

The empowerment of women farmers in the
context of participatory plant breeding in Syria:
towards equitable development for food security

Alessandra Galie

Thesis committee

Promotors

Prof. Dr P.C. Struik

Professor of Crop Physiology

Wageningen University

Prof. Dr J.L.S. Jiggins

Guest researcher

Wageningen University

Co-promotor

Prof. Dr S. Ceccarelli

Barley breeder and Participatory Barley Breeding Consultant

ICARDA, Beirut, Lebanon

Other members

Prof. Dr L.E. Visser, Wageningen University

Dr C.J.M. Almekinders, Wageningen University

Dr D.L. Danial, Wageningen University

Dr E. Nuijten, Louis Bolk Institute, Driebergen, the Netherlands

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The empowerment of women farmers in the context of
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Alessandra Galiè

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Abstract

This study explored changes in the empowerment of 12 women farmers from ten Syrian rural households as affected by their participation in a participatory plant breeding (PPB) programme, and by multi-level institutions regulating the governance of seed at ground level. The study aimed to i. provide in-depth information on the involvement of the respondent women in the barley value chain and in farming in selected PPB programme villages ii. examine the inter-relation between the respondent women's roles in farming and seed governance and iii. analyse the potential and actual contribution of PPB in these villages to supporting and enhancing the respondent women's roles, and to providing empowering opportunities for them.

This study is framed within the overarching concepts of social justice and gender equity, and analysed through the frame of reference of food-related rights and empowerment. It interlocks issues of empowerment, participatory plant breeding, gender analysis, and governance of seed based on in-depth and empirical exploration of the issues and their interconnections. The study was designed as exploratory small-N research with 12 women farmers and 24 male farmers from three villages involved in the PPB programme. It provides qualitative findings that can be further explored and tested across a wider population.

The findings show that the respondent women farmers have key roles in food provision, production and in food cultures related to both manual and mechanised, and food and feed crops. These roles vary depending on household as well as individual circumstances. However, the respondent women were also shown to have disadvantaged access to and control of productive resources such as land, water and seed in particular, and limited decision-making power about farm management. The study argues that the access of Syrian women farmers to relevant seed is vital for them to successfully perform their food-related roles, and to have equal access to development opportunities towards food security enhancement. The study shows how gender-sensitive PPB can provide participating women with seed relevant to their needs. It can also provide them with opportunities for empowerment by increasing their recognition as farmers, by supporting their access to relevant seed varieties and information, by providing access to opportunities (e.g. variety selection, income-generating activities, exposure to new contexts and life-paths) and also by enhancing their decision-making in agriculture. It also shows three events that had negative impacts on the respondents.

Finally, the study discusses the impact that gender-biased contextual and institutional circumstances might have on the empowerment of the respondents. It analyses the

interface between governance regimes regulating the right to access and control genetic resources at international and national levels, and the actual ability of the respondent women to access and control the seed varieties they had developed under the PPB programme.

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To all Syrian friends and colleagues with the hope that
peace will soon return

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CHAPTER 1

General introduction

Introduction

After two decades of declining aid to agriculture in developing countries, there is renewed interest in agriculture and its role in pro-poor development and food security enhancement (Ransom and Bain 2011). It is recognised that new pathways of agricultural research for development are needed to achieve this goal and to enhance food security in the face of new and powerful drivers of change, including climate change and the increasing role of market-based actors (Foresight 2011), and to support poor farmers, including farm women, in the marginal areas which have benefited the least from publicly-funded and delivered Agricultural Research for Development (AR4D) (IAASTD 2009a). The Food and Agriculture Organization of the United Nations (FAO) estimates that closing the gender gap in agricultural yields could bring the number of undernourished down by as much as 100-150 million people, that is, by 12-17% (FAO 2011). Empowerment of farm women is considered a means to both enhance the effectiveness of AR4D and reduce gender-based disadvantages (Kabeer 2010). Participatory plant breeding (PPB) is today accepted as a useful approach in the emerging mosaic of efforts to meet these current and future challenges.

This study has explored the empowerment of women farmers in the context of a PPB programme based in Syria and in the framework of social and gender equity. The study helps clarify the links among women's empowerment, food-related rights and seed security for small-scale farmers. It provides empirical evidence of the gender-based organisation of farming along the food production to consumption chain in selected Syrian households, and of the process by which the empowerment of farm women can be impacted by PPB and by seed management at household and community level. The study has intrinsic interest in a region where there is a relative paucity of research literature on any aspect of women in agriculture (IAASTD 2009b) and offers some insights to improve the relevance and efficiency of PPB for small farmers and women farmers in particular. The study also contributes a conceptual and methodological framework developed in collaboration with the respondent women for self-assessment of personal and social changes in empowerment induced by PPB. In studies of this type it is unusual to explore these concerns through the medium of a crop usually considered to be controlled by men, in this case, barley. The reasons for choosing barley as the focus crop in this study are explained

elsewhere in this chapter. The implications for what PPB none the less may contribute to women's empowerment in such cases are considered.

The three assumptions on which the study is based are:

- (i) Gender-sensitive approaches in PPB programmes can improve the targeting of agricultural technologies such as improved crop varieties and seed supply
- (ii) Use of research tools for gender analysis “adds a little complexity for a lot of insight” (Feldstein and Jiggins 1994, 3) into gender-based constraints that need to be overcome for effective technology development and adoption, and
- (iii) PPB can provide empowering opportunities for women if programme activities take into account social and gender considerations affecting the life circumstances of the participants.

Women in farming in Syria and the CWANA region (Central and West Asia and North Africa)

The starting assumptions are perhaps not ‘new to science’ but there is very little evidence of how they might play out in the Central and West Asia and North Africa (CWANA) region and practically none for Syria itself. Herein lies one of the primary contributions of this thesis, as an exploratory study that sheds some light on the daily farm life of selected women farmers in a country where food security has been a national priority since the 1980s and where current civil war is arguably partly related to the lack of rural and agricultural development opportunities.

Syria's score on the United Nation's development index in the first decade of this century is approximately 0.63 placing Syria below the regional average of 0.64 and the world average of 0.68 (UNDP 2011). Agriculture in Syria is not very productive although it remains a major source of livelihood. Overall about 50% of the population is engaged in farming but agriculture's share of Gross Domestic Product is only just over 20%, associated with low added value per agricultural worker and low capital stocks per agricultural worker (IAASTD 2009b). Recent, comprehensive and reliable data for ‘women in agriculture’ are not available for Syria (IAASTD 2009b summarise the most recent information; 1995 is the date of the FAO's last synthesis report that addresses women in agriculture in the region; Ransom and Bain 2011; World Bank, FAO and IFAD 2009).

The available data indicate that about 44% of the women in farming households work in agriculture as paid labourers, and most of the remainder contribute unpaid labour to the family farm. There is a marked gender based division of labour and

responsibility, with women concentrated in the manual, time-consuming and labour intensive tasks, typically including planting seeds, transplanting seedlings, weeding, harvesting, picking fruit and vegetables, post-harvest work, threshing, and seed selection and storage. We return to women's seed-related tasks below. Within this general picture there is known to be considerable variation, depending on the agro-ecological zone, and the cultural and religious identity of the mosaic of communities that make up the nation. In the rural areas women's participation in paid work, including non-farm work, is thought to increase with the poverty and size of the household.

Women's control over assets in Syria is severely restricted. They own less than 5% of the land (compared, say to women in Oman, where women own no land at all, or Egypt, where women own about a quarter of the land). Only 7% own animals, and about 16% some form of agricultural equipment or machinery. National efforts to mechanize farming have led to male control of machinery in ways that are thought to have increased the drudgery of women's work on the farm. Women-headed households are uncommon, at about 6% of all households (FAO 1995), about the same rate as in Turkey, Jordan and Iran, and far fewer than in Egypt or Morocco (16%), or Pakistan (25%). Male migration to urban areas is said to be causing a feminisation of agricultural labour and has increased the proportion of women among the farming population, most often without increasing their control of farm assets and decision-making (Abdelali-Martini et al. 2003).

Women and seeds

This study pays particular attention to the role of seeds in agricultural improvement, and the question of how seed is managed, in part because it is based in a PPB programme but more generally because seed security is a key component of food security (World Bank, FAO and IFAD 2009). Access to adequate seed typically is the main guarantor of adequate nourishment at the farm household level (Santarius and Sachs 2007). The secure access of women to adequate seed is particularly critical in household food provisioning (Jiggins 2011; World Bank, FAO and IFAD 2009). The questions of 'whose preferences and needs' are taken into account in seed improvement, 'how' seed system development occurs and 'who benefits', are important research issues and consequential for the gender equity of outcomes.

However, there has been a general failure to translate into practice the recognition that gender inequality is an important issue in seed technology development and adoption (Ransom and Bain 2011). The improvement of crop varieties through plant breeding often is considered mainly in terms of its aim to produce 'technical outputs',

i.e., improved crop varieties that yield more than local varieties. This raises concerns about the extent to which plant breeding can produce seed that matches the actual demands, needs, and local market opportunities of small farmers, in diverse contexts, and that takes into account their life circumstances. It also raises concerns about the effectiveness of plant breeding in providing new varieties that are adopted by farmers without addressing issues of access to and control of seed at household and community level as affected by seed governance - the customary rules, formal regulations and policies at national and international level, that affect individuals' access to seed (see below). The extent to which seed breeders can and should pay attention to the gender-based inequalities expressed and constituted in 'grounded realities' always requires empirical investigation but even where such inequalities are marked they often are overlooked despite the evidence that they constrain the overall efficacy of efforts to enhance agricultural production and food security (World Bank, FAO and IFAD 2009).

In the CWANA region, even where women do play key roles in agriculture their role "is not properly recognised and gender issues are not high on national agendas" (IAASTD 2009b, 3). Here lies another main contribution of this thesis - clarifying important aspects of the links between food security and seed security by analysing the gender dimensions of seed preferences, access and control at household and community level in the framework of the PPB programme and of governance regimes affecting seed access in the selected households.

Gender-blind AR4D also raises concerns about the equity of the development opportunity created through seed improvement: women in the most challenging low rainfall environments have rarely seen the crops and the varieties of most interest to them improved through conventional plant breeding programmes (Almekinders, Thiele and Danial 2006; Quisumbing and McClafferty 2006). Gender-blind seed technologies in some cases have been shown to aggravate existing inequalities rather than reducing gender and poverty gaps (Srinivasan and Mehta 2003).

Participatory plant breeding in Syria

Food security has been a declared national priority in Syria since the 1980s. The new National Framework for Regional Planning (2011-2015) places great emphasis on agricultural modernisation, in the light of climate change, declining water reserves and land degradation. However, with an average of only 252mm of rainfall a year and high evapotranspiration, much of the country is marginal for cropping. Although two of the region's major rivers, the Tigris and the Euphrates, flow through Syria, as a whole the country is in water deficit. Nutrient losses are high, through water and

wind erosion and soil salinization, especially in the river valleys (UNEP/ISRIC 1990). Syria exports fruits and vegetables, dates and olive oil and imports grains. The main domestic crops are wheat, barley, lentils, peas and vetch. Barley and vetch are grown as animal feed or pasture, while wheat, lentils and peas are grown as food and are used for animal feed or pasture if the yield is too poor to harvest for food. Syria lies at the heart of the Near Eastern Vavilov centre of diversity for these crops. Generations of natural and human selection have resulted in numerous highly adapted and diverse populations of local landraces (Bishaw, Van Gastel and Struik 2011).

The national research institutes in Syria have been generally isolated from mainstream development research over the last decades. Currently, public provision for agriculture remains highly centralised. Except under the PPB programme, the research agenda and breeding priorities of the national system are usually determined solely by the breeders and not discussed with farmers. Crop improvement research is concentrated in the agro-economic zones that do not reflect the circumstances of farmers from the more marginal areas, many of the products of formal research are not appropriate to their farming conditions, extension services are weak, and adoption rates are low (Ceccarelli and Grando 2007). Barley landraces are still preferred by the farmers to the officially released varieties. Informal farmer-to-farmer seed exchange is the major source of wheat and barley seed for most farmers (Aw-Hassan, Mazid and Salahieh 2008; Bishaw, Van Gastel and Struik 2011).

Participatory plant breeding (PPB) for crop improvement is a science-based procedure in which professional plant breeders and researchers from various disciplines collaborate with farmers to produce locally-adapted varieties that meet farmers' needs, priorities, and local market opportunities (Almekinders and Hardon 2006). The PPB programme was started in Syria in 1996, coordinated by the International Centre for Agricultural Research in the Dry Areas (ICARDA) in collaboration with the General Commission for Scientific and Agricultural Research (GCSAR) - the Syrian national research institution for breeding - and with extension staff (who are present only in the larger villages). The programme initially involved farmers in the early stages (third generation) of breeding. Farmers from 24 villages were recruited, in a range of marginal areas, typically those frequently affected by droughts and resulting crop losses. The programme focused mainly on barley because barley is the major feed crop and winter cereal, a major source of income for small-scale resource-poor farmers, and practically the only crop that produces a worthwhile yield in the more marginal areas.

During the period in which this study was undertaken the work of the programme proceeded as follows. ICARDA scientists make crosses (using diverse parents including landraces, wild relatives and modern germplasm) and grow the first two generations on the research station, taking into account the trait priorities the farmers have mentioned when selecting their preferences. These scientists analyse - quantitatively and qualitatively - the traits and store electronic copies of the information. The farmers are involved in PPB from the third generation seeds. Farmers from the same village can have two roles: some farmers manage the trials of the varieties supplied by ICARDA in their fields, decide breeding priorities and select their preferred lines; but some farmers are involved only in selecting their preferred varieties from among those grown by the first group of farmers. After four years of testing both groups decide which varieties to adopt; they then give these varieties a name. Some farmers also are involved in seed multiplication and diffusion in their districts. Each year the farmers grow the lines they have selected in the previous years as well as new lines provided by ICARDA, in a cyclical process (see further Chapter 2).

The PPB programme has consistently delivered well-adapted new barley varieties that offer higher performance than the best comparison seeds in the areas in which it has operated. In 2011 for example, nine villages selected ten new varieties after four years of trials. The ICARDA PPB barley programme thus formed the operational context of my research when this study began. However, crops identified by the women respondents during the course of my research as likely to be of particular interest to women farmers and labourers, especially wheat, lentils and chickpeas, were added between 2009 and 2010. Wheat, in particular, was added in 2009 as the PPB plant breeders explored the potential of an 'evolutionary approach' to breeding (where complex populations are grown year after year, letting natural selection slowly increase the frequency of the best adapted genotypes; this is explained further in Chapter 2).

Because of PPB's capacity to respond to a range of farmers' needs in specific contexts PPB is held to be particularly effective in addressing the diverse priorities of small-scale farmers in marginal rainfall areas characterised by a high variability of agro-ecological and socio-cultural opportunity (Ceccarelli, Grando and Baum 2007). This potential makes PPB notionally well-suited also to address gender-based preferences in seed improvement. However, it is a question explored in this thesis if seed improvements offered to women through PPB also in some sense 'empowers' them.

Empowerment through participatory plant breeding

Interventions to adjust gender-based relations of unequal power are seen by many as a justifiable development activity (Cornwall and Anyidoho 2010). Others consider women's empowerment to be a 'human-centred' pathway to development, by providing women with the means to voice their own needs and desires, and to take action in their own interests (De Schutter 2009). It is argued more instrumentally that the 'empowerment' of farm women would enable them to participate in research as more equal partners alongside scientists, and thereby would increase the effectiveness of agricultural research (Song and Vernooy 2010). There is some evidence that PPB does have positive effects on the empowerment of farmers (Ceccarelli and Grando 2007; Paris et al. 2008). However, the impact of PPB on women farmers and gender relations has been little analysed (Farnworth and Jiggins 2003; Paris et al. 2008). The *processes* by which participatory plant breeding might enhance women's empowerment also have received limited attention. Here lies a third main contribution of this thesis, to understanding how the respondent women conceived of empowerment and how they perceived the PPB programme to affect their empowerment.

The PPB programme in Syria from the start intended its work to be 'open' to both women and men. Over time, the PPB researchers observed that neither women farm labourers, nor the women in the farm households actively participating in seed trials, in practice became involved. When they asked in the field whether or not women were interested, many of their men folk and many of the women expressed an interest and desire for women to be involved. Yet it did not happen. This study thus adopts as a given the PPB programme's pre-analytic wish that the women who might want to be involved in PPB work, should be enabled to do so, on the grounds both of equity and programme efficiency. The programme finally followed through on its commitment and observations by commissioning a consultant researcher to find out why women in selected villages and households where the programme was operating did not become actively engaged in the work. This diagnostic study subsequently evolved into the four year research activity presented in this thesis.

Problem statement

This study aims to contribute toward filling three knowledge gaps identified at the start of this study:

- i. While it was known that women play an important role in agriculture in Syria, there was little understanding of the extent and modality of women's involvement

in farming, nor about the consequences for agricultural research for development and in particular, for seed breeding

- ii. Even less was known about the gender dimensions of seed management, access and control at household and community level
- iii. The processes by which PPB might provide empowering opportunities for farm women involved in small-scale agriculture had not been determined.

Research objectives

Given the lack or inadequacy of this primary information, the study has the form of in-depth small-N research, which can say a lot specifically about how and why a few act and think as they do, with the overall aim of teasing out the salient issues that could be examined subsequently in larger scale follow up research.

Specifically this thesis aimed to:

1. Provide in-depth information on the involvement of the respondent women in the barley value chain and in farming in selected PPB programme villages
2. Examine the inter-relation between the respondent women's roles in farming and seed governance, and
3. Analyse the potential and actual contribution of participatory plant breeding in these villages to supporting and enhancing the respondent women's roles, and to providing empowering opportunities for them.

Research questions

The research questions that relate to these objectives are set out in Table 1.

Objective	Research questions	Chapters
1. Provide in-depth information on the involvement of the respondent women in the barley value chain and in farming in selected PPB programme villages	a) Are the respondent women involved in the barley value chain or in agriculture at all, and if so, which women and in what tasks?	3 and partly 6
	b) What are the gender biases in local understandings of 'farmer'? Do the respondent women regard themselves, and do other members of their communities regard women as farmers and value their labour contribution and knowledge?	4, 7 and partly 5
2. Examine the inter-relation between the respondent women's roles in farming and seed governance	c) How is seed managed in the households of the respondent women, and by whom? d) How do the respondent women access seed? e) What are the factors that affect the respondent women's access to and control of PPB seed?	3, 6, 7
3. Analyse the potential and actual contribution of participatory plant breeding in these villages to supporting and enhancing the respondent women's roles, and to providing empowering opportunities for them	f) How can the respondent women become involved in the PPB activity?	2
	g) How has the PPB programme affected the respondent women's access to seed varieties they value?	2, 6, 7
	h) Does participation in the PPB programme affect men's and women's perceptions of women's role in farming and their knowledge?	5, 7
	i) According to the respondent women themselves, can PPB effect their empowerment and if so, how?	7

Conceptual framework

A key concept introduced so far in this thesis is that of empowerment. Women's empowerment is a common thread in each of the major international conferences of the 1990s, advocated as a way to achieve sustainable human development (<http://www.un.org/popin/unfpa/taskforce/guide/iatfwemp.gdl.html>). It is considered instrumentally to be a means by which to increase the effectiveness of AR4D, by developing women's capability to participate in agricultural research, to express their needs more effectively, to benefit from its outputs, and to actively shape agricultural development to reflect their priorities and future livelihood preferences. It is viewed normatively as a means to counter the structural disadvantages faced by women. The empowerment of rural women, in particular, is considered essential from a humanistic perspective, in order for women to safeguard their own livelihood interests and their gendered heritage of seed-related biodiversity and related knowledge (Almekinders and Hardon 2006). In short, '*empowerment*' has become something of a common catch-all, aspirational phrase.

Yet empowerment is an elusive concept. Its very definition raises concerns over who has the power to decide 'what empowerment means' and 'whose empowerment counts'. The concept of women's empowerment has been criticised as a product of feminist ideologists in the global north that has been transferred to the global south (Charrad 2007). Women from the global south, on the other hand, have claimed recognition of their key role in defining empowerment in the context of their own struggles against gender-based injustices (Mosedale 2005). The ambiguity of the concept is pertinent to this study in so far as parts of the research are anchored in analysis of empowerment discourses in the Middle East (Chapter 7).

Sen (1990) and Kabeer (1999) both see empowerment as a 'process' designed to enhance individuals' capacity for self-determination - that is their capability of living the lives that they have reason to value. For Kabeer (2010) empowerment thus starts with the exercise of 'agency'. 'Agency' she describes as the ability to define goals and act upon them to achieve the chosen outcomes. Cornwall and Edwards speak of empowerment as increasing agency by "extending the horizon of possibility, of what people imagine themselves being able to be and do" (Cornwall and Edwards 2010, 3). Bartlett (2005) identifies as the basis of agency an ontological transformation that produces lasting changes in perceptions and relationships.

Sachs and Santarius (2007) identify three basic principles of such processes of self-determination: 'recognition', 'distribution of resources' and 'access to opportunities'. 'Recognition' here is understood as acknowledgement of the identities and

associated roles individuals freely chose to take in society. It refers both to self-awareness of inner ontological transformations and perceptions of the 'self', and to the recognition and judgment of the more 'public aspects of this self' by others (Howard and Hollander 1997).

'Distribution of resources' relates to the right to self-determination because resources are the material expression of recognition and the necessary means of survival. Social exchange theory has highlighted how the value of one's resources affects his or her power over others (Howard and Hollander 1997). The right of individuals to resources, however, does not necessarily translate into their actual 'access to and control of resources'. An emphasis on individuals' 'access to resources', understood as 'ability to derive benefits from things' provides a more pragmatic understanding of the means, dynamic processes and social relationships that constrain or enable individuals to access resources (Ribot and Peluso 2003).

'Opportunities' are necessary for individuals to make use of the resources they access and to actualize their right to self-determination. 'Opportunities' are defined as "the available lines of action open to an individual [...] so that he or she might act without seeking the formal consent of others" (Schmid 1987, 6). Actual execution is affected by personal choice, taste, skills, knowledge and so on. The provision to individuals of 'equal opportunities' translates into ensuring that they all have the potential to achieve the same outcomes by compensating for different environmental circumstances (Roemer 2008).

We now take a closer look at the 'power' element in 'empowerment'.

We have noted already that empowerment as a process has been treated variously in terms of the individual or the group. The treatments relate in part to the researchers' views on social relations (for instance, as 'structural' or 'systemic') but also to their understanding of the concept of power. Much of the literature on empowerment in practice looks at power dynamics in terms of clashes over conflicting claims and the ability of some individuals to dominate over others. In this framework empowerment implies a shift of a finite quantum of power from powerful individuals to less powerful ones, in a zero-sum game. Follett (1924) provides an alternative to these dualistic empowerment-disempowerment discourses by looking at co-power, that is, multi-sided relationships of power where 'relationships' are the key driver. She thus thinks of individual empowerment as increasing the power of all rather than as a re-allocation of existing quanta of power. Others have focused on 'the power with' concept i.e., power which results from sharing common concerns and that can be

more powerfully addressed by a group rather than by an individual. Collective action - the voluntary action taken by a group to achieve common interests - in this sense has been analysed as a powerful strategy for securing the needs and interests of group members (Pandolfelli, Meinzen-Dick and Dohrn 2007).

Application of any concept of empowerment within the Muslim world takes on a particular character. Fernea (2003), for example, discusses the differences between 'Western feminism' and the movements for women's equality in the Muslim countries in terms of what she calls 'family feminism'. By means of a historical comparison between Christianity and Islam Fernea argues that Western feminism separates biology from socialization, places women as individuals outside of the family, and treats them as de-socialized units in the labour force. In her perspective, this prioritizes women's productive role over their biological and social reproductive roles. Family feminism in contrast reasserts the value of the multiple roles of women constituted in and by family relationships. Family feminism argues for the importance of women's positionality in social relationships, where women and men are seen to be "involved in complex systems designed for survival, and for raising and socializing the next generation, for reproducing culture as well as people" (Fernea 2003, 149).

Over the last two decades activist scholars in the Middle East have explored also the potential of religion to enhance rather than constrain gender equity and women's empowerment. This has been inspiring to many because of the way Islam has been seen as inhibiting women's aspiration for modernity. Arnez (2010), for instance, draws attention to how women in Muslim countries are reinterpreting Islamic sources as a step towards their self-emancipation. By founding women's rights in religious texts an alternative is provided to the western credentials of feminism that serves to increase the legitimacy of gender equality demands in Islamic cultures. However, Kandiyoti (2011) underlines the pitfalls of promoting gender equality through a religious lens and warns against the instrumentalisation of both gender and religion by those seeking to implement diverse political agendas.

Charrad (2007) takes a more directly political stance by contextualizing feminist discourses in the political milieu of the Middle East. She argues that gender relations are shaped by collective negotiations between power holders and kin-based groups. On the basis of sociological research she maintains that in periods of social change, family and gender roles take a major place in politics. Charrad, however, also notes that in these processes of change "women are transformed into symbols of the tension between tradition and modernity, or between East and West" (Charrad 2007, 60). Rabo (1996) argues that because women represent symbolically both the

progress and the cultural traditions of society throughout the Middle East, struggles for power are expressed through discourses in which women are manipulated as symbols in support of arguments that are mutually incompatible. Kandiyoti warns that in the face of “growing popular discontent [...] governments may make the tactical choice of relinquishing the control of women to their immediate communities and families, thereby depriving their female citizens of full legal protection” (Kandiyoti 1991, 387).

A number of scholars have warned that mainstream development institutions have depoliticised the word ‘empowerment’ which, rather than being understood as ‘a multifaceted process of social transformation’, was instrumentalised into a ‘magic bullet for poverty alleviation’ and supported by unverifiable claims to success because abstracted from the specifics of culture and context (Batliwala 2007; Cornwall and Anyidoho 2010).

This study employs the perspective on empowerment as ‘a process by which an individual acquires the capacity for self-determination, that is, of living the life that she or he has reason to value’ (adapted from Kabeer 2010; Sen 1990). It is examined analytically with reference to the field data in terms of the three principles distilled by Sachs and Santarius: ‘recognition’, ‘distribution of resources’, ‘access to opportunities’. A fourth principle, ‘decision-making’, was added as a cross-cutting principle because considered by the respondent women as an indicator of change in any path to self-determination. ‘Decision-making’ is understood in this thesis as ‘the ability to take one’s own decisions that affect one’s own life’ and as a necessary means for self-actualisation and self-determination (Cornwall 2007). The meaning given to these generalised principles have been derived from criteria proposed by the respondents themselves, in order to ensure that they are understood in terms of locally meaningful concerns and the women respondents’ pragmatic realities. That is, we take the view in this study that while natural scientists describe what human beings are like as a biological kind, our interest in human beings as persons interacting with others in specific environments shifts attention to how female personhood is shaped in and through agriculture, and through participation in the PPB programme. We note that the ‘why’ of scientific inference is not the same as the ‘why’ of personal understanding; the latter question demands a conceptualisation of women’s personal understanding considered under the aspects of freedom and choice (Scruton 2012).

The concept of empowerment in this study thus is framed within the overarching concepts of *social justice* and *gender equity* and further analysed through the frame of reference of *food-related rights* (Fig. 1).

Associated frames of reference

Figure 1 is a heuristic device that serves to illustrate the inter-linkage of the conceptual language used in this thesis, and how it has been operationalized.

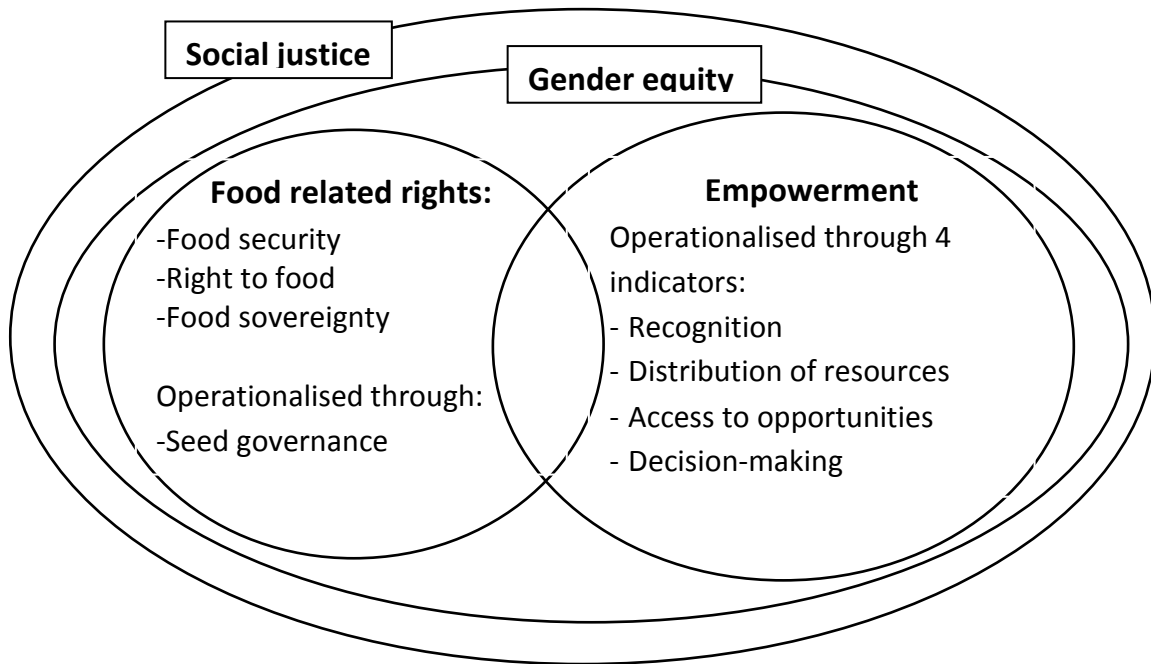


Figure 1. Overarching concepts and frame of reference
Source: Author’s elaboration

Social justice

The two central concepts framing this study i.e., food-related rights and empowerment, are nested in the larger frames of social justice and gender equity. Although this thesis focuses mainly on gender equity, it includes a brief reference to social justice because this can be considered to form the larger frame of reference for both issues of equity and empowerment. *Social justice* captures the aspiration to create a just society or institution and to remove clearly identifiable injustices (Sen 2010) (Box 1). It addresses the right for all to equally benefit from the outcomes of development opportunity. Article 14 of the UN Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) affirms the principles of social equity and justice and establishes the right of rural women to participate in the elaboration and implementation of development planning at all levels, access appropriate technologies, information, and rural services and also obtain formal and informal training to enhance their technical proficiency

(<http://www.un.org/womenwatch/daw/cedaw/text/econvention.htm#article14>).

Women's empowerment is considered to provide women with the capacity to counter the structural disadvantages they face - e.g., in accessing and controlling resources, in taking advantage of opportunities, in accessing decision-making processes and in shaping their own development path - and engage in dialogue and actions that are needed to make progress towards social justice a reality.

Syria adopted and ratified the CEDAW in 2002 with reservations applied to Articles 2, 9(2), 15(4), 16(1)(2), and 29(1). The government found these articles to be incompatible with national laws and the Shari'a. Syria's reservations concern a woman's right to pass her nationality to her children, freedom of movement and of residence and domicile, equal rights and responsibilities during the marriage and its dissolution, and the legal effect of the betrothal and the marriage of a child.

Gender equity

Gender equity is intrinsic in social justice because it focuses on gender-based social injustice and argues for the right of both women and men to enjoy the same entitlement to rights that respect diverse needs and aspirations (Box 1). To achieve the same outcomes, women and men might need different means and treatment given that they might have distinct needs and preferences, and also different entitlements to resources and access to opportunities (Reeves and Baden 2000). Empowerment supports women and men's capability to define their own needs and preferences, voice them and act on them to achieve gender equity. In this view women's empowerment "involves a process whereby women, individually and collectively, freely analyse, develop and voice their needs and interests, without them being pre-defined, or imposed from above" (Reeves and Baden 2000, 35).

Food-related rights

This thesis adopted food-related rights as a main frame of reference because they are central in current debates on pro-poor development, in the approach of the Syrian government to agricultural development, and in AR4D. This thesis applied three aspects of food-related rights: *food security*, *right to food* and *food sovereignty* (Box 1) in the analysis of the empirical evidence. Each aspect was considered to contribute complementary and essential elements to establish individuals' right to food in the framework of empowerment.

Box 1. Overarching conceptual frameworks and frame of reference

Social justice is “fairness and equity as a right for all in the outcomes of development, through processes of social transformation” (Reeves and Baden 2000, 3)

“*Gender equity* denotes the equivalence in life outcomes for women and men, recognising their different needs and interests, and requiring a redistribution of power and resources” (Reeves and Baden 2000, 10).

Food-related rights. Three aspects are included in this thesis within the frame of food-related rights: food security, right to food and food sovereignty. *Food security* is “physical and economic access by all people in a society at all times to enough culturally and nutritionally appropriate food for a healthy and active lifestyle” (World Food Summit, 1996). *The right to food* is defined as “the right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensures a physical and mental, individual and collective, fulfilling and dignified life free of fear” (De Schutter 2012). *Food sovereignty* is peoples’, countries’ or states’ right to define their own food systems and agricultural policy (La Via Campesina 2001). Seed governance was considered by this thesis as a practical form of food-related rights. It is defined in this thesis as “the rules, traditions, institutions and behaviours, by which interests are articulated, resources are managed and power is exercised in society, in ways that affect individual’s access to and control of seed” (adapted from EC 2003).

Food security as a human right has been spelled out at the World Food Summit in 1996: “Democracy, promotion and protection of all human rights and fundamental freedoms, including the right to development, and the full and equal participation of men and women are essential for achieving sustainable food security for all” (Rome Declaration on World Food Security 1996). *The right to food* was first established in the non-binding but universally recognised Universal Declaration of Human Rights (1948). It was then directly addressed in the International Covenant on Economic, Social and Cultural Rights (1966) as a legally-binding norm¹. The right to food

¹ The right to adequate food is also recognized in specific instruments such as the Convention on the Rights of the Child (Art. 24(2)(c) and 27(3)), the Convention on the

establishes the importance of guaranteeing individuals with regular, qualitative and quantitative appropriate food or the means to purchase it. The concept of *food sovereignty* was created in 1996 by La Via Campesina, a movement of peasants, small and medium-size farmers, landless people, women farmers, indigenous people, migrants and agricultural workers from around the world. Food sovereignty focuses on the right of all individuals and states to define their food system and argues for democratic forms of agro-food governance (Box 1).

The United Nations (UNDP 2009) recommended that the empowerment of rural women is supported in order to achieve food security and enhance rural development. This stems from the recognition of women's key roles in food production, provision and in food cultures (Foresight 2011; IAASTD 2009a; Jiggins 2011; WB 2008), of their significant roles in the economic survival of their families, and also of women's disadvantaged access to natural resources, information, rural services and decision-making opportunities. The UN Special Rapporteur on the Right to Food stated that "empowerment and participation are key to the long term success of strategies based on the right to food" (De Schutter 2010, 2). La Via Campesina argue that the empowerment of farmers and women in particular is necessary to achieve food sovereignty and, also, that by promoting food sovereignty greater gender equality and empowerment can be achieved (Caro 2012). Both the right to food and the food sovereignty approach place emphasis on farmers' empowerment as a means to enable farmers to safeguard their right to the means to produce or purchase their own food.

Seed governance is defined in this thesis as 'the rules, traditions, institutions and behaviours, by which interests are articulated, resources are managed and power is exercised in society, in ways that affect individual's access to and control of seed' (adapted from EC 2003). It was adopted in this thesis in order to operationalize food-related rights, in the farm reality understood by the women respondents. Seed is one of the principal natural resources needed for farming and for local food security (together with land and water). Access to seed is considered important for the empowerment of women farmers because lack of basic productive resources affects survival and hinders any path to self-determination. Zueger (2005) maintains that empowerment only takes place when inner self-determination is externalised and enters into a person's actual and functional reality. Therefore, the outcome of the

Elimination of All Forms of Discrimination against Women (Art. 12(2)), or the Convention on the Rights of Persons with Disabilities (Art. 25(f) and 28(1)).

empowerment process for farm women is affected by the way seed governance affects individuals' access to and control of seed within communities and households. Access, control, or ownership of seed and other resources influence the status of each individual, their power in the community and household, their life options and thus their capability for self-determination and for achieving their food-related rights.

Methodology

Research framework

Locating the study within the PPB programme

The PPB programme operated in three of Syria's agro-ecological zones, defined by rainfall that varies from 1500 mm in the coastal western areas to less than 100 mm in the southeast, and characterised by diverse farming systems (Fig. 2). Agricultural planners identify five distinct zones based on average annual precipitation:

zone 1: over 350 mm

zone 2: between 250 and 350 mm

zone 3: between 250 and 200 mm

zone 4 between 200 and 150 mm

zone 5 below 150 mm.

The choice of which farmers to collaborate with is a crucial procedural step in PPB, to ensure that the varieties selected in the processes of collaboration are relevant to other farmers operating similar cropping systems in the same agro-ecological zone. At the start of this study in 2006, the PPB barley programme was operating in 24 villages spread across seven provinces that stretch across zones two and four, i.e., in the marginal areas affected by recurrent drought and resulting crop losses. In each village, between eight and ten male farmers were involved in the PPB work consistently across the four years of the selection procedures undertaken by farmers (Chapter 2). These households formed the 'population' from which the respondents in this study were recruited.

Design

The study is designed as exploratory small-N research. Small-N research, although widely used in historical and comparative analysis from the late 19th century onwards and currently often used in medical, nutrition, and clinical research, has its critics (e.g., Lieberson 1991; Mahoney 2000). It can be used as a form of analytic induction

to analyse causation but this application has stringent methodological requirements that, according to some, can rarely be met in the real world. The main critique is that it has limited external validity, principally because:

- Theory testing is problematic
- Generalisations are not possible
- Divergent conclusions can be drawn from the comparisons
- There are no scientific controls
- It is open to observer bias and interpretation bias
- No cause-effect conclusions can be drawn.

A number of other scholars (Anderson and Scott 2012; Denzin 2009; Donmoyer 2012a) argue, on the contrary, that qualitative, small-N studies can provide causal explanations by elucidating the specific mechanisms “that influence social action to proceed in certain directions rather than others” (Erickson 2012, 686). However, small-N research remains in the methodological tool-box across a wide range of social science, policy, and clinical disciplines. Mahoney and Goertz (2006) and George and Bennett (2005) argue that it is especially appropriate to situations where few or no previous studies have been conducted and little information exists, as in this case. Flyvbjerg (2006) similarly argues that the largest amount of information about a given problem is rarely provided by a random sample but more likely obtained through the strategic selection of a few instances and their in-depth analysis. The outputs of such small-N research can be used to provide thick descriptions and understandings of specific issues, identify new issues, appreciate complexity, provide new frames for thinking of and approaches to solving a given problem, and generate questions that can be examined in large-N studies, and, with caution, be extrapolated to similar settings, and interpolated into similar activity elsewhere (such as another PPB programme), as hypothesised innovations subject to further testing and analysis (Donmoyer 2012b). My own study is based on this appreciation of the advantages of small-N research.

In brief, small-N research is appropriate wherever the objectives are to:

- Generate a rich source of information and ideas about complex situations
- Open up opportunities for innovation

- Be present ‘in the context’ to observe and understand subtle, rare or chance events
- Gain experiences that may challenge pre-analytic assumptions
- Provide novel understandings that might be applicable in broadly similar situations
- Report the results of a treatment.

Given the state of knowledge in the domain that this study focuses on, these six advantages pointed strongly towards the appropriateness of a small-N design. An initial scoping visit to the PPB villages, and desk study, suggested that the collaborating households in the set of 24 villages offered a spectrum of opportunities for observing women’s involvement. Three villages were selected that offered contrasting settings in terms of a continuum of existing ‘household participation in PPB’. The location of the villages is shown in Figure 2.

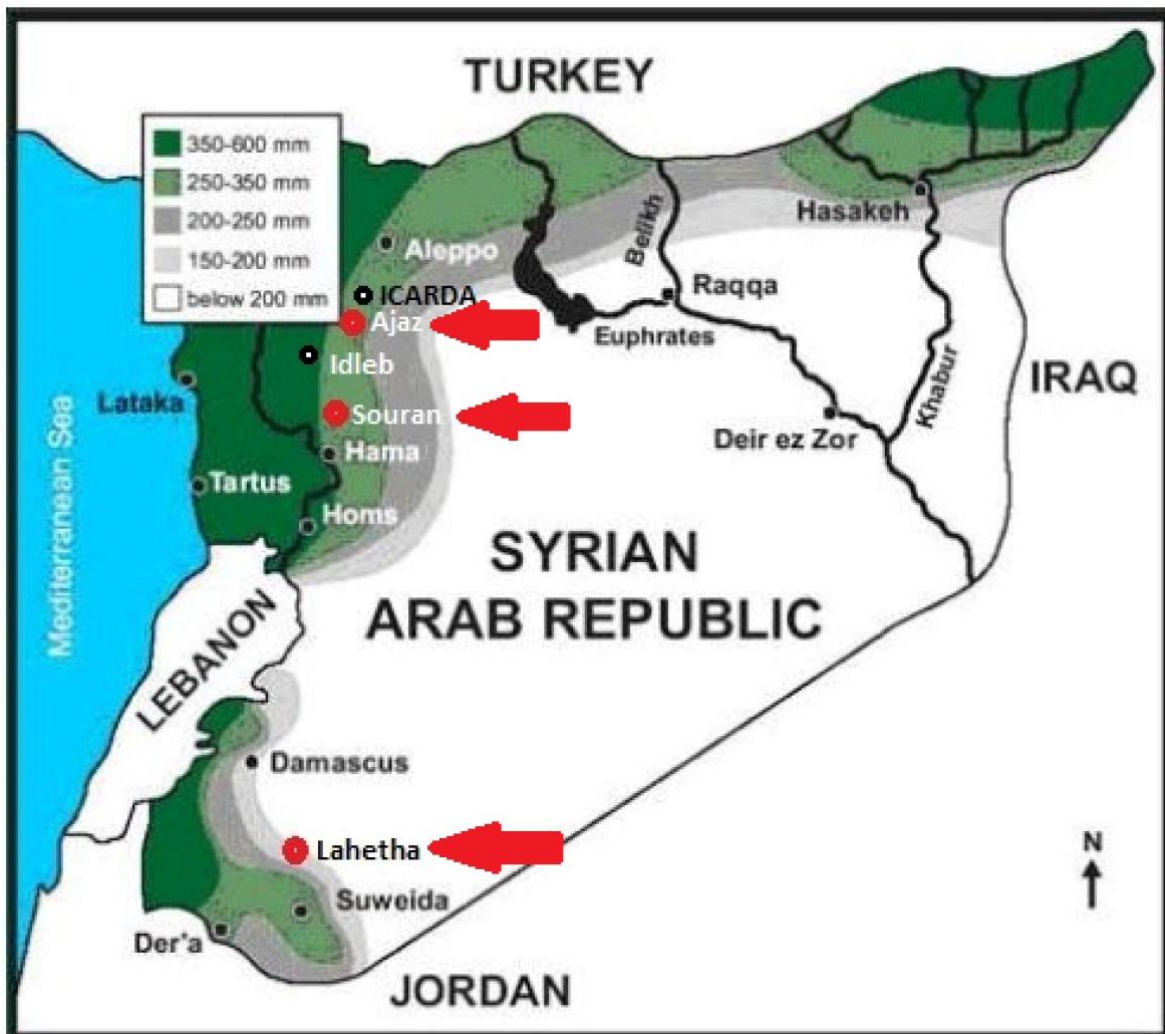


Figure 2. Map of Syria and the villages of this study: Ajaz, Souran and Lahetha
Source: Local extension offices in Idleb, Souran, and Lahetha (respectively)

Twelve women respondents, from ten households, (defined in this study as “a person or group of people living in the same residence” (Sullivan and Sheffrin 2003, 29)) were recruited on the basis of voluntary interest in intensive-interaction, from among the households already participating in PPB activities, and from among households that were interested in participating but had not been involved yet (see further ‘Respondent selection’ below). The respondent women were interviewed every week for four up to six months a year over four years, 2006-2010.

Respondent selection

A diagnostic study was conducted in 2006 to assess the reasons for the non-participation of women in the PPB programme up to that date, and their interest in the programme (Chapter 3). This study provided the panel of the respondents who subsequently participated in the research over four years, and useful insights that informed much of the research that followed. The 12 women respondents from ten households were recruited based on their interest in the PPB programme, their involvement in agriculture, or their interest in the research itself (see Box 2 for a description of the households). Together they constituted a respondent panel who provided in-depth information with regard to seed and crop/livestock management, and participated, in intensive interaction with the researcher, throughout the four years of the research in cycles of action researching (Almekinders, Beukema and Tromp 2009), repeat written exercises, and one-off oral discussion of life histories (Deshpande 2005), chance events and special topics. An additional number of women (a maximum of five at any time, in each village) regularly joined in the research meetings and contributed to the oral discussion. Moreover, in 2009 a male MA student carried out seven semi-structured interviews with 24 men from the three villages in both PPB and non-PPB households to explore their views of the intra-household division of agronomic labour and perceptions of ‘who is a farmer’.

Figure 3 illustrates the spectrum of involvement in PPB activity of households in the three villages. In the case of Souran, the men from ten households were long-term participants in PPB (involved since 1996). Souran is a Muslim village located in the centre-east Hama province, in zone 2 where the average annual rainfall is 300 mm. Here conditions for smallholder barley growing are relatively favourable (allowing two barley seasons approximately every three years (Soubh 2006). Two of the women were drawn from one of the participating households.

Five respondents, one each from five households, were recruited from PPB households in the village of Lahetha (Table 2). Eight men from eight households in the village had been PPB participants over the medium-term (i.e., since 2003).

Lahetha is a Druse village located in the south-west Sweida province, in zone 4, where the average annual rainfall is 174 mm and conditions are much less favourable for cropping. It is mainly steppe and desert, where agriculture is barely possible (Soubh 2006). The harsh conditions and the lack of water for irrigation mean that cropping is highly susceptible to abiotic stress. Households mainly rely on non-farm income and casual employment. Barley cultivation, however, is marginally possible and provides a second source of income in years of higher rainfall.

Five respondents were recruited from four households in the village of Ajaz (Table 2). Ajaz is a Muslim village situated in the north-west province of Idlib, in agro-ecological zone 2, where average annual rainfall is 320 mm. Ajaz was chosen as a village that at the start of the study was 'non-participating' in PPB activities but was considered by the programme to lie within the spectrum of PPB activities because male farmers had expressed a strong interest in PPB. However, in 2006 for logistical reasons the collaboration had not started.

In both Ajaz and Souran relatively favourable temperatures and rainfall, irrigation facilities, and good market access favour crop-based land use and agriculture as a main source of income, complemented by non-farm and off-farm activities. Lahetha is in this sense the outlier.

The choice to recruit women from households with differing degrees of involvement in PPB, lying in different agro-ecological zones and with differing religious identities, was made in order to increase contextualised understanding of the observed changes in relation to the PPB programme - the main 'intervention' in the farming of the studied households.

Table 2. Characterisation of the three villages of this study with an overview of respondents			
	Ajaz	Souran	Lahetha
Involvement in PPB	Non-participating	Since 1996	Since 2003
Location	North-West, Idleb province	North-West, Hama province	South-West, Sweida Province
Agro-ecological zone	2	2	4
Rainfall (mm)	320	300	174
Population	550	32,000	3,500
Main religion	Sunni Islam	Sunni Islam	Druse
Main crops	Barley, wheat	Barley, wheat, chickpea	Barley
Female respondents	5	2	5
Number of households	4	1	5
Written exercises and oral discussions	4	1	5
Oral discussions	1	1	0
Additional women (from same or different households; Oral discussion)	2-5	2-5	2-5
Male respondents	12	5	7
Related to respondents	9	1	3
PPB participants	0	4	4

Source: Local extension offices in Idleb, Souran, and Lahetha (respectively)

Box 2. Characterisation of the main respondent women and their households

In Ajaz and Souran the relatively favourable conditions allow intensive agriculture. Planting is mechanised for almost all crops (wheat, barley, lentils, chickpea, and cumin) excluding vegetables. Wheat and barley are harvested by machine. Mechanized activities are the task of men who either drive their tractor or, most often, hire daily labour with the machinery. Lentils, chickpeas, cumin, olives, pistachios and vegetables are harvested manually by the women who are also in charge of planting vegetables and weeding. Marketing of surplus vegetables is usually done by the men (see exceptions below). Fertilising and watering are often done by the men with partial involvement of the women. Post-harvesting activities (e.g., seed saving and food processing) are women's activities. Women above 60 years can sell straw and seed from their house.

The household in Souran the two respondents belonged to was composed of seven people: the mother (60-63) - a respondent - was a widow and managed the family farm; two daughters: one (25-27) - the second respondent - worked on the family farm and in 2009 taught handicraft in the local school for five months, a second daughter (27-30) was affected by down syndrome; four sons: two (20-27) worked in a hotel and one worked in an aluminium factory in a nearby town, one (20-23) was affected by down syndrome. The father, who used to be a respected farmer in the village, died in 2006. After his death his wife and one daughter took over the management of the farm. The family belonged to the Sunni Muslim religious group as the majority of their village which was generally considered quite conservative. The household owned five hectares of land cultivated with, in order of importance, barley, wheat, chickpea, lentil, pistachios, and olives. The household main incomes included the revenues generated through agriculture and the pension of the deceased father. The salaries of the sons were generally kept for their future families.

The five main respondents from the village of Ajaz belonged to four households. All the households belonged to the Sunni Muslim religious group as the rest of the village. All the households owned around four hectares (received after the land reform in the 1960s) and grew wheat, barley, cumin, lentils, chickpeas and vegetables for both house consumption and sale of surplus. The first household was composed of the father (65-70) who worked both as daily non-agricultural labour and on the family farm; the mother (60-65) - a respondent - who worked on the family farm; three unmarried daughters (21-26): two - of which one was a respondent - involved in agriculture on and off-farm and one in charge of domestic

duties; one son (19-23) who was in the military service. The household main incomes included agriculture and the unpredictable revenues of the father's work. The second household included three people: the grandmother (70-75) and the grandfather (74-78) who were both retired; their unmarried grand-daughter (21-25) - a respondent - worked in agriculture both on and off-farm. The household revenues depended mainly on agriculture and the support of three married sons. The third household included the mother (27-32) - a respondent - who was in charge of the household farming, housekeeping and children care; the father (30-35) who managed a shop in the village; three boys and two girls who were in schooling age. The household's revenues mainly relied on the shop and agriculture. The fourth household was composed of the father and mother (65-70), both retired; three unmarried daughters (17-34): one (30-34) - a respondent - managed the family farm with the support of two sisters; a brother (27-30) who worked in non-agricultural jobs abroad; his wife (20-25) who was in charge of house-keeping and child care; two girls below five years. This household's economy relied on agriculture and partly on the unpredictable revenues of the brother's job.

The five respondents from Lahetha belonged to five households. All households belonged to the Druse religion, as did the majority of the village. The households grew barley in the main fields to be sold as fodder, and grew some vegetables for family consumption in the home garden. Cultivation of wheat had stopped between 2000 and 2005 because recurrent droughts had caused yield losses. Minimum plant height required for mechanised harvesting, the high price of daily labour and the low rate of yield return discouraged mechanised planting and harvesting of barley and wheat. Both activities were usually done manually by all family members. Both men and women were in charge of buying and selling agricultural inputs and produce.

The first household in Lahetha comprised of four people: the father (45-50) managed an electricity shop and the family fields; the mother (38-42) - a respondent - was involved part-time in the women's union and in agriculture; a daughter (17-19) and a son (15-17) were still in school. The family owned four hectares of land. The household economy relied on the shop, revenues from a son in Venezuela, unpredictable agricultural revenues and on the salary from the women's union. The second household included a woman (65-70) - a respondent - who was in charge of house-keeping and farming in the household fields, and her husband (68-73) who managed a vegetable shop in the village and also worked in agriculture. They owned four hectares of land. The shop and agriculture were the main revenues. A third

household included the mother (40-45) - a respondent - who was in charge of household-keeping; two daughters (20-25): one worked in Damascus and one studied at Damascus University; one son (17-20) was in high school. The family owned 14 hectares of land managed by the mother. The household's economy relied mostly on a room in the house rented out as a shop, revenues from a son living in the Emirates, partly on the salary of the daughter and on agriculture. The fourth household was composed of the mother (37-40) - a respondent - who managed a shop up until 2008, then she was involved in house-keeping and farming; two daughters (15-19): one attended school and the other was involved in house-keeping; one son (20-22) who in 2008 started working as a teacher in the local school. The family owned seven hectares of land. The household's main economy relied on the shop, the salary of the son and agriculture. The fifth household comprised of the mother (50-54) - a respondent - who was involved full-time in the family fields and in raising one cow; two daughters (20-25): one studied in Damascus and the other worked as a teacher in the village; one son (15-17) was in high school. The family owned seven hectares of land. The household's economy relied on the revenues generated through the sale of dairy products and on the unpredictable agricultural produce.

Methods

Repertoire of tools The repertoire of tools associated with small-N research includes those that generate rich description and close analysis of individuals over time, such as participant observation (Geertz 1974), self-reporting (Lam and Bengo 2003), life histories (Deshpande 2005), participatory exercises (Chambers 1992), and semi-structured interviews (FAO 1990). Details about the application of these methods are provided in each chapter. The reader should note that, in order to protect confidentiality, some quotations have been anonymised.

Indicators of change To assess the effects of PPB on the empowerment of the women farmers, four indicators of changes in empowerment were selected through intensive dialogue with the respondents: (i) recognition of women as farmers, (ii) access to and control of productive resources - seed in particular - and information, (iii) access to opportunities, and (iv) decision-making. Changes in these indicators were explored with the respondent women through a number of exercises that included joint analysis of data on family structures and activity charts (Guijt and Shah 2006), semi-structured interviews (FAO 1990), the sustainable livelihood framework (Mancini, Van Bruggen and Jiggins 2007), matrix analysis (Miles and Huberman 1994) and rich pictures (Attenborough 2006).

Seed management The research also analysed how seed management was organised at household level, how this management was affected by PPB and how governance systems regulating the management of seed at international, national and ground level, might affect women's access to and control of appropriate seed, impact on their empowerment and ultimately on the enhancement of local food security. The respondent women participated in constructing daily and seasonal calendars (Chambers 1983) and matrix analysis in relation to this part of the study (Miles and Huberman 1994).

Complementary research activity

Seed governance An overview of seed governance at international and national level first was obtained through desk research, followed by eight key informant interviews (Patton 2002) with plant breeders, extension agents in the field, local government officials and a member of FAO, that were carried out throughout the four years of the study. Because even legislative documents in Syria can be hard to access the key informant interviews were of particular importance for this part of my study. Chapter 6 reports the findings of this part of the research.

Action research Action research (Almekinders, Beukema and Tromp 2009) took place alongside and in addition to the studies reported in this thesis. In fact, following the diagnostic study, the researcher was appointed as a member of the PPB team, with special responsibility for developing, together with the women who expressed an interest, ways in which to involve them in PPB activities. Participant observation (Geertz 1974) during routine PPB activities took place over four cropping seasons, bi-annual breeder-farmer meetings to evaluate and select varieties, and one exchange visit between Jordanian and Syrian women farmers that was organised in 2006. Information drawn from the action research activity helped shape the research process reported in this thesis. It is introduced in the chapters as appropriate.

Gender-based agricultural knowledge An International Farmers' Conference was organised in 2008 (Galiè et al. 2009) by the PPB programme. Interviews with the participants were used to provide insight into a number of gender-based aspects of agricultural knowledge and on the possible impact of PPB activities on the perception of women's identities as farmers and their role in farming. The Conference involved over fifty farmers and researchers from Algeria, Canada, Egypt, Eritrea, France, Iran, Italy, Jordan and Syria, who were invited to share their agricultural knowledge and show its value to the wider scientific community. The Conference aimed also to increase recognition of women as farmers and build alliances among farmers and researchers. The sessions included discussion of the issues most important to farmers

and elicitation of farmers' tacit and gender-differentiated knowledge about farming. The women respondents of this study participated in the Conference together with some of their male counterparts. The findings from the interviews and an evaluation of the Conference contributed to the analysis in various chapters as specified and are presented in detail in Chapter 5.

Analysis

All fieldwork interviews were written up, transcribed in digital format, and verified by one female assistant and by the respondents. Visual material including pictures and video interviews complemented the written material. The findings were analysed descriptively (Patton 1980) and quantitatively (J. P. Pelto and G. H. Pelto 1978). The software package Atlas.ti (Development GmbH 1993-2009) was used to organize, code, aggregate and disaggregate both the written and visual material, and to triangulate findings elicited through the various methods.

Outline of thesis

An overview of the content of the thesis is presented in Table 1.

Chapter 1. The first chapter introduces the thesis.

Chapter 2. The second chapter introduces in detail the processes, procedures and activities of the PPB programme in Syria and analyses the barriers and opportunities these presented to the involvement of women farmers.

Chapter 3. The third chapter provides a baseline overview of the intra-household management of farming activities in the households of the respondent women, with a focus on barley. It analyses women's access to seed and to information and their decision-making regarding farming and its revenues. The chapter discusses the implication of adopting a gender-sensitive approach in PPB.

Chapter 4. The fourth chapter explores the gender-based perceptions of 'who is a farmer' and the issue of self-recognition and public recognition of the respondent women as farmers and the implications for seed improvement programmes.

Chapter 5. The fifth chapter presents an evaluation of the International Farmers' Conference - on the farmers participating in the conference and on their communities. It focuses on the perceptions of women's roles in farming and their knowledge.

Chapter 6. The sixth chapter analyses policies and practices governing seed access and improvement in Syria. It describes seed management in the households of the

respondent women and the influence of the PPB programme on women's access to seed. The chapter discusses how gender-concerns at ground level might be addressed by adjustment to prevailing seed governance at local, national and global level.

Chapter 7. Chapter seven examines the empowering effects of PPB on the panel members, as experienced by them. It looks at changes in their recognition as farmers, in their access to seed, information and opportunities that affect their future, and changes in their decision-making regarding farming activities. The analysis is based on local understandings of the concept of women's empowerment and locally identified indicators of empowerment.

Chapter 8. The final chapter assesses the main findings in the light of the objectives and research questions of this study. It indicates how the findings might be extrapolated to other settings in Syria, and interpolated into the design and execution of PPB. This chapter then reflects on the broader relevance of the outcomes for strategic priorities in agricultural research for development and for policies regulating seed management.



Picture 1. Women farmers from Ajaz



Picture 2. Women farmers in the fields

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CHAPTER 2

The participatory plant breeding programme in Syria

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Abstract

This chapter introduces the participatory plant breeding (PPB) programme coordinated at the International Centre for Agricultural Research in the Dry Areas (ICARDA). It describes how the programme evolved in Syria between 1995 and 2011, what benefits were generated, and how these were beneficial to farmers, breeders and scientists. The chapter focuses on the women pro-active approach adopted by the programme to involve seven women farmers along with the men in two villages and describes some of the hindrances encountered in ensuring a gender equal participation. The findings show that gender-sensitive PPB can provide both female and male farmers with opportunities to contribute to varietal development and to enjoy the benefits of PPB, and with varieties that are consistent with their gender-based agronomic interests, activities and knowledge.

Keywords

Barley, benefit sharing, breeding, crop diversity, gender, variety selection

Introduction

Kherbet El Dieb, north of Aleppo, is one of 11 Syrian villages involved in a participatory plant breeding (PPB) initiative started by the International Centre for Agricultural Research in Dry Areas (ICARDA) (Fig. 1). Yields there, like in the other involved villages, have increased since the farmers have begun to use varieties developed through the PPB programme. PPB is one of the most common types of benefit sharing arrangements in crop improvement; it is related to farmers' rights as this concept is outlined in the International Treaty on Plant Genetic Resources for Food and Agriculture (2004). By combining farmers' knowledge with that of professional breeders, PPB enables farmers to benefit from their contribution to the global genetic pool by adding value to their own varieties, improving their livelihoods and increasing their incomes. The main principle of PPB is participation, and this is a signature characteristic of the barley breeding initiative in Syria.

This chapter describes how the PPB programme evolved in Syria between 1995 and 2011, and how benefits have been generated and shared through local action research, in which farmers and breeders have been engaged in a collaborative learning process. The PPB work in Syria has served as a learning ground for PPB in a number of other countries in the region (e.g., Algeria, Egypt, Eritrea, Ethiopia, Iran, Jordan, Morocco and Yemen). In 2011 the PPB activities were interrupted in Syria itself because of national conflict.

Participatory research and plant breeding

In recent years there has been increasing interest in participatory research in general and in PPB in particular. Scientists have become more aware of how users' participation in technology development may increase the probability of success (Sperling et al. 2001). The interest in PPB stems partly from the view that the impact of agricultural technology development, including plant breeding, for a considerable number of farmers and some areas has been below expectations, especially in marginal environments and among poor farmers. It is more widely recognised today that crop improvement alone is not a sufficient response to persistent poverty and hunger. According to the World Food Programme (WFP 2011), there are 925 million under-nourished people in the world today. The limited impact of most agricultural research in marginal areas is, to some degree, related to the fact that the research agenda is usually determined by scientists who work to increase crop production overall rather than to solve the specific problems of farmers in localised areas. In addition, because agricultural research typically is organized according to disciplines or commodities it seldom adopts an integrated approach that would more closely

resemble the situation at the farm level (Ceccarelli and Grando 2007; Darnhofer, Gibbon and Dedieu 2012). There is a large gap between the number of technologies generated by the agricultural sciences and the relatively small number adopted and used by farmers, particularly smallholders.

In relation to plant breeding, many scientists would agree that programmes have not been very successful in marginal environments or among poor farmers. It takes a long time (about 15 years) to release a new variety, and few releases have been adopted by farmers; in such areas many continue to grow varieties other than the officially released ones. Even when new varieties are acceptable to farmers in marginal environments, the seed may not be available in such areas or it may be too expensive. The conservation in living agriculture 'by default' of this gene pool represents an increasingly important resource under climate change. Great loss of biodiversity has been associated with the modernisation of farming and associated plant breeding efforts. Reversing this trend is considered important both to improve the livelihoods of farmers in marginal environments and to maintain and conserve plant genetic diversity (Bänziger and Cooper 2001).

Participatory research, defined as a type of research in which users are involved throughout the process of design and development of a new technology, is now seen by many as a way to address some of these problems. PPB is a specialised form of participatory research. Typically it involves scientists, breeders, farmers and other partners, such as extension staff, seed producers, traders, consumers and NGOs, in crop improvement. Crop improvement under PPB includes a range of activities, including but not restricted to the development of a new variety that matches the needs, preferences and conditions of targeted farmers in selected environments (Bellon 2006).

The science behind participatory and conventional plant breeding is the same. The major difference is that conventional plant breeding is a process in which the priorities, objectives and methods are decided by breeders, whereas PPB gives equal weight to the knowledge and opinions of farmers (and other stakeholders). PPB draws on but is distinct from farmers' own crop improvement and varietal breeding practice.

The first phase of Syria's participatory plant breeding programme

ICARDA, which is one of the 15 international agricultural research centres that make up the Consultative Group on International Agricultural Research (CGIAR), has been involved in PPB in Syria since 1995. PPB is well suited to ICARDA's objectives of

improving the livelihoods of resource-poor people in dry areas by enhancing food security and alleviating poverty, to achieve sustainable increases in agricultural productivity and income, and to ensure efficient and equitable use and conservation of natural resources. The General Commission for Scientific and Agricultural Research (GCSAR), the national research organisation responsible for crop breeding in Syria, has been involved in the PPB initiative from the beginning.

The main organisational goal has been to develop a way for breeders and other partners to learn how to move from top-down centralized breeding programmes to bottom-up participatory, decentralized programmes. An additional goal has been to provide a model that could be used in other countries and for other crops. Up to the beginning of the civil war (2011) PPB has been a continuing effort involving 11 villages spread across Syria between 2009 and 2011, 24 villages between 2005 and 2008 when the programme reached its maximum development, and nine villages between 1996 and 2004 (see below). The wide coverage has been possible partly because of collaboration with GCSAR staff based at provincial research stations and with extension staff, who have easy access to farmers (at least, to the better off, male farmers) in the selected villages. Most of the villages are located in marginal areas, frequently affected by droughts and resulting crop losses. The selection and breeding of varieties that are adapted to the local conditions and the selection of which farmers to collaborate with are two important aspects of the programme (Ceccarelli 2009). Barley, the main cereal crop in the dry areas, initially formed the main target crop.

Farmers (male farmers only, until 2006; see below) have been involved in PPB from the beginning. At first, this meant detailed consultations between the breeders, farmers, and extension workers not only about the overall objectives but also about the organization of the trials (location of the trial plots, number of varieties, plot size, seeding rate, trial design, scoring criteria and methods, etc.). In the beginning, the efforts of the researchers were directed mainly towards building relationships (to form the team), understanding farmers' preferences, measuring the efficiency of farmers' selection methods, developing a scoring system and enhancing farmers' skills. Exploratory work included the selection of farmers and test sites and the establishment of a common experiment in nine villages and at two of ICARDA's field research stations. The overall design sought to encompass as much of socio-economic and biophysical variation as practical (Ceccarelli 2009): the nine villages represented a range of climatic conditions from wet to dry; the participants represented a range of farmer literacy levels and household incomes (on-farm and off-farm); farm sizes ranged from about 5 ha to 160 ha; and farm types captured the

range in terms of the extent of crop and livestock production and the importance of barley in the farming system. None of the villages had adopted modern varieties even though farmers knew about them and, in some cases, had tried planting them.

Between ten and 15 male farmers participated in each village. In 2006, in addition seven women in two of the villages also became involved in PPB (Fig. 1), after the programme replaced its gender-neutral approach with a women pro-active and gender-sensitive approach in order to achieve a gender-balanced participation (see below for more details). Involved farmers (whether male or female) can participate in PPB in two capacities: as 'trial hosts and evaluators' (host) or as 'trial evaluators only' (evaluators). Trial hosts grow the trials in their own fields according to their own management preferences, are involved in the evaluation and scoring of the trials, in the selection of the material to grow in the following year, and in naming the varieties selected at the end of the whole breeding cycle. Trial evaluators participate in all these activities except that they do not host trials. All participating farmers can, if interested, multiply and sell the adopted PPB varieties (Ceccarelli 2009). The programme also has supplied a few interested farmers with seed cleaning machines.

ICARDA's two field research stations, at Tel Hadya and Breda, are located in distinct production environments. Tel Hadya, with an average annual precipitation of 338 mm, has a typical high-input environment favourable for barley and a wide selection of crops. Breda, on the other hand, with average annual precipitation of 268 mm, characterises low-input, high-risk agricultural potential; barley is the most common rain-fed crop, together with a limited selection of other crops and cropping systems.

The programme initially focused on barley because barley is the main feed crop and rain-fed winter cereal in Syria. Since sheep are the main agricultural product, barley as the main livestock feed plays a critical role in the livelihood of most villagers. Barley is used solely as animal feed (mainly for sheep) throughout Syria. However, although it might be the only cereal crop in the driest cropping areas, it is also grown in some areas as a rain-fed crop in more complex farming systems together with wheat, lentil, chickpea and summer crops. Farmers with their own herds of sheep will use the barley they grow as feed and sell the surplus, while farmers without herds will sell their entire barley harvest (both grain and straw).

The initial barley experiment took place over three cropping seasons (1996–97, 1997–98 and 1998–99) and included 200 new barley types that represented a wide range of characteristics, such as plant height, flowering and maturity date, leaf colour, row type (two vs. six rows of grain in the ear), seed colour (white, black, grey),

stem diameter and associated lodging resistance, and straw palatability. Because barley is used exclusively as animal feed in Syria, straw palatability is a valuable trait for sheep farmers although it is usually neglected by breeders. In addition, eight farmer cultivars from eight of the nine host farmers were also included.

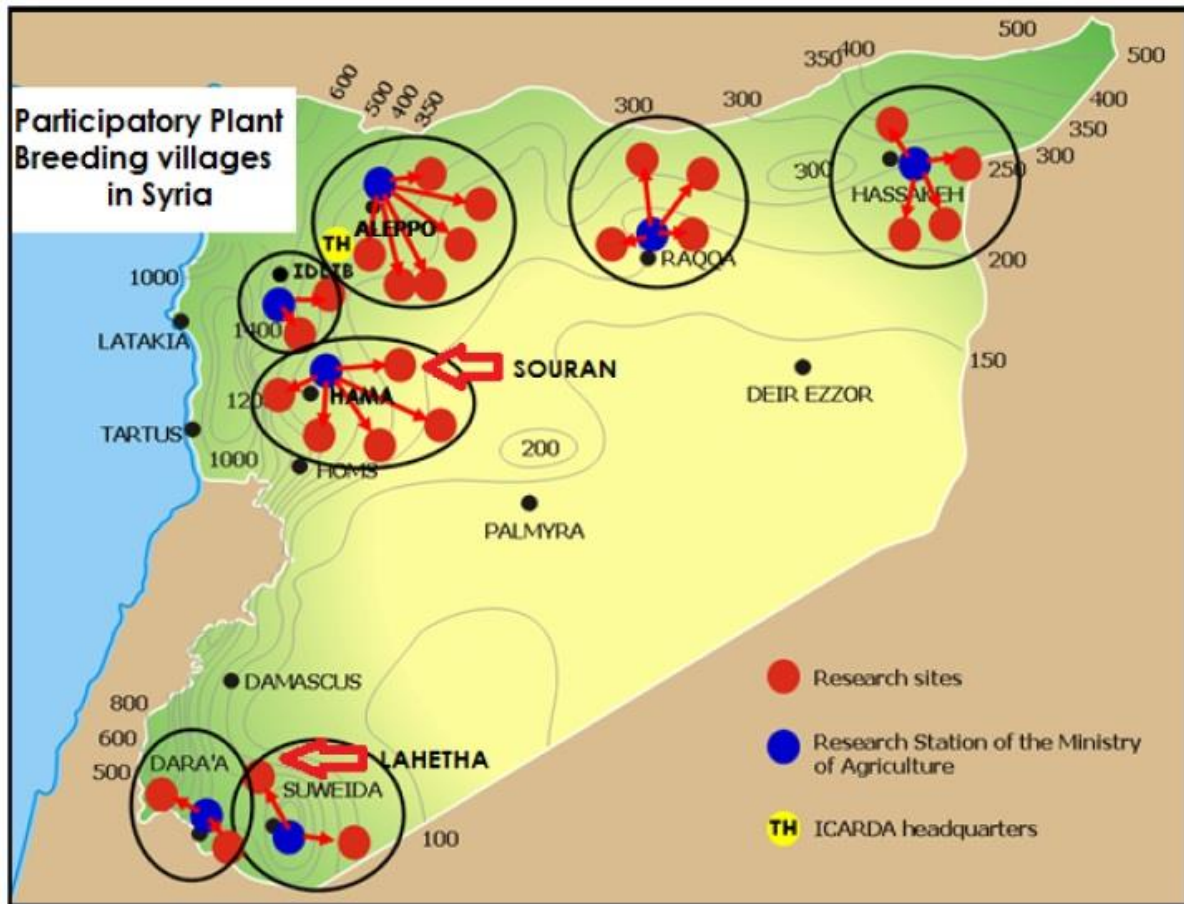


Figure 1. Villages involved in the PPB programme in Syria between 2005 and 2008. Souran and Lahetha are the two villages with female participation since 2006
Source: ICARDA PPB leaflet 2006

The 208 varieties could be grouped as follows: they came from either modern germplasm (100) or landraces (108); they were fixed lines (100) or segregating populations (108); they had two rows (158) or six rows (50); and they had white seeds (161), black seeds (28) or mixed seed colours (19).

Both before and after planting, agronomic management of the trials was left to the host farmers. The trials were conducted under rain-fed conditions in the farmers' fields as well as at the research stations, to ensure that they were grown under typical farm conditions. At the time, the government did not allow Syria's scarce water resources to be used for the irrigation of barley.

Each of the participating farmers was given a field book in which to record daily rainfall and other observations. Most of the farmers preferred a numeric scale as a scoring method for the trial plots, although a few preferred qualitative scoring, classifying plots as 'bad,' 'medium,' 'good,' 'very good' and 'excellent.' Eventually, they adopted a mix of quantitative scores for some traits and qualitative descriptors for other ones. The farmers used these scores during final seed selection to assign an overall score. The farmers did not usually need assistance with scoring but where there was a high degree of illiteracy, they were assisted in recording their scores by other farmers or by the scientists.

Selection processes

Various selection processes were used. At the field research stations, centralized non-participatory selection was carried out by GCSAR's barley breeders and centralized participatory selection was conducted by the farmers. Decentralized selection was either non-participatory (carried out by a breeder in the farmers' fields) or participatory, carried out by farmers in their own fields.

The first selection took place in May 1997. The selections were made independently by the various participants, none of whom knew what the others had selected. The selected varieties subsequently were identified by whoever had selected them and by the selection location, i.e.:

1. Selected by farmers in their field
2. Selected by farmers at Tel Hadya research station
3. Selected by farmers at Breda research station
4. Selected by the breeder in each of the farmers' fields
5. Selected by the breeder at Tel Hadya research station
6. Selected by the breeder at Breda research station.

The first four selections were specific to the nine farmers' fields, although a number of samples were selected in more than one field. A specific trial (containing all the samples selected by each farmer without duplication) was prepared for each of the nine farmers' fields to be planted in the subsequent season in the same location. The samples in the two last groups of selections were common to all trials.

In the 1997–98 cropping season, the farmers chose local landraces and improved varieties to use as controls. Abdu Sheiko, a participating farmer from the area near Al

Bab (a large village 60 km northeast of Aleppo) had introduced a forage legume crop into the rotation. The trial crop was, therefore, at this location planted twice, once after barley and once after the legume. All ten trials were also planted at the two field research stations, using the same layout as in the farmers' fields. The total number of samples tested in 1998 was 1348, 196 of which were genetically different as a result of the large diversity reflected in the selection criteria used in 1997. The process of evaluation and selection conducted in 1997 was repeated in 1998 on the lines that had been selected the first year, and again in 1999 on the lines that had been selected in 1998.

Experience over the first three years of the trials indicated that the male farmer participants were able to handle large numbers of samples (a frequently debated issue among PPB practitioners), make and record a number of systematic observations during the cropping season, and develop and apply consistently their own scoring methods (Ceccarelli et al. 2001). It was also observed that the farmers selected for specific adaptive traits and, in some cases, that selection was driven mainly by observation of environmental adaptation. The diversity of farmers' selections was greater in their own fields than at the research stations and greater than those of breeders at both locations. The selection criteria used by the farmers proved to be nearly the same as those used by the breeders. In addition, in their own fields, farmers were slightly more efficient than the breeders in identifying the highest yielding varieties. The breeders were more efficient than the farmers in selection at the research station that is located in the higher-rainfall area but less efficient at the research station located in the lower-rainfall area. These findings constitute a strong argument for farmer participation (Ceccarelli et al. 2001).

Benefits

The first phase of the barley PPB programme in Syria led to increased awareness among the farmers of what is involved in purposeful plant breeding and what such procedures can offer. This was evident, for instance, in the number and quality of questions raised by the farmers over the entire process. Requests to extend PPB to other crops confirmed how interested the farmers were in the approach. The evidence that the farmers had been at least as efficient as breeders when it came to selection was an important finding that opened the way for the approach to be extended over the following years to other countries (Algeria, Egypt, Eritrea, Ethiopia, Iran, Jordan, Morocco, Tunisia and Yemen), often following visits by scientists from these countries to Syria to observe and discuss Syria's experience.

The results from the three-year experimental phase indicated that there was much to gain and nothing to lose from implementing a decentralized PPB programme and a second phase was initiated. This meant reassuring the farmers that the programme would be on-going and evolving. The farmers were agreeable, and the work continued.

The second phase of the programme

An important feature of the second phase was that the role of the field research stations changed; in the second phase they were used only for seed multiplication, making crosses, and preparing the initial material. The number of villages taking part in PPB increased from nine to 11 in 2003 and to 24 in 2005. The number of farmers directly involved also increased as a result of strong support from the Syrian Ministry of Agriculture and Agrarian Reform following a workshop organized in Hama at the request of the Minister of Agriculture. In addition, seed production was initiated in four villages (Bylounan, Al Bab, Souran and Bari Sharky). Details of the experiments, such as the number of lines to be tested, plot size, type of germplasm, selection criteria and issues related to seed production, were discussed in meetings with farmers in each of the participating villages. This led to the development of a more refined PPB model, which ICARDA would subsequently introduce and support also in other countries with broadly similar production conditions and cultural background.

It is worth mentioning that there are no fixed models for PPB. For a particular crop, even within the same country, different models may be required depending on the genetic structure of the varieties and how used farmers are to handling on-farm genetic diversity, among other factors. Any model may require further adaptation over time as well as fine-tuning to specific conditions, organisational capacities and local histories. In the generalised model that was evolved at ICARDA, broadly applicable for a number of self-pollinated crops (barley, bread wheat, durum wheat, lentil and chickpea) and for a number of countries (Algeria, Egypt, Eritrea, Ethiopia, Iran, Jordan, Syria and Yemen), the role of the breeders is to make the crosses (mostly between landraces and between improved cultivars and landraces and wild relatives), grow the first two generations of crops on research stations, assess traits the farmers have defined as important, analyse the data and keep a safely stored electronic copy of the information. The farmers' role in the model is to routinely evaluate and score the breeding material, decide what to maintain and what to discard, adopt and name varieties and produce and distribute the seed of the adopted varieties.

The testing process occurs in four stages: initial yield trials, advanced trials, elite trials and large-scale trials. The initial yield trials in Syria included 165 varieties. When crop diversity is great and farmers in different villages have different preferences, the initial trials in the villages use different varieties and only a few (usually five) common checks (traditional varieties used by local farmers). In these cases, the total number of varieties tested can be fairly large: in Syria, more than 400 genetically different varieties. As there is only one initial trial per village, choosing which farmer will be involved and which field will be used is a serious decision requiring careful discussion within the community. If a choice is made, for example, to conduct the trial in the field of a farmer who is using agronomic practices different from those of most other farmers in the village, the resulting selections may not be well suited to the rest of the village. (Efficiency and equity concerns in relation to the criteria applied in selecting farmers are discussed elsewhere in this thesis).

The advanced, elite and large scale trials, which test the varieties selected during initial, advanced and elite trials of the previous year, include two replications. Statistical analysis of the data is used to produce the best linear unbiased predictors of genotypic values and a number of parameters including heritability. The large-scale trials use a replicated block design with very large plots and farmers' fields as the replications. In this way the model ensures that the PPB trials generate the same quantity and quality of data as those obtained from the multi-environment trials used in conventional breeding programmes. In addition, they provide information about farmers' preferences, which is usually not available from conventional trials. Because the data are scientifically sound and comparable to those obtained from conventional breeding the resulting varieties usually qualify for official release. In most of the collaborating countries this is a prerequisite for commercial seed production, governed by law or ministerial regulation.

Increasing crop diversity

One key aspect of this PPB model is that, once it is fully implemented, the lines selected as best are used as parents in a new cycle of recombination and selection, just as in a conventional breeding programme. The difference is that these lines have been selected by farmers and can vary from location to location. This cyclic aspect, where the farmers' best selection is used to produce the following generation, has an enormously empowering effect on the collaborating farmers, who feel that their choices are valued by the breeders, and this creates a strong sense of ownership among them. The impact of PPB on the empowerment of the respondent women farmers is the focus of this thesis.

Particular care has been taken throughout to design a scientifically robust model, for two reasons: first, to ensure that the farmers could be provided with scientifically correct information (the same type of information a breeder usually has) on which to base their decisions; secondly, because PPB programmes might be criticized, sometimes rightly so, for not using a rigorous experimental design or statistical analysis the model has been evolved to withstand such criticism.

Because of the decentralized selection process and farmer participation, the PPB process leads to increased crop diversity (see also Witcombe et al. 1996). It has been shown that in the Syrian programme the number of different varieties adopted at the end of a breeding cycle in farmers' fields is greater than the number of lines the Syrian National Programme uses in its own on-farm testing programme. The national programme does not release varieties every year (in the last 35 years ten barley varieties were released) while ten to 15 varieties are selected yearly by the PPB farmers. Because many more varieties are adopted in the PPB programme an increase in biodiversity takes place, not only in space (because different villages select different lines) but also in time, because the cyclic nature of the process ensures rapid turnover of variety at the same location.

On average more than 1000 farmers by the end of 2011 were directly benefitting from the programme in each cycle. During the second phase of the cycle, the number of farmers directly involved in the programme varied from five to ten per village at the time of selection and from ten to 15 per village at the time of data discussion. As a result, 200–400 farmers were directly involved in two of the most important decisions during each cropping season. In addition, in some of the villages, an increasing number of farmers were buying the seeds of the varieties selected through the PPB programme. A plan to investigate the adoption and diffusion rate in and around each of the participating villages could not be implemented because of the outbreak of civil disorder.

At least ten farmers have started to produce seed from the PPB varieties. Because they are buying seed of a variety they have seen grown in the field by a farmer whose agronomic practices are similar to their own, other farmers seem to be willing to pay more than they would for the little-known officially released 'improved' varieties available on the market. They usually buy only small amounts (100–200 kg) of the PPB seed because they subsequently multiply the seed at their own farm, i.e., the buyers in turn become seed producers and thus the benefits derived from the PPB varieties spread.

Involving women farmers

In 2006 a women pro-active approach was adopted by the programme. Initially the goal was simply to understand whether the lack of participation of female farmers up until then was related to the gender-neutral approach of the programme (by gender-neutral is meant that the programme was open to both women and men farmers but did not address women's and men's distinct needs or analyse gender-based crop preferences), and whether farm women were interested at all in PPB and in becoming involved. The initiative began with an exchange visit between Jordanian women farmers who already were participating in PPB, and nine Syrian women from two PPB villages (Lahetha and Souran) (Fig. 1). During the visit it was the Syrian women from Lahetha and Souran who expressed an interest in PPB. A diagnostic study was thereafter undertaken to explore a range of issues related to their participation. The study revealed that the respondent women farmers were interested in PPB but were not being informed about the possibility of collaborating or they were themselves assuming they could not participate. Some declared that they did not have decision-making power over the land they were cultivating; some were not interested in barley (see also Chapter 3). Subsequently a female researcher has been supporting the integration of women farmers into the PPB efforts in Syria by combining gender analysis with action research. Between 2006 and 2010 multi-criteria mapping (Stirling 2005) was used to determine a panel of women respondents' expectations of the programme, their views on the validity of the evolving PPB process and their suggestions for adaptation to women's circumstances. In addition, gender issues were taken into account in relation to efforts to promote knowledge sharing. Because the respondent women, on average, had lower literacy than the male participants, and had less access to modern technology, the results of the various studies were produced in both digital and hard copy formats and included visual and oral material. Finally, an assessment of the impact of PPB (up to the beginning of 2011) on the empowerment of the newly involved women farmers was undertaken (this thesis).

The women pro-active approach adopted by the PPB programme facilitated the participation of the involved female farmers, along with the men, by addressing the local constraints to women's participation in public events and their interaction with unrelated men. At the start, in 2006, seven women decided to become involved: five women from five households in Lahetha and two women from one household in Souran (a mother and her daughter who were encouraged to participate by the father, a PPB participant, before his death). From 2006 these seven women formed the core members of a panel of respondents who were involved in various formal

gender studies, as well as being the core collaborators in action research focussed on evaluating and scoring trials, in selection of the crop material to be planted in the following year, in naming the adopted varieties, and also, in some cases, in selling the crop (see Chapter 6). They also participated in a number of other activities organised by the programme such as conferences and workshops (Chapters 5 and 7).

The women's role as trial hosts was limited; in Lahetha only two of the women hosted trials (in 2009). In fact, in 2008 the two women were supposed to host trials together with two men but all the male farmers from the same village and the extension officers agreed that it would be better if a common 'women's field' would be planted, in the field of a male farmer, because the fields usually planted by the women were thought to be stony and small. The women themselves had argued that their fields were like the men's but they agreed to having a women's field, just so as to be able to initiate their participation. However, the women's field was accidentally ploughed a few months later and the trials were lost (see Chapter 6 for more details). In 2009, drawing on this unsatisfactory experience, it was agreed by all collaborators that in Lahetha two women and two men should host the trials, which they did. In the following year (2010) two other women were selected to host the trials, again together with two men. These women's trials, however, were planted in the fields of two male farmers, for no apparent reason and without the consent of the women themselves or of the project managers (see Chapter 6 for more details). In Souran the two women respondents hosted the trials every year from 2006 until 2011. However, between 2006 and 2010 they two did not participate in the trial scoring and crop selection meetings but sent their older brother instead to these meetings. In 2010 only, the women themselves participated in the crop selection meeting because it was organised in their house and the presence of the female researcher was guaranteed.

This very brief review of experience indicates that in Syria a women pro-active approach is needed to achieve a more gender-balanced participation (the difficulties encountered in involving women as participants on equal terms as the men are discussed in Chapters 4 and 6). The experience also showed, however, that in principle and practice in Syria PPB can accommodate varieties relevant to both women and men farmers, and that represent their complementary agronomic interests, activities and knowledge.

Everyone gains

As the PPB activity progressed, the farmers contributed to the evolution of the programme by suggesting changes in methods. At the beginning, visual selection

occurred in the field, as requested by the farmers, on a day close to harvest time. On that day the farmers would gather together, a short explanation would be provided by the scientists for newcomers, and each farmer would be given a score sheet for each trial. The farmers would then score each plot. At some locations, this could take up to half a day, at the end of which the breeders would collect the score sheets to enter the data into their computer programmes. Visitors interested in the work often would be invited to these gatherings.

In 2005, Majid Awad, a farmer from Bylounan in Raqqa province, one of the driest villages taking part in the programme, declared that he was not happy with this procedure. He complained that he could not concentrate properly on the scoring, a process he regarded as very central to future selection, because of the frequent interruptions by the visitors' questions and by their habit of walking in front of him as he was rating crops. He also pointed out that even though the selection day was chosen in consultation with the farmers, a last-minute commitment could prevent a farmer from attending and, thus, cause him or her to lose the opportunity to participate in the selection.

He suggested that the score sheet be distributed to all interested farmers well ahead of time, giving them the opportunity to choose when to do the scoring. They would be able to take as much time as they needed and even repeat the scoring if a weather event changed the growing conditions. (This had occurred one year when the various lines reacted differently to a heat wave after the selection day, and the farmers decided to repeat the scoring process.) The procedure Awad suggested eventually was adopted also by the farmers in the other villages. Most of the farmers still preferred to set aside one day to discuss various aspects of the trials with the scientists.

Another modification was related to the use of mixtures. Given that farmers in Syria do not generally plant heterogeneous plots, the ICARDA scientists were surprised to learn that Abdu Sheiko from Al Bab had decided to mix two very different barley varieties: a two-row variety, susceptible to lodging but drought resistant, and a six-row, lodging-resistant variety that produced a high yield in years of heavy rainfall. He explained that he had learnt about the characteristics of the two varieties by hosting the first sequence of PPB trials and taking notes of his observations. He thought that it might be a good strategy to mix the two types in order to stabilize yields. When other farmers were told about Abdu Sheiko's mixtures, some of them began making their own mixes, by mixing the seed left over after samples had been taken to measure the yield. For the last three years (up to the 2011 harvest), these mixtures

have been producing better yields than any single variety; thus, the breeders and farmers decided in future to include experimental mixtures as part of the testing programme.

This experience, in turn, is contributing to the development of a programme on 'evolutionary PPB', based on farmers' experiments with and acceptance of the idea that mixtures can change with time in the direction of better adapted genotypes. Evolutionary PPB uses broadly diversified germplasm and long-term natural selection processes in the relevant areas to produce highly adapted crops. It allows some degree of adaptation of the genetic material and increases the capacity of local communities to manage their own seed populations. The handling of complex populations is very simple as all that is needed is to cultivate them in locations affected by either abiotic or biotic stresses or both, and let natural selection slowly increase the frequency of the best adapted genotypes. With the experience and skills they have developed through PPB, farmers and breeders can superimpose artificial selection for traits that are important at each specific location. Different farmers may select different plants and grow the progenies in their own field over many years; the expectation is that the varieties derived from this evolving population will be better adapted than those of preceding years.

In addition, as a consequence of discussion with the participating women farmers, in 2009 trial selection was organised in the house of one or other of the women (in addition to trial selection in the field), for the female farmers only, so as to facilitate the involvement of women in the selection process (an otherwise too public event for the respondent women of Souran). It led to a better understanding of the women's trait preferences. In addition, the PPB programme started expanding its crop portfolio to include crops other than barley — e.g., chickpea and cumin — and included evolutionary wheat populations in its trials, so as to reflect women's priorities. It also started including priority traits for selection that were suggested by the women — e.g., spike hardness for barley, which is necessary for hand harvesting and palatability, and stem flexibility and flour elasticity for wheat, which are important respectively for handicrafts and local bread.

These examples indicate how seriously the participating farmers take the opportunity that PPB offers. Observation of the degree to which the PPB seeds and information spreads from farmer to farmer and village to village has encouraged the scientists to explore further how to support farmers to learn from each other and experiment with new methods that they themselves think might be beneficial. For instance, in 2010, to facilitate the sharing of lessons learnt among the farmers, five computers

were distributed to PPB participants in five of the collaborating villages. Farmers had expressed an interest in enhanced communication with ICARDA scientists and with other farmers participating in the programme, and in accessing information about agronomic management available online. The computers were used also for the discussion of results of the PPB trials in farmers' fields. A one day introductory course on the use of computers was organised following the request of the women respondents farmers of Lahetha.

Benefit sharing

Data from the last few years, including the very dry 2008, show that the PPB lines outperformed both the commonly used landraces and conventionally bred modern varieties. For instance, in Kherbet El Dieb, which received rainfall of 190 mm in 2006, 206 mm in 2007 and only 139 mm in 2008, four PPB lines outyielded the local black-seeded landrace grown by most farmers by 12.3–23.2%. During visual selection, the farmers also scored the four lines higher than the landrace. The farmers from Kherbet El Dieb estimated that, in 2009, about 5000 ha of the cultivated land in the area were planted with varieties introduced through the PPB programme four years ago, then multiplied by the farmers. In 2010, they estimated, 90% of the farmers in the area planted one of three PPB varieties selected in the last five years. This estimate, which is based on the amount of seed sold and distributed, suggests how effective the programme may have been in terms of increasing variety adoption.

In Om El Amad, a village in the province of Hama with an average annual rainfall of 249 mm over the last four years, ranging from 183 mm in 2008 to 328 mm in 2007, the two best lines out-yielded the local white-seeded landrace by 11–19% and a conventionally bred modern variety by 5–13%. In Bari Sharky, a drier village in the same province with an average annual rainfall over the last four years of 204 mm (range: 130 mm in 2008 to 238 mm in 2005), the largest yield increases were obtained with two lines resulting from crosses with the wild progenitor of barley. These lines out-yielded the local landrace by about 33%.

The selected lines are superior not only in marginal and drought-affected areas. In Souran, another village in Hama province, average annual rainfall over the last four years has been 277 mm. In three of these years, the village received more than 300 mm; in 2008, it received only 198 mm. In this area in 2008, two sister lines obtained from crosses with landraces out-yielded the local landrace by 15–25% and a conventionally bred modern variety by 18–27%.

Until 2011 all these lines were grown by farmers in these four villages and the seed distributed to other farmers. According to Ali Turkia from Tel-Hassan Bash, everyone who saw how the 'Yana mixture,' a mixture of seed from the advanced, elite and large scale trials in his field, had requested seed for the next season as they were impressed by the plant height and spike length of the new variety, in particular. Compared with the local barley variety in this area as well as the conventionally bred Furat 2, the mixture has performed very well.

The experience of the PPB indicates that farmers will not adopt improved varieties unless these have been shown to have clear advantages in the actual conditions that the farmers experience and unless the seeds are locally available. A PPB study in Syria (ICARDA 2007) has also shown that no matter how many varieties are released from the conventional system nor how much higher their yields under optimal conditions might be than those of farmers' varieties, farmers in marginal environments will not adopt them unless they have participated in their selection. This makes PPB a particularly important approach to improve yields and livelihoods even in difficult environments by means of farmer participation in the breeding process. Also, cost-benefit analysis of barley production at the farm level shows that participation of farmers in the breeding programme does not mean higher costs of a breeding programme (ICARDA 2007). Farmers adopting varieties bred through PPB programmes seem ready to pay for higher input costs in order to gain higher net returns (ICARDA 2007). In addition to the economic returns, participating farmers appreciate other benefits, such as increased knowledge of barley production, crop improvement, variety selection and how to collaborate effectively with scientists, extension workers and other farmers.

Cost-benefit analysis

ICARDA's own studies indicate that the economic benefits of PPB are clearly positive (ICARDA 2007), and that there is more to gain by implementing PPB than by continuing conventional plant breeding. Market-level benefits, calculated from an estimated adoption rate and yield gain, were compared in the studies with the investment costs for PPB and conventional plant breeding. Even assuming only a 10% adoption rate and a 33% gain in yield for the varieties produced in the PPB programme, the benefit-cost ratio, as well as the internal rate of return, was shown to be higher for PPB crops. However, because the impact of PPB depends on the availability of seeds from the resulting varieties, the studies also stressed the importance of ensuring that farmers, including women, and especially those farming on marginal lands, have access to these seeds.

The collaborating farmers, and those who have adopted PPB seeds, have benefited in other ways as well. The knowledge they have gained through their participation in the programme has improved their ability to make decisions regarding variety testing, evaluation and selection. According to an informal study conducted by ICARDA (2007) almost all the participating farmers say that, even if the PPB process ends, they will continue to practise what they have learnt about variety selection. They also intend to maintain seeds of the new varieties and to keep looking for good varieties along with other farmers. Many feel that their participation has improved their knowledge of barley production, as well as agriculture in general.

Collaboration with researchers is assumed to improve the 'human capital' of the participating farmers. The respondent women in particular perceived that their knowledge has increased as a result of their interaction with breeders and technicians. The women farmers also believed that their role in agronomic management, usually overlooked at household and village levels and by researchers and development practitioners, had become more visible through their participation in PPB (Chapter 7).

By working in groups, and being encouraged to share information and knowledge, there might also be gains in 'social capital'. Many of the participating farmers have said that they had gained valuable experience through the interactions with other farmers, especially with farmers from other villages (Chapters 5 and 7). Moreover, in the areas of longest collaboration, one of the most important successes of the PPB programme is that it has had a positive impact on the livelihoods of most of the participating farmers (ICARDA 2007). Most farmers who have not yet felt the impact on their livelihoods live in areas where the PPB programme started later. Women farmers particularly have valued their increased access to good seed and information (Chapter 6).

Only a very small number of PPB farmers interviewed as part of an Access and Benefit Sharing project (ICARDA 2011) believe that those involved in selecting new varieties should keep the benefits for themselves; most felt that the benefits should be shared at the community level. This might indicate that the farmers view local plant genetic resources as their common heritage, not something only a few should benefit from and that they favour conserving the collective public value of plant genetic resources over private interests. Other initiatives possibly also would be more in tune with the values of the farming communities if they take cooperation, sharing and fair distribution of benefits as their point of departure. Chapter 6 addresses some of the issues women faced in accessing PPB seed at community level.

In 2008 the GCSAR, despite its supportive and long-standing involvement in the PPB programme, by referring to legislation regulating variety release, seed multiplication and distribution in Syria, appeared to block further expansion of the programme by limiting the amount of PPB seed that can be produced and distributed officially or commercially by farmers. It also discouraged extension officers from collaborating with the PPB so that the number of participating villages was reduced to 11. However, the only legislation dealing with seed matters in fact is a Ministerial Decree from 1975 (available only in Arabic), and it does not contain any specific restrictions on the movement of seed. The legislative situation with regard to this issue remains somewhat unclear. The uncertainty surrounding the legality of seed distribution might become a barrier to up-scaling. The Ministry of Agriculture and Agrarian Reform is currently (early 2012) in the process of drafting a seed law, that promises to include a new system for varietal release. The law would bring greater legal and regulatory certainty but if it makes it less easy for PPB outputs to pass seed performance, approval and release procedures, much of the gains that PPB has demonstrated in Syria would be restricted. If it were to place restrictions on the sale or exchange of seed among farmers it might also be detrimental to farmers' rights. Chapter 6 further discusses this issue.

Conclusions

The PPB programme in Syria has inspired other countries in the region (Algeria, Egypt, Eritrea, Ethiopia, Iran, Jordan, Morocco, Tunisia and Yemen) to start PPB of several crops of high importance to food security and farm development. One of the most important lessons for those seeking to imitate this programme's success is that efforts should from the start involve the national institutions with responsibility for plant breeding. It can be argued that only by institutionalizing PPB can the PPB achieve full impact. To ensure the success of PPB in reaching out to a substantive number of farmers it is also crucial that seed laws allow the registration of PPB products, and seed multiplication and distribution at farm level.

PPB gives farmers the opportunity to influence the development of technologies that are better adapted to their specific needs, agro-ecological environments and cultural preferences. It also provides them with the opportunity to influence decisions about how financial resources for research and agricultural extension services are used. In addition, the programme makes use of the traditional knowledge of farmers and, thereby, elevates the profile of that knowledge and its holders, creating incentives to continue using and developing it. Although gender-sensitive PPB is still not a widespread practice, the PPB programme in Syria indicates that the work can be

structured to provide opportunities for women to contribute to crop improvement and varietal development and to enjoy the full range of the benefits of PPB.

Participatory research processes bring farmers into contact with professional breeders, helping the farmers to become more aware of what science can offer them. The farmers in this case are involved not only in breeding activities but also in the registration of the resulting varieties, their maintenance, seed multiplication and distribution and, as appropriate, commercialization. PPB in Syria and other programme countries in addition has strengthened local and national seed systems by improving the frequency of production of new seeds, selection of locally relevant varieties, and access to better adapted seeds. Along with increased yields, these have been shown to be important contribution to food security in Kherbet El Dieb and the other villages involved.

Finally, it is worth mentioning that by increasing access to better adapted and higher yielding varieties, PPB can contribute to ensuring the right to food. In fact, promulgation of PPB is one of the recommendations of the interim report of the Special Rapporteur on the right to food, who also places special emphasis on the importance of collaborating with small-scale, women and marginal farmers (De Schutter 2010).



Picture 1. Trial scoring in the fields of Lahetha



Picture 2. Women farmers participating in a PPB meeting in Lahetha

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CHAPTER 3

Including women in a participatory barley breeding programme in Syria: a study of twelve women and their role in the farm

Abstract

This chapter scrutinises the reasons for involving women farmers from three Syrian villages in a participatory barley breeding (PBB) programme and in its development of locally adapted seed. The chapter presents an analysis of the intra-household division of agronomic management, gender issues in access to information, agricultural knowledge, decision making, and women's access to land, water and seed in ten selected households. The analysis yielded three main insights: (i) the roles of the respondent women and men farmers along the food value chain vary depending on crops, villages and households; mostly older women and men are involved in barley cultivation; (ii) men and women rely on parallel and complementary systems of information access; and (iii) women are disadvantaged in terms of ownership of land and water, access to quality seed, and in decision-making about farm management. The chapter discusses the implications of these insights within the framework of technology effectiveness and equity of development opportunity.

Keywords

Participatory plant breeding, gender, access to seed, variety, knowledge, barley, decision-making

Background

Agriculture in Syria is a major source of livelihood particularly in the rural areas. Overall about 50% of the population is engaged in farming in which the largest labour share is female (FAO 2011). However, agriculture's share of Gross Domestic Product is only just over 20%, associated with low added value per agricultural worker and low capital stocks per agricultural worker (IAASTD 2009). In 2010 between two and three million people in Syria were estimated by the UN to be vulnerable to poverty and food insecurity, mostly small-scale farmers from the marginal areas (De Schutter 2010). New challenges such as population increase, climate change, depletion of water resources, and a decrease in availability of oil are expected to further hinder the role of agriculture in food security enhancement.

The FAO considers the underperformance of the agricultural sector to be partly related to the constraints faced by women - who are a crucial labour resource in agriculture and the rural economy - that reduce their productivity (FAO 2011). While it is broadly recognised that development strategies need to be gender-sensitive to maximize their impact on food security enhancement, and that gender analysis is the first step to develop appropriate strategies, in Syria the official statistics are mostly gender-blind and recent, comprehensive and reliable data for 'women in agriculture' are scarce. FAO (1995), Farah (1999), FAO (2011), Ransom and Bain (2011), World Bank, FAO, IFAD (2009) and IAASTD (2009) summarise the most recent information. The available data indicate that women constitute 60.7% of the economically active population in agriculture and that the growth in the rate of female agricultural labour force participation is among the highest in the region together with Libya and Jordan (FAO 2011).

New pathways of agricultural research for development (AR4D) are needed in Syria to enhance rural livelihoods and food security vis-à-vis current and future challenges, to target poor farmers from marginal areas and women farmers in particular, and to provide new development opportunities. The urgency of such measures is testified by the vulnerability of farmers to food insecurity (De Schutter 2010) and by the current civil war that is arguably partly fuelled by limited development opportunities in the rural areas.

Participatory plant breeding (PPB) is today accepted as a useful approach in the emerging mosaic of efforts to meet these current and future challenges. PPB is considered an effective approach to developing improved varieties of seed adapted to the local agro-ecological and socio-economic context of farmers. The choice of which farmers to involve in the improvement of new varieties affects the

effectiveness of PPB in developing locally adapted varieties that respond to farmers' needs and are adopted at household level. It also raises the question of 'whose preferences and needs' are taken into account in research for seed improvement.

In 1996 the International Centre for Agricultural Research in the Dry Areas (ICARDA) started a PPB programme in Syria to produce and disseminate varieties of barley that better respond to farmers' needs and preferences with the aim of enhancing their livelihoods (the programme is further described in Chapter 2). Barley is the major feed crop and winter cereal in Syria, and is a major source of income for small-scale resource-poor farmers, and practically the only rain-fed crop that produces a worthwhile yield in the more marginal areas. Collaboration with Syrian farmers under the PPB programme has proven an effective methodology for developing improved varieties and ten to 15 varieties are selected yearly by the participating farmers (S. Ceccarelli, personal communication, January 2012). However, in 2006 it was found that only male farmers had been involved in the programme after ten years of activity in Syria. Yet, within Syria itself preliminary field evidence indicated that Syrian women are involved in agricultural activities relevant to PPB. The lack of women's involvement was thought to be related to the gender-neutral approach that the PPB programme had adopted from its inception: the programme was open to both women and men farmers but did not address women's and men's needs or analyse gender-based differences.

A women pro-active approach thereafter was adopted to increase the gender-balance of the programme's participants. A diagnostic study was initiated in 2006 to understand the reasons why women farmers in villages participating in the PPB programme had not become involved. The reasons provided by the 16 respondent women for not participating included: i. assumption that PPB activities addressed male farmers only, ii. lack of information about PPB activities iii. lack of decision-making over family land, and iv. women's disinterest in barley, the focus crop of the PPB programme. These elements were further analysed in a gender-sensitive study that took place between 2006 and 2009 and focused on: a. perceptions of 'who is a farmer' and the gender-based division of agronomic management; b. women's access to information and gender aspects in agricultural knowledge; c. women's decision making in farm management and their access to land, water and seed; d. women's involvement in barley.

This chapter presents the findings of the gender-sensitive study; 'perceptions of who is a farmer' is discussed in Chapter 4. Based on the findings the chapter discusses the

inclusion of both women and men farmers in the PPB programme in the framework of technology effectiveness and equity of development opportunity.

Conceptual framework

Participatory plant breeding: effectiveness and equity

Participatory plant breeding is a science-based procedure that involves scientists, farmers, and others, such as consumers, extensionists, vendors, industry, and rural cooperatives in plant breeding research. It is termed 'participatory' because many actors, and especially the users, can have a research role in all major stages of the breeding and selection process (Cleveland 2001). The PPB programme at ICARDA involved mostly professional plant breeders, social scientists, economists, extensionists and farmers to produce locally-adapted varieties of barley that reflected farmers' needs and priorities. PPB is considered effective in addressing the diverse needs of farmers and particularly of small-scale farmers from the marginal areas (Ceccarelli and Grando 2007). The PPB programme in Syria at the end of 2011 was operating in three agro-ecological zones (zone two to four which include annual precipitation between 350 and 150 mm), nine farming villages, and directly involved between five and ten (male and female) farmers in each village.

Two of the main reasons for targeting small-scale and resource poor farmers in PPB are technology effectiveness and equity of development opportunity. The technology effectiveness justification is concerned with the need to develop varieties that are better adapted to the needs of farmers from less favoured production environments by directly involving them in identifying priorities and constraints in crop cultivation (Almekinders and Hardon 2006; Johnson et al. 2004). In fact, PPB is based on the awareness that yield increase is not the only criterion that matters in varietal improvement because a wide range of concerns are taken into account by farmers when choosing their preferred variety (Almekinders and Hardon 2006). These concerns need to inform breeding strategies if released varieties are to be relevant to small farmers experiencing high production risks. It has been rigorously demonstrated that better adapted varieties are more likely to be adopted by small farmers and that investments in marginal areas may give higher returns on poverty reduction (Bellon 2006).

Targeting breeding strategies to community needs and farmers' preferences is particularly critical for marginal areas where agriculture is characterised by wide spatial and temporal variability of agro-ecological conditions and by diverse socioeconomic needs resulting in complex stresses and high production risks (Aw-

Hassan, Mazid and Salahieh 2008; Bellon 2006). It has also been found useful to expose the communities to new genetic diversity and related information in order to provide an opportunity for local farmers to continuously re-evaluate their preferences (Asfaw 2011) and take informed decisions about what varieties best fit their household's needs. Gender-sensitive targeting is important wherever socio-economic needs vary within the community and the household. It is particularly critical in cases when men and women perform different agronomic activities that entail gender-differentiated skills, knowledges, needs and trait preferences (Farnworth and Jiggins 2003; Pimbert 2006).

The equity of development opportunity justification is concerned with the need to reduce social inequalities through development interventions by providing individuals with the means to achieve equivalent life outcomes, based on their diverse needs, interests, choices and capabilities (FAO 2009; Reeves and Baden 2000). The equity of development opportunity justification in PPB is based on the evidence that small-scale farmers in the more challenging environments, often among the poorest in the world, have benefited the least from the advances of conventional plant breeding and women in these environments least of all. The conventional organisation of breeding and seed releases generally has addressed farmers from more favoured environments and has rarely included gender concerns (Almekinders and Hardon 2006).

To address gender-based inequalities that affect negatively poor and rural women in particular, the UN Convention on the Elimination of all forms of Discrimination Against Women (CEDAW 2007) establishes the right of rural women to benefit from developing opportunities by accessing appropriate technologies, by participating in decision-making and implementation of agricultural development programmes, and by being trained to improve their technical proficiency. Syria adopted and ratified the CEDAW in 2002 although with reservations applied to Articles 2, 9 (2), 15 (4), 16 (1)(2), and 29 (1). Srinivasan and Mehta (2003) highlight how gender-blind agricultural technology often has aggravated existing inequalities rather than reduced the gender and poverty gap.

Once a target production environment and crop have been selected by a PPB programme the choice of which farmers in the communities and within the households to collaborate with is a key factor that affects the outcomes of projects both in terms of technology effectiveness and equity of development opportunity (Cornwall 2003; Guijt and Shah 2006; Johnson et al. 2004). Johnson et al. (2004) found that most participatory natural resource management projects selected

participants based on efficiency criteria - such as participants' possession of knowledge, skills and status in the community - and selection by the communities themselves, or self-selection. Only a small percentage selected participants on the basis of equity criteria. As a result, the most marginal individuals in the communities were likely to be excluded. Farnworth and Jiggins (2003) argue that participants selected on the basis of efficiency criteria only might not be representative of the intended target group. Ashby and Sperling discussed the issue of both efficiency and equity of participatory plant breeding when asking how to identify which user groups "should get a chunk of the financial pie: those most important to economic growth? those most needy? those with the highest political profile?" (Ashby and Sperling 1995, 757).

Gender-based division of agronomic labour

Identifying the 'actual doers' along the value chain in agriculture is one way of better understanding who and what groups have a stake in crop management, an important basis for PPB to better select its participants (Farnworth and Jiggins 2003). Evidence from Syria is that about 44% of the women in farming households work in agriculture as paid labourers, and most of the remainder contribute unpaid labour to the family farm. Women are generally involved in manual, time-consuming activities. However, there is known to be considerable variation in the amount and type of this involvement, depending on the agro-ecological zone, and the cultural and religious identity of the communities that make up the nation. A feminisation of agricultural labour has been observed in the smaller holding households as men migrate to the cities in search of work (Abdelali-Martini et al. 2003; Farah 1999). This study analysed the gender-division of labour along the food production to consumption chain in selected PPB households to understand which women were involved in agronomic management and how, what was their role in barley and in what crops they were interested.

Access to resources

McGuire et al. (2003) highlight how farmers' gender, wealth, status and knowledge, and the crops the breeding programmes focus on affect not just the likelihood that they participate in PPB but also their capacity to participate and the modality of their participation (McGuire, Manicad and Sperling 2003). Wealth can affect farmers' margin for experimentation in terms of availability of land for trials, vulnerability to yield losses, free time and also their trait preferences (Farnworth and Jiggins 2003). Understanding farmers' access to and control of land and basic resources for agriculture can help clarify also which farmers are most seed needy and in what capacity they can be involved as PPB participants (e.g., as trial hosts or trial

evaluators). The (poor) evidence from Syria suggests that women own less than 5% of the land and men 95% and that women's property is generally smaller than men's (Farah 1999). Gender-sensitive studies on seed access are not available. In his analysis of wheat and barley management in Syria, Bishaw (2011) argues from observation that seed selection, cleaning and storage are the joint responsibility of both men and women and adds that women's role in seed management is largely underestimated. The study presented in this chapter analyses the actual access to and control of land, water and seed by the respondent women.

Knowledge and information

The knowledge of resource users and stakeholders is important for the generation of information and innovations that shape how resources are understood and exploited (Johnson et al. 2004). Because crops and knowledge are inextricably linked in adaptive resource management systems, involving knowledgeable farmers in PPB is important to produce better varieties (IIED 2009). However, Howard (2003) has highlighted how knowledge is not simply a function of the gender division of labour but "rather is embedded in cosmologies, beliefs, and norms about appropriate behaviours" (Howard 2003, 24). What or whose knowledge counts is affected by the status, gender, age (among other social factors) of the knowledge holder (Cornwall 2003; Jewitt 2000).

Moreover, access to good information is essential to improve agricultural systems (Huynh et al. 2010), enhance technology adoption (Paris et al. 2008) and increase farmers' ability to manage their farms particularly when facing external shocks (World Bank, FAO and IFAD 2009). Access to information for poor farm women is particularly important because they generally lack access to education, information and capacity building opportunities (World Bank, FAO and IFAD 2009). Studies on the gender dimensions of agricultural knowledge in Syria are not available; however, a number of papers recommend facilitating farm women's access to information (Soubh 2006). This study analyses how the farmers from the selected households accessed information and how gender affected the perception of 'what knowledge counts'.

Decision-making

A wide literature has analysed the different positionalities of household members in decision-making processes that affect individuals' life opportunities and outcomes (Agarwal 1997). Decision-making about breeding priorities in PPB affects what crops are improved and what improved varieties are selected, and which traits are favoured, and these in turn affect variety adoption and use at household level (Paris

et al. 2008). The (scanty) evidence from Syria suggests that although the feminisation of agricultural labour has increased the proportion of women in the farming population, this has not led to a proportionate increase in their control of farm assets and decision-making (Abdelali-Martini et al. 2003; Farah 1999). This chapter shows the respondent women's own perception of their decision-making roles in farming.

Methodology

This section complements the methodology section of Chapter 1 by reporting details specific to the findings of this chapter.

Because in most Arab countries women are believed to play minor or no roles in field work or in crop management, it was important first to establish in my case what the respondent women did. The purpose of this chapter is to identify what the respondent women did rather than to analyse why they were playing the roles they did (Nuijten 2010). The study reported in this thesis was carried out between 2006 and 2009 as exploratory small-N research (see Chapter 1). The findings reported in this chapter include the findings from a diagnostic study performed in 2006 and from two stages of main fieldwork that were performed between 2007 and 2009. Each stage lasted between five and six months. During each stage, two fieldwork days a week were organised with the panel of 12 women from ten households in three villages: Souran, Ajaz and Lahetha. Maximum five additional women at any time, in each village, joined in the oral discussions (see Chapter 1 for details on selection of villages, households and respondents). In-depth interviews were also carried out with 24 men in 2009 in the three villages by a male MA student. Two community facilitators at ICARDA and one extension officer from Lahetha were also interviewed during the field visits. In this chapter, in order for the reader to keep track of which of my respondents I refer to, I sometimes add the place of residence to the data. No inter-village comparison is intended by this.

Data collection

The first stage of the research was a diagnostic study performed in 2006 (Galiè 2007). The diagnosis consisted of (i) a three-day meeting between ten Jordanian and 16 Syrian women farmers to discuss their involvement in the PPB programme, and to assess the reason for the absence of Syrian women farmers from the programme up until then; (ii) semi-structured interviews with 16 women farmers in Ajaz, Souran and Lahetha about their involvement in agriculture and their interest in the PPB programme. The understanding provided by the diagnostic work shaped the research questions that were explored between 2007 and 2009. In these three years two stages of fieldwork (2007-2008 and 2009) were organised in the three villages, using

selected PRA methods (Chambers 1992) during women-only group interviews, and participant observation.

The diagnostic study revealed that the women had assumed that it was the men farmers who were the target of the PPB activities and also that barley was not a crop they were interested in. Therefore, the study was widened to understand whether women were involved in farming at all, and which women. A gender-sensitive analysis of intra-household agronomic management was carried out and the gender division of labour along the food production to consumption chain was analysed in the respondent households. This analysis included a study of family composition and family structures (Guijt and Shah 2006); an assessment of the involvement of women in agronomic activities by means of daily and seasonal calendars (Chambers 1983); an exploration of the factors that affect household crop cultivation practices through semi-structured interviews (FAO 1990); and also an analysis of 'perceptions of who is a farmer' (discussed in Chapter 4).

During the diagnostic study the women also mentioned their lack of decision-making opportunities over the family land they were cultivating. Therefore, an assessment of their access to and use of land, seed and water, and of decision-making opportunities was also made. Patterns of intra-household land and water ownership and use were established through the use of local maps (Guijt and Shah 2006). Semi-structured interviews were used to explore household sources of seed and women's access to seed. Women's perceptions of intra-household decision-making were explored through a matrix matching their daily work and life, and the power dynamics affecting them (Miles and Huberman 1994).

Finally, because in the diagnostic study the women mentioned their lack of access to information about the PPB programme, open discussions were organised focused on gender-differentiated sources of information and agricultural knowledge, and on local perceptions of 'whose knowledge counts' (see Table 1).

A male MA student carried out seven semi-structured interviews with groups of men (total of 24 men) to add gendered nuance to the women farmers' assessment of intra-household agronomic management, and to explore men's perceptions of women's role as farmers, and their access to information. Twelve men were from Ajaz - of whom nine were related to the female respondents. Five were from Souran - of whom one was related to a female respondent and four were participants in the PPB programme. Seven were from Lahetha - of whom one was an extension agent,

two were related to the women respondents, and four were male farmers participating in the PPB programme (see Table 2, Chapter 1).

Activity	Time	Method	Issue explored
Diagnostic study	2006	Semi-structured interviews	Reasons for absence of women in PPB to that date Interest of the women in PPB Assessment of the respondent women's involvement in farming
First stage of fieldwork	2007-2008	Family structures	Family composition Recognition of women as farmers in the selected households
Second stage of fieldwork	2009	Daily and seasonal calendars	Involvement of respondent women in agronomic activities
		Semi-structured interviews	Factors affecting household crop cultivation practices
		Local maps	Intra-household ownership and use of land and water
		Semi-structured interviews	Household sources of seed Respondent women's access to seed
		Matrix analysis	Respondent women's perception of intra-household decision-making
		Open discussions	Sources of information Perceptions of 'whose knowledge counts'
Interviews with male farmers	2009	Semi-structured interviews	Intra-household agronomic management Recognition of women as farmers Access to information
PPB activities	Cropping seasons 2006, 2008 and 2009	Participant observation	Gender-based crop and trait preferences

Complementary research activity

Participant observation during PPB activities, such as planting and crop selection, took place over each of three cropping seasons, 2006, 2008 and 2009, and focused mainly on barley.

Main findings

The findings presented below are organised according to the four main issues that were explored during the research: 'gender-based division of agronomic labour', 'access and entitlements to land, water and seed', 'decision-making' and 'knowledge and information'.


Gender-based division of agronomic labour






















The main findings of the daily and seasonal calendars show that in Ajaz and Souran the majority of women in the household were involved in agriculture full time and a small percentage of men in the households were involved in agricultural activities. In Lahetha agricultural work was generally limited and part-time but involved more women than men. Table 2 shows the main occupation of the members from the respondents' households. The table includes also family members who are not part of the households (defined in this thesis as "a person or group of people living in the same residence" (Sullivan and Sheffrin 2003, 29)) in cases when they contributed to the household's economy.

In Ajaz, the five women from four households interviewed were involved in agricultural activities either as on-farm domestic labour or as off-farm paid labour (Table 2). Depending on the number of women available for work in the household, agriculture was either performed in the place of domestic duties or in addition to them. The households grew wheat, barley, cumin, lentils, chickpeas and vegetables for both house consumption and sale of surplus.

Barley cultivation was mechanised for both planting and harvesting as well as wheat cultivation. All mechanised ploughing, planting and harvesting, of both barley and wheat, were done either by a male family member - if they owned the appropriate machine - or more commonly by hired labour with specialised machinery and under the supervision of a man from the family. The sale of barley seed and straw, and of wheat grain, seed and straw to the government was done by men because women were generally discouraged from interacting with non-related men and because the government dealt only with official title holders, mostly men. When yields exceeded the quantities purchased by the government men and older women (above 60 years approx.) sold the surplus. At this age women were allowed to interact with non-

related men; yet, the women sold within the village to other farmers or retailers while the men travelled to nearby cities and markets (see exceptions in Box 1). Older women were in charge of seed selection and preservation even though some women argued the average good quality of seed in recent years had reduced the workload this activity required.

Table 2. Occupation of members in respondents' households								
Village	Type of occupation							
Household	On-farm agriculture	Off-farm agriculture	House-keeping	Off-farm non-agriculture	School	Not working	Army	Abroad
Ajaz								
Household 1								
	✓			✓				
	✓							
	✓	✓						
			✓					
							✓	
Household 2								
						✓		
	✓	✓						
Household 3								
	✓		✓					
				✓				
					✓			
								
Household 4								
						✓		
	✓	✓						
								✓
			✓					
					✓			
Souran								
Household 1								
	✓							
	✓		✓	✓				
						✓		

Lahetha								
Household 1								
	✓		✓	✓				
	✓			✓				
					✓			
Household 2								
	✓		✓	✓				
	✓			✓				
Household 3								
	✓		✓					
				✓				
					✓			
Household 4								
	✓		✓	✓				
			✓					
					✓			
				✓				
Household 5								
	✓		✓					
				✓				
					✓			
Labels								
								
Married woman	Married man	Unmarried woman above 18	Unmarried man above 18	Woman below 18	Man below 18			

Source: Family structure and daily and seasonal calendars; Ajaz, Souran, and Lahetha; 2008 and 2009

Generally, the household women worked together, regardless of the crop, to take care of manual planting, weeding, hoeing, fertilising, harvesting, watering and animal care. Women were also in charge of processing vegetables and fruit. Women also hand-harvested lentils, chickpeas and black cumin and hand-harvested olives and cotton, and carried out hand-planting, harvesting and uprooting of the cotton. Irrigation was men's task, performed in collaboration with the women who help set up the pipes. The men were in charge of dealing with the government for the

provision and sale of the seed of compulsory crops (see below). Surplus vegetables and fruit were sold by the men in their area and the older women (above 60 years approx.) from their garden gate, as was the case for barley and wheat. The purchase of agricultural products from shops and loading heavy weights was done by men.

Box 1. Young women work off-farm

In the village of Ajaz a young woman contributed her work to her grandfather's field when needed; otherwise she worked as a daily labourer on other farms. All the work in her family field was managed by an uncle, who also bought and sold the produce. In only one household in the village, one woman of 30 *de facto* managed the family farm (even though her father was considered 'the farmer'). Together with performing all the work in her family field, with the help of two sisters, she also bought agricultural products, took care of irrigation and drove to a nearby town to sell the produce. Generally, a system existed in some households in the village where the women were given to manage independently a small part of the family field they were cultivating as a payment for their work. The produce of this smaller field was sold by male relatives and the revenues were given to the women who could dispose of them autonomously.

Generally, agricultural work was performed by the women as unpaid family labour but a system of repayment existed in some households (see Box 1). When the workload was high, some households hired daily women labourers as extra support. In this case, the unmarried women of the households might work as day labourers in other farms. When agricultural work at home was not needed the unmarried women worked for money making bead-work commissioned from the city or worked as daily agricultural labourers. Agriculture, however, was prioritised since it was a source of income more reliable than the handicraft because commissioning was irregular.

The household studied in Souran cultivated, in order of importance, barley, wheat, chickpea, lentil, pistachios and olives. Two women are farmers: the mother (60-63) who *de facto* managed the farm (even though she referred to her sons as the farm decision-makers) and the daughter (25-27); the three working men in the household were involved in non-agricultural, off-farm activities (Table 2). Generally, the women performed the same agronomic activities as those of women in Ajaz and in addition harvested and pruned pistachios. Barley planting and harvesting was mechanized and was done by hired labour only, with the supervision of a man in the family. The sale of barley seed and straw was done by the older woman (who sold mostly to other women and from the house door) and by her sons (who sold to other farmers in the area). Barley seed was not preserved for planting from season to season, because the

households received seed yearly from the PPB programme. The younger woman worked at times as a teacher.

In Lahetha, agriculture was insufficient to sustain the families and both men and women were employed in non-agricultural jobs. In the households interviewed, men and younger women were more likely than older women to have a non-agricultural employment (Table 2). The five households studied, grew barley in the main fields to be sold as fodder, and grew some vegetables for family consumption in the home garden. Cultivation of wheat had stopped between 2000 and 2005 because recurrent droughts had caused yield losses. Out of the five respondent women, two women (aged between 50 and 65) were involved in agriculture with their husbands, three widows (aged between 55 and 60) did the agricultural work themselves and relied on the help of their children or hired labour when needed (Table 2). Together with the agricultural work four women had a second non-agricultural job. One of the three widows was a full time farmer whose family economy relied on the dairy products of one cow and the sale of the barley harvest which was not used to feed the cow.

Barley was generally planted and harvested by hand by all family members. In years when it was economically viable, when the land was suitable for machines - not too irregular and without stones - and when the stem was long enough for mechanised harvesting, mechanised labour was hired for barley planting and harvesting. Both men and women sold barley seed and straw when the harvest was successful. Older women were mostly in charge of seed selection and preservation. In all households women looked after the vegetable gardens for home consumption. Irrigation, if practised, was arranged by the men and was always very limited. Women also did the food processing and the olive picking.

In all three villages the involvement of the women in agriculture was determined by the manual labour needed by the crop planted and the related farm management practices. The considerations affecting the choice of what crops to grow included location and whether the crop was irrigated or rain-fed, price of seed at the time of planting, and the actual rainfall. Farmers might decide what to plant based on a rainfall prediction or might substitute another crop if rainfall was too low for crop growth. Decisions also depended on the price of fuel for irrigation, the availability and price of machinery in the area, the availability of labour in the household, the expected price of sold produce (crops that sold better were considered to be worth a bigger investment) and the expected market demand for the crops. In Souran, for example, barley was in great local demand and its cultivation was preferred over the generally more lucrative wheat. Because manual work was women's task, the women

seemed to prefer crops that were not labour intensive and for which mechanised harvesting was available.

Whether to rely on manual labour or on mechanised labour depended on the crops that were planted, the size of land (since hired labour could become very expensive for larger fields), the cost of fuel, the economic status of the family, family composition, the availability of labourers, the employment situation of all household members, the availability of machines for hire in the area and the availability of machines in the family.

Access and entitlements to land, water and seed

None of the women interviewed in this study owned any property, neither did their daughters or female neighbours. The land they cultivated belonged to the husband, father or father in law. Traditionally, when the husband dies the title of the land goes to their sons as soon as they are old enough (over 18 or around 20). Even though they could ask for a share, women argued that generally they preferred to waive their rights in favour of their brothers, following the village customs. They were more likely to ask for a share in cases where the land otherwise would be inherited by a different household (such as e.g., by the household of the husband's previous or second marriage). In this case, two women added, women might get some money rather than the land but, as a consequence of their request, they would be looked down on by the whole village. According to the respondents, the general reason landed property was not shared equally among daughters and sons, was to avoid further land fragmentation that risked that a farm became too small to sustain a family. Men, rather than women, were given the land since they are in charge of sustaining their wives and families.

None of the women interviewed owned water wells (that were usually considered to be part of land ownership and therefore mostly the property of the men). They added that water was controlled and managed by the men since women are not in charge of irrigation, a task that is strictly considered a man's activity.

In Ajaz and Souran the male farmers interviewed relied on the government to source seed for the compulsory crops, and on private suppliers and on farmer to farmer systems for the other crops. The female respondents were not addressed by the public system since they were not landowners. They had limited access to the private system to source the seed since men were mainly in charge of shopping and women generally do not interact with unrelated men. However, the women mentioned exchanging seed with neighbouring (mainly female) farmers. One woman only, in

Ajaz, bought seed from the shops, from the Farmers' Union and the farmers' cooperative because no men in the household was able to sell or buy agricultural products. In Lahetha the interviewed farmers argued that seed was mainly saved by older women in the household year after year, exchanged with other farmers and also purchased from the agricultural extension office. Here, both men and women were in charge of buying seed and had direct access to seed.

Decision-making

In female headed households and households where women *de facto* managed the farm, women thought they had all decision making power concerning their agricultural work. The unmarried woman from Ajaz who was *de facto* the head of the household mentioned her old father and the brother (who lived abroad) as having as much decision-making power as her for the household farm management. However, she added, she would not accept decisions that did not reflect her opinion as she was the person mostly in charge of the household farming. In male headed households, the respondent women felt that the male head decided more than the women. Women in the female headed households seemed to involve a wider range of people (such as the extension office and the other women in the household) when taking decisions on agricultural matters. The married women generally felt they had some decision-making power but all mentioned a male relative who decided more than or equal to them. The unmarried women also felt they had some decision making power, but mentioned older women and male relatives as the main decision makers.

In relation to marketing activities in Lahetha the respondent widows felt they had all decision-making power - including selling the agricultural produce and buying goods for the households - while the married women felt they decided as much as their husbands. The married women from Ajaz felt men decided most. The young unmarried women farmers from Ajaz and Souran thought they decided very little since their related men and older women decided the most. The unmarried *de facto* head of household in Ajaz thought she had as much decision-making as her men folk but less than the retailer she dealt with and the customers who greatly affected her sale. All women agreed that there should be and often there was consensus on what the budget priorities were for the household and added that there were standardised behaviours in the village that reduced the space for diverging opinions and therefore limited conflict. However, they agreed that in case of disagreement they could ask for the mediation of trusted community members. If this failed they could only accept the decision of the husband. Prolonged disagreement might result in divorce or having to accept their husband's decision to take a second wife.

In the case of the purchase of agricultural products women in Ajaz said that the men decided what varieties to buy for crops that they sold, based mainly on the highest yielding variety. For crops used for house consumption women contributed to the choice of varieties by expressing their preferences based on cooking, dietary needs and other priorities related to crop cultivation. In the Souran case all decisions in the household about agriculture were taken by the older woman and the seed was then purchased by her sons. She was also in charge of selling the grain seed and the straw from the garden gate together with her sons who sold in the villages of the area. This household had a reputation as a good seed provider and the sale of PPB grain and seed contributed 70% to this household's income. However, the women seemed not to be aware of the varieties available on the market because men were generally in charge of seed purchase. Some men, in turn, were in charge of choosing seed varieties without being aware of all household trait needs, the women argued.

All the revenues of on-farm agricultural work were used for the general household expenditures and were controlled by the head of the household, whether man or woman, regardless of who contributed their work. On the contrary, all revenues from off-farm activities were controlled by the labourers themselves, whether men or women, and if unmarried, were kept for their future household or spent on the current household if married. The women from Lahetha felt they took most decisions about their off-farm paid work. The women from Ajaz and Souran mentioned men, older female relatives and employers as affecting their ability to work off-farm.

Knowledge and information

All the women interviewed in the three villages maintained that they mainly acquired new information through informal and domestic or village-based sources. They learnt about agricultural work by going to the fields with their family. They learnt about new varieties, cultivation methods and crops mainly through experience and experimentation in the fields over the years, and also by asking neighbours (preferably female) and relatives. The women of Lahetha mentioned also the women's union and women farmers' meetings as sources of agricultural information (Fig. 1). One woman from Ajaz maintained that "anybody who goes to the shops or the agricultural pharmacy is given the information, men or women. Only, women usually do not go there" (Female farmer, Ajaz, 31.03.2009).

The respondent men acquired new information through more public, formal and wider sources, that included the Farmers' Union, neighbours, agricultural pharmacy, markets, shops, farmers from other villages, seed exchange with other villages and

neighbours, male farmers' gatherings in the evening and experience. There seemed to be little exchange of information between the men and the women.

A male farmer from Ajaz, after acknowledging that women shared the agricultural work with the men, underlined the importance of accessing information outside the village while also showing a bias against women's knowledge. He asserted:

Men have more knowledge than women and argue better. The women have no knowledge, they are not experts. We men meet up and talk about the seeds. We can go to other villages and see the fields. Women can't. Women don't know prices. The women only talk about clothes and make up. They have no idea about seeds (Male farmer, Ajaz, 28.01.2009).

All the women of Ajaz and Souran maintained that men were generally more knowledgeable than women. They explained that men had more years of education than girls, travelled outside their village or abroad, did the most important tasks, and some argued, men were naturally more knowledgeable than women. "Generally, men always know more. If a woman studied something like agricultural engineering she could know more" (Female farmer, Ajaz, 26.03.2009). The older female heads of household were considered to be much more knowledgeable than the younger women and men in agriculture. The women interviewed in Ajaz and Souran agreed that the association between women and knowledge was generally frowned upon. In fact, it was widely felt that a knowledgeable woman would not easily find a husband because her knowledge would be perceived by men as a threat. Older women were more likely to speak openly about their knowledge as long as the traditional gender roles of men as farmers and decision makers were restated (see Chapter 4).

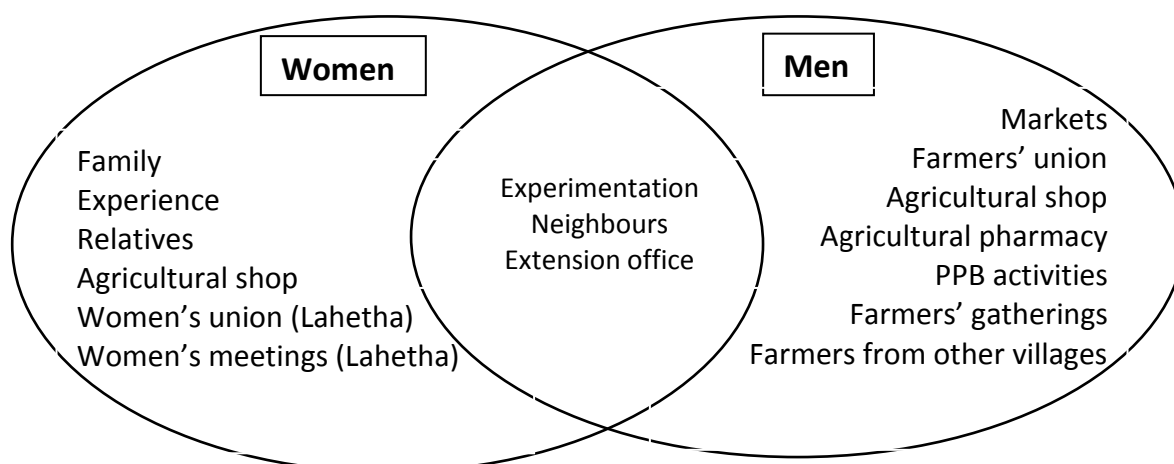


Figure 1. Sources of information for the women and men in the respondent households

Source: Semi-structured interviews; Ajaz, Souran and Lahetha; 2007-2008 and 2009

Analysis and discussion

This section discusses the implications of the findings for the effectiveness of crop improvement through the PPB programme, and for progressing toward greater equity of agricultural opportunity.

What influences gender-balance in PPB

The study shows that overall women in the respondent households indeed play important roles in crop management, through the entire production cycle, and in the farm's relations within the village and surrounding society; that in these households, sex-selective labour movements leave more and more women 'on the farm'; and that the modality of women's involvement is affected by numerous factors among which their age, status, family status and farm management. However, despite their roles in agriculture, the presence of PPB in their village and their interest in the programme the women had not become involved in the PPB while the programme operated under a gender-neutral approach.

What would a women pro-active approach need to do to facilitate their involvement, and which women and why might the PPB involve?

Gender and the division of labour

A number of studies show that in farming systems where agricultural activities are divided on the basis of gender, varietal selection criteria might vary between women and men based on different crop management and information-seeking behaviours, and on distinct activities and the knowledge these activities might entail (Farnworth and Jiggins 2003; Nuijten 2010; Weltzien et al. 2003). Our findings show the presence of a gender division of labour in Ajaz and Souran for all crops that require manual work. In this context, a gender-balanced participation of farmers in PPB would be important to improve varietal development and adoption based on the preferences, needs and knowledge of both women and men farmers. The programme would need also to develop a capacity to assess the difference that a gender-balanced PPB makes in terms of variety adoption and therefore on PPB programme effectiveness.

Gender and activity performance

In the case of barley, the findings have shown that in all respondent households older women and men were similarly involved in barley cultivation: mechanised activities were mostly outsourced to daily labourers; manual activities and selling were performed by both men and older women, or by women in female headed households or *de facto* female managed farms. The young on the other hand have a limited role in barley. While the need to target the specific needs of women-headed

households has been highlighted by research in Africa (Chiwona-Karlton et al. 1998), it might be asked if a PPB programme needs to involve both women and men in cases when the division of agronomic labour is not differentiated by gender?

The findings of this study suggest that gender-based perceptions of 'appropriate behaviours' affect the way women and men perform certain activities - as suggested for example by the restraints on women's marketing activities because women do not interact with unrelated men and in public spaces. Thereby, it might be too simplistic to assume that because women's involvement in seed purchases or grain marketing on the whole might be limited, their trait preferences are not important in seed improvement and development. Our findings suggest on the contrary, that there is always a need to establish empirically, for example, how women's limited scope in the sale of barley and their preferred female clientele in seed sales distinguishes their trait needs from those of men who sell to more distant buyers (who might have different quality criteria) and into both formal and informal markets.

Wealth status and variety preferences

The women interviewed in this study were found to cultivate family land which they did not themselves own; they were shown to have no entitlements to water and reduced access to seed. The International Assessment of Agricultural Science and Technology for Development (IAASTD 2009) argues that small-scale farmers with limited access to resources and opportunities marginalise small-scale agriculture in the eyes both of policy makers and technology developers, who tend to accept the axiom of market-led development that the rewards go to those who own the factors of production. At the same time it is clear that extra difficulties and costs are incurred by plant breeding that addresses the most marginal and vulnerable farmers (Bellon 2006). Is it effective for the PPB to collaborate with farmers who lack basic farming resources, as in the case of the respondent women?

According to McGuire et al. (2003) the wealth status of participants in PPB might affect their variety preferences because for instance poorer farmers might prefer varieties that perform under low-inputs. The PPB programme at ICARDA was organised so that also landless male farmers could have a say in seed improvement by participating in seed selection during trials hosted by farmers who control or own land assets. This chapter argues that recognition of women in farm households as a special category of landless farmers might increase the effectiveness of PPB.

Gender influences on information and seed sharing

When selecting farmers and communities to collaborate with PPB programmes need also to take into consideration strategies to increase the longer term effectiveness of their efforts by out-scaling i.e. to diffuse PPB improved varieties and increase their adoption among farmers and in villages not directly involved in the programme. Informal farmer-to-farmer seed exchanges have been shown to be particularly important for the adoption of new barley varieties wherever small-scale farming is not well served by the formal seed supply system, as in Syria (Mazid, Aw-Hassan and Salahieh 2007). However, McGuire et al. recommend an assessment of “how people and processes are socially-embedded in farmer-breeding” (McGuire, Manicad and Sperling 2003, 72) to understand which farmers are better placed to diffuse improved seed within networks of seed and information exchange, what institutions are involved and how benefits are shared among different users. Legal recognition of farmers’ right to sell improved PPB seed, as an organised income-earning enterprise, also has been shown to be important (Gyawali et al. 2010; Song and Vernooy 2010).

The findings of this study indicate that information and seed sharing in the research villages are arranged mostly along gender lines. Could enhancing the access of women who participate in PPB to relevant varieties constitute an effective strategy to strengthen women’s networks in the exchange and sale of good seed? Which of the women are best placed to diffuse PPB seed? Further research is needed to assess the gender aspects of the informal seed system and the potentialities of women’s networks in enhancing women’s access to and dissemination of PPB seed.

Gender-based differences in decision-making, variety selection and adoption

The study showed that in most of the respondent households, women were disadvantaged in terms of decision-making in the sense that if there was an adult man in the household, he had the last word about all main decisions. Our findings also reveal the subtlety of decision-making processes in that decision-making appears to be based on the combined variables of gender-and-age rather than on the actual work contribution and that in some households decision-making about variety adoption is shared between (mainly) older women and men, while in households where a woman is household head, she takes most of the decisions.

Paris et al. (2008) argue that who participates in decision-making about crop improvement affects both the resulting varieties because of the breeding priorities that are taken into account, and variety adoption because involvement in variety trials and evaluations might affect final adoption. Effort to involve all household decision-makers in PPB thus seems a good strategy to ensure that the portfolio of

PPB varieties reflects the breeding priorities of all members, and are evaluated by them, all.

Access to information and variety adoption at household level

The findings show that the women respondents had limited access to new information, particularly about available varieties, and that their information was mostly sourced in domestic and informal settings. Men, on the contrary, had access to both formal and informal information sources that were spread geographically more widely than the women's. The importance of farmers being informed about the varieties that are available, and their performance in their own context has been established in adoption studies (Bishaw and Turner 2008). By involving both women and men farmers in PPB, information about the availability and performance of improved varieties would enhance variety adoption in both female and male households.

Implications for gender-balanced PPB

Gender-sensitive analysis and identification of PPB beneficiaries

The literature shows a selection bias by participatory programmes in favour of 'knowledgeable farmers' (Johnson et al. 2004). The findings of this study, however, show that a strong pre-analytic gender bias existed in perceptions of what is valuable knowledge and who is considered knowledgeable. This raises the issue for PPB programmes of identifying 'whose knowledge counts' in farming households and villages. When expertise does not coincide with social power some forms of knowledge can be marginalised (McGuire, Manicad and Sperling 2003). By involving the 'actual doers' in agronomic management, identified through a gender-sensitive analysis of the division of labour on the farm, a PPB programme could benefit from the knowledge and expertise of all those who have a stake in crop improvement.

What does gender-balanced PPB contribute?

When analysed in the framework of the equity of agricultural development opportunity, a gender-balanced participation of farmers in PPB that targets crops for which men and women perform both separate and/or similar activities, seems a necessary strategy to avoid excluding one of the two social categories of stakeholders from the opportunity. This is spelled out in the UN Convention on the Elimination of Discrimination Against Women (CEDAW) (Article 14) (<http://www.un.org/womenwatch/daw/cedaw/text/econvention.htm#article14>).

The general principle seems clear but the practical implications merit further consideration. For instance, should the PPB barley programme collaborate with the

younger farm women whose involvement in agriculture is substantial but in barley seems very limited? Or should it look rather for instances such as the one case where barley is a major income for the Souran household, whose farming is in the hands of two women?. This case provides a sort of ‘proof of principle’; that involvement in PPB could provide also women farmers with an opportunity to access improved barley seed, in ways that requires little additional manual work, and could constitute a good source of income. This indication of the potential gains could be particularly relevant given that the respondent women seemed to have fewer opportunities than men to engage in non-agricultural paid work and mostly are working as on-farm unpaid labour.

Crop choice in PPB

We now turn to non-barley crops. The findings show that the respondent women are substantially more involved in cultivating crops other than barley. This raises the question whether the focus on barley of the PPB programme reflects the crop preferences of all farmers or whether better targeting for effectiveness and equity of development opportunity might imply an expansion of the PPB portfolio to other crops of interest to both women and men farmers. There is ample discussion in the literature about how crops selected for improvement by researchers represent a minority of the crops that are central in the livelihoods of the poorest farmers (Bellon 2006) and of women farmers in particular (Howard 2003). Expansion of the crop portfolio can be seen in addition as a measure to compensate in part for the existing inequitable control over farm assets and resources, notably land and water, by the respondent women. Meinzen-Dick et al. (2011) argue that without specific attention to redress asset inequalities, agricultural development interventions are likely to reinforce inequalities and might result in undermining poverty and equity goals. Conversely, by providing access to resources development interventions might be able to support the goals of livelihood security and empowerment (Meinzen-Dick et al. 2011). By involving women and by supplying them with relevant crop varieties the PPB programme at least would avoid further marginalisation of women from the benefits of crop improvement.

Kabeer draws a continuum from ‘gender blind’ projects that might reinforce gender-biases, to ‘gender sensitive’ ones that avoid reinforcing marginalisation, to ‘gender transformative’ projects that ensure that women meaningfully benefit from and are empowered by development opportunities (Kabeer 2010). Can the PPB programme at ICARDA move from gender-sensitive to gender-transformative by supporting women’s involvement in its activities? If yes, how? These issues are further discussed in the following chapters.

How to provide women with access to information

The findings of the study reported here show that the respondent women had limited access to new agricultural information and that the lack of access to such information and knowledge, and the women's limited experience outside the domestic sphere, was used by the men interviewed to justify the exclusion of women. It has been shown in other studies that access to new information on available varieties and agronomic management can enhance women's decision making over what crops and varieties are most appropriate to them (Paris et al. 2008). However, it is a question raised by this study whether and how the PPB programme at ICARDA could provide women with access to information about the new varieties and their performance (this question is further explored in Chapter 7).

The evidence presented in this chapter is that perceptions of 'who is a knowledgeable farmer' are gendered; this has implications for the equity of opportunity justification. Mosse argues that some participatory interventions "tend to emphasise formal knowledge and activities, and reinforce the invisibility of women's roles" (Mosse 1994, 21). Has male farmers' participation in PPB affected the perceptions of 'who is a knowledgeable farmer'? Could women's participation give visibility to women farmers as knowledge actors? These issues were pursued in a follow-up study, reported in Chapter 4.

What degree of farmers' diversity can PPB accommodate?

Finally, this study has revealed marked inter-household, intra-village and inter-village differences in the patterns of task allocation, decision making, roles and responsibilities among women, and this raises an additional practical question of considerable importance: how can a PPB programme satisfy such a degree of variation when selecting collaborating communities and farmers? Some aggregation and clustering of effort always will be necessary. In the PPB programme at ICARDA clustering of communities often is determined at the level of farming systems so that varieties developed in one village are likely to be appropriate to farmers in villages with similar agro-ecological conditions and agronomic practices. The analysis offered in this chapter suggests that the final clustering of farmer selection needs to be done at the community level and be based on gender criteria. By including both men and women farmers PPB could address two major but distinct categories of stakeholders. The benefits of adopting a gender-sensitive operationalization of PPB, however, in turn depends on the PPB researchers' ability to shape the PPB process in ways that facilitate the participation of both female and male farmers and to work with their different knowledge, preferences and needs.

Conclusions

This chapter has focused on the rationale for involving selected women farmers from three rural villages in Syria in a PPB programme based on consideration of technology effectiveness and equity of development opportunity. It presents an analysis of the roles of the respondent women in barley and other crop cultivation of their access to and ownership of land, water and seed, and their decision making in farming activities. It shows that gender-based perceptions of 'who is a knowledgeable farmer' and farmers' access to new information influence women's actual access to new seed opportunities. Based on the analysis a number of issues are raised:

- a. When to collaborate with both women and men in PPB? When these are involved in distinct or similar activities along the food chain?
- b. Should farmers participate in PPB only when already involved in PPB-relevant crops and activities? Or can PPB provide a means to expand farm women's access to new development opportunities? Or should a PPB programme adapt its focus crops to address the interests of the farmers it does otherwise not reach?
- c. Can participation in a PPB programme address gender-based inequalities in access to seed, information and decision-making?
- d. What degree of 'farmers' diversity' can a PPB programme accommodate?

These issues are discussed in greater depth in the following chapters.



Picture 1. Fieldwork in Ajaz



Picture 2. Farmer from Lahetha showing the handicraft she produces

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CHAPTER 4

Women's identity as farmers: A case study from ten households in Syria

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Abstract

This chapter presents the results of a study on women's roles and identity as farmers, as perceived by 17 women and 24 men in three Syrian villages, which was carried out between 2007 and 2009 as part of long-term, in-depth research in these villages in the context of a participatory plant breeding programme. The findings reveal that understanding who is considered a farmer, at household and community levels, is biased by gender norms. Women in the study villages play substantial roles in farming and are increasingly involved in agricultural management, but they are generally overlooked or under-valued as farmers by both men and women, at the household and community levels. Men typically are considered to be 'the farmers' and women to be only their helpers. However, the findings also reveal a more nuanced understanding of the contribution of women and men to farming as households pragmatically deal with their needs and possibilities in the actual conditions they encounter. The chapter presents some of the reasons behind this 'invisibility of women as farmers', as understood by the respondents, and discusses the implications for the participatory plant breeding programme.

Keywords

Gender, participatory plant breeding

Introduction

Incomes from small-scale agriculture in Syria are declining. Rural households find it increasingly difficult to rely solely on farming and off-farm employment constitutes an important source of income. Men are looking for off-farm work in cities or abroad, leaving women in charge of the agricultural work. As a consequence, more and more farmers are women (Abdelali-Martini et al. 2003).

Despite their substantial role in agronomic activities¹ women are not addressed by agricultural research and extension services (World Bank, FAO and IFAD 2009). Institutions working on rural livelihood enhancement target their policies and research outputs to male farmers only. The invisibility of women in agriculture has been shown to affect women's access to extension services and information, and their control over production processes and resources (World Bank, FAO and IFAD 2009). This impacts negatively on women's ability to perform their role as farmers and food providers, and on their decision-making in relation to agriculture. By overlooking the role of women in farming, development programmes can miss their target and reduce their effectiveness in enhancing food security or improving rural livelihoods (World Bank, FAO and IFAD 2009).

The participatory plant breeding programme (PPB) co-ordinated by the International Centre for Agricultural Research in the Dry Areas (ICARDA) in Syria forms the immediate context of this study. The ICARDA PPB programme started in Syria in 1996 to improve and disseminate barley varieties that better respond to farmers' household needs and market opportunities in the most marginal areas. Selecting the 'right' farmers to involve is a key procedural step if PPB is to develop varieties that are relevant at farm level under diverse socio-cultural and agro-ecological circumstances (Ceccarelli et al. 2000). However, at its inception in 1996 the PPB programme adopted a gender-neutral approach, i.e., the programme's activities were open to the participation of both female and male farmers but no gender lens was adopted in assessing farmers' needs and differences or in participant selection. In 2006 it was found that only men had become involved in the breeding activity although preliminary evidence indicated that women in the areas in which the programme was operating were in fact involved in farming activities relevant to PPB. A gender-sensitive study was thereby started to assess the reasons for the absence of women from the programme to that date. Sixteen women from three villages

¹ Agronomic activities comprise the creation, management and optimization of agricultural production to improve food production and to manage and use natural resources in a sustainable way.

involved in the programme were interviewed. One of the reasons they mentioned for not being involved in the programme was their assumption that PPB activities addressed male farmers only (see Chapter 3 for more details). A study on 'who is considered to be a farmer and recognised as a farmer' and of 'farm women's identity' was undertaken. The findings of this study are reported and discussed in this chapter.

Conceptual framework

We took as our starting point the weight of the evidence, from all countries, for the existence of a general perceptual discrepancy between women's actual contribution to agriculture and the image of agriculture as a male domain (summarized, for instance in Safilios-Rothschild 1985; World Bank, FAO and IFAD 2009). Farming typically is simply assumed by agricultural planners or service suppliers to be an enterprise controlled by men, where men are the farmers and women the 'farmer-wives' (Trauger 2004). Definitions of 'farm activity' usually are framed by male-related characteristics such as "productive, hard work with heavy, brute machines" (Brandth 2002, 188) or, at times, definitions of who is a farmer refer directly and solely to men (Swanson, Bentz and Sofranko 1998).

Since at least the 1980s, rural gender studies have challenged the assumption that agriculture is a predominantly male activity. Trauger, for example, defined on the basis of empirical research on farming in the USA a woman farmer as "a woman who is the primary contributor of labour and decision-making to a farm on a daily basis, or is the employer of individuals who assist with farm work" (Trauger 2004, 294). Researchers criticized agricultural research for development (reviewed, for instance, in Jiggins 1986) for overlooking what Brandth (2002) called "the composite social character of the family farm, and for treating it as a unit of common interests" (Brandth 2002, 181). While studies on women in agriculture, and in farming systems research, initially focused on documenting empirically the gender division of farm labour in order to analyse the distinct roles of women and men in farming by the early 1990s the focus had shifted, to include understanding the way 'identities' are constructed in farm realities and are affected by gender (Whatmore 1991).

Michael (1996), in his analysis of the processes involved in the construction of identity, interrogates the 'discursive practices' through which identity emerges. Analyses of discourse are premised on the construction of identity through the way people speak or write about identities. Discourses are heterogeneous and provide competing and contradictory ways of giving meaning to the world (Brandth 2002). They affect people's understanding of what individuals, and reified social categories such as 'women' are expected to do and how they are expected to behave. Howard

and Hollander (1997) analysed identity creation from the perspective of the stories people tell about themselves and others, in the light of theorizing about social exchange, social cognition and symbolic interaction. They suggest that identities result from the way “individuals in social situations manipulate the impressions they give to manage others’ perceptions of them” and maintain that individuals juggle multiple identities to “present particular selves to particular others for particular reasons” (Howard and Hollander 1997, 99). Murshed (2003) argues that it is through this process that individuals privilege some identities and marginalize or even negate certain other ones.

It appears that the overlapping of identity narratives by individuals in a specific historical time and location leads to the magnification of certain common identities that become ‘social truths’, to the expense of other identities that might not be recognized as appropriate and are marginalized (Murshed 2003). Thus, identities are neither fixed nor absolute; they can be manipulated for personal or social advantage and may be used to reinforce dominance and maintain hierarchy. Howard and Hollander refer to the “limited set of symbols [or meanings attached to people and behaviours] that may affirm stereotypical understandings of positions such as husbands, wives, students...” (Howard and Hollander 1997, 101). Foucault (1978) and Brandth (2002) also discuss the processes by which some discourses become hegemonic and other ones marginal as affected by power dynamics among social actors and by the complex and changing contexts in which discourses about identity arise.

Hegemonic discourses affect the capacity of individuals to assert identities that diverge from the stereotypical identities associated to the structural position they occupy. A disjuncture between individuals’ own sense of who they are and the identity assigned to them by others can result both in non-recognition or rejection by others of the self-chosen identity and in the production of alternative discourses that resist or challenge hegemonic discourses of identity. It might also result in ambiguous identities where various meanings coexist (Brandth 2002). Power struggles over assertions of identity and for ‘recognition’ by others in turn affect individuals’ ‘self-determination’. Self-determination is, in Sen’s words (1999), people’s capability of living the lives that they have reason to value. According to Santarius and Sachs (2007) ‘recognition’ in turn is the first step towards self-determination. ‘Recognition’ refers here to acknowledgement of any identity that individuals freely choose to take in society and it includes both self-recognition of inner ontological transformations - that leads to individuals’ choices of identity - and their public recognition by others.

Discourse analysis has provided a useful framework for much gender research because it allows researchers to move away from polarized discussion of gender identities as a matter of 'nature' and 'essence', and to take into account how gender-based power imbalances affect the identities of 'man' and 'woman', and how the meaning of 'masculine' and 'feminine' arises in any particular context. The framework opens up the space to understand how gender identities are affected by other determinants of inequity (e.g., ethnicity, appearance, age, social status, religion). Howard and Hollander define gender identities as "socially defined self-meanings one has as a female or male" (Howard and Hollander 1997, 97). Hoang and Yeoh (2011), and Howard and Hollander (1997) document how gender identities are enacted through everyday behaviour, are affected by peoples' beliefs about gender, are complex because defined in relation to other social systems of difference, and are malleable because subject to power negotiations, changing discourses and experienced realities of masculinity and femininity.

Hoang speaks of a discrepancy between "men's lived experiences of their own masculinities, which are necessarily multiple, and their lived expectations of masculinity, which are contained in a hegemonic normative model or set of ideas concerning what defines a man" (Hoang and Yeoh 2011, 734). Trauger (2004) studied public agricultural spaces in the USA that are largely dominated by men (such as equipment dealerships and local town halls) as sources of farmers' knowledge, legitimacy and affirmation and as sites where the recognition of men as 'farmers' and women as 'farmer-wives' is both produced and legitimized.

Trauger also analysed the subversive potential of women affirming their role as farmers: "when women assume the role of farmer they transgress the traditional gender roles, work cultures and ideologies that define the social narratives of farming" (Trauger 2004, 290). 'Self-presentation' is the public affirmation of chosen identities, Michael (1996) suggested and therefore, essential in asserting subversive identities. In a circular fashion, self-presentation in the farm context is affected by hegemonic and gendered discourses shaping the identity of 'a farmer'. This chapter reports an analysis of the self-presentation of 17 farm women and 24 farm men, and of the local understanding of 'who is a farmer'. The self-presented identities are shown to confront hegemonic discourses; some are recognised (e.g., as 'legitimate'), some are overlooked or discarded (e.g., as 'inappropriate') by others. The implications of the findings for the participatory plant breeding programme are then considered.

Methodology and methods

This study is based on qualitative analysis of empirical small-N data (Chapter 1). Qualitative analysis is used to trace the process behind a particular event.

The research findings have been analysed descriptively using ethnographic techniques (Attenborough 2006; Chambers 1983) and quantitatively using the software package Atlas.ti 6.0 (Development GmbH 1993).

The research was carried out principally by means of in-depth repeat interviews that took place in two stages between 2007-2008 and 2009. Each stage lasted between five and six months. The interviews were conducted with 17 women; 12 - the main respondents of this study - participated in both written exercises and discussions; five women participated only in the oral discussions. All the women interviewed belonged to ten respondent small-scale farming households, distributed across the three case study villages: Ajaz, Souran and Lahetha (Chapter 1).

These three villages were selected among the set of 24 villages involved in the PPB programme in 2006. The selected villages were thought to offer contrasting settings in terms of a continuum of existing 'household participation in PPB'. Farmers from Souran were involved in the PPB since 1996; farmers from Lahetha were involved in PPB since 2003; farmers from Ajaz expressed an interest in PPB in 2006 but for logistical reasons participation never started. Souran and Lahetha were chosen after the women in these two villages expressed their interest in joining the male farmers already participating in the ICARDA PPB programme. The long-term collaboration of the male villagers with the PPB programme and the interest of the women in joining it provided supposedly favourable conditions for the women farmers to get involved. Therefore, the villages represented an interesting ground to assess the reasons behind women's absence from the PPB even in an (apparently) enabling environment. The village of Ajaz was chosen as a third village after the men expressed their interest in the programme but collaboration had not yet started.

A number of Participatory Rural Appraisal techniques (PRA) were used to assess the family composition and structure (Guijt and Shah 2006). The question of participation in PPB was discussed in semi-structured interviews. Intra-household agronomic management was assessed by means of daily and seasonal calendars (Chambers 1983). Free-listing (Gatewood 1984) was used to elicit statements about 'gender and farming' in all three villages. Consensus analysis was performed manually on the extracted statements. These methods were complemented by women-only open discussions and participant observation.

In addition a series of interviews were conducted during an evaluation of an International Farmers' Conference organised by ICARDA in 2008 (Chapter 5). This event generated additional insights on the gender-differentiated agronomic knowledge of farmers, their crop priorities and the perceived roles of women in agriculture (Galiè et al. 2009).

Further, a male MA student carried out seven semi-structured interviews with 24 men in the same three villages in 2009, to explore men's opinion about the intra-household division of agronomic labour and male perceptions of 'who is a farmer'.

The findings reported here deal particularly with the results of the free-listing exercise, the open discussion days, the interviews to assess the impact of the Farmers' Conference, and the semi-structured interviews that focused on the 'perceptions of who is a farmer'.

Data analysis

All interviews were written up, digitally transcribed and verified by one female assistant and the respondents. The software package Atlas.ti 6.0 (Development GmbH 1993) was used to organize, code and disaggregate the textual material for qualitative and quantitative analysis.

During the free-listing exercise conducted in 2009, all the respondent women of the three villages were asked to list the elements that, according to them, were essential to define a farmer. The elements mentioned during the free-listing exercise and their local meaning were listed and ranked according to their frequency. Consensus analysis (Caulkins and Hyatt 1999) was then performed manually on the extracted statements that were grouped into seven main domains (Halkier 2011): i. gender roles (to include all statements that associated the identity 'farmer' to the 'roles' that women or men are 'supposed' to take in society); ii. land ownership (statements connecting the identity of farmers to the ownership of land); iii. decision-making (associations between farmers and decision-makers at farmer level); iv. important work (statements that farmers are those who do 'important work'); v. knowledge (assertions relating farmers to those who have knowledge about farming); vi. family origin (statements asserting that those whose family of origin was of farmers were in turn considered farmers); vii. interest in agriculture (statements arguing that mostly men were considered farmers because women were not interested in agriculture).

Findings

An analysis of the intra-household division of agronomic labour revealed that all the 17 women interviewed about the 'identity as farmers' were involved in agronomic

management. In Souran and Ajaz the majority of women and only a small percentage of the men respondents were found to be involved in agriculture full time. In Lahetha agriculture was mainly a part-time activity and men were more likely than women to travel abroad and be employed in non-farm activities; one widow was involved in agriculture full-time (Chapter 3).

Perceptions of who is a farmer

None of the women respondents thought that being a farmer was associated with negative perceptions and three women explicitly said that an identity as a farmer was positive in their village. Of the 17 women respondents, in Ajaz and Souran two older women - one from Ajaz and one from Souran - defined both themselves and their husbands as farmers; three young respondents had difficulty describing their own occupation; five considered themselves to be 'helpers' in agriculture; one thought of herself as a farmer; another defined herself mainly as a teacher - although this was a recent and short-term assignment - but added that she also worked in agriculture. In Lahetha, only a widow who worked full time in agriculture defined herself as a farmer. Two women said their husbands were farmers and one of them added that she worked with her husband in the fields. Two widows considered themselves to be 'involved in agriculture'. In all villages the younger and unmarried women generally defined their fathers - whether employed in non-farm activities or retired - as farmers whereas their mothers were generally defined as housewives. Box 1 shows three cases where female respondents experienced differently the gender identities assigned to women in their communities.

All 24 men in the three villages claimed that they were 'the farmers' (it is noteworthy that the stress that in English is rendered by the definite article, was used consistently in the responses). When asked about the role of women in agriculture, all the men in Souran and Ajaz agreed that women worked with them by taking care of all the manual work. They generally added that mechanization substantially reduced the women's workload because machines are operated by men only. In Lahetha, some farmers argued that women increasingly were involved in non-agricultural activities, and therefore no longer contributed to agriculture (as much as they did formerly); however, none of them viewed the increasing engagement of males in non-agricultural activities as a sign of men's decreasing contribution to agriculture. One male respondent, for instance, argued that women did not work in agriculture because in his shop - that sold fertilizers and seed to farmers - the customers were mainly women. In his opinion this demonstrated that the women had time to shop while the men were working in the fields. Interestingly, this same argument was used to justify the contrasting gender identity of 'who shops' in Ajaz.

Here, a common opinion of both male and female farmers was that only men could be considered farmers because they are the ones in charge of buying agricultural products.

Three women (one from Souran and two from Ajaz) thought it was simply a matter of tradition: if a family in the past generations had been farmers, the men today would say they were the farmers even if they held different jobs. Three women from Ajaz thought it was more a matter of personal preference, in their village, women did not like being called farmers because they did not like to do agricultural work. They reasoned that this was because the work was physically heavy, did not always bring monetary reward and often was not recognized by the other household members as work. Two women from Ajaz and one from Souran explained that they were themselves in charge of all domestic duties, in addition to their work in the fields but, they added, their husbands and brothers did not acknowledge the women's agricultural work and thus asked the women also to perform heavy domestic tasks when the women returned from the fields.

Box 1: Gender identities as perceived by three respondent women and their communities

A widow from Lahetha identified two key elements of a 'respectable woman': staying in the house and wearing the veil. Unfortunately, she argued, she needed to work in her shop and fields to provide for her family. In addition, she could not wear the veil since the interaction with men and women customers was incompatible with the reserved behaviour that wearing the veil entails. When a new stipend contributed to the household economy she moved her shop into her house (Lahetha, 19.02.2008).

An unmarried woman in Ajaz, who defined herself as a farmer, had taken on the household agricultural work and management, including the more public roles that are usually reserved for the men. This exception was tolerated in the village because her father and mother were too old to work, and her brother lived abroad. However, the other women in the village believed her chances of getting married were small because men do not like to marry strong and independent women (Ajaz, 26.02.2009).

In some households in the village of Ajaz, the women who were cultivating the family field were given to manage independently a smaller field as a payment for their work. The revenues generated from this smaller field belonged to the women who could dispose of them autonomously.

Perceptions of what a farmer is

When asked to provide a definition of 'what a farmer is' six women related the notion of 'a farmer' primarily to what 'men' do. They referred to the roles that men and women are assigned to in (and by) society to explain this association. Three coupled the notions of respect and gender roles; they thought it would be 'disrespectful' towards the men if a woman said that she was a farmer since farming is 'a job for men'. An old lady on the respondent panel from Souran further extended the referents of gender and respect, to associate these with 'shame': she said that women had had to take over men's work when men began to look for alternative employment; however, it would be 'shameful' for the women to say that they had taken on their husband's role. We glimpse here some of the social mechanisms at work in discourse that serve to maintain 'customary' gender identities.

One young woman referred to a different social mechanism, that of religious authority, in maintaining that the Koran stated that it was the role of men to be the providers for the family, and that this was a role women should not have. Two women referred to yet another mechanism, based on the following normative causality: they thought that 'modesty' was what determined the proper behaviour of women, that modesty meant that only men appeared in the public domain, and thus women should not figure as farmers but should confine themselves to the private social spaces allowed to an identity as housewives only. Another woman embedded gender identities in agriculture in a specific legal document, the marriage contract: she thought that marriage contracts in general specify that women are traditionally not expected to do agricultural work - agricultural work is men's work and women do this work only if they need to (and they prefer not to mention it if they do have to do such work). Another old lady, from Souran, referred explicitly to men's perceptions and power in society as the main determinants of women's identities. She said: "Men have the control and they should decide, and they don't like it when women work, acquire knowledge and control. Women can only help. This is the way they [the men] think, that they are the ones providing for the family" (Female farmer, Souran, 17.2.2009).

Five women referred to a material mechanism of power and control: they identified 'land ownership' as the key element in shaping agricultural identities. According to them, the men can say they are farmers because they own the land that they cultivate, and this is not the case for women. Five women thought that the power of 'making decisions' and 'responsibility for household agriculture' were key mechanisms in defining a farmer. Five women referred to a hierarchy of power in relation to work: they thought that men were considered farmers because they 'did

the most important jobs' such as shopping, selling, using machines and watering the crops. One young woman from Souran added the following to this point: women did unimportant, i.e., manual, jobs only. An unmarried woman from Ajaz related gender identities to a household's power to hire labour: she maintained that women only helped in the fields by doing light agricultural work since for 'serious' work they hired day labourers. At the same time, she felt she also was doing the easy tasks when working as a day labourer.

'Knowledge' emerged in a special position in the interviews and subsequent discourse analysis. According to four women in the respondent panel 'knowledge' was the most important defining characteristic that conferred status as a farmer. One young woman insisted that 'a farmer' is the one who is knowledgeable about agriculture and, she added, men generally were more knowledgeable than women, particularly in agriculture. Two of the four women argued, to the contrary, that women knew more about agriculture than men because they did the actual work and had practical experience. One of them added that "however, the village sees it the other way round" (Female farmer, Ajaz, 26.02.2010). The fourth respondent, the older woman from Souran, emphasized that men do not like women to have knowledge and therefore, on the one hand discourage them from accessing education and, on the other, overlook the knowledge they have. She demonstrated the uneasiness of showing her knowledge in front of her men folk when interviewed in the presence of her sons: whereas on many occasions she had declared that she herself was the most knowledgeable person in agriculture in the household, in the presence of her sons, she would turn all questions asked by the researcher towards them, arguing that they were the most knowledgeable in the family.

These views are important for development practitioners, and for any of the women interested in developing their agricultural roles, because they suggest how identities might shift if ways could be found to increase and support women's agricultural knowledge.

Men's perceptions

Notwithstanding the stereotypical normative assumption that 'men farm' and 'women only help', this study found that the male respondents held diverse opinions about the involvement of women in agriculture. During a men-only interview (conducted by a man, in Lahetha) the men's varying opinions about the involvement of women in agriculture led to a lively discussion. The husbands of the women interested in PPB argued that women indeed played a role in agriculture and in the modernization of agriculture. On the other hand, the men who already were

participating in PPB maintained that the village women were not working in agriculture and were not interested in this work. The discussion appeared to reflect either that the PPB programme had involved in its activities all the women who worked in agriculture in the village, or a competition for accessing the 'resource' of PPB - in which 'women's interest in agriculture' becomes the means for opening up access to the PPB resource also to other men. When asked about this episode, the respondent women argued that most women in the village were involved in agriculture in ways similar to them. Also, on a number of occasions in 2009 and 2010 the respondent women reiterated that some of the participating men thought that the women were competing in their access to the ICARDA seed as trial hosts or evaluators.

Two other men, both with professional jobs related to advisory services, linked women's involvement in farming to irrigated agriculture. A male community facilitator from ICARDA and a male extension officer from Lahetha stressed that women's contribution to agriculture was substantial in irrigated areas - because of the manual labour needed for irrigated crops (e.g., vegetables and cotton) - but was less in rainfed areas where barley is the main crop (together with wheat), which is not labour intensive. One of them supported the idea that advisory services should also be provided for women in the irrigated areas such as Ajaz and Souran.

A male farmer from Lahetha described gender-division of labour in the village by relating this to the changing inter-play of opportunities for women, and for the small-scale farm sector, as follows:

My opinion is that the women who don't have a husband work in the field by themselves. But only very few women work in the field. Nowadays women don't do much. There are two reasons why women don't work in agriculture. Firstly, most of the women are otherwise employed, in the government or educational system for example. Secondly, agricultural work in this region has become very difficult. There is no benefit, no money. That is why women aren't interested. Only very few women work in the field (Male farmer, Lahetha, 10.02.09).

Although he came to a somewhat different judgement, a male farmer from Ajaz also described women's contribution to agriculture in terms of the changing interplay of male and female opportunities:

We (men and women) work hand by hand. They (women) follow our steps. [...] The workload has decreased in the last few years. There is less rain and

therefore less work. Some young men are moving to the city. The wife and maybe the son stay behind and are responsible for the farm (Male farmer, Ajaz, 28.01.2009).

During the same interview, however, another male farmer commented that he was not satisfied that women should contribute at all to agriculture since “women should rather work in the house. Normally, they go to the field after they do the work in the household” (Male farmer, Ajaz, 28.01.2009).

Further insights

The evaluation of the International Farmers' Conference (Galiè et al. 2009) focused on farmers' knowledge and on the 'conference model' as a means for opening up the space for women to show their experience, knowledge and skills in agriculture. The evaluation assessed (amongst other impacts) changes in the participants' perceptions about women's roles in agriculture over the course of the conference. Half of the respondents (of which 12 female and 14 male were conference participants, and three women and 22 men were non-participants) interviewed at the end of the conference claimed that they had changed their opinion about women's role in agriculture. Some (two men and one woman participating in the conference) maintained that they had come to regard women as equal partners; others (two men participating in the conference and one woman non-participant) that they had realized the important role of women in agriculture (Galiè et al. 2009). Three of the participating women farmers argued that their communities had been surprised by ICARDA's commitment to supporting the participation of women in the conference and had drawn the conclusion that 'they must be good farmers'. A woman who did not participate in the conference but heard about it afterwards maintained “I did know that women work in agriculture and have experience but only after hearing that women farmers took part actively in the International Farmers' Conference did I realize how important this is” (Female farmer, Souran, 17.02.2009).

Analysis and discussion

The consensus analysis performed manually to group statements about 'what is a farmer' revealed strong normative agreement, irrespective of the gender of the respondent, across all seven domains studied and all three villages that 'men are the farmers' and 'farming is man's work'. These findings are in line with numerous studies that have analysed the invisibility of women as farmers worldwide (World Bank, FAO and IFAD 2009). However, the consensus analysis is contradicted by the more nuanced appreciation recorded in our study's findings on men's and women's perceptions. The findings show that gender relationships and women's identities are

not rigid; they are susceptible to change in daily life, based on household needs and circumstances, idealized gender roles as well as social status considerations (see also Box 1). Considerable deviance from the norms of what a woman is 'ideally supposed to do and be' was revealed by the respondents, as households dealt pragmatically with their needs and possibilities in the actual conditions they encountered.

This suggests that there is a strong dissonance between men's and women's actual experience of day-to-day life in farming households and societal norms. Identities are claimed and expressed differently according to the lived and experienced life world that is under review. If so, then the space for change in women's roles and status as farmers is both limited (by societal norms) and potentially subject to change (by the interplay of socio-economic changes in the small farm sector and larger society). 'Knowledge' appears in this dynamic as a mechanism that potentially has the power to influence both the normative and the experiential life worlds that shape men's and women's identities.

The findings suggest that the same 'fact' - such as, 'both women and men buy agricultural inputs' - could be interpreted as a demonstration of women's lack of involvement in agriculture, i.e., to support normative expectations of men's and women's 'agricultural identities'. We seem to have here an instance of what Fairclough describes as follows: "discursive practices are ideologically invested insofar as they incorporate signification that contributes to sustaining or restructuring power relations" (Fairclough 1992, 91). However, the Atlas.ti analysis of the discourses recorded in the interviews also suggests recognition of and acceptance by both men and women of deviance when 'appropriately' performed, i.e., with due respect to the consensus norms (see also Box 1).

The findings further indicate that age, status and power in the household affected the ability of women to 'be deviant' in their assertions of identity and occupation. It were the three older women, and the female heads of households who explicitly defined themselves as farmers. Younger women preferred to present their identities as conforming to normative expectations - by for example, underplaying their contribution to family farming - possibly in order not to jeopardize their status, marriage prospects, and future in the community. The transgression of norms by asserting identities that do not conform to hegemonic discourses of 'woman' and the 'feminine', this study suggests, brings the risk of social marginalization. This was the case, for instance, of the unmarried woman from Ajaz (who was *de facto* head of the household) who publicly performed traditionally male activities and asserted her role as a farmer and, as a consequence, was considered by the village to have become

'unsuitable' for marriage (Box 1). Brandth similarly reports that in the literature on gender in family farming in Europe and elsewhere women were reported to "have severe difficulties in describing their roles and identifying their occupation" (Brandth 2002, 184), and gives comparable reasons why this is so, i.e., if women's position in the farm household is tied to their marital status and they do not have direct claims to ownership of the farm, or if their work is not publicly recognized as awarding income and status.

We turn now to the consideration of how a PPB programme might address and, most importantly, involve women who might wish to develop their agricultural roles and claim status as farmers when this role is publicly underplayed. The analysis suggests that the PPB programme would have to base its operations not only on an analysis of the actual gender division of labour in any locality (Paris et al. 2008) but also on careful and systematic observation in the field, and on what women themselves say about their interest and roles in farming. The programme would then have to find practical ways to organize its work to reflect the fact that not all women would have such an interest, and be prepared to find ways that would support women's 'deviance' (by participating) rather than bringing upon them social retribution. Our study suggests that this would not be an easy task, with even the first round of analysis requiring time and sensitivity in the performance. It also suggests, however, that Padavic and Butterfield's conclusion, that "as long as rigid prescriptions for gendered behaviour are inscribed in institutions [...] members of excluded groups will remain in the identity limbo" (Padavic and Butterfield 2011, 193), will apply to PPB researchers too, unless they take pro-active initiatives to change their own default behaviours.

The PPB programme might also consider affecting dominant perceptions and norms by addressing the 'knowledge issue' more explicitly. Our study indicates that by contributing to show women's experience and knowledge, PPB can positively affect the perceptions of women as farmers. It also indicates that by positioning PPB in terms of its contribution to experience and information access - rather than 'education' that is considered unsuitable in Syria for women above 12 - some of the challenges to women's participation might be lessened. This suggestion in turn raises the issue of whether 'identity definition' is in fact the core problem. Would broader acceptance of the identity of women as farmers imply substantial changes in other aspects of women's lives, and/or their capabilities? Michael (1996) holds that when individuals structure their identity discourses, they seek to satisfy the exigencies of their immediate situation. In this frame, it would be fascinating - and with large practical consequences - to study whether continued denial of women as farmers

would become a symptom of a factual transgression by women of a persistent norm. Murshed argues that “ostentation of identity works as a device in the theatre of power in multiple social locations where individuals transact” (Murshed 2003, 402). That is, change in the identity of women as farmers would need to be coupled to wider roles for women as farmers in social spaces currently dominated by men. Murshed’s emphasis on the transactional nature of identity, and the assertion of identity, suggests that no absolute meaning could be assigned to the concept of women farmers, that applies to all contexts, at all times. The protean nature of local discourses of identities might be the reason behind Brandth’s suggestion that: “farm women’s strained relationship to gender equality and feminism has continued to puzzle feminist researchers” (Brandth 2002, 186).

Conclusions

This chapter addresses the issue of women’s recognition as farmers, based on an in-depth study in three villages in Syria and an International Farmers’ Conference. It presents evidence that despite the women’s increasing involvement in agricultural work and management, their role as farmers is underplayed or denied, and that various social determinants affect the ability and readiness of women themselves to assert an identity as farmers. The analysis reveals dissonance between dominant, normative discourses that identify men as farmers and a more nuanced, situated appreciation of and respect for the actual work that men and women do as rural society is caught up in larger socio-economic processes of change. The chapter concludes by suggesting that a more explicit positioning of PPB activity in terms of its contribution to information access and experience might assist those women who do want to develop their agricultural roles, to do so in ways that might allow them to transact their participation in the new opportunity in ways that do not explicitly transgress dominant norms.



Picture 1. Semi-structured interviews with male farmers in Ajaz



Picture 2. Women farmers from Ajaz working as daily labourers off-farm

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CHAPTER 5

Evaluating knowledge sharing in research: the International Farmers' Conference organized at ICARDA

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Abstract

The objective of this chapter is to describe the process and the results of the evaluation of the knowledge sharing (KS) during and after an International Farmers' Conference organized at the International Centre for Agricultural Research in the Dry Areas (ICARDA) and involving over 50 farmers (14 women and 36 men) and researchers (five women and seven men) from Algeria, Canada, Egypt, Eritrea, France, Iran, Italy, Jordan, and Syria. Storytelling was chosen in consultation with the participants, who set the agenda of the topics to be discussed, as the main framework to exchange farmers' knowledge. The evaluation was based on the anecdotal feedback from the participants gathered during the conference, shortly after the conference, and about a year later and on a questionnaire distributed to 64 non-participating farmers (seven women and 57 men) to evaluate the diffusion of the knowledge shared at the conference and its effect on farmers' practices. The narratives that were collected in the evaluation were grouped into categories that illustrate several dimensions of impact such as: acquired knowledge and practices, value added for participants, learning and dissemination of knowledge, network sustainability, change in perception of gender roles, impact on research and effectiveness of KS tools approach. The main results from the survey including participants and non-participants were that 57% of participants (respondents) changed their agricultural practices, all respondents told stories about the conference to others; 71% changed their mind about women's knowledge and role in agriculture; and over three quarters stayed in touch with one or more participants. While storytelling proved an effective means to facilitate knowledge sharing during and after the conference, documenting local knowledge remains a challenge as important exchanges might occur outside the formal presentations.

Keywords

Participatory plant breeding, farmers' knowledge

Introduction

Why an International Farmers' Conference

Breeding improved varieties of crops is one of the main tools to alleviate poverty in rural areas and increase food security. However, there is little adoption of improved varieties by poor farmers in marginal areas. This is partly due to a gap between the plant attributes that formally trained plant breeders breed for and those preferred by farmers practicing small-scale, low-input agriculture. One way to raise the adoption rates of research outputs such as improved varieties is communicating and exchanging knowledge more effectively between scientists and farmers.

Participatory plant breeding (PPB) addresses this problem by including farmers in the research process and building on their knowledge, preferences and needs (Ceccarelli and Grando 2007). The success of the approach is demonstrated by the rapid development of new cultivars which are being adopted by farmers throughout the developing world. However, the institutionalization of PPB is relatively slow despite its proven efficacy. One of the reasons is the lack of cross-fertilisation of ideas among the stakeholders involved in PPB, which along with plant breeders and farmers include social scientists and biodiversity conservationists. This lack of exchange has also prevented each building on the achievements of the others.

The Farmers' Conference that took place in Syria in May 2008 addressed these challenges by providing a space for over fifty farmers and researchers from Algeria, Canada, Egypt, Eritrea, France, Iran, Italy, Jordan, and Syria, to share their agricultural knowledge. The conference was one of six pilot projects of the Consultative Group for International Agricultural Research (CGIAR) ICT-KM programme on knowledge sharing in research¹. It brought to the attention of the wider scientific community the potential value of farmers' knowledge for agricultural research in general and plant breeding in particular. The conference also built alliances among farmers' communities and between these communities and researchers to bring diverse levels of expertise and knowledge together to create platforms for dialogue and decision-making that ensure viability, ownership and sustainability of agricultural research outputs. Discussing the issues most important to farmers, and eliciting their tacit and gender-differentiated knowledge on crop management were among the conference objectives.

¹ The Knowledge Sharing in Research (KSiR) Project aims to help improve the effectiveness and impact of CGIAR research through providing options and lessons around good practices to support enhanced collaboration, learning, and delivery of research results.

The challenge was to provide an environment conducive for knowledge sharing while using innovative and effective tools to facilitate communication across countries, cultures, genders and experiences. Knowledge Sharing (KS) tools and approaches were used to enhance cooperation, facilitate access to and combine multiple sources of knowledge.

After consulting with the participants, storytelling was chosen as the main framework to exchange farmers' knowledge. Storytelling was thought to best facilitate the sharing of knowledge both in terms of format and content because it reflects a format close to the way farmers usually share their knowledge, allowing the use of informal language that suits also the illiterate. At the same time, it allowed discussion of topics that might otherwise be considered too trivial for a conference.

The KS tools selected for the conference included participatory agenda setting, a Food & Seed Fair and network mapping. Both male and female farmers set the conference agenda by deciding what issues to discuss. These included old cultivation methods, mechanisms of coping with drought, the role of women in agriculture and agronomic management. The farmers contributed stories, but also songs and proverbs. Their contributions were documented on a website², which features also videos and transcripts, pictures and other material.

Background to evaluation

The evaluation was to answer two main questions: how can we facilitate knowledge sharing during a conference and what type of social interaction best contributes to individual learning? (Blackmore 2007). This evaluation is a utilization-focused³ (Patton 2008) participatory evaluation that understands the conference as a complex activity system⁴ (Williams and Imam 2007) and aims to assess stakeholder learning to evaluate the sustainability of the newly created network, to appraise the effectiveness of KS tools, and to reflect on what worked and what did not in the conference and the reasons for success and for failure (Horton and Mackay 2003).

² <http://www.icarda.org/farmersconference/>

³ A utilization focused evaluative framework interprets relationships among multiple variables, values and system dynamics, integrates qualitative and quantitative data, and watches out for emergent phenomena.

⁴ By refusing to simplistically break down complexity to analyse its component parts in isolation, system concept evaluations value the dynamic relationship between the components and appreciate the importance of multiple understandings and of challenging boundary judgments of any situation (Williams and Imam 2007).

The evaluation draws mainly on the anecdotal feedback from the participants gathered during the conference, shortly after the conference and about a year later. It also utilizes the first, mid-term and final project reports where we adopted the Participatory Impact Pathway Analysis (PIPA)⁵ approach to evaluate, ex-ante, the intervention logic and, ex-post, its performance. A simple social network analysis was conducted to illustrate visually the evolution of relationships among participants.

Given the complex learning context of the conference, preference was given to plausible outcomes rather than to proof of changes attributable to the conference (EIARD 2003). The methodology utilised focused on demonstrating contribution through documenting behaviour and practice change, and showed associations between research outputs and impact (EIARD 2003).

A group of 64 non-participating farmers was asked to answer a questionnaire aimed to evaluate the diffusion of the knowledge shared at the conference and its effect on farmers' practices. This control group also helped the evaluators identify the plausible outcomes of the conference.

The narratives that were collected in the evaluation were grouped into categories that illustrate several dimensions of impact such as: acquired knowledge and practices, value added for participants, learning and dissemination of knowledge, network sustainability, change in perception of gender roles, impact on research and effectiveness of KS tools approach.

The final focus of the evaluation was on the appropriateness of KS tools and methods to best achieve the project goals of knowledge eliciting, sharing, and documenting, and also of network creation among farmers and researcher.

The findings of the evaluation were used to prepare a final evaluation report and were included in a booklet (Galiè et al. 2009) with the best stories told during the conference.

Findings

A survey administered about one year after the conference gathered feedback from both conference participants and non-participants (see Fig. 1). Thirty-five farmers from five countries responded, of which 12 were female. Their answers were parsed into meaningful categories illustrating four outcomes of the Conference as perceived by the responding farmers: practice change, knowledge spread, network sustainability, and gender awareness. This sample was checked with a control group

⁵ Developed by Borou Douthwait for the CGIAR.

of 64 non-participants of which about half said they had heard about and were told stories from the conference. For a detailed breakdown of the results see The Appendix.

In the following section these results are broken down into more detail, illustrating what practices were changed, how stories were told and to whom, how the network evolved over time and what changes in gender awareness occurred.

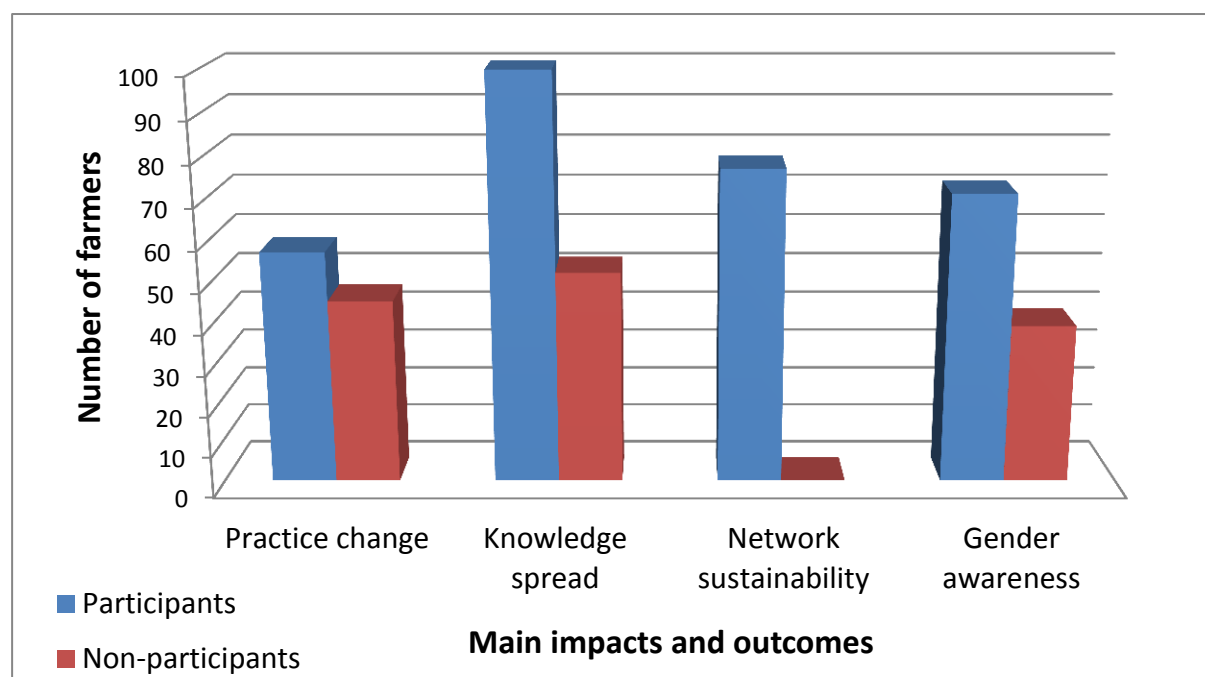


Figure 1. Main impacts and outcomes of the Conference as perceived by the participants and non-participants

Source: Survey with conference participants and non-participants; 2009

Practice change

Of the 35 participating farmers (12 women and 23 men) who responded to the survey, 20 (four women and 16 men) changed one or more of their agricultural practices. Nine participants (three women and six men) planted a new variety. Three male participants changed their ploughing depth, or lowered the seed rate, three (two women and one man) changed the way they store seeds. Two men changed their cropping pattern (Table 1).

Interestingly, in the control group five farmers changed ploughing depth and the cropping pattern they use. All of the non-participants who reported changing their work practice also reported having heard of the conference and attributed the change to the stories they had been told. Only four farmers (one woman and three men) planted new varieties, however.

Table 1. Number of farmers who changed various agricultural practices as a consequence of their participation in the Conference			
Practice	Participants	Non-participants	Overall
Changed planting date	1F	1M	2
Changed soil preparation	1M		1
Grafted water melons	3F		3
Used thyme against nematodes	4F		4
Used fertilizer	1F	3M	4
Used irrigation	2M	1M	3
Lowered seed rate	3M	3M	6
Changed seed storage	2F, 1M	1F	4
Planted new variety	6M, 3F	3M, 1F	13
Changed ploughing depth	3M	5M	8
Changed cropping pattern	2M	4M, 1F	7
Cleaned seeds before planting	1M		1
Selects varieties differently	1M	3M	4
Used pesticides		2M	2
Changed harvesting method		4M, 1F	5
Follows 'modern' techniques		8M	8

Source: Survey with conference participants; 2009

M indicates men; F indicates women

As a woman farmer stated during the group interviews:

The conference was very useful since we got good information. I learnt about new varieties of barley that I did not know before. By talking and discussing among farmers I learnt about new ways of planting, the right use of fertilizer, how to choose a good seed and good practices for storing seed (Ruqeya Ibrahim, Syrian farmer).

In the words of a non-participant:

After my wife came back from the Farmers' Conference we tried our best to incorporate what she had learnt but it is not harvesting season yet and I can't give you concrete examples of results (Abu Talal, farmer from Lahetha, Syria).

A farmer from Egypt said about his own learning:

I have changed some ideas about seeds through the field trip to Souran. As a result, this season I and my family cleaned the seeds before planting (Idriss, farmer from Egypt).

Added value

When asked how the conference was useful to them farmers mainly cited meeting people (19: nine women and ten men), particularly farmers from other countries, and learning something new (18: six women and 12 men). Three (one woman and two men) simply said it was good, two (one woman and one man) mentioned personal growth, two women said they got seeds of a new barley variety and one woman said she can work more independently now (Fig. 2). A farmer who did not take part in the event but heard about it mentioned that the Farmers' Conference demonstrated the commitment of the International Centre for Agricultural Research in the Dry Areas (ICARDA) to working with farmers.

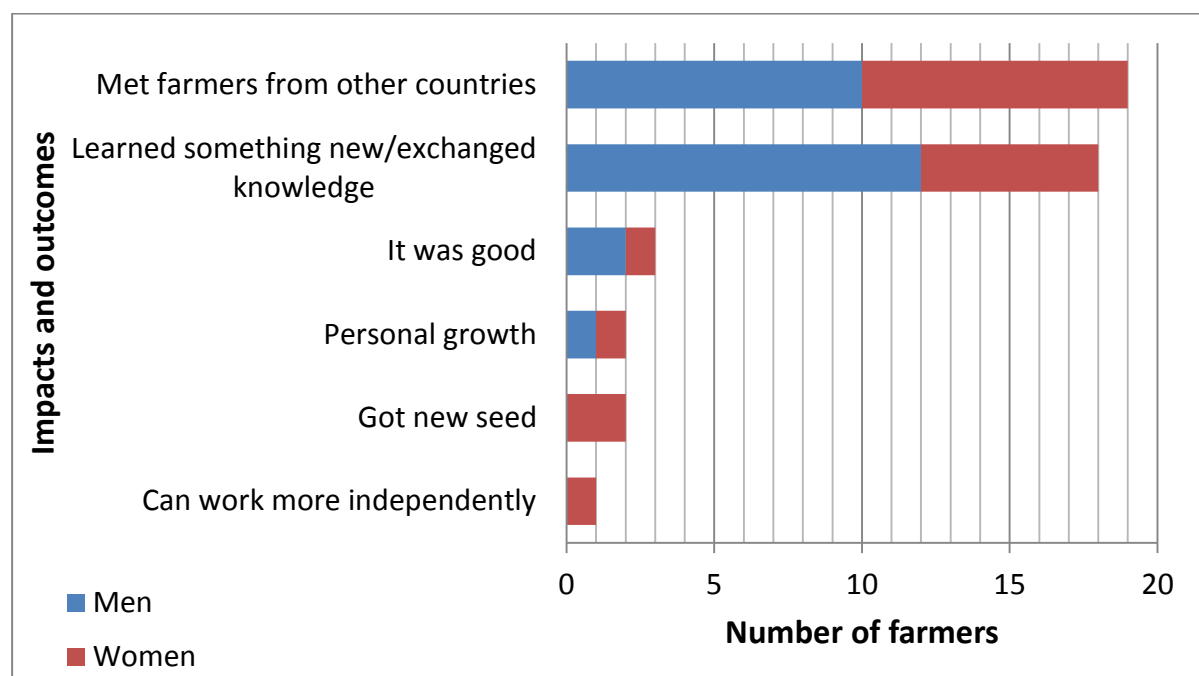


Figure 2. Additional impacts and outcomes of the Conference as identified by the participating farmers

Source: Survey with conference participants; 2009

The participating researchers also underscored the importance for farmers to meet others and being exposed to new information. The nine researchers interviewed for this survey listed the following benefits they saw for farmers (in brackets the number of researchers who raised the issue):

- Exchange ideas and experiences with farmers from different countries (nine)
- More information, learnt something new, access to new knowledge (e.g., saw new seeds and plants) (four)
- More awareness about project, get to know ICARDA (two)
- Recognition, self-confidence, empowerment (two)
- Revaluing old stories, bringing back lost traditional knowledge (one)

Empowerment as value-added

The empowering effects of the conference for the farmers were testified to by several participants, mostly women, who stated that they gained confidence to speak in public, interact with other farmers and trust their own agricultural knowledge and skills. An Algerian male researcher said that the process of storytelling was very comfortable and empowering for the farmers. This was echoed by a visiting Italian male researcher who said that through the conference farmers could have a recognition of their innovation capacity and thus a considerable empowerment by the international research community.

A highlight of the conference was the feeling that others valued what I had to say, which motivates me to want to work more to improve my farming (Rugeia, Ibrahim, Syrian farmer).

Spreading stories

The conference organizers in consultation with the participating farmers chose storytelling as the overarching framework for the conference because it was deemed similar to how farmers share knowledge with their peers. All participants retold the stories after the conference to others. Most shared them in their immediate surroundings to farmers in the village, family and friends; some, mostly women, told them to farmers in neighbouring villages in their area; and few (men) told the stories to extension workers, National Agricultural Research Systems (NARS) or farmers unions (Table 2).

I told the stories from the conference to the director of the extension office in Shahba and all extension colleagues. I made an official report during the monthly meeting of all the extension staff and I also told the stories in their own

offices. Moreover, I told the stories at the annual meeting of the farmers union in Lahetha (Sami Jaber, extension worker, Lahetha, Syria).

To whom the stories were told	Participants	Non-participants	Overall
Everybody	6F	0	6
In village / neighbouring farmers	19M, 8F	23M, 2F	52
In other villages / farmers in the area	9M, 2F	3M	14
Extension workers	4M	1M	5
Researchers (NARS)	1M	1M	2
Farmers Union	3M	0	3
Family	8M, 3F	7M	18
Friends	2M	5M	7
Colleagues	0	1M	1

Source: Survey with conference participants and non-participants; 2009

M indicates men; F indicates women

Farmers shared the knowledge almost exclusively by retelling the stories. Very few showed the Conference website to others, either online or using a CD with an offline version the organizers had distributed to some. Remarkably, one Algerian farmer went on air to tell the stories when he was invited by a local radio station (Table 3).

The lack of available ICT infrastructure for farmers clearly shows here. Nobody distributed the cell-phone videos available on the website, although an earlier access to technology survey found that over half of the participants owned mobile phones that could play videos. On various previous occasions the organising team saw farmers make use of cell phones to record and share videos, even in a conference setting.

I told the stories I heard at the conference to members of the family, other farmers and labourers and also on the local radio CIRTA fm, when I was interviewed about the situation of agriculture this year (Mr Aggoune, Algeria).

Means used to share the stories	Participants	Non-participants	Overall
Story	22M, 13F	28M, 4F	67
Cell phone video			
Conference website online	2F, 1M	1M	4
Pictures	3F	1M	4
Participants' booklet			
Crops in own field	1M		1
Conference website CD	4M		4
Radio	1M		1

Source: Survey with conference participants and non-participants; 2009

M indicates men; F indicates women

Network sustainability

The relationships among participants were understood as the communication channels or knowledge pathways that enable blending of knowledge from multiple sources, such as scientists and agricultural communities, and make knowledge more relevant and useful. In the evaluation we monitored the development of the conference participants' network by comparing three stages: before, during and after the conference (see Figs. 3–5, respectively).

The evaluation started by reconstructing a baseline of the network before the conference. This is a hubs and spokes model with ICARDA as the central information broker, connected to research institutions and five countries through which the farmers are connected (Fig. 3). Information flow among farmers in different countries had to go via the central hub - the travelling ICARDA researchers literally acted like medieval 'postillons' bringing news from other countries.

Mapping the emerging relationships between the farmers during the conference was the second stage. Figure 4 illustrates the many new connections made between the participants. A dramatic increase in network properties can be observed, with nodes rising from 11 to 59 and connections from ten to 210. Overall, network density actually fell from 0.165 to 0.122 because of the large numbers of new nodes added (Table 4).

By facilitating farmers to share knowledge among themselves and learn from each other, the conference helped to create farmer-to-farmer extension, which is especially useful in countries where there is limited or even ineffective formal extension services (M. Maatougui, Researcher at ICARDA).

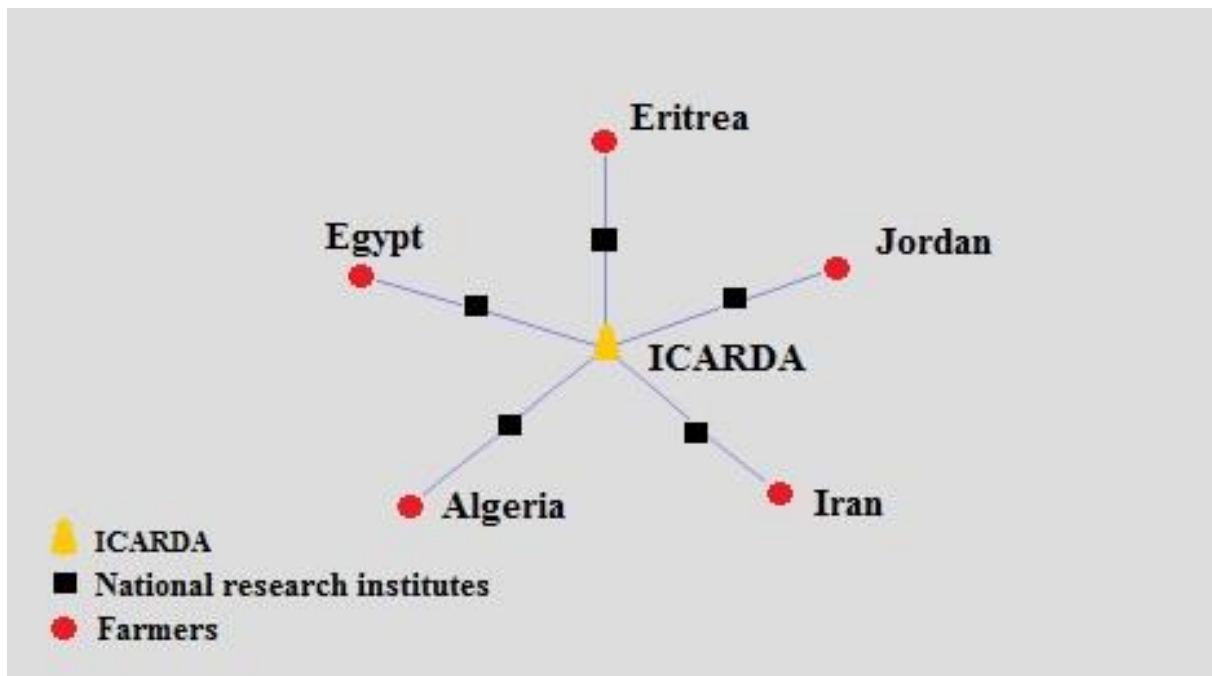


Figure 3. Reconstruction of the participants' network before the conference
Source: Authors' elaboration

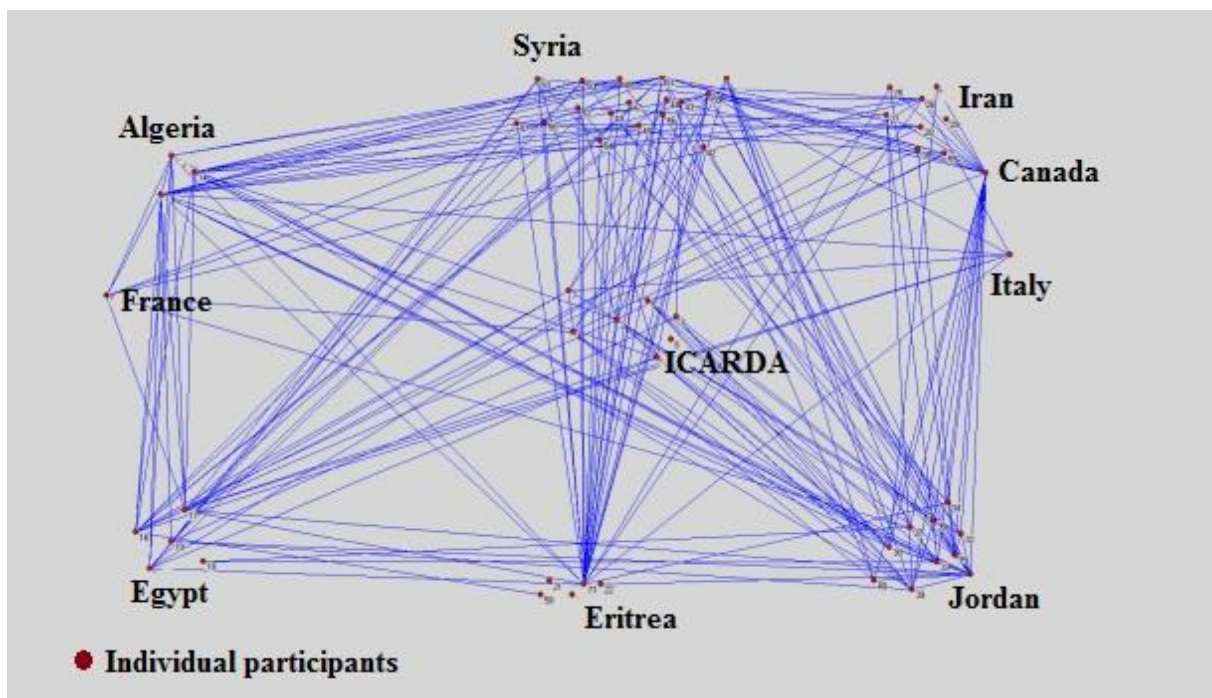


Figure 4. Participants' network during the conference
Source: Network map developed by participants at the conference; 2008

The conference organizers expected to find a reduced network in the third stage, about one year after the conference. To some extent this expectation was confirmed, the network has less inter-country connections and the role of ICARDA as central hub is re-established. However, and perhaps surprisingly, the overall number of connections in the network has gone up significantly, from 210 to 319 with the number of nodes remaining constant. Participants were taking initiative to make contacts after the conference, particularly within their own and neighbouring communities. This is confirmed by the increased network density of 0.183. Generally the graph in Figure 5 shows that communication across borders occurs when there is no language barrier, as in the case of Syria, Jordan, Algeria and Egypt, which remained well-connected.

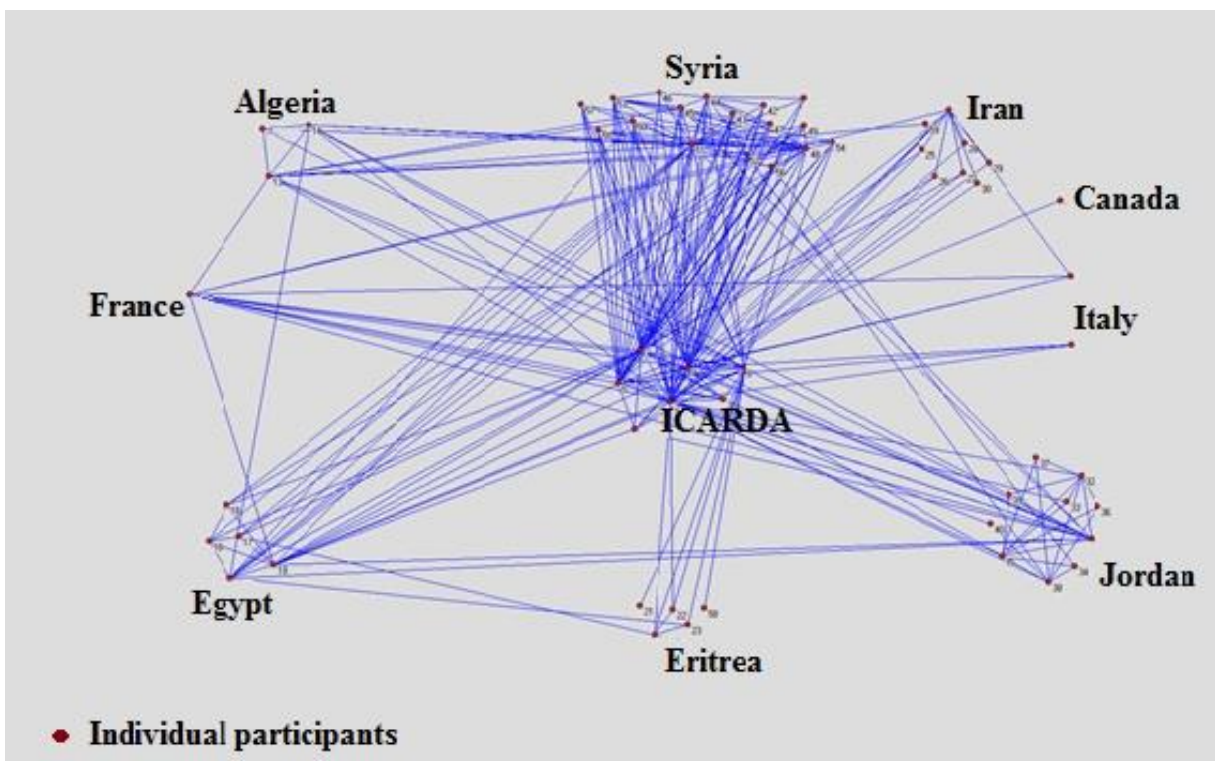


Figure 5. Participants' network after the conference
 Source: Survey with conference participants; 2009

Table 4. Statistics of participant's network before, during and after the Conference			
	Before	During	After
Nodes	11	59	59
Connections	10	210	319
Density	0.165	0.122	0.183

Source: Authors' elaboration

Staying in touch

By far the most common way for participants to stay in touch was the telephone, the tool of choice for 26 (of which six women and 20 men) out of 35 survey respondents (Table 5). Issues talked about range from simple courtesy calls (six: one woman and five men) to agricultural work in general (19: three women and 16 men) to more specific issues such as drought (three: one woman and two men) to grafting water melons (two women) (Table 6). Obstacles to staying in touch reported were not having contact details (six: three women and three men), the language barrier (two men) and the distance (two: one woman and one man) (Table 7).

Means used to stay in touch	Participants
Meeting	3F
Phone call	20M, 6F
SMS	
MMS	
Email	
Chat	

Source: Survey with conference participants; 2009

M indicates men; F indicates women

Topics discussed	Participants
Courtesy call	5M, 1F
Agricultural work	16M, 3F
Drought	2M, 1F
Grafting water melons	2F
Participatory Plant Breeding	1F, 1M
The conference	2F, 2M
Seed exchange	2M

Source: Survey with conference participants and non-participants; 2009

M indicates men; F indicates women

Table 7. Challenges to staying in touch with other Conference participants	
Obstacles	Participants
Distance	1F, 1M
Language	2M
Has no contact details	3F, 3M
Has no phone	1M
Has no email	1M
It's too expensive	1F

Source: Survey with conference participants; 2009

M indicates men; F indicates women

I believe there is communication between the farmers. I can't say if it's stable over time but the connections are definitely still alive. The participation of Syrian and Jordanian farmers in a follow-up farmers' conference in France is an outcome of our conference (Stefania Grando, Project Leader, ICARDA).

Gender awareness

Through the survey both participating and non-participating farmers were asked if the conference had changed their idea about women's involvement in agriculture. The question addressed the issue of the widespread invisibility of women's role in small-scale agriculture despite the increasing feminisation of agricultural labour in the countries that participated in the conference.

Of those who responded 50% (71% of participants - of which 12 women and 14 men- and 39% of non-participants - of which three women and 22 men) maintained that they had changed their mind about the role of women in agriculture (Table 8). Some of them said that they now regard women as equal partners and some said that at the conference they realized the importance of the role women have in agriculture. In the words of one Syrian male farmer: "[n]ow, I think collaborating with women farmers is good; but many people here in the village don't think this way. I did not think this way before the conference either". Two participants (one male and one female) argued that they perceived a change in their awareness about women's role in farming which would affect their life but which they were unable to further qualify (expressed as 'Life/something changed' in Table 8).

Table 8. Changes in the perception of women's roles as farmers and their knowledge		
Change of mind	Participants	Non-Participants
Life/something changed	1F, 1M	
Women got new knowledge and ideas	3F, 1M	1M
Women are more open	2M, 1F	
Women have more confidence	3F, 1M	
Regard women as equal partners	2M, 1F	
Women are more interested in agriculture		1M
Realized importance of women's role in agriculture	2M	1F
Collaboration with women is good	1M	

Source: Survey with conference participants and non-participants; 2009
M indicated men; F indicates women

However, the majority of the farmers who maintained that they had changed their mind about women in agriculture qualified their answers by adding that women had gained new knowledge and ideas after participating in the conference, that they were more open-minded and were generally more interested in agriculture. For the evaluators these answers seemed to indirectly reconfirm the biased perception of women's knowledge and contribution to agriculture rather than indicate a change in role and behaviour. A group discussion with women farmers in two Syrian villages revealed that their communities and families were surprised about ICARDA's commitment to supporting the participation of these women in the conference and concluded that "they must be good farmers".

Non-participating male farmers declared that they were discussing agricultural work with their wives after they had participated in the conference. After her participation in the conference a young Syrian woman farmer, for the first time, was put in charge of deciding what variety to grow in the family field. And this was possible because her family trusted her opinion after she saw the different varieties in the ICARDA fields.

All the researchers who participated at the conference expressed their satisfaction about the participation of both male and female farmers. One man emphasized the importance of involving women farmers in the event to discuss gender-specific needs and roles in agriculture and also added how impressed he was by the degree of female participation in the discussion. An Egyptian male researcher commented:

“[s]ure, our group of farmers and myself were interested in seeing a lot of women participants which could not be expected before the conference was held”. One Syrian researcher appreciated the participation of women but expressed his scepticism about women’s commitment to move collaboration forward.

Two non-participating male researchers from the region stated that neither did they believe that having both women and men at the conference was good, nor had they changed their mind about women’s role in agriculture. One of them claimed that women did not get involved in agriculture in the area of Syria where he works.

Participating researchers (both male and female) generally said they did not change their mind about women’s role in agriculture since they were already aware of their contribution. Two maintained the conference reconfirmed and strengthened this awareness. Stefania Grando, project leader at ICARDA, added that in her previous research work she had many times experienced the complementary roles played by men and women in agriculture and explained:

In Eritrea, if you ask men and women what is the best barley to do kitcha (bread), they will both tell you the same varieties. But men are very elusive about their reasons. Women can give you a lot of details, such as water absorption. That means men were aware what to plant because women told them.

Impact on research

An ICARDA male researcher from Algeria said that the Farmers’ Conference was a good reminder of the fact that researchers work for farmers, that they develop technologies to improve the lives of farmers. The event helped make research more appropriate by giving insight into problems, situations and needs on the ground as well as the innovation and knowledge that farmers may already have and be using.

Value added for researchers

Just under 20% of conference participants were researchers. Most of them had some affinity with participatory research methods. While this makes them qualified commentators, their high estimation of the benefits of the process was to be expected. Researchers listed several forms in which the conference added value to their own work, such as:

- Better understanding context and constraints to adoption:

Researchers (two women and three men) said the conference helped to better understand farmers’ expectations and needs as well as the context in which their

institutions are working. They learnt about limitations to adoption and it helped them to plan research better and understand how to disseminate results.

- Farmers are more effective partners in research:

Researchers (one woman and one man) also said farmers know more about research work now, they learnt about the importance of new varieties and their dissemination among farmers and they saw seed production on the farm.

- More mutual trust and better cooperation:

Researchers (three women and two men) said the conference confirmed the need to do participatory research and that multicultural as well as multinational research processes are possible. Also, experience was gained for organizing similar events in future. They further cited better cooperation and trust developed between researchers and farmers as added values for their own work.

Dr. Ceccarelli, whose brainchild the conference was, explained that a benefit to the PPB research programme was that many of the farmers present at the conference are involved in the ICARDA participatory plant breeding programme. They are all at different stages and so can inform others about what the PPB programme and process is like at the various stages. It provides perspective and may encourage others to participate (Manning 2008b).

Effectiveness of KS tools and approach

Group interviews with women farmers from Syria asked their opinion about the tools used to share knowledge at the conference. Regarding participatory agenda setting, they would have liked someone to visit them and clarify the objectives of the conference during the preparatory phase. About storytelling they all agreed that stories were better than official speeches, because they felt more comfortable speaking informally through stories.

They added, it would have been interesting to have scientists contribute their knowledge through stories too. They suggested complementing stories with photos or some visuals, sitting at a table when telling stories rather than going up to speak at the podium, and arranging simultaneous translation because it was confusing at time to have the stories translated between all the various languages. They proposed that some questions be asked directly to them, as they may otherwise never put up their hand to ask or answer a question.

They appreciated the field trips where crops and agricultural practices were

discussed, and enjoyed the Food Fair where they could look at seeds and products. They appreciated being able to deal directly with scientists and tell them their problems, ideas and knowledge and wished they could work together, ask the scientists questions and learn from them to improve their agriculture (Manning 2008a).

Story 1: Thyme against Nematodes

During the past four years, the nematode problem appeared in our barley fields, and there's a story I'd like to tell you, when I was a little kid, my grandfather used to put a small wooden box over the old plough, and this box was about 40 * 20 * 20 cm, and he took us there with him to fields to collect thyme, a plant with a very strong scent, so we collect the thyme and women in the village dried and ground it. My grandfather used to take this powder and put it in the box over the plough, this box had small holes in the bottom, so when he ploughed, this powder mixed with the soil, and although I asked him all the time "why are you doing this?" he never told us, he just said "to get rid of bad spirits". And now during this conference I learnt that researchers in Canada are using plants with strong scents to fight nematodes (Ahmed El-Haj Saleh, Farmer, Syria).

Story 2: Ruqeia - Empowerment

I learnt a lot of new things about planting, using fertiliser, harvesting and good practice for keeping seeds. I planted some of the new seeds I got from the Food and Seed Fair in my home garden and I am curious to see how they will work out. A highlight of the conference was the feeling that others valued what I had to say, which motivates me to want to work more to improve my farming. At the beginning of the conference I was very worried about having to talk in front of strangers, mainly older men, but after hearing words of appreciation for my knowledge I grew more confident and could speak from the microphone. I also found the courage to approach an FAO representative who organises courses on Integrated Pest Management to find out about possible collaborations (Ruqeia Ibrahim, Farmer, Syria).

Story 3: A researcher's experience

Organising the Farmers' Conference changed my awareness of knowledge sharing issues. In my whole research on the social impact of participatory plant breeding (PPB) on the women farmers I deal with knowledge sharing issues. I look at 'what knowledge' is usually included in collaborative research and focus on women's

knowledge, which is often marginalised because of gender dynamics. I work on finding best ways to discuss women's often tacit and overlooked knowledge. Finally, the nature of my participatory assessment of empowerment implies a continuous sharing of findings and thoughts with the women farmers. Organising the Farmers' Conference and attending an ICT-KM KS workshop helped me become aware of knowledge sharing issues. As a consequence, I redefined my research methodology and was more able to refine the methods and tools. During the organization of the conference I also had the chance to research KS and gender issues in particular and developed some gender-sensitive methods and tools for including women farmers in the event. This was a radical change in my research approach that will influence all my future work, which, I believe, will develop KS concepts and methods further, particularly in relation to gender issues (Alessandra Galiè, Research Fellow, ICARDA).

Conclusions

This final section interprets the results above and relates them to the original aim of the chapter: evaluating KS in research. Each outcome of the project is assessed and in turn feeds into an overall conclusion judging the effectiveness of the chosen KS approach.

Practice change

The project's impact on working practices of the participating farmers seems unusually high, and compares favourably with the usual rates of adoption reported throughout the CGIAR. However, significant behaviour changes like modifying seed rates or ploughing depth are of course not the result of one single conference. Rather, they constitute one point in a long process of change to which the conference has contributed building on many years of previous work and debate.

A possible interpretation of the results could be that trust plays a central role in the process of adoption. The assumption of the conference organizers had been that farmers are more likely to take advice from other farmers than from scientists and researchers. The findings would support this assumption.

Spreading stories

The original idea of spreading knowledge in the form of short cell phone videos did not work. While farmers, mostly men, do use cell phone videos themselves none of them downloaded the videos from the website. With hindsight, this may not be surprising as only a quarter of participants had internet access, and only 18% had a broadband connection. A different distribution strategy should have been employed.

During the interviews farmers repeatedly asked ICARDA staff to provide computers and internet connections to facilitate collaboration with researchers and other farmers.

Overall, storytelling proved a very effective method for both male and female farmers to share knowledge with their peers. All surveyed participants retold stories they had heard at the conference, mainly within their immediate environments. Additionally all non-participants who heard about the conference retold the stories to their peers. This is a strong testimony to the fact that farmers will share knowledge effectively if it is presented to them in an accessible format.

Network sustainability

The fact that the network kept growing on its own instead of becoming impoverished after the conference is an illustration of the desire of farmers to directly exchange information. This is particularly so, because cross-country communication faces challenges such as language barriers, missing contact information and lack of ICT infrastructures, all impacting negatively on the overall network density. In sum, the conference goal of creating a more sustainable network with more direct connections between farmers was reached.

Added value

The main value-added for the farmers and women in particular, lay in the meeting with other farmers from other countries and with researchers. Second in importance is access to new information. Time and again anecdotal evidence refers to the empowering effects the conference had, particularly for women farmers.

Gender awareness

The conference aim of increasing the awareness about women's role in agriculture was achieved. A large majority (71%) of the participants (of which 86% of the participating women) said either that they changed their mind about women's role in agriculture or that they, already aware of this role, had their convictions reconfirmed. Generally the change in awareness among non-participating farmers was lower (39%). The degree and depth of this awareness and its actual impact on research might need further questioning and research.

Impact on research

Anecdotal evidence points to an improvement of the research process: on the one hand, better relationships with the farmers lead to more mutual trust. On the other hand, improved mutual recognition of the knowledge each side brings to the table leads to more efficient and targeted research priority setting. Both effects have the

potential to improve adoption rates.

Overall effectiveness of KS tool and approach

The International Farmers' Conference successfully elicited and documented tacit knowledge by giving farmers the opportunity to share their experience in the form of stories. It demonstrated the importance of this knowledge to the research process by illustrating types of value added for researchers. The conference also enriched the network of farmers and researchers and, thus, made it more sustainable. By ensuring the participation of women farmers, the event has contributed to both, the elicitation and documentation of women's knowledge, and positive changes in gendered perception of women's role in agriculture.

“The conference has been a big event in the farmers' life. They always ask: ‘When will be the next one?’” (Salvatore Ceccarelli, Participatory Research Specialist at ICARDA).

Documenting local knowledge, however, remains a challenge. Important exchanges might occur outside the formal presentations, e.g., during coffee breaks. It would also be important to lower the risk of losing knowledge in translation. A follow-up event should be a regional conference where participants have a language in common. That would also make it easier to establish and maintain linkages among participants.

Storytelling proved an effective means to facilitate knowledge sharing during and after the Conference. Farmers' individual learning was aided by the informality of the process and a mix of social interactions that included farmer to farmer exchange, field visits and the Seed and Food Fair.



Picture 1. Visit to the field trials during the Conference



Picture 2. Preparing a video to share stories on mobiles in Souran

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CHAPTER 6

Governance of seed and food security through participatory plant breeding in ten Syrian households: empirical evidence and gender analysis

Based on: Galiè A., 2013: 'Governance of seed and food security through participatory plant breeding: Empirical evidence and gender analysis from Syria', *Natural Resources Forum (NRS), a United Nations Sustainable Development Journal*, 37, 31-42.

Abstract

This chapter presents the findings of a study on the governance of seed conducted in the framework of a participatory plant breeding (PPB) programme, based on a multi-year inquiry with a panel of ten Syrian households. The study assessed the interactions between governance regimes regulating the rights to access and control genetic resources at international and national level, compared to the actual ability of the respondent women farmers to access and control the seed of varieties they co-developed with the PPB programme. The findings demonstrate the positive role of participatory approaches in plant breeding to providing access to and information concerning seed varieties that are relevant to both male and female farmers. They also show the institutional hindrances faced by the programme in securing the provision of these varieties to the study's farmers and how a gender unbalanced access to seed and resources at household level was reproduced within the PPB programme. The chapter argues that gender equal access to seed can 'optimally' contribute to enhancing household food security in small-scale farming. The article also argues that to support a gender-equal access to seed in the respondent households legislation needs to explicitly protect the rights of women farmers to access and share the benefits of genetic material and draw from empirical evidence of the actual access to and control of seed at ground level.

Keywords

Governance, seed, gender, Syria, participatory plant breeding, food security, biodiversity

Background

Biodiversity can be broadly defined as 'diversity of life on earth' (The Crucible II Group 2000). Loss of biodiversity is an increasing concern worldwide because biodiversity contributes to the stability of ecosystems on which life on earth and human beings depend (Santarius and Sachs 2007). Loss of biological diversity on farm, specifically in terms of increasingly fewer varieties of crops grown by farmers, is expected to have a strong impact on rural livelihoods and food security for the world's poor who rely on biological products for 85-90% of their livelihood needs (The Crucible II Group 2000).

Because of its key role in the world's economy and food security biodiversity is profoundly political (The Crucible II Group 2000). The politics of biodiversity management in agriculture are complex not least because they involve regulating forms of access, ownership, management and benefit-sharing that are governed by intellectual rights over living organisms. Decisions about biodiversity management include who controls biodiversity and its components¹, for example, who benefits from the revenues generated by its use, and who decides how to conserve, reproduce and use it. Biodiversity management in agriculture is characterised by the tensions inherent in protecting the interests of diverse stakeholders² from misappropriation, and especially from the assertion of exclusive proprietary rights in genetic resources useful for agriculture, without the consent of those that develop and preserve the resource, while allowing the continued exchange of genetic material and the expression of genotype-environment interactions in farmers' fields (Rosendal 2006).

These stakeholders have varying degrees of influence on negotiations about agricultural biodiversity management and regulations. Rural women worldwide have been shown to play a special role in preserving and creating knowledge about seed (Howard 2003; World Bank, FAO and IFAD 2009). Also, women often play key roles as food providers and as preservers of food cultures (Jiggins 2011). Yet, they are the least able to influence the formal negotiations and decisions, including at international level, concerning the governance of seed and natural resources (Deda and Rubian 2004; Van Esterik 1999).

Because of its importance and complexity, biodiversity management has become a hugely disputed field where national systems of governance coexist with often

¹ For example, genes, seed, plants, parts of plants, micro-organisms and animals.

² Such as communities, farmers, formal and informal breeders, inventors, commercial enterprises and researchers, national governments, or corporations.

incompatible international regimes, regulations and agreements each focusing on a particular aspect. Governments are faced with the challenge of addressing national priorities such as food security, economic growth and sustainable development, while deciding which of the international agreements related to the governance of seed, to adopt and how to abide by their contrasting provisions and rules. Whereas commitments to include gender concerns in the governance of biodiversity have been made at the international level (e.g., in the Convention on Biological Diversity or in the Plan of Implementation of the World Summit for Sustainable Development), their translation into tangible actions is still wanting in most jurisdictions (Deda and Rubian 2004). Syria is a particularly interesting case because agriculture is its primary economic activity and the Ba'ath government made food self-sufficiency a priority in the 1980s. The government supported the poorest farmers by providing them with access to natural resources for farming through a series of agrarian reforms. In 2002, the government adopted and ratified³ Article 14 of the UN Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) which establishes the right of rural women to participate in the elaboration and implementation of development planning at all levels, access appropriate technologies, information, and rural services and also obtain formal and informal training to enhance their technical proficiency

<http://www.un.org/womenwatch/daw/cedaw/text/econvention.htm#article14>).

This chapter provides an analysis of seed governance in Syria up to beginning of 2011, as affected by governance regimes from the international to the local level, from a social science and gender perspective. It presents the participatory plant breeding (PPB) programme as the background against which to analyse the process of involving farmers in shaping seed development and (in part) the food system at community level. By providing empirical evidence of seed management at ground level, this chapter aims to unfold the gender dimension of both formal and informal seed management, thereby contributing to progress towards more gender-equal institutional frameworks related to the management of seed. As De Schutter notes: “[...] seed policies must be guided, not by a preconceived view about the benefits technology can bring to farming, but by a careful examination of their impacts on food security and, specifically, on the ability of the most vulnerable farmers to improve their livelihoods” (De Schutter 2009b, 3).

³ with reservations applied to Articles 2, 9(2), 15(4), 16(1)(2), and 29(1).

Conceptual framework

Food security and seed

This paper adopted food security as a main frame of reference because it is central in current debates on pro-poor development, in the approach of the Syrian Government to agricultural development, and in agricultural research for development. Food security at household level can be defined as the ability of households to secure adequate food at all times to meet dietary requirements of their members (Negash and Niehof 2004). This chapter associates food security in turn with two food-related rights: the 'right to food' and 'food sovereignty'. The right to food is, according to the United Nations, "the right to have regular, permanent and unrestricted access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear"(De Schutter 2012). The UN envisions governments playing a central role in respecting and protecting individuals' right to food and actively intervening to fulfil this right. The right to food is part of the Universal Declaration of Human Rights of 1948 and of other global conventions and declarations.

La Via Campesina (2001) articulated the concept of 'food sovereignty' as peoples', countries' or states' right to define their own food systems and agricultural policy. Food sovereignty places at the forefront of discussion the need for democratic forms of agro-food governance and for people to define their own institutional arrangements for regulating the food system (Patel, Balakrishnan and Narayan 2007). Full realization of food sovereignty starts from control over genetic resources and is predicated on the attainment of 'seed sovereignty', that is, the control of seed production and use.

This chapter looks at seed as a key to food security because seed is the first link in the food value chain. It provides food crops as well as plants and trees that are used as animal feed or feedstock for industries. Seed provides also a means to acquire food through seed sales or exchange (World Bank, FAO and IFAD 2009).

Food security and governance

In 1998, Kofi Annan⁴ stated that good governance is the most important factor in eradicating poverty and food insecurity (World Bank 2007). The UN Rapporteur on the Right to Food maintains: "Hunger is not a fatality. It is a result of policies that

⁴ Then Secretary-General of the United Nations.

could have been different, and that would not have been allowed to stand if their impacts had been monitored more carefully in the past" (De Schutter 2009b, 2). From this perspective, reducing hunger is not only a matter of improving crop production but also of distributing the resources equitably. Sen (1981) even more strongly maintains that hunger stems from institutional arrangements that give rise to or perpetuate disempowerment, marginalization and poverty. Such grand statements and assertions, to have effect on the realities 'on the ground', always need to be translated into specific actions; the PPB programme in Syria might be viewed as one such 'act of translation'.

Governance

Governance can be defined as the "purposive practice of governing by multiple actors that operate at multiple scales of decision-making in pursuit of a broad goal" (Paavola and Gouldson 2009, 149). Governance frameworks are "specific and purposive governance interventions developed in pursuit of a goal" (i.e., policies, laws, directives, conventions, etc.) (Paavola and Gouldson 2009, 149). A broader conceptualisation of governance is based on the belief that humans and organisations govern their behaviour affected by a range of formal and informal rules⁵, and mental models including social expectations and cultural norms⁶ that humans use to organise all forms of repetitive and structured interactions (Rhodes 1996). Paavola and Gouldson (2009) argue for an analysis of governance 'regimes' which include customs, norms, rules and also governance frameworks that shape how an actor or an activity are governed in a particular context. This chapter focuses on seed regimes by analysing the intersections between seed governance frameworks and the informal rules regulating seed management at community and intra-household level.

Seed governance

The concept of seed governance was used in the study reported here to operationalize food-related rights in the farm reality. Seed governance is defined in this thesis as 'the rules, traditions, institutions and behaviours, by which interests are articulated, resources are managed and power is exercised in society, in ways that affect individual's access to and control of seed' (adapted from EC 2003). Ribot and

⁵ 'Rules' are defined by Ostrom as "shared understandings by participants about enforced prescriptions concerning what actions [...] are required, prohibited, or permitted" (Ostrom 2005: 18).

⁶ 'Norms' are understood by Ostrom to be "cultural prescriptions" or "the generally accepted moral fabric of a community" (Ostrom 2005: 17)

Peluso (2003) distinguish between access and property by defining access as the 'ability to derive benefits from things' (e.g., natural resources) and property as 'the right to benefit from things' (Ribot and Peluso 2003). They argue that access is affected by a range of factors such as institutions, social and political relations and discursive strategies that shape benefit flows of which property is one factor only (Ribot and Peluso 2003). Access in turn, differs from control in that the latter implies some form of decision-making over objects or resources (Valdivia and Gilles 2001). Ostrom (2010) recommends engaging in empirical work to better fit institutional rules to specific socio-ecological settings and enhance innovativeness and cooperation for effective and equitable outcomes. This chapter reports an empirical assessment of the intersection between formal and informal rights to seed and the actual access to and control of PPB seed by the respondents.

Gender

Gender relationships affect the social expectations of what roles women and men are supposed to play in society, what agricultural resources they have a right to, can access and control, and how they can benefit from technology development and resource management (Brewster 2004). Generally, although women are often heavily involved in the use of agricultural resources, they are excluded from management decision-making processes from those regarding their management of the household to those at the highest levels of policy making (Brody 2009). Gender equity is based on the understanding that women and men to an extent have different needs, priorities and desires and that they are affected differently by policies and programmes. It follows that to achieve equivalent life outcomes, women and men have to have access to means and opportunities that reflect their specific needs and, more importantly, that counterbalance gender-based injustice. Yet seed governance debates often are assumed to be neutral with respect to gender (UNDP 2000). Bringing a gender dimension to seed governance implies, according to Brody (2009), both involving women and the most marginal groups in decision-making processes and ensuring that governance regimes take into account the different realities, responsibilities, priorities and needs of men and women. Gender-sensitive seed governance is believed to enhance women's seed sovereignty, that is their ability to access and control resources in ways commensurate with their roles as food providers, producers and preservers of food cultures (World Bank et al. 2009).

This chapter discusses how seed governance frameworks might interface with the actual access and control farm women might have to the PPB seed they co-developed, based on the evidence from a multi-year enquiry with a panel drawn from ten Syrian households, within the framework of gender equity and food security.

Figure 1 is a heuristic device that serves to illustrate the inter-linkage of the conceptual language used in this chapter and how it has been operationalized.

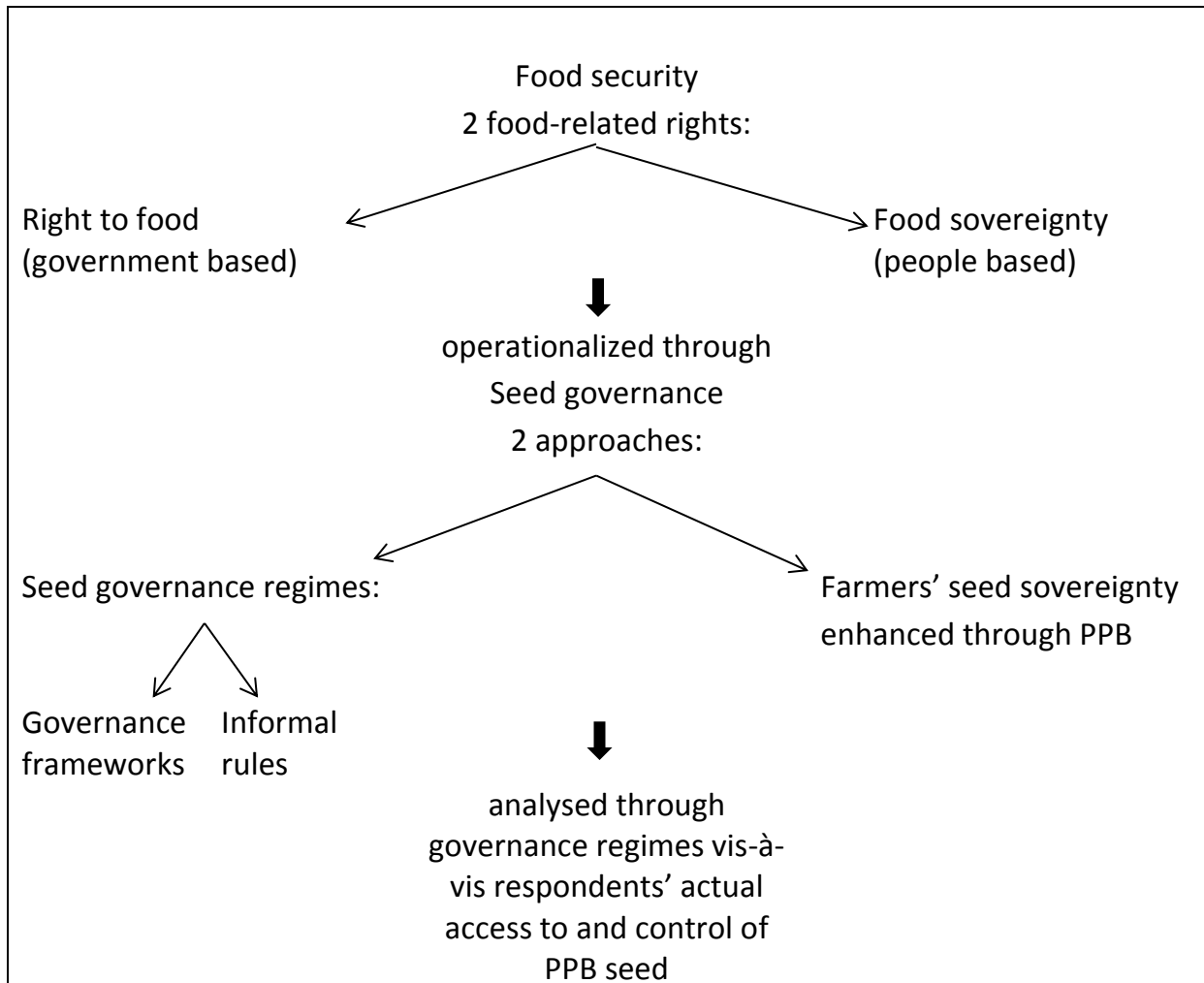


Figure 1. Overarching concepts and frames of reference

Source: Author's elaboration

Methodology

Anderson and Scott (2012) argue that qualitative, small-N research (Mahoney and Goertz 2006) can support policymakers to address growing social inequality by providing 'thick descriptions'⁷ of complex problems, and insights on the factors that shape these problems at the macro and meso levels of political economy and institutions, and at the micro level of race, class and gender. Figure 2 is an inferential diagram that shows (in a simplified, linear fashion) how the information provided by this study on the processes and institutions affecting the access to and control of

⁷ Thick description refers to the researcher's task of describing and also interpreting an observed social action or behaviour within its context (Ponterotto 2006).

seed for the respondent women farmers flowed to and from wider meso and macro level of agricultural research for development.

This study was designed as a qualitative, small-N analysis of seed governance in ten PPB households. The analysis of seed governance regimes affecting the access of the respondent Syrian farmers to PPB seed took place between the beginning of 2006 and the beginning of 2011 and comprised two main parts: a review of seed governance frameworks at international and national levels; and empirical analysis of seed governance at ground level. The review of seed governance at international and national levels used systems evaluation (Williams and Imam 2007) applied to desk study of key documents and was carried out between 2007 and the beginning of 2011. Evaluations based on systems concepts are used to assess complex situations by appreciating their richness and valuing the dynamic relationships among their components. Eight key informant interviews (Patton 2002) with plant breeders, extension agents in the field, local government officials and a member of FAO, were also carried out throughout the study.

The empirical analysis of seed management at ground level was based on direct observation and participatory assessment, both of a) the management of seed at household level and its changes consequent to the involvement of the women farmers in the PPB programme and b) the interaction between the international and national legal frameworks, and customary rules operating at ground level. Qualitative analysis of actual practices was based on small-N data (Mahoney and Goertz 2006) in order to explore the gender dynamics that regulate the management of seed at household level and changes consequent to the involvement of the women farmers in the PPB programme. By working with a small number of cases rather than with Large-N statistical analysis, in-depth understanding of a problem, and of the processes behind it, can be acquired (Shively 2006).

The empirical work involved in-depth fieldwork with a panel of 12 women from ten households in three Syrian villages, who were selected purposively following a diagnostic study (Chapter 1 and 3). Five women from five households were selected in the village of Lahetha; the village was a mid-term participant in the PPB programme⁸. Two women were from the village of Souran which had been a long-term participant in PPB⁹. Five women, from four households, were from Ajaz, a village where the male farmers had expressed interest in the PPB programme but

⁸ Lahetha began participating in the PPB programme five years before the gender study commenced.

⁹ Souran was involved in PPB since its beginning in 1996.

collaboration had never started for logistical reasons. An additional number of women (a maximum of five at any time, in each village) regularly joined in the research meetings and contributed to the discussion. These three villages were thought to offer contrasting settings in terms of a continuum of household participation in PPB (Chapter 1).

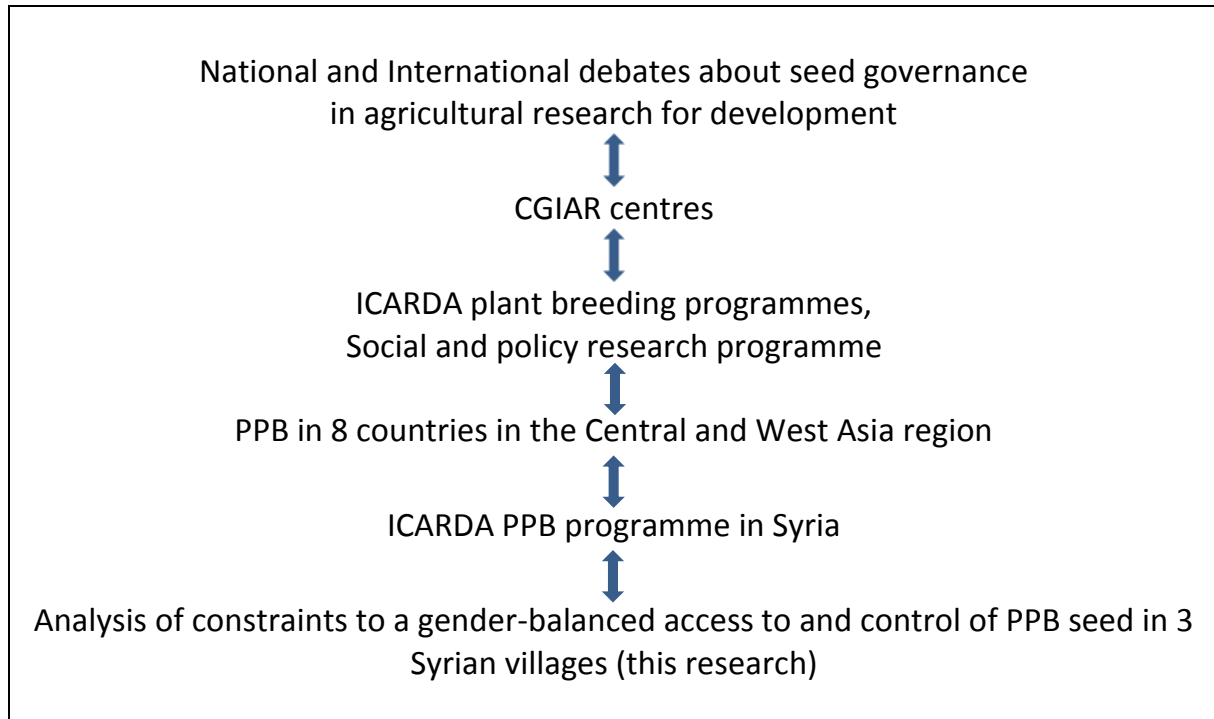


Figure 2. Inferential diagram showing the information flow among this research and the meso and macro levels

Source: Author's elaboration

Data collection

The first stage of the research throughout 2006 consisted of a diagnostic study (Chapter 3) and a literature review of gender issues in agriculture, rural development, and natural resources in Syria.

The insights gained in the first year were used to shape the empirical research in each of the following four years. During three stages of fieldwork (2007-2008, 2009 and 2010) the following methods were employed in women-only meetings:

- a. Daily and seasonal calendars (Chambers 1983) were used to assess men's and women's involvement in farming, across changing seasons and sites of production
- b. Semi-structured interviews were used in all three fieldwork stages (2007-2008, 2009 and 2010) to explore household management of seed (handling, storing, selecting, selling and buying) and women's access to seed

- c. Women's perception of household decision-making dynamics related to seed management was assessed through matrix analysis (Miles and Huberman 1994), matching women's daily activities and their power to make decisions about their activities
- d. Photographic material and video interviews complemented the written material.

Participant observation during PPB activities such as planting and variety selection took place over four cropping seasons (2006, 2008, 2009 and 2010). In parallel to this empirical research a desk study of seed governance at international and national levels was carried out between 2007 and 2010.

Data analysis

The fieldwork interviews and the written exercises were written up, transcribed in digital format and verified by one female fieldwork assistant and the respondents. The software package Atlas.ti (Development GmbH 1993-2009) was used to organize, code, aggregate and disaggregate both the written and visual material, compare changes in women's perception of seed management over the years and triangulate the findings. The findings presented in this chapter were further analysed descriptively and qualitatively (Patton 1980) using a variety of methods.

Main findings

International legislation

This section briefly reviews the main international governance frameworks regulating seed systems and their implications for countries such as Syria. Under the emerging regime, farmers' rights to seed and genetic material increasingly have been weakened by the application of intellectual property rights, designed for other purposes, to biological materials (Tansey and Rajotte 2008). For instance, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) which came into force in 1995 within the framework of the World Trade Organisation (WTO), establishes a global regime for intellectual property rights that does not recognize the principle of national sovereignty over genetic resources and establishes that farmers who cultivate patented seed do not have the right to save, re-sow or exchange the seed (De Schutter 2009a). Syria applied for WTO membership in 2001 and in 2010 it won observer status, the first step to joining the WTO.

In addition, the successive revisions of the International Convention for the Protection of New Varieties of Plants (UPOV 1991) have strengthened protection of the rights of those who develop plant varieties that are new, distinct, uniform and stable. The costs of UPOV certification, however, are beyond the means of small-

scale farmer-breeders (Santarius and Sachs 2007). UPOV safeguards formal breeders' rights by forbidding States to grant farmers the right to the exchange or sale of protected varieties (that can only be used for non-commercial purposes). Governments have been forced to adopt UPOV standards through bilateral negotiations on trade and agriculture (Santarius and Sachs 2007). Syria has not acceded to UPOV.

Both the TRIPS and UPOV regulations raise a number of issues including: the collection of seeds from farmers' fields without compensation, for the purposes of commercial seed development; the undermining of the historic value of genetic resources as a 'global public good'; the erosion of diversity by the expansion of commercial seed use; and the sharing of the benefits of public research and technology development. This last issue has risen higher on the policy agenda in parallel with the increase in patenting and other forms of exclusive proprietary protection of varieties (Li et al. 2012 for a case study from China).

In contrast, a number of international conventions - such as the Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) - seek to protect the rights of farmers to natural and agricultural resources and seed in particular. The CBD came into force in 1993 (Convention on Biological Diversity 1993) to enhance conservation measures. It can be considered one of the most important platforms for international cooperation related to living resources. It recognises the principle of national sovereignty over the regulation of the use of genetic resources. It requires that access to resources rests on the consent of those affected and that farmers have the right to equal access to any new benefits derived from the resources. It recommends that particular attention be given to the protection of the resources and rights of indigenous groups and women. Syria ratified the CBD in February 1995.

The ITPGRFA came into force in 2004, supported by the UN Food and Agriculture Organisation (FAO). It aims to secure access to seeds from a specified list of the most central food plants for plant breeding, and to protect farmers' rights to seed (Rosendal 2006). The ITPGRFA holds that international cooperation and open exchange of genetic resources are essential for food security. Article 9 recognises the role of local and indigenous communities and farmers in the conservation and development of plant genetic resources. Syria signed the Treaty in June 2002 and ratified it in August 2003.

In recognition of the special effort needed to integrate gender into policies and decision-making at global, national and regional level the Global Gender and Climate Alliance (GGCA) monitors and supports the implementation of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), which sets out guidelines for supporting women's rights in agriculture and food systems, including their seed-related rights. Syria ratified the CEDAW in 2003 (with a number of reservations).

Syrian national legislation¹⁰

In Syria the Ministry of Agriculture and Agrarian Reform (MAAR) oversees agricultural development. The Supreme Council of Sciences is in charge of implementing national scientific research policy and of overseeing the functioning of the agricultural research institutions. Agricultural research is managed by the General Commission for Scientific Agricultural Research (GCSAR), the national institute for breeding in Syria. The General Organisation for Seed Multiplication (GOSM) is tasked with seed production and supply of strategically important crops (wheat, barley, potato and cotton) and quality control. At present no independent seed certification agency exists. The variety release system is not formally organised and works on an *ad hoc* basis. The GCSAR is responsible for variety evaluation. Promising lines are tested in on-farm field trials before they are proposed for release to the National Variety Release Committee. The Agricultural Credit Bank is responsible for the supply and sale of seed for all major food and fodder crops; the private sector is involved mainly in the sale of fertilisers, herbicides and pesticides.

The MAAR and the Supreme Agricultural Council (SAC) are in charge of preparing yearly production plans for the agricultural sector that are used for issuing farmers with licences (with which they are legally bound to comply) to plant specific crops in specific areas. Through this licence, farmers can obtain government-supplied credit, inputs and services. The government sets prices for crops that are considered 'strategic' (i.e., wheat, barley, lentils, chickpeas, cotton, sugar and tobacco) at which government establishments will purchase from farmers or their cooperatives (Westlake 2001). The Agricultural Extension Department (part of the MAAR) is in charge of 'technology transfer' from the research institutes to the farmers. Their offices are located in the districts, but their services do not reach most farmers. At village level, farmer-to-farmer seed exchange or sale is reported to be dynamic and

¹⁰ The information in this section is based on the situation up to end 2010 and the outbreak of widespread civil disorder.

complementary to the formal seed system. The bulk of the seed reaches farmers through the informal seed system (Bishaw 2004).

In 2004, no laws, rules and regulations related to varieties and seed existed in Syria (Bishaw 2004). The only legislation on the subject of seed remains a Ministerial Decree that dates from 1975 and that does not contain any restriction on the movement of seed. With the assistance of the FAO a draft law on the exchange of plant genetic resources has been formulated (FAO 2002) in conformity with the provisions of the ITPGRFA. National sovereignty remains the basic principle regulating access to Syrian genetic resources. The draft law further recognises the right of farmers and local communities to participate in national decision-making about the conservation and use of plant genetic resources and related benefit sharing. Farmers and local communities are to be consulted also, before access is granted for collecting *in situ* plant genetic resources (FAO 2002). No further progress has been made and the draft law remains in limbo (pers. comm., FAO representative, 2009).

Seed management in the PPB households

The PPB farmers chose what crops to grow based on numerous considerations. These included location, availability of irrigation water, rainfall predictions, price of seed at the time of the planting, fuel prices, availability of machinery in the area, availability of labour in the household, the expected market demand of the crop and its expected sale price. Because the women in the study were in charge of manual work (see below) they preferred crops that were less labour intensive and crops for which mechanised harvesting was available. The sale of seed or agricultural produce in the village or markets was regarded by the respondents as a men's task (unless the head of household was a woman with no close male relative). Older women (above 60 years) also sold seed, grain and straw, directly from their house. Male government agents were in charge of providing the seed of the strategic crops and buying the harvest. They dealt only with the head of the household; in most cases this was a man. Seed for other crops was sourced by men from shops, cooperatives or other farmers in the area, and by women from (preferably female) farmers in their village only. The respondents stated that in the case of female headed households with no male relatives or older women, the women might source their seed themselves from other farmers or from public retailers e.g., shops or agricultural pharmacies. Revenues from seed sales and other agricultural products were spent on family needs regardless of who contributed to the work, and after consultation among family members. The women argued that the final decision about expenditures remained always with their men folk (Chapter 3 and 7). Revenues from off-farm work were controlled by the labourers themselves, whether female or male. In Ajaz, the

respondents stated, women in some households in addition were given a small piece of land to manage independently, in return for their agricultural work in the family's fields, and they were allowed to keep the revenues from any crop or seed sales from this land.

In Ajaz the main cultivated crops were rain-fed wheat and barley as well as vegetables for household consumption and marketing. All the respondent women were in charge of manual activities on-farm (i.e., planting, hoeing, fertilizing, weeding, harvesting, and processing vegetables; livestock care; hand-harvesting of lentils, chickpeas, black-cumin and olives). Young women performed similar activities off-farm also. The older women (above 60 years) and women heads of household sold seed and straw from the house. Mechanized activities were performed by hired labour or by the men folk in the few cases where they possessed a tractor. The five women respondents declared that they all selected plants in the field and retained planting seed for crops such as barley, wheat, and vegetables (such as aubergines and peppers), and that the men and the women heads of households bought seedlings of other crops such as tomatoes, beans and okra. Selection of wheat and barley seeds was limited to keeping part of the harvest aside in a special part of the granary. Selection of vegetable seeds was carried out mainly by the older women, by identifying the plants in the field that bore many fruits, letting them dry and then harvesting the seed and storing it in a dry place. Part of the annual seed store was regularly exchanged by the older women and men with their neighbours, and by men with men in other villages, in order to maintain or improve quality. The women argued they also exchanged seed to 'adjust' their crops with (preferably female) neighbours, so as to fit their specific needs and preferences. For example, in the case of wheat in one household in Ajaz the women mixed white and red seed kernels since the latter gave a good taste to the flour and the former a good yield. In another household in Ajaz, the women looked for the seed of soft lentils to add to their more productive varieties.

A new variety might be purchased only if a neighbour or a family member farming in similar agro-ecological conditions recommended it, or if the farmers could observe the variety's performance in the field. The varieties of the crops cultivated for marketing purposes were selected generally by the men after consulting with neighbours and family members and mainly based on yield potential and customer demands. The choice of a variety for household consumption was made mainly by women, based on taste and cooking qualities. The household's need for cash and market demand also were considered: "if we have money to buy seed we look for the best crops" (Female farmer, Ajaz, 20.03.2008).

It was by sourcing seed through neighbours that women farmers in particular gained access to new information on cultivation techniques, one woman from Ajaz argued. Seed purchased elsewhere did not provide this opportunity, at least not for the women. Another woman from Ajaz stressed that while all commercial seed sellers provided information about the varieties, since only men purchased the seed, only they learnt about the new seeds. The women, particularly the young ones, said they learnt how to improve their agronomic practices mainly through experience, a process greatly under-valued by the male farmers. For instance, one male farmer from Ajaz argued strongly that:

Men have more knowledge than women and argue better. Women have no knowledge and they are not experts. We men meet up and talk about the seed. We can go to other villages and see the fields. Women can't. Women don't know prices. Women only talk about clothes and make-up. They have no idea about seed (Male farmer, Ajaz, 20.01.2009).

In Souran barley and pistachios were the main crops cultivated for market purposes, together with vegetables and legumes cultivated for home consumption. No man was involved in farming in the respondent household and the two respondent women were in charge of the farm. The older woman (60-63 years), a widow, was a full-time farmer, assisted by her daughter (25-27 years) in all manual activities on-farm (i.e., planting, hoeing, fertilizing, weeding, harvesting, and processing vegetables; livestock care; seed selection; hand-harvest of lentils, chickpeas, black-cumin, olives, pistachios and cotton). Mechanized activities were arranged with the men folk and performed by hired labour. Since their involvement with the PPB in 1996 they had acquired new barley seeds from the programme. The two women declared that they usually replanted their own vegetable seed that they retained from the previous year's harvest. Their selection of vegetable seed was organised either by separating the area planted for crops that were to be consumed from the area for seed collection, or by planting one field only and selecting by observation the seed of the best plants. They considered the best vegetable plants to be those with: the highest number of fruits, the best resistance to pests and drought, and the best taste and cooking qualities. The older woman regularly exchanged seed with neighbours to refresh, maintain or increase their yields. If they needed to purchase seed it was the older woman who told her son what variety to buy. The older woman also sold both barley seed and straw directly from the house, a practice allowed because at her age, the women said, interaction with male strangers, if needed, was permitted. Although she reiterated over numerous interviews that all the important decisions were taken by her sons, it was observed that this woman in practice had considerable decision-

making power. Written exercises carried out with her daughter also suggested that her mother was the main decision maker with respect to seed, farming, and food management.

In the village of Lahetha the farmers grew mainly barley that in case of a successful harvest could be sold as grain or straw, and some vegetables for household consumption only. Wheat was desired for local dishes but this crop was less and less frequently cultivated because successive harvests had failed over the last decade because of recurrent droughts. Two of the women respondents (aged between 50 and 65 years) were involved in agriculture together with their husbands, with the responsibility to hand harvest and sell barley. Planting was mechanized and performed by hired labour. The women were also in charge of vegetable production (in the home garden) and processing, and seed selection. Three widows (55-60 years) did most of the farm work themselves, with the help of their children or hired labour when needed. The seed of barley or wheat was preserved from harvest time to the next season or sourced through neighbours, farmers from other villages or sometimes from the district extension office, by both men and women, and by women only in female headed households. Seed was exchanged with other farmers to improve quality. Seed selection and conservation was carried out during harvest time by the women, who selected the best plants, cleaned the seed and preserved it in a dry place. The women considered the best barley plants to have long spikes, long stems, numerous and big spikelets, a gold colour and a healthy appearance. In the case of wheat, it was the men who selected seed on the basis of yield, while women also considered taste, fitness of the grain for the preparation of local dishes, and the quality of straw for use in handicrafts. In male-headed households, seeds were purchased by both women and men, based on a joint decision.

The experience of the participatory plant breeding programme

In Souran the two women became involved in PPB in 2006 after the male head of the household - who had participated in PPB for many years - died and they began to manage the family farm. The two women cultivated the PPB trials in 2007, 2008 and 2009 and sent a brother to represent them at the PPB meetings organised for variety selection. In 2010 both women took part in the variety selection meeting for the first time, after the presence of a female researcher from ICARDA was guaranteed and the meeting was organised in their house.

In 2008 these women argued that the sale of PPB seed had contributed substantially (adding 50-70% by value) to their family economy because they had established themselves as a reliable provider of good PPB barley seed and because PPB varieties

sold for a better price than other varieties. The women noted that the demand in 2008 for PPB seed had exceeded the amount of seed they had available for sale. However, at planting time in the same year, a neighbouring farmer tasked by the PPB programme to deliver the PPB seed to the farmers in the village had given them a bag containing mixed black and white seed rather than the PPB line they had asked for. This incident drastically reduced their seed sales in 2009; they used most of the seed as feed. The women further indicated that their preferred crop was barley, even though wheat fetched a better unit price, because barley responded well to their agro-ecological conditions and it was in great demand in the area.

In 2008 the young female farmer in Souran was left in charge of deciding what barley variety to grow in her field for the first time. Her family acknowledged that she had gained an overview of the best available PPB varieties by reason of her participation in a Farmers' Conference organised by the PPB programme. When asked whether the PPB programme had changed women's access to seed this young woman argued that the PPB programme had provided good well-adapted varieties for their field, thus allowing herself and her mother to select the varieties that best responded to their household's needs. She added that women in the village otherwise did not have direct access to or knowledge of the varieties available, and thus could not select the ones suited to household needs, because their male relatives, who were interested mainly in yield, were in charge of seed purchases and they learnt about what was available or new varieties when buying seed from the commercial sellers.

In the village of Lahetha the five respondent women argued in 2010 that through the PPB programme they had learnt about crop varieties different to those they usually planted and had been given the opportunity to select those that better suited their environment and needs: "Before the PPB programme we did not know about the existence of other varieties. We planted what seed was available and hoped it would work out. Now we know we can choose the varieties we need and that some varieties are better for our environment" (Female farmer, Lahetha, 2.06.2010). During seed selection sessions in 2010 the women asked the programme to provide wheat varieties similar to the local variety *Hourani* that they used to cultivate, but that had become difficult to find. *Hourani* flour was considered best for bread-making and the flour available in the market was not considered suitable for this purpose. Targeted selection of PPB lines by the breeders, when organised together with women farmers, revealed women's interest also in wheat straw traits suited to the use of the straw in handicrafts. These traits and crop priorities subsequently were included in the PPB programme. The women further stated that participation in PPB, and the knowledge generated through the programme, had increased their independence

since they felt they could take decisions more independently and be accountable for their own decisions.

In the first year of the women's participation in the programme in Lahetha, the PPB male farmers and the ICARDA facilitator declared the fields usually cultivated by the women to be unsuitable for varietal trials because they were too stony and too small and decided to assign land for a collective 'women's trial' planted on the field of a male farmer. The women complained repeatedly about this arrangement, particularly when a few months later this field was accidentally ploughed and they lost their harvest. In their second year of participation it was decided that - together with two male trial hosts - two women should host the trials on behalf of all the participating women, using family land. When the extension agent involved in the PPB programme distributed the seed given in compensation for the use of the farm land in PPB trials, the women were given a smaller share than the two men who also hosted the trials in the village. The active involvement of ICARDA staff was needed to rectify the distribution. In the third year two other women were assigned as hosts for the trials - together with two men - but, at the time of planting the trials were moved to the fields of two neighbouring male farmers. The women were told about this decision by the male participants after planting had been completed. A few months later, during a meeting organised by the programme with the PPB farmers, the women complained loudly about their only nominal participation in PPB and their exclusion from decision-making processes. In reaction, a male extension agent present at the meeting, threatened to substitute other (more compliant) women. A few days later, the extension agent even forbade the women to talk directly to the ICARDA staff. Only a strong intervention by ICARDA programme managers re-established the right of women to fully participate in PPB activities along with the men - and their right to host trials, in particular. Communication was re-established between the women directly with the ICARDA staff. On a number of occasions in 2009 and 2010, the women reiterated that some of the participating men remained unhappy about the involvement of women in PPB because they thought that the women would compete in their access to ICARDA seed (as the PPB involves directly only a limited number of farmers, between five and ten in each village) as trial hosts or evaluators (Chapter 2).

In 2008 the activities of the PPB programme had to be down-scaled when the General Commission for Scientific Agricultural Research (GCSAR) referred to the existence of a national law that was said to forbid the exchange in Syria of varieties that had not been officially released. The PPB varieties had begun circulating through farmer-to-farmer exchange and informal sales throughout the drier areas of Syria but had not been submitted to the official approval and release procedure. In only three cases

had the varieties been submitted but they were considered unsuitable for release because they did not perform as well as the controls in the agriculturally most favourable testing sites (ICARDA 2006). However, by then they had been widely adopted in the areas where they showed superior performance i.e., although the PPB varieties performed better than the controls in extreme conditions they did not perform so well in the favourable environments used in the official variety release trials¹¹. The ability of farmers to benefit from PPB varieties became uncertain. Even though no practical measures were taken by the government to prevent farmers from selling PPB seed the farmers felt vulnerable to potential intervention by the government. The text of the law cited by the GCSAR was not made available; it would seem to contradict Syria's obligations already secured by its ratification of the CBD and the ITPGRFA. Collaboration between the extension service and the PPB programme officially was scaled down even though it continued in practice.

The findings show that overall the respondent women played important roles in crop management along the food chain. Yet they (and particularly the younger ones) had limited access to seed, information, markets and decision-making power regarding crop management and revenues. When involved in the PPB programme the women had access to seed varieties and information relevant to their needs, decision-making about variety improvement and, in one case, to income generating activities. However, women's access to PPB seed was often hindered by PPB male farmers from the community, and so was women's ability to host trials and participate in decision-making processes. Women's claims to a gender-equal participation encountered the active opposition of an extension agent.

Analysis and discussion

The right to food emphasises the right to access - regularly and permanently, qualitatively and quantitatively - adequate food or the means to purchase it. The

¹¹ The variety release trials in Syria suffer from numerous problems (Tripp et al. 1997) such as: a) inappropriate site selection – in about 10% of the cases the sites are actually within research stations and not in farmers' fields; b) unrepresentative trial management – usually the level of inputs, particularly of fertilizers are higher than those used by the majority of the farmers; the same applies to the rotation which, in the best of the cases is only one of those used by the farmers; c) trial analysis is biased against poor environments – usually sites with low or variable yields and with some entries failing to give a measurable yield are discarded from the analysis; d) use of sub optimal experimental designs and statistical analysis – for example little or no use of spatial analysis and use of unweighted means across sites which because of scale effect leads to the selection of the highest yielding entries in the highest yielding sites; e) lack of farmer participation and lack of attention to farmer-relevant variety traits – farmers are only involved in providing the land for the trials.

seed sovereignty framework argues that farmers need to be empowered to participate in shaping the food system along the entire value chain, from seed production to consumption (La Via Campesina 2001). The United Nations has urged in resolution 62/206 that multilateral donors and international financial institutions implement policies to ensure that a higher proportion of resources reach rural women in remote areas to empower them to achieve food security and rural development (United Nations 2009). The Global Gender and Climate Alliance (GGCA) maintains: “The guiding principle in any seed intervention is that seed security is a key component of food security. Women are the main food producers in farm households, and so their seed security - in other words, their access to reliable supplies of good seed - is of the highest priority” (World Bank, FAO and IFAD 2009, 545).

The study of which the research reported in this chapter is part, showed how in the respondent households women and men perform complementary activities in the local food value chain, that entail distinct knowledge and needs (Chapter 3). Instrumentally, in Syria, PPB has been demonstrated as effective strategy for involving both women and men farmers in seed improvement, producing varieties that are adequate to their needs and securing the access of both women and men farmers to the PPB seed and associated information. This enhances both farmers’ access to and control of seed varieties. By addressing the interests that the women farmers expressed, for seed with particular cooking and stem qualities - as in the case of wheat (a crop used for food) - and by providing them with good seed that they could sell - as in the case of both wheat and barley (the latter used as feed) - the PPB programme improved women’s control of and access to qualitatively and quantitatively appropriate food and the means to purchase it, and thereby augmented their right to food. Moreover, by providing the participating farm women with opportunities to participate in decision-making regarding agricultural technology development, and with regular access to relevant seed, control of seed revenues and with relevant information, the programme constituted an important step forward in enhancing their seed sovereignty and thereby in achieving a range of food-related rights (Deda and Rubian 2004; Valdivia and Gilles 2001). The programme thus fulfilled many of the expectations of the CBD and ITPGRFA, which Syria has ratified, albeit in this first instance only for a limited number of women. The programme also has shown the value of granting farmers a right to genetic material for the food security of the selected households.

On the basis of these findings, it is possible to interpolate the ‘proof of principle’¹² into the larger setting (such as those of Fig. 2), to ask what might be the best options for the government of Syria to support farmers and achieve food security through improved seed governance while enhancing social and gender equity? The options, this chapter suggests, would include the following:

1. A PPB variety release system, and a variety release system in general (Bishaw and Turner 2008; Tripp et al. 1997)
2. Seed delivery systems appropriate for small farmers in the less favourable environments (Bishaw and Turner 2008)
3. Access and benefit sharing arrangements for genetic material of agricultural interest, that is produced in participatory processes (Salazar, Louwaars and Visser 2006), and
4. Access and benefit sharing arrangements for biodiversity management in agriculture (Convention on Biological Diversity 1993).

The findings indicate that the PPB programme experienced difficulties in relation to farmer-approved varieties that are not officially released by the government. This limits the benefits that farmers can enjoy from PPB and affects particularly the access of women farmers, especially the younger ones among them - who have the most limited access to both the formal and informal seed systems - to appropriate seed and information. Because the existing formal release system is not able to integrate the farmers’ trait preferences and selection criteria (Ceccarelli and Grando 2007) the Syrian government might consider creating an alternative release system for PPB varieties (Bishaw and Turner 2008). It might be further argued that creating an alternative release system based on farmers’ preferences would be particularly important for producing seed adequate for women farmers whose trait preferences, which are related to post-harvest activities also, are not usually among the selection priorities of breeders. This is key to enhancing the seed sovereignty of women farmers and to contribute to their household’s food security.

The informal seed system remains more important in Syria than the formal system particularly in the most remote areas that are not well served by the formal system (Mazid, Aw-Hassan and Salahieh 2007). The findings of our study show that in the respondent households women mainly sourced and sold their seed through the

¹² i.e., this research proves that it is possible to enhance women’s food-related rights through PPB in the studied context. This understanding can be useful in other contexts where, however, its validity needs to be assessed.

informal seed system and through other female farmers.¹³ Bishaw and Turner (2008) recommend the creation of enabling policy and regulatory environments to actively support the informal system. Our study suggests that the government of Syria might consider supporting the informal system as a key strategy to guarantee women's regular and permanent access to good seed. Moreover, because the findings show that seed exchange in the respondent households moves along gender lines, further study of the potential effects of supplying women farmers' networks with good seed might open up a means to reach more women farmers and build an operational understanding of a network where women might be the key seed disseminators.

International experience of the negative effects of inappropriate IPRs suggests that, in addition, a law regulating the rights of farmers who participate in formal plant breeding might be recommended. Salazar et al. (2006) argue for the recognition of collective innovation to ensure that farmers will have continued access to germplasm and the right in law to share the derived benefits. However, as argued by Paavola and Gouldson (2009), the governance of resources is affected by formalised frameworks and informal rules. The findings of our study show that the enjoyment of the PPB benefits by the women respondents was undermined by customary discriminatory practices that affected their participation in PPB activities, the sharing of PPB seed and even the perception or public acknowledgement of who owns good fields. These circumstances affected negatively the potential of the PPB programme in providing relevant varieties and information to women, and their ability to benefit from the programme. Therefore, the government of Syria might consider formulating legislation that guarantees the rights of farmers to the genetic material produced in participatory programmes with an explicit promotion of the rights of women. Such legislation would counterbalance the informal gender-discrimination that affects the right to seed at community and household levels and provide a legal framework for women to effectively claim their rights¹⁴. Ribot and Peluso (2003) argue that the right to benefit from resources, however, does not always translate into the actual ability to access the benefits. The findings show how gender, age, status and other social determinants affected the ability of different women to claim their access and control over PPB seed. Whether, how and for which women and men the legal right to genetic material might translate into actual access and control, and what processes

¹³ This supports recent evidence (World Bank, FAO and IFAD 2009) underlines how for resource-poor farmers, and women in particular, local seed systems are still the main and most reliable source of seed, notwithstanding the earlier successes of the Green Revolution.

¹⁴ The impact of the PPB programme on the empowerment of the respondent women is discussed in Chapter 7.

affect the sharing of benefits, would need to be empirically assessed (Ribot and Peluso 2003) on a larger scale if the legislation were to provide an effective governance framework for a gender-equal sharing of the benefits of PPB varieties (Ostrom 2010).

This chapter further argues that the explicit protection of women's right to access and benefit from genetic material might need to be adopted into legislation regulating all biodiversity management in Syria. The international agreements that recognize the role of women in biodiversity conservation limit themselves to recommending that the states include a gender-sensitive dimension in their policies¹⁵. The new Seed law that the Syrian Ministry of Agriculture and Agrarian Reform is drafting is based on the ITPGRFA and therefore should protect the rights of farmers. In order to progress towards the achievement of food security and the enhancement of gender-equal access to food the draft law would need to explicitly acknowledge the vital role of women in conservation, development and sustainable use of agricultural diversity, and protect their access and benefit sharing rights. Syrian women generally lack ownership rights (UNDP 2006) and in practice, as this study illustrates, age, status and other socio-cultural factors affect the respondent women's seed access and control. Thus it would be easy to make women's rights 'disappear' if biodiversity and seed law were to be framed in terms only of official land title-holders.

The findings further indicate that it was only the insistence by the programme's managers that kept open the possibility of a more equal sharing of the benefits, in the case of PPB households in Souran and Lahetha. This suggests that local norms and values will continue to govern gender relationships and seed flows in the absence of committed 'outsiders'. A lack of appropriate gender-equal official regulation of access to seed would tend to undermine efforts to support women's empowerment and limit the contribution of a gender-sensitive PPB programme to seed security. An assessment of how such a gender-equal seed regulatory framework might affect women's right to food and their food sovereignty is recommended on the basis of the small-N evidence reported in this chapter.

¹⁵ As a matter of fact, the CBD calls for governments to draft national laws and strategies to ensure the "full participation of women at all levels of policy making and implementation for biological diversity and conservation" (Convention on Biological Diversity 1993) but does not set mechanisms or binding agreements to guarantee women's inclusion.

Conclusions

The findings of this study show that the respondent women and particularly the younger ones, generally had limited access to new seed varieties and information; limited decision-making authority related to seed purchase; and only modest control of crop-based agricultural revenues. The PPB programme was able to provide access to seed that was appropriate for both female and male farmers participating in the programme and to new information. Because of gender-discrimination at village and household level, the respondent women farmers faced difficulties in participating in the programme in terms equal to the male farmers and in accessing the seed they co-developed under the programme.

Syria had begun the process of developing a national law for the governance of its natural and agricultural biodiversity based on the ITPGRFA. This chapter argues that a gender perspective would need to be incorporated in the emergent seed regime in ways that enshrined both women's and men's rights. Further, support of the informal seed system, on which women mostly rely to source their seed, as complementary to the emergent formal system might be an effective strategy for providing a greater number of women farmers with good seed. The potential of such a strategy would need to be assessed empirically.



Picture 1. Variety selection in the field in Lahetha



Picture 2. Variety selection with women farmers in a house in Ajaz

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CHAPTER 7

Empowering women farmers: the case of participatory plant breeding in ten Syrian households

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Abstract

This chapter presents the findings of an assessment of the impact of a participatory plant breeding programme (PPB) on the empowerment of 12 women farmers in three Syrian villages over four years. The assessment is based on indicators identified by the women themselves that comprise recognition of the identity of women as farmers; access to and control of productive resources; access to opportunities; and decision-making. The chapter concludes that PPB can constitute an opportunity to enhance women's empowerment by increasing the recognition of women as farmers, supporting their access to information and relevant seed and impacting on their decision-making in agriculture. The chapter also shows and discusses three events that had negative impacts on the respondents.

Keywords

Empowerment, participatory plant breeding, women, impact assessment, Syria

Background

Empowerment of women has become a frequently cited goal of development. In agricultural development empowerment is considered essential in order for farmers to safeguard their livelihood interests and seed-based agro-biodiversity (Almekinders and Hardon 2006). Empowerment is also considered to enable small farmers from marginal areas to participate in research as more equal partners alongside scientists, thereby increasing the effectiveness of agricultural research (Song and Vernooy 2010). Empowerment of the most marginal farmers, and rural women in particular, is considered important to provide these most vulnerable groups with the means to voice their needs and desires and to take action so that they can influence rural and agriculture development for the improvement of nutrition and food security (De Schutter 2009). Nobel prize-winner Amartya Sen (1981) demonstrates in his essay 'Poverty and Famines' how hunger stems from disempowerment, marginalization and poverty.

Research on the empowerment of women farmers in Syria is important because of its intrinsic interest in a region where there is a relative paucity of research literature on any aspect of women in agriculture and particularly because of its potential to improve the relevance and efficacy of development work (Jensen 1994). This chapter presents the findings of an assessment of changes in the empowerment of 12 farm women from three rural villages in Syria. The assessment is based in the context of a participatory plant breeding (PPB) programme coordinated by the International Centre for Agricultural Research in the Dry Areas (ICARDA).

Scientists regard PPB as an innovative technological process and an institutional mechanism for enhancing rural livelihoods, by providing the means and a process for improving plant varieties. By collaborating with the most marginalized and poor farmers, PPB addresses their agro-ecological, geographical and socio-cultural needs (Ceccarelli et al. 2000). PPB also has been recognized as an approach that can support farmers' empowerment. 'Increased self-esteem' and 'enhanced knowledge' are some of the specific benefits mentioned by farmers involved in PPB projects (Paris et al. 2008).

A PPB programme was initiated in Syria at ICARDA in 1996. It adopted a gender-neutral approach to the involvement of interested farmers as it was open, in principle, to the participation of both male and female farmers but did not assess gender-based needs and constraints. However, after ten years of activities it was found that only male farmers had become involved. In 2006 a diagnostic study (Chapter 3) was carried out to understand the reasons for the absence of women

farmers from the PPB programme. At the same time, the women expressed a strong interest in participating in the programme. Thereafter, the researcher (a young, newly married Italian woman) was appointed as a member of the PPB team and tasked to develop, together with the interested women farmers, a pro-active approach to address the barriers to their involvement. Seven women farmers from Lahetha and Souran have since been involved in growing PPB trials, evaluating their performance, selecting varieties, and naming them. They have also been involved in other activities organized by the programme such as conferences and meetings. From 2007 an assessment was undertaken by the researcher that evaluated the impact of the PPB programme on the empowerment of the newly involved women farmers over a period of four years (2007-2010).

This chapter reports the findings of this assessment and addresses the question: can participation in the PPB programme enhance women's empowerment, and if so, how? The challenges encountered in the research give rise to a number of reflections on the meaning of empowerment and how this concept can be measured and understood by researchers, as well as by the women and men concerned in this case.

Conceptual framework

Empowerment is an elusive concept. It has been conceptualized, for instance, as an on-going process of change in power relations (Kabeer 2010). Power relations are often concerned with rules that legitimize some voices and discredit others (Patton 2002). The empowerment discourse itself is not exempt from concerns over who has the power to decide, in this case, to decide what 'empowerment means' and 'whose empowerment counts'. The very concept of 'women's empowerment' has been criticized as produced by feminist ideologies in the global north and transferred to the global south (Charrad 2007) and also claimed by feminists from the developing world for their struggles against gender-based injustices (Batliwala 2007). Given that empowerment is also conceptualized as a means to self-determination (Sen 1990), the question of 'who defines women's empowerment?' is a pertinent question to which we return in the analysis and discussion.

According to Sen, empowerment is best seen as a process of "replacing the domination of circumstances and chance by the domination of individuals over chance and circumstances" (Sen 1990, 44). Kabeer (2010) also focuses on empowerment as process, defined in her perspective as the process of acquiring the capacity to make strategic life choices and exercise influence. Both views emphasize empowerment as a means to enhance individuals' capacity for self-determination - people's capability of living the lives that they have reason to value. Sachs and

Santarius (2007) identify three basic principles of self-determination: 'recognition', 'distribution of resources' and 'access to opportunities'. 'Recognition' here is understood as acknowledgement of the roles individuals freely choose to take in society. It refers both to self-awareness of inner ontological transformations and to recognition of these transformations by others. 'Distribution of resources' relates to the right to self-determination because resources are the material expression of recognition and the necessary means of survival. 'Opportunities' are necessary for individuals to make use of the resources they access and to actualize their right to self-determination. The approach proposed by Sen and Kabeer, focused on empowerment as a process, has been adopted by this study, together with the three principles of self-determination identified by Sachs and Santarius.

Much of the literature on empowerment looks at power dynamics in terms of clashes over conflicting claims and the ability of some individuals to dominate others. In this framework empowerment implies a shift of a finite quantum of power from powerful individuals to less powerful ones in a zero-sum game. Follett (1924) provides an alternative to these empowerment-disempowerment dualistic discourses by looking at co-power, which focuses on relationships and on individual empowerment as increasing the power of all rather than as a re-allocation of the existing power. Others have focused on 'the power with' (Kabeer 2010) that is, power that results from sharing common concerns that can be more powerfully addressed by a group rather than by an individual. This chapter discusses how opportunities for empowerment through PPB can contribute to these different forms of power.

Applications of any concept of empowerment within the Muslim world takes on a particular character. Fernea (2003), for example, discusses the differences between 'Western feminism' and the movements for women's equality in the Muslim countries in terms of what she calls 'family feminism'. Fernea argues that, while Western feminism prioritizes women's productive role over their biological and reproductive roles, family feminism reasserts the value of the multiple roles of women in the family and their involvement in complex systems to raise the next generation and reproduce culture. This chapter explores the complexity of socialization that a women-inclusive PPB would need to take into account.

Over the last two decades activist scholars have also explored the potential to enhance gender equity and women's empowerment through religion. Arnez (2010), for instance, draws attention to how women in Muslim countries are reinterpreting Islamic sources to increase the legitimacy of gender equality demands in Islamic cultures. Others have contextualized feminist discourses in the political milieu of the

Middle East. Charrad (2007), for example, argues that gender relations are shaped by collective negotiations between power holders and kin-based groups and that in periods of social change gender roles take on a major role in politics. This may be a particularly interesting comment at a time when Syria is experiencing civil war and demands for governments to implement key reforms. One of the questions explored in this study is the extent to which PPB can represent a pathway for women towards 'modernity'.

In the discussion we return to these conceptual issues. Here, in order to render the more abstract conceptual discussion amenable to applications in the field, we now turn to how indicators of empowerment might be derived. Cornwall and Anyidoho (2010) argue for development of indicators that are locally meaningful for women themselves and for the specific development activity of interest.

In Syria so far there has been very little work to develop indicators relating to any aspect of gender relations. There have been two notable contributions: one based on the field experience of the NGO Fund for Integrated Rural Development of Syria (FIRDOS), a network of rural communities, and one developed by the National Agricultural Policy Centre (NAPC), based on international agreements such as the Convention for the Elimination of All Forms of Discrimination Against Women (CEDAW), adopted and ratified by the Syrian government in 2002.

Neither the indicators developed by FIRDOS nor those developed by the NAPC were found in this study to be sufficiently grounded in the PPB activities that this chapter addresses. The methodological section explains how the indicators applied in this research were chosen and constructed.

Methodology

This chapter integrates the methodology section of Chapter 1 by reporting the methodology specific to this part of the research. This was an impact assessment that comprised a set of participatory exercises, participant observation, and individual and group discussions, performed repeatedly in three stages over four years (2007-2008, 2009, and 2010) in order to monitor and assess on-going changes in identified indicators of empowerment that focused on 'change' as a process (rather than an outcome).

The indicators

This research examined four indicators of empowering processes: 'recognition of women as farmers', 'access to and control of productive resources particularly seed and information', 'access to opportunities' and 'intra-household decision-making'.

These indicators were distilled during intensive dialogue with the respondent women on the basis of: i. the constraints on their participation in PPB that the respondent women had identified during the diagnostic study in 2006 ii. the principles of self-determination identified by Sachs and Santarius (2007).

Village and respondent selection

Three villages were selected among the set of 24 villages involved in the PPB programme in 2006. The selected villages were thought to offer contrasting settings in terms of a continuum of existing 'household participation in PPB'.

The 12 women respondents were selected strategically from the three villages, based on their ability and willingness to provide in-depth information with regard to seed and crop and livestock management. Their men folk approved this collaboration because the researcher and the other farmers present in the meetings were all female. This yielded ten households in total and 12 women. An additional number of women (a maximum of five at any time, in each village) regularly joined in the research meetings and contributed to the discussion. (Chapter 1 provides more details about the respondents' selection).

Data collection

The research started in 2006 with a diagnostic study (Chapter 3). The impact assessment was organized in three stages over 2007-2008, 2009 and 2010, each lasting between five and seven months of regular weekly field visits. The first stage (2007-2008) was a base-line study, carried out in all three villages (Chapter 3). Stages two and three (2009 and 2010) consisted of repeat interviews to assess changes in the selected indicators of empowerment over the two years.

Repeat interviews were conducted during women-only meetings, with the support of a female translator. The 'recognition of women as farmers' indicator included an exploration of both self-recognition by the respondent women and recognition by their households and community members of women's role in agriculture. This indicator was studied by assessing: i. women's perceptions of their roles in agronomic management - by means of joint analysis of data on family structures and activity charts (Guijt and Shah 2006); ii. women's understanding of 'who is a farmer' - by means of nine semi-structured group interviews with the women (FAO 1990) that included life histories (Deshpande 2005); iii. the perception held by 24 men farmers of 'who is a farmer' - through seven semi-structured interviews in 2009 and; iv. the reasons for changes in the perceptions of women as farmers across the four years -

through semi-structured interviews in 2009 and 2010 where self-reporting (Lam and Bengo 2003) was utilised.

Changes in the distribution of resources were assessed through the use of local resource maps (Guijt and Shah 2006) and by Sustainable Livelihood Framework (SLF) analysis (Mancini, Van Bruggen and Jiggins 2007). The women were asked first to list the attributes they associated with the five types of capital (social, human, financial, physical and natural) that constituted their livelihood and then to score those that they themselves had (labelled 'have' in Table 1). The exercise was taken a step further by adding prospective scores for what they did not but would have liked to possess (labelled 'need' in Table 1). The scores and the discussion surrounding this exercise allowed deeper understanding of livelihood dynamics and a more complete evaluation of the contribution of each kind of capital to each respondent's livelihood.

Changes in women's perception of intra-household decision-making were explored through matrix analysis (Miles and Huberman 1994) matching women's daily activities and the power dynamics affecting them. Variations in women's perception of their access to opportunities for self-determination were monitored by means of Rich Pictures (Attenborough 2006): through detailed drawings the women were asked to represent the future life they would ideally like to have (dream future) and the life they realistically expected to have (realistic future). Repeat open discussions were organized focused on gender-differentiated sources of information and knowledge, and on seed exchange and management.

Action research (Almekinders, Beukema and Tromp 2009) took place in addition to the main research activity to achieve a gender-balanced participation of farmers in the PPB programme (Chapter 1).

An International Farmers' Conference organized by the PPB in 2008 and its evaluation provided additional information on the empowering potential of participation in PPB (Chapter 5).

In addition, in 2009 a male MA student carried out seven semi-structured interviews with 24 men from the three villages (see Chapter 1).

The results of a preliminary analysis of the research findings were further validated in a series of informal interviews in the three villages in late 2010.

Data analysis

All fieldwork interviews were written up, transcribed in digital format, and verified by one female assistant and by the respondents to increase the accuracy of the

information particularly across languages. Visual material including pictures and video interviews complemented the written material. The findings were analysed descriptively (Patton 1980).

The software package Atlas.ti (Development GmbH 1993-2009) also was used to organize, code, aggregate and disaggregate both the written and the visual material, and to triangulate findings elicited through the various methods. Atlas.ti was used to compare the findings provided in each of the three stages of the impact assessment and to elicit changes in the indicators of empowerment.

Main findings

The findings are presented for each indicator in turn.

Recognition of women as farmers

The main picture that emerges from the study is of variable and fluid identities held by the respondent women often affected by social norms rather than actual work contribution. Typically, throughout the study period men were named as farmers and women as their helpers, by both men and women alike, despite women's substantial role in farming and their increasing role in agronomic management.

The social meanings associated with 'who is a farmer' revealed stereotypical associations between men as the breadwinners and therefore farmers and women as family caretakers. Atlas.ti analysis showed that other factors linking the identification between men and farming included land ownership, decision making, perceptions about 'who does important work', 'who is knowledgeable', 'family origins' and 'interest in agriculture' (Chapter 4). One woman only referred to Islam as ascribing to women a modest role in the household, subordinated to their husbands. Three women mentioned that the appropriate role of women was in the domestic sphere as housewives. The detailed findings, however, reveal more light and shade on this point than the ideo-typical responses suggest.

In Ajaz, of the four women interviewed between 2007 and 2010, two of the younger women did not specify any occupation in 2007 and 2009. In 2010 one of them said she was 'working in the fields'. One unmarried woman who had been in charge of the family farm for some years defined herself as a farmer together with her father who was, in fact, retired. Four married women substantially involved in agriculture defined themselves as housewives in all three years, an identity also given to them by their daughters. Their men folk were defined by the women mainly as farmers across all the years - although they were mostly involved in off-farm, non-agricultural activities - but they also included one man's work in a non-agricultural job. The men

interviewed in 2009 generally stated that they were the farmers. One, however, mentioned the increased role of women in farming because of male migration. A second farmer expressed his dissatisfaction that women contributed to agriculture rather than to household duties only.

In Souran a young woman declared for the first two years that she was 'working in the fields with her mother' after the death of her father. In 2009 she defined herself as a teacher (a part-time and temporary occupation), and in 2010, after getting married, she identified herself as someone with multiple identities, as a teacher (although at this point she had stopped teaching a few months earlier), as a farmer in her mother's family, and as 'helping in the fields' of her in-laws. In 2010 she defined all the male members of her family as 'farmers' (an occupation they never had), adding that they had non-agricultural jobs. The five men interviewed stated that men were the farmers and did almost all the work in agriculture but added that women contributed to seed selection and manual work.

In Lahetha the number of women defining themselves as 'farmers' went from one in 2007 to five in 2010. Only one woman, a widow whose family's economy depended solely on agriculture, defined herself a 'farmer' across all the years. The number of husbands defined as farmers also increased, from one in 2007 to four in 2010, when all the widows decided to specify the occupations of their deceased husbands. The number of women defining themselves as 'helpers' in agriculture decreased, from four in 2007 to zero in 2010. The number of women including 'housewife' among their occupations increased from zero in 2007 to three in 2009 (and decreased to two in 2010).

The men interviewed in Lahetha in 2009 presented diverging opinions during a lively discussion. A male facilitator from ICARDA, a male extension officer from the village, and the husbands of the women participating in PPB argued that the women indeed were involved in agriculture, and some of the husbands added that the women worked as much as the men in agriculture. Other farmers involved in PPB denied that women had a role in agriculture; some added that in the past women had been more involved, but drought and mechanization had reduced their farming role; and some maintained that women were not interested in agriculture because there were no economic benefits. For these reasons they argued against the participation of women in PPB.

In 2009 and 2010 the women stated clearly that the following key events had raised awareness about their role in agriculture at both the household and the community level.

The women from Lahetha declared that their inclusion in the PPB programme in 2007 and ICARDA's willingness to support financially the participation of women at a conference in Aleppo in 2008 had been interpreted by other village members as a sign that the women were 'good farmers'. One respondent maintained that after her participation in the International Farmers' Conference her husband realized that their knowledge in and about agriculture was equally valuable and consulted her more than before regarding farm management. In 2009 a female farmer from Lahetha declared that "people always saw us work in the fields and knew about our work. But now they also talk about it" (Female farmer, Lahetha, 18.03.2009). In 2010 the women concluded, as a female farmer from Lahetha expressed: "We have more knowledge than the men because the women went to Aleppo [for the Farmers' Conference]. The other farmers now appreciate our knowledge! Not all of them will show it, though. But we do not care about the rest; we only care that our families acknowledge what we know and do. The others probably are simply jealous because we are part of ICARDA!" (Female farmer, Lahetha, 14.10.2010).

In Souran a young woman farmer complained in an interview that the members of the village and her household were little interested in recognizing her role as a farmer. Nonetheless, after participating in the International Farmers' Conference, she had been put in charge of deciding what varieties to grow in the family fields for the first time. This was a direct consequence of her exposure to ICARDA varieties during the conference, as her mother and brothers declared. During the evaluation of the Farmers' Conference in 2008 other members of her family also declared their new awareness of the important role of women in farming (Chapter 5). In 2010, during a women's group discussion on women's role as farmers, this young woman argued for the importance of confronting men's image of women's capabilities by asking "why in the fields are there both men and women but in conferences and meetings only men? You need to confront them and hear their answers!" (Female farmer, Souran, 12.07.2010).

On numerous occasions the women from Ajaz expressed their disappointment at the lack of recognition of their work in the fields by household members

because this meant that after their agricultural work they were also asked to perform all the household duties. Two of the women respondents pointed out that the degree of recognition varied among households. In some, the women were given by their husbands or fathers a small plot from the family land to manage independently. The women were then entitled to the revenue generated through the sale - by a male relative - of the produce of this plot in recognition of their work on the family's land. In 2010 three of the women interviewed declared that in spring 2009 a sudden increase had occurred in the recognition of women's role in farming. This was after agricultural activity had abruptly ceased because of a combination of a sharp increase in fuel prices, depletion of water resources, and a severe drought, events that together made the irrigation of vegetables and the hiring of machines too expensive. Many households found it cheaper to purchase vegetables from the shops. This in turn affected household income by on the one hand increasing the expenditure on food for household consumption and on the other decreasing the agricultural revenues generated through the sale of surplus vegetables. As a consequence the normally unpaid contribution of women to the household economy through their everyday farming activities became monetized and hence visible.

Access to resources

The respondent women considered social capital to include all social relations; human capital to include health, knowledge, skills, and character-related attributes; financial capital to comprise mostly cash, incomes, and property; natural capital to include land, water, weather, livestock, plant and animal diseases, and seed in some cases; and physical capital to comprise all infrastructures.

In 2007-2008 the baseline study revealed that none of the women interviewed and none of their daughters or female neighbours owned any property in land, housing, capital goods, or equipment; all such property was held in men's name only. This situation had not changed by 2010. The SLF analysis revealed that between 2007 and 2010 in all three villages agriculture was considered the most important livelihood resource. Specific agriculture-related resources considered important were the sale of seed, vegetables, and fruit for household consumption (as well as livestock for one woman from Lahetha and the sale of surplus vegetables in Ajaz). Non-agricultural resources considered important were salaries, remittances from family members working abroad, embroidery, and renting out a car or a shop. The young women, in general, tended to conflate their financial capital and that of their household because

they relied on the latter for economic support. However, within the general picture strong differences emerged across location and time.

In Ajaz the women scored financial capital the lowest among the five capitals in all years because, they argued, farmers are poor and women farmers poorer as their men folk take most of the property. Natural capital was the strongest capital in 2007 because, the women argued, contrary to other villages, Ajaz had irrigation water and could grow vegetables. However, in 2009 natural capital recorded a sharp decrease related to cuts in fuel subsidies that reduced the availability of groundwater for irrigation. Human capital scored the highest in 2009, and the score remained stable across the three years with the exception of one younger woman, who was thought by the other women and herself to have little human capital because of her laziness and dislike of agricultural work. Social capital scored high in all years because, the women argued, in the village they helped each other as much as possible. One woman thought that she could benefit from accessing a wider network of people as women only know people from their own village.

In Souran financial capital also was rated among the lowest of the five capitals in all years because the women argued they had limited land and cash availability. Natural capital for the Souran women included PPB seed, which, according to a respondent, was “not just ok, but very good” (Female farmer, Souran, 24.02.2009). The score for natural capital was high in 2008 but decreased in 2009 after a frost damaged crop yields; it remained low in 2010. A family’s social status here was considered to be an attribute of human rather than social capital because “people know they can trust us and trust the seeds we sell. That’s why we sell so much [PPB] seed” (Female farmer, Souran, 5.03.2008). However, scores for human capital were much affected by individual circumstances and their interplay with the programme’s impacts. For instance, the young respondent decreased her score in 2009 after the community disapproved of a trip she made to Aleppo (Box 1) but increased it substantially in 2010 after she married. Human capital was thought by the two women respondents to have decreased throughout the period, maybe affected by an incident in the delivery of PPB seed: a neighbour in charge of distributing the PPB seed to participating farmers had given the women mixed black and white seed rather than PPB lines (maybe in an attempt to increase his sale of seed by damaging his neighbours’ seed supply). This had drastically reduced their sale of seed and affected their reputation as reliable sellers of good seed (Chapter 6).

In Lahetha the women felt that natural capital was the weakest point in their livelihood even though it was considered to have increased steadily over the three years because of increased rainfall and better PPB seed. They complained that droughts made agriculture difficult and that the land was not fertile. Human capital was scored as one of their strongest resources with a slight decrease in 2009, probably as a consequence of an increase in self-awareness caused by interaction with other farmers during the International Farmers' Conference. In 2010 the women specified that since their involvement in PPB there had been no increase in their access to formal education but considerable improvement in access to information, and they believed that this was much more important than formal education for their farming. The social capital score decreased a bit in 2009 and increased substantially in 2010 because, the women declared, through collaboration with the PPB they had become a cohesive group and helped each other.

Physical capital varied in all villages for reasons external to the PPB programme and related to the status of the infrastructure in the area.

The SLF also revealed women's increasing desire to widen their access to information and skills. In Ajaz the attributes listed for human capital were just two in 2008 ('health' and 'skills'). However, the list increased in 2009 and 2010 to include 'health, experience, autonomy and learning capacity' among others (see Table 1). Some of the keywords mentioned in Ajaz were similar to those in Souran and Lahetha, possibly indicating the influence of the researcher on the discussion across the three villages or the common image, held by the women, of what attributes women ought to have. The women in Ajaz also listed among their 'needs' a strengthening of their existing skills, adding in 2009 their belief that they could profit from learning English. The 'needs' mentioned in Lahetha and Souran were increasingly numerous and specific and included in 2009 and 2010 'access to information, computer-skills, English, knowledge of technological devices, driving' (see Table 1).

Table 1. Comparison between sustainable livelihood framework keywords			
'HAVE' (i.e., attributes that the women considered to possess)			
	Ajaz	Souran	Lahetha
2008	Health Skills	Health Skills Commitment Experience Faith Status	Health Skills Experience Faith Being-active Courage Creativity Embroidery Gardening skills Housekeeping skills Knowledge Passion for work Practical skills Interpersonal skills Strength Strong-character Talent
2009	Agricultural skills Housekeeping skills Embroidery skills Interpersonal skills Creativity Hand-work skills Education Memory Practical skills	Agricultural-knowledge Housekeeping skills Embroidery skills Interpersonal skills Self-confidence Teaching skills Status Patience Strong character	Agricultural-knowledge Housekeeping skills Embroidery skills Interpersonal skills Self-confidence Hand-work skills Selling skills Influence
2010	Health Autonomy Housekeeping skills Benevolent thoughts Cleverness Experience Learning capacity Practical skills	Health Agriculture skills Hand-work skills Teaching skills Strong-character Intelligence	Health Agricultural knowledge Housekeeping skills Autonomy Knowledge

'NEED' (i.e., attributes that the women did not but would have liked to possess)			
	Ajaz	Souran	Lahetha
2008	Agricultural knowledge Knowledge Passion for agricultural work Skills Strength	More people to rely on More proportionate distribution of household work and inheritance among brothers and sisters	Health Power Strength Younger-age Physical power More knowledge More experience
2009	Agricultural skills Autonomy Complicated skills English Practical skills	Stronger personality More education Ability to take decisions	More agricultural knowledge Education English Knowledge of technological devices More access to information More knowledge Know more people Computer skills
2010	Education Health Household skills	More people to rely on More cash or income	Health Education English Driving skills Computer-skills

Source: Sustainable livelihood framework; Ajaz, Souran and Lahetha; 2008, 2009 and 2010

On various occasions throughout 2009 the women respondents in Lahetha expressed the specific importance to them of participating in PPB in order to get access to information about the existence of different crop varieties that best fit their environment, to get access to good seed, and to exchange information and experiences with other farmers. One woman maintained: "Before the programme we would plant any variety in our fields and hope they would grow. Now we know there are varieties that better fit our environment and needs" (Female farmer, Lahetha, video interview, 2.06.2010). They also asserted that they had begun to make

decisions on their own and to be responsible for decision-making about agricultural matters without having to rely on other people.

The women from Lahetha maintained in 2009 that their collaboration - through the PPB programme - with people unknown to the village, including people in professions such as science and farmers from other countries, as well as, for some, their participation in international conferences, had encouraged them to continue their agricultural work. After the International Farmers' Conference they declared they felt more self-confident in speaking to men. A female farmer from Lahetha, quoting a male farmer who had participated in an earlier PPB meeting, declared: "By speaking loud we get stronger! We are afraid no longer when a man says 'you women should not speak'" (Female farmer, Lahetha, 18.03.2009). In 2010 another of the women of Lahetha maintained that through her participation in PPB she had gained in self-confidence even to the extent of participating in a conference in Europe. A young woman from Souran also maintained that through the International Farmers' Conference, where she had been invited as a speaker, she had gained in self-confidence and could now speak in front of men, strangers, and even older men. Her responsiveness and collaborative spirit increased considerably during the fieldwork through 2009 and 2010. The women in Ajaz also felt their self-confidence had increased, in this case because of their collaboration with the study.

Access to opportunities

In 2008 the women respondents of Lahetha said they dreamt of opportunity mainly in terms of getting a pension and spending their retirement in good health, travelling and enjoying their grandchildren once all their daughters and sons had married. However, by 2009 in Lahetha the five respondent women included among their dreams big and productive farms with a water well, where they could drive their farm machinery onto the land and take care of the garden. They also mentioned their aspiration for their sons to manage a big commercial activity (such as a supermarket), in some cases in collaboration with them, and a new car. Among their realistic wished-for opportunities they included building a second floor onto their house for their sons' families, that their daughters and sons would be married and educated, grandchildren, and a small commercial activity for themselves. One woman mentioned her realistic desire to obtain a position as an employee. In 2010 the realistic hoped-for opportunities included more women as managers of a commercial activity. Discussion of this picture provided grounded expression of a range of concerns related to women's access to education as a pathway to a 'modern' life. For instance, three women were disappointed at having been prevented by their family members and society from studying longer. In two cases the women argued that their

husbands had prevented their daughters from continuing their education, thereby compromising their future. A widow asserted that after she took over the management of the family she had allowed all her daughters and sons to study.

Box 1. Women farmers participate in an international conference

To facilitate the participation of an unmarried female farmer (aged between 25-30 years) in the International Farmers' Conference that was held in Aleppo (roughly 100 km away from her village) the PPB team at ICARDA decided to support financially the participation of an accompanying older female person. According to the local tradition young women are not supposed to travel alone and spend time outside their home unsupervised. An agreement was reached with her family concerning all the logistical circumstances that would allow her to travel to the conference. On the day the bus picked up the participants from her village, the Conference organizers were contacted by the community facilitator because, it was reported, at the request of the young woman's family, the designated accompanying family member was said to be unable to travel; a second woman would substitute. Once at ICARDA it was clear that the substitute was a young woman unknown to the young respondent woman. She was a relative of an influential farmer from the same village who had arranged the substitution to provide the young lady with the opportunity to participate in the Conference under his supervision. When the conference was over the young respondent woman returned to her village where her neighbours were openly critical of her 'unsupervised' stay of two nights in Aleppo. She maintained afterwards that the neighbours showed hostility towards her family by not paying visits and generally ignoring their presence in public. Her family blamed her for this social ostracism. The situation worsened further when, in an attempt to clarify the circumstances of the episode for which he had partly been held accountable, the ICARDA community facilitator organized a public confrontation between the influential farmer and the young woman in spite of the fact that the PPB programme manager had strongly advised against it. When asked about who had lied about the availability of the 'accompanying person' the young woman was forced to take the blame because, as she later argued, it was impossible for her to say that the older, male, influential farmer had lied. The difficult circumstances obliged her mother to intervene, take the blame for her daughter, and apologize to the influential farmer to avoid the shame of having publicly embarrassed him. The disapproval of their neighbours grew even stronger, and the reprimands her household members directed towards her increased. Only after she married and moved to a new neighbourhood did her

social status recover.

Five women from Lahetha also participated in the Conference. They experienced their participation very differently. They were accompanied to Aleppo by a male member of the community who, however, had to leave the conference earlier than them. The women complained on one occasion only about the inappropriateness of being in Aleppo without a male supervisor and never mentioned any instances of disapproval by their community. On the contrary, they argued that their participation in the conference had given them visibility as farmers in the village and made the villagers 'speak' of them as 'good farmers'.

The rich picture drawn by a young female respondent in 2008 in Souran further reveals the nuances of social expectation and how women seek to negotiate these. She included among her goals a "good husband because I am from a good family, a good house and a car because my sisters have them too, and children because all women here have children" (Female farmer, Souran, 5.03.2008). The woman did not distinguish between dreams and realistic futures because, as she put it, it is not appropriate to desire too ambitiously. In 2009 she included a house in her picture of the future as a symbol of stability and independence and good jobs for her and her husband. Again she did not distinguish between realistic and dream futures and commented

It is shameful to desire a lot also because I know I can't achieve it. So it is better to refrain myself and not be disappointed. Also, this is the model of life I always see and that's what I want. If I had been exposed to city life or different cultures I might want something different (Female farmer, Souran, 17.02.2009).

During informal discussions the woman complained about her inability to take any courses in the nearby town because her family disapproved of the idea; "rules are strict in the village", her mother added. She included in her marriage negotiations in 2009 her husband's permission for her to take hairdresser's courses, to continue teaching, and to continue farming.

Many of the respondents referred to their men folk as those responsible for determining their life chances. In 2008 an unmarried woman farmer from Ajaz wished only that she could marry a strong, respectful, and religious man from the city who could buy a car that she could drive, who would allow her to go on the Haj (a pilgrimage to the *Kabala* in Saudi Arabia), and who would provide her with children and a nice mother-in-law. When asked about realistic access to opportunity she

maintained, “It’s up to my husband if what I drew happens or not; also, he will decide about the children” (Female farmer, Ajaz, 3.03.2008). In 2009 her comment on her realistic future was that, because of the society in the village where she lived, she would not be educated or be able to decide the number of children she had and that probably she would have to marry a man from her village. In 2010 her realistic future was a blank page; she was still not yet married, and she felt that in the future “my life will be as it is now, a white page” (Female farmer, Ajaz, 27.07.2010). In contrast, a married woman farmer from Ajaz in 2008 included in her future picture her expectation of being a good mother and wife, seeing all her children complete their education, and opening a make-up shop in a room of her house. In 2009 her dream future also included travelling; by 2010 she had added a big house and plane travel. In a matrix analysis constructed in 2009 she stated that she would have liked to continue her studies beyond the age of 12, and to have become a mechanic and a pharmacist in her own village. She explained her aspirations in the following way:

Men will have to come to me with broken cars or if they are sick. In the village there is the idea that women who deal with men are not to be respected because women can’t say no if a man asks. I want to show them that I can work like them and have a proper professional relationship with them and still be a respectful woman (Female farmer, Ajaz, 5.03.2009).

However, she added, her parents, her husband, and society in general prevented her from pursuing these occupations, because they are considered jobs only for men, and prevented her from continuing her studies, because they considered this inappropriate for girls above 12 years. In 2009 she also abandoned her dream of opening a make-up shop in her house because of financial trouble, although her husband had approved the idea on the grounds that the shop would allow her to stay at home and deal only with female customers.

Decision-making

The baseline study performed in 2008 revealed that the women respondents were disadvantaged in terms of decision-making. They perceived their decision-making role in their households very differently from one another but they all agreed that, if there was an adult man in the house, the final decision rested with him. Decision-making seemed to be linked to gender-and-age variables rather than to actual work contributions. Marriage and giving birth to one or preferably two boys, were said to increase social status and to confer greater decision-making power, for both women and men. Younger women (between ages 20 and 30) and unmarried women in male headed households felt they had the least decision-making power; older women in

female headed households felt they had the most decision-making power related to their agricultural activities.

In 2009 and 2010 the matrix analysis revealed that in Lahetha the five women felt that their decision making capacities and their space to decide had increased over time as a result of the information exchange with ICARDA scientists and the provision of good PPB varieties. The two married women specified that their husbands consulted them more about agriculture-related decisions; the three widows felt more self-confident and autonomous in managing their farm.

In Souran the young woman respondent felt throughout the three years that her decision-making power concerning agricultural work was very low, while the decision-making power of her mother and older brother remained very high across the three years. In 2009 she related her decision making power to her unmarried status:

When I will be responsible for my house I will depend only on myself and not on my mum anymore. Decision-making is not about age or being married but about being responsible for the house! (Female farmer, Souran, 3.02.2009).

In 2008 she said she had had no role in marketing decisions, but by 2009 she felt she had acquired substantial power in taking marketing decisions. However, the decision-making role of her men folk increased in 2010, after her marriage, when both her husband and her father-in-law (together with her mother-in-law) took over the farm management. Her mother declared on many occasions that she herself was the most knowledgeable person in agriculture in the household. She also decided what to plant and sell, as well as what prices to set. However, if interviewed in the presence of her sons, she would turn all questions asked by the researcher towards them, arguing that they were the most knowledgeable in the family and that they took all decisions regarding agricultural management.

In Ajaz the young women from male-headed households (married and unmarried) recorded their contribution to decision-making in agriculture as stable across the three years, and their male relatives as having more decision-making power than they did. In 2009 external factors were felt to be the major influence on the women's agricultural work - that is, increases in fuel prices and the drought. Marketing decisions were dominated by male relatives across the three years. In the female headed household a young woman even felt she had decision-making power equal to that of her brother regarding agricultural activities and marketing, perhaps because he was employed in non-agricultural activities and she was managing the family farm.

Analysis and discussion

This chapter set out to address the question: can participation in the PPB programme enhance women's empowerment, and if so, how? The analysis and discussion are organized on the basis of the empowerment concepts presented in the conceptual framework.

Empowerment as a process

Sen (1990) and Kabeer (1999) both see empowerment as a process to enhance individual's capacity for self-determination. For Kabeer empowerment thus starts with the exercise of 'agency' - the ability to define goals and act upon them to achieve the chosen outcomes. Cornwall and Edwards speak of empowerment as increasing agency by "extending the horizon of possibility, of what people imagine themselves being able to be and do" (Cornwall and Edwards 2010, 3). These transformations in turn are related to the concept of 'recognition' put forward by Sachs and Santarius.

This research has analysed changes in women's self-recognition and public recognition as farmers. The women participating in PPB argued that over the three years they had become more aware of their own role in farming. The findings show that over 2009 and 2010 the women increasingly wrote of themselves as farmers as well as housewives. In Ajaz, on the contrary, there was no substantial change in women's definition of their roles, suggesting that the process of engaging in PPB activities contributed to the changes documented.

Bawden (2006) argues that recognition of desired aims and of constraints to achieve them, and the identification of solutions, are the first steps towards self-determination. The findings from the SLF analysis show that the women rated their human capital lower after their involvement in PPB and particularly after the International Farmers' Conference. Opportunities such as meeting new farmers, interacting with researchers, and being exposed to new environments, seemed to increase women's self-awareness in terms of 'what they could potentially know' and to decrease their rating of their existing 'human capital' in terms of 'what they actually knew', despite the fact that they believed that both their knowledge and their self-confidence to speak in public had increased. The findings suggest that the correlation between access to information and opportunities and human capital is not necessarily linear and can be misinterpreted unless the context is well understood. The findings further suggest that any simple applications of the concept of empowerment also may give rise to erroneous judgments, given that a decrease in human capital seems to be linked in this study to an increase in awareness and agency on the part of the women.

Issues of power

Part of the empowerment literature looks at power as a struggle between individuals with conflicting interests to gain the power held by others, in a zero-sum game. By looking at co-power (Follett 1924), others draw attention to the power produced by relationships and by collective action to address the common concerns of groups. Collective action - the voluntary action taken by a group to achieve common interests - has been analysed as a powerful strategy for securing the needs and interests of group members (Pandolfelli, Meizen-Dick and Dohrn 2007).

In this case the PPB programme seems to have been successful in supporting a range of women in gaining access to opportunities and resources that augmented their recognition, negotiating spaces and skills. The findings show that public events (such as the International Farmers' Conference) or substantial changes in production patterns at the community level (such as the farming crisis in Ajaz in 2009) in effect may boost women farmers' public visibility and their recognition in their communities and households.

It could be said that the PPB programme provided planned opportunities that enhanced the public recognition and legitimization of women farmers at least as effectively as the unpredictable response to circumstances in Ajaz. The surprise event of the agriculture crisis in Ajaz, however, suggests an additional strategy that programmes such as PPB could follow, that of revealing the monetary value of the unpaid work of women in family farming and in paid employment. The information provided could be of value in negotiations among women and their families as they adjust to changing circumstances.

At the same time the experience of the International Farmers' Conference shows that the increased visibility of the young unmarried woman from Souran was followed by a decrease in her social status and reprimands from her mother and brother, who blamed the woman for the ostracism the family was experiencing (see Box 1). In the case of the five women from Lahetha the Conference only positively affected their image in the village. The difference between these experiences could be due to age, status, and cultural context, since the former was young, unmarried, and from an environment generally considered conservative, while the latter were older, married or widows, and from a religious group generally considered more liberal. Consideration of these contextual factors seems essential in order to develop effective empowering strategies. These two experiences also suggest that opportunities that are felt as empowering by the women and are perceived positively by their family members (as in the case of Lahetha) might contribute to co-power by

increasing the power of all household members; conversely, opportunities that are considered to negatively affect the household (as in the case of Souran) might weaken women's position and strengthen that of the most powerful members, thereby contributing to the 'zero-sum power game'.

The difference in outcome when the PPB programme involved women as individuals, or as members of a group in the Conference also underlines Kabeer's emphasis on the importance of collective action. The women from Lahetha continued to face challenges in being accepted by men in the village as PPB participants, but they declared that they found mutual support in their group of PPB women. Kabeer's argument that collective solidarity in the public arena creates the conditions for large structural change, while reducing the penalties suffered by individuals who do not conform to the norms, here finds support. The programme provided circumstances that catalysed the public questioning of naturalized behaviours and norms and discussion of alternatives. According to Kabeer freedom of choice for self-determination implies that alternative options are conceivable. Questioning the *doxa* - "the aspects of tradition and culture which are so taken for granted that they have become naturalized ... and exist beyond discourse and argumentation" (Bourdieu, 1977 in (Kabeer 2010, 441)) is a step towards critical consciousness of discursive and finally material alternatives.

Family feminism

Family feminism argues for the consideration of women's multiple roles in both the productive and the reproductive spheres within the social relationships established in their society and culture (Fernea 2003). The PPB programme positioned farming in Syria as a family enterprise, open to the participation of both women and men. However, only men were found to be involved after ten years of gender-neutral activities that had been captured by stereotypical expectations of who does what, on the part of both male scientists and villagers, and by normative identities. The research of which the study reported here is a part (Chapter 3) has argued that gender-balanced participatory plant breeding might be able to better match improved varieties to household needs when the distinct trait preferences of both women and men involved in farming along the food chain are taken into account.

The PPB programme as a technocratic activity undoubtedly underplayed the reproductive role of women as mothers and wives. If, as has been shown to be the case, in Syria women's productive role also is underestimated, then the potential benefits of involving women in agricultural development would be lost. The efforts subsequently made by the programme to support women's roles as *de facto* farmers

and farm workers and as knowledgeable about important aspects of the seed value chain, provided opportunities that increased both public and self-recognition of women's productive role as farmers. This study suggests that complementary activity to support the multiple roles of women might add value to the human and social impact of technological developments.

Women: between tradition and modernity

Charrad (2007) argues that in the Middle East women are symbols of the tension between modernity and tradition and that gender relations are shaped by negotiations between power holders and kin-groups. Kandiyoti maintains that in cases of "growing popular discontent ... governments may make the tactical choice of relinquishing the control of women to their immediate communities and families" (Kandiyoti 1991, 440). These considerations raise questions about the roles played by women in these societal negotiations. Also, where do women farmers stand in the 'modernity' versus 'tradition' divide? And how do these issues affect agricultural modernization and crop improvement undertaken by an international research institute such as ICARDA?

The findings from this study show a range of household responses as men and women pragmatically adapt to new realities that disrupt the traditional roles, expectations and normative identities of both men and women. The SLF analysis revealed the dreams especially of the younger women for a more modern lifestyle and the regrets for opportunities foregone because of denial of further education, but also a realistic appreciation of the traditions that circumscribe women's lives. Moreover, the findings also show how decision-making roles continue to be based on sociological markers, such as the combined variables of gender-and-age, rather than on actual work contributions.

Kabeer highlights how, in situations where women are likely to be given respect in a community only if they conform to its norms, women might prefer to negotiate changes informally while retaining intact the public image of traditional decision makers (Kabeer 1999). The findings of this study clearly substantiate this point. The fact that the PPB women became more assertive about their roles as farmers while at the same time emphasizing their identity as mothers and housewives, and the important role of men in farming, shows a cautious balancing between acknowledging their own productive roles in the household and community and maintaining the modest and respectful behaviour they are expected to exhibit towards men. While women were prepared to speak of their work in agriculture in

women-only spaces, they preferred to conform to normative gender expectations when talking publicly about the organization of their households and farm work.

This reality suggests that the boundaries between modernity and tradition are blurred and that the positionality of women and men within these categories is continuously shaped to adjust to changes in the Syrian social fabric as men leave farming in search of higher incomes and as more and more farmers are in fact women. Therefore, women farmers' ability to assert their entitlement to improved varieties, to information, and to decision-making power over variety adoption is of growing importance to enhance the effectiveness of agricultural development for food security and to support small-scale agricultural livelihoods.

How can a participatory programme for crop improvement position itself in this context? The involvement of women farmers in the PPB programme was found to positively affect the decision-making capacity of women participating in the improvement of crops and to indirectly affect their decision-making power in the household. The PPB programme provided a gender-balanced space for farmers to jointly and individually take informed decisions affecting their agricultural work and varietal management along the value chain. The PPB activities also provided women with an opportunity to acquire new information essential to improve farm performance. The importance of farmers' awareness of what varieties are available and which varieties best fit their needs, and of accessing information on cultivation methods for these varieties, has been established in adoption studies (Bishaw and Turner 2008).

The findings also show that the keywords used by the women in the PPB villages to identify what knowledge they needed had become much more numerous and specific by 2009 and even more so by 2010 in comparison to 2007 and 2008. The keywords also became more clearly linked to such hallmarks of modernization as computer courses, English courses, and training in the use of technological devices. Women's increased access to information and knowledge through PPB, and through their participation in discussion groups focused on various aspects of empowerment, thus might be seen as an entry point to enhance women's self-awareness, to support critical thinking and dialogue, and to enhance a process of learning about what different life opportunities might exist for women in a rural village in Syria.

Islam as an empowering force

Many scholars (Arnez 2010) find in Islam sources to legitimize women's empowerment and to define and operationalize the concept in ways that are

compatible with Muslim societies' norms and cultural expectations. Although this would seem to set Islamic traditions of empowerment against the models and pathways identified in western development models, empowerment conceived - as in this study - as a 'process and means for self-determination,' rather than as an outcome, could be said to transcend specific religious contexts and specific 'modes of life' by opening the space for achieving any preferred life path. This approach also provides a way out of discussion of who has the authority to define empowerment because it rests on the assumption that through the very process of empowerment individuals will define their own path to self-determination.

An exploration of envisaged life opportunities has been captured in this study through the women's rich pictures of aspirational and realistic futures. Although cultural restrictions clearly limit the women's responses, in terms of both conceiving their desired futures and formulating these publicly, the respondent women are finding ways to expand their thinking that link them to a lifestyle other than that wholly prescribed by tradition. On the one hand the women say their desired futures match the pattern of life expectations for women in their village; on the other hand, they mention the modesty of their desires as a strategy to avoid disappointment, while progressively revealing their awareness of alternative futures linked to life in the city and abroad. Their expectation of being able to achieve any alternative, however, remains embedded in their relationships with men folk and their skill in negotiating, through their men folk, access to their desired opportunity. In one case only did the specific norms and expectations of Islam form a distinctive frame of reference for the respondents in these discussions.

Participation in PPB seemed not to affect the perceptions the women had of their opportunities to realize their desired futures. Rather, PPB provided an opportunity for reflection on discourses of gender-based identity naturalized in village life and opened up a space for thinking that alternative life paths might exist. Kesby speaks of the importance of 'other spaces' that are provided by participatory methodologies where "normal frameworks of privilege are circumvented by the discourses and practices of equity, free speech, and collaboration" (Kesby 2005, 2055). These spaces typically are organized through action in material sites where women's knowledge, skills, and performances can be valued and expressed as equal to those of men. However, Kesby adds that the major challenge faced by any participatory practice that enables empowered performances, is to 'normalize' these performances in everyday spaces. The contribution of the PPB programme might rest in providing otherwise rare opportunities for women farmers to be recognized in their productive

work, to participate in improving varieties, to access relevant seeds and information, and to make decisions. However, unless a conducive institutional environment supports these empowerment processes, it seems unlikely that empowered performances would become normalized. The effects of gender-discriminating institutions affecting women's management of PPB seed at the village level were studied as part of this research and are the basis of a separate chapter (Chapter 6).

The definition of empowerment as argued in this chapter can transcend specific models of life and rest on individuals' paths to self-determination. Its operationalization in development projects, however, engages with predefined change pathways adopted to achieve planned outcomes and impacts. This raises two further issues: first, how to operationalize the process of empowerment; and second, accountability and risk.

Saccharine approaches or grounded reality?

Cornwall and Anydoho (2010) challenge many of the women's empowerment approaches adopted by mainstream development institutions as 'saccharine' in their depiction of women as a homogeneous group of saviours or victims. They argue, rather, for development workers to adopt a grounded approach that places women in their context.

The findings show that despite the apparent homogeneity in roles, opportunities, and needs of women farmers in Syria, important inter-household and inter-village differences exist, grounded in sociological patterns of age, gender, and marital status and affected by other socio-cultural factors such as household composition and family cultural background, as well as the capacity of individual women to negotiate their identities and roles within their spheres of influence. Each of these differences in its own way affected the success of the PPB programme in involving the women farmers and providing empowering opportunities.

The need for disaggregation to appreciate the diverse development context of individual PPB participants' lives, however, at some point encounters programme efficiency concerns: some degree of aggregation is needed when selecting PPB participants and when identifying representative cases for out-scaling. How can a participatory breeding programme engage with diversity? What criteria can it adopt to decide which farmers to involve? By engaging both women and men farmers, PPB is able to address two major and distinct categories of stakeholders with similar needs, roles, and capacity in farming. The experience of the PPB programme also shows that the strategic selection of powerful farmers in the communities allows a

better diffusion of the PPB seed to other farmers, thereby increasing the programme's effectiveness in output delivery. This chapter argues that equity concerns might also be taken into account by the PPB to include also the most marginal farmers from the communities, who might otherwise not be reached by the benefits of crop improvement. Social and gender analysis could then provide insights on how to better target diversity among these groups of farmers. Effectiveness and equity criteria in the selection of PPB participants might respond to two main PPB priorities: that it deliver its outputs to as many farmers as possible, and that it deliver relevant varieties to the most marginal farmers.

Accountability and risk

The findings suggest that attempts to optimize who is reached by programme benefits and to target its strategies to the context of its participants are not a sufficient guarantee of positive impacts for all participants. The study reveals the punitive sanctions that can be imposed when well-meant interventions go wrong, as in the case of the arrangements for the young woman's chaperone or of the wrong seed delivery for the Souran household; it is not the programme that bears the cost.

Development interventions embedded in projects, which are thus of limited duration, alter - whether by design or presence - the established dynamics at the household and community levels. And what happens afterward? By talking together with the respondent women about their desires for the future, the researcher (herself a young, newly married woman) entered into the forming of expectations. The aspirational field created between the researcher and the respondent women sometimes overtook the programme's ability to respond. One of the women accused the researcher thus: "why do you make us dream, then, if you can't do anything about it" (Female farmer, Lahetha, 16.03.2009).

All development interventions operate based on theories of change and, when working at the local level, inevitably alter household and community dynamics. Given the pervasiveness of gender biases, development projects run the risk of augmenting social and gender inequalities (Kabeer 2010). In the case of crop improvement, the integration of social and gender concerns can help avoid the danger that women and the most marginal farmers are by default left out of the benefits of agricultural research for development. This chapter argues that a women pro-active PPB can provide opportunities that enhance the empowerment of participating farmers, thereby increasing their capability to participate in the programme, voice their needs, take decisions regarding crop development, and benefit from project outputs. This can arguably increase the relevance of PPB as a process and of its outputs to the

stakeholders and reduce the risks of unsuccessful impacts. As a matter of fact some of the respondent women argued that with the information they had received through the PPB, they felt more able to make autonomous decisions and be accountable for them. The findings also show that some of the observed changes can be related to the respondents' interaction with the researcher, rather than to the PPB programme. However, it is worth noting that in a context like Syria such research was accepted by the authorities only through the framework of an international programme coordinated by a well-established institute such as ICARDA.

Also, the findings indicate that a gender-sensitive evaluation of empowerment can help refine PPB strategies and reduce the risk of negative impacts (Galiè 2013). After the incident of the wrong seed delivery, for example, the PPB started to deliver seed directly to each participating farmer rather than relying on one farmer in the village to deliver the seed to the other participants. After the incident of the young woman and her unsupervised trip to Aleppo, the PPB programme discussed the event with its staff from a gender perspective and decided to actively involve a larger group of women from the same village to support collective participation. Yet, based on these experiences, this chapter concludes that there might exist unpredictable circumstances that transform an opportunity intended to be empowering into a negative experience. This opens two questions: whether such negative experiences are to be considered integral steps of any empowerment process; and whether PPB gender-sensitive activities are best understood as opportunities for empowerment - rather than as empowering opportunities - that carry risks that the participating women need to be aware of and to decide to take.

A final reflection: this study was only possible because it was performed by an Arabic-speaking female researcher (although with the assistance of a translator) who was allowed to meet the respondent women in women-only meetings. Often her presence was necessary to facilitate the participation of female farmers in PPB activities. This suggests that in countries characterized by a strong gender-based organization of household and community life, gender-balanced staffing of extension offices and research teams might be necessary to achieve gender-balanced outcomes.

Conclusions

This chapter argues that empowerment of women farmers is increasingly important in countries where the feminization of agricultural labour is making women farmers key participants in the agricultural development of small-scale farming. The findings reported here show that the adoption of a concept of empowerment as a process of

self-determination transcends specific 'modes of life'. They also show that a women pro-active PPB can provide opportunities and set in motion a process towards women's individual and group empowerment, based on their own definition of self-determination. In so doing, such efforts can enhance the relevance of PPB and its outputs. Empowering strategies that are grounded in the contextual specifics of the participants and that facilitate the collective action of farmers are less likely to result in failure. By including both effectiveness and equity concerns, the PPB might be able to satisfy two main objectives: to reach more farmers and to reach more marginal farmers.



Picture 1. Presentation by a farmer from Lahetha at a PPB conference



Picture 2. Variety selection with a young farmer in Souran



Picture 3. Women farmers from Souran

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CHAPTER 8

General conclusion

The relevance of the research

This study analysed changes in the empowerment of women farmers in the framework of social and gender equity. The research was carried out in the context of a participatory plant breeding (PPB) programme in Syria coordinated by the International Centre for Agricultural Research in the Dry Areas (ICARDA), one of 15 centres belonging to the Consultative Group on International Agricultural Research (CGIAR).

The study explored in particular the process of empowerment as perceived by 12 Syrian women from ten households in three villages as they became involved in the PPB programme. Changes in empowerment were monitored on the basis of indicators selected in collaboration with the respondent women. These included: 'recognition of women as farmers'; 'access to opportunities' (such as the PPB); 'access to and control of productive resources', particularly seed and information; and 'decision-making' about agronomic management. The latter was adopted as a cross-cutting indicator.

The study focused on:

1. How the respondent women were involved in household farming and the barley value chain in particular, and how this involvement was perceived by themselves, their households and community, particularly after their involvement in PPB
2. Access to and control of seed - and related information - by the respondent women as affected by a. seed governance at household, community, national and international levels; b. their participation in the PPB
3. How the indicators of empowerment were perceived by the respondents to change over time (between 2006 and 2010) and in relation to the activities of the PPB.

The study is designed as a small-N inquiry that opens up a cross-disciplinary research field, that interlocks issues of empowerment, participatory plant breeding, gender analysis, and governance of seed based on an in-depth and empirical exploration of the issues and their interconnections, in a context (PPB in Syria) where these relationships have not yet been examined. The research starts by shedding light on

aspects of gender and farming - and gender and seeds in particular - within the respondent population in three villages in Syria, a country where there is a relative paucity of research literature on women in agriculture. The study then provides an understanding of what factors the respondent women consider to affect their empowerment and self-determination, thereby contributing a concrete operationalization of the often cited yet blurred concept of 'empowerment' (Cornwall and Anyidoho 2010). It also provides a methodology to assess and illustrate the complexity of processes through which the empowerment of women farmers might take place. The study also complements and deepens the limited evidence of the impact of PPB on empowerment (Paris et al. 2008; Soleri et al. 2002; Song and Vernooy 2010). It focuses on a crop, barley, which in Syria is considered to be the domain of men only but that this study shows also involves women.

Finally, this research provides a micro-to-macro contextual framework to analyse the actual access of the respondent women to PPB seed. In so doing, the findings indicate the value of assessing empirically how institutional arrangements regulating access to seed for farmers might translate into actual practice. Overall, the findings contribute to current discussions within the CGIAR system and beyond on new pathways of agricultural development to enhance food security and rural livelihoods in the dry areas of the world.

The background

The concept of food security establishes access to qualitatively and quantitatively appropriate food, for every individual, as a human right. The right to food emphasises the right to also access the means to produce food. The food sovereignty approach adds a further dimension: the right of farmers to shape food systems in ways that offer benefits also to themselves. While approaches to enhance food security mostly focus on production intensification many have argued that access to food is more related to food distribution and to social marginalisation (De Schutter 2011; Sen 1981; Tscharncke et al. 2012). Current efforts to enhance food security for the world's poor mainly focus on two approaches:

1. Governance solutions that place emphasis on the lack of political will and inequity of institutions as key factors affecting fair access to adequate food and the means to produce or purchase it, and
2. Technological solutions, to produce more food with less resources (Chappell and LaValle 2009).

The breeding of improved plant varieties is important, in order to produce seed technologies that can enhance food security. Participatory approaches to plant breeding, in particular, have proven able to address the diverse needs of small-scale farmers from marginal areas by involving them in the improvement of crops, and by providing them with access to and control over good seed that is relevant to their needs (Bellon 2006).

Small-scale farmers from marginal and dry areas typically farm with limited and often degraded natural resources, yet they provide affordable food to rural populations who are the majority of the poor, and are not reached by the formal food distribution channels (Tscharntke et al. 2012). Women small-scale farmers, in particular, play key roles in providing food, generating incomes, preserving food cultures and contributing to the livelihoods of rural households (Jiggins 2011; UN Women et al. 2012). The weight of evidence indicates that if women farmers had the same access to productive resources - and improved seed in particular - as men, they could increase yields on their farms by 20 to 30 per cent (FAO 2011). Yet rural women have less access to resources, opportunities and decision-making than rural men, and urban women and men (UN Women et al. 2012). Rural women have been shown to be particularly vulnerable to the effects of climate changes that seem likely to worsen existing environmental constraints (Skinner 2011).

Empowerment of the most marginal farmers, and rural women in particular, is seen as a means to both improve gender equality and to progress towards hunger and poverty eradication (FAO, IFAD and WFP 2012: <http://www.un.org/womenwatch/feature/ruralwomen/facts-figures.html#footnote5>). Empowerment is considered important for the most vulnerable groups to access the means to voice their needs and desires, and to take action so that they can safeguard their livelihood interests and seed-based agrobiodiversity and effectively participate in rural and agricultural research for development for the improvement of nutrition and food security. Zueger (2005) maintains that empowerment only takes place when inner developments are externalised and enter into a person's actual and functional reality. Governance regimes affect the actualisation of empowerment because they are believed to affect individual's access to resources and opportunities thereby affecting individuals' capability to access and control food, the means to purchase it, and the food system (De Schutter 2012; World Bank 2007). Because seed is the first link in the food value chain (Chapter 6) the way in which seed governance regimes at micro, meso and macro level affect the actual access to and control of seed by small-scale male and female farmers is key in progressing towards empowerment and food security.

In Syria small-scale agriculture supports the livelihoods of most rural households. In 2010 it was estimated that between two to three million people in Syria were living in extreme poverty, of whom the majority were small farmers (De Schutter 2010). Women in the dry areas of the Middle East make up the largest percentage of agricultural labourers particularly in small-scale farming (Ransom and Bain 2011). In Syria women's share of farming work is increasing as men leave farming in search of higher incomes. The IAASTD (2009) argues that women's disadvantaged access to productive resources, information and rural support services in countries characterised by a feminisation of agricultural labour (such as Syria) have further marginalised small-scale farming and the livelihoods depending on it.

In this context, the ability of Syrian women farmers to assert their entitlement and reliable access to improved seed, to decide what seed is most appropriate to their needs, to access and control the means to cultivate it, and to control the revenues generated through farming to purchase seed or food is clearly important (World Bank, FAO and IFAD 2009). Understanding what women farmers consider central for their empowerment and self-determination, how a process of empowerment might take place within a PPB programme, and how governance regimes affect the actual access of PPB women farmers to the seed they co-developed with the programme is important to enhance both the effectiveness of PPB in contributing to the food security of small-scale farmers, and equitable development (FAO 2011).

The research questions

The main research questions addressed by this study are:

- a. Are the respondent women involved in the barley value chain or in agriculture at all, and if so, which women and in what tasks?
- b. How can the respondents become involved in the PPB activity?
- c. What are the gender biases in local understandings of 'farmer'? Do the respondent women regard themselves, and do other members of their communities regard women as farmers and value their labour contribution and knowledge? Were these perceptions affected by women's involvement in PPB and how?
- d. How is seed managed in the households of the respondent women, and by whom? How do the respondent women access seed? What are the factors that affect the respondent women's access to and control of PPB seed? How has the PPB programme affected the respondent women's access to seed varieties they value?
- e. According to the respondent women themselves, can PPB effect their empowerment and if so, how?

Action-research was undertaken in parallel to this research to understand what approach the PPB programme could adopt to effectively involve the 12 female respondents along with the participating men, and what could be learnt from this 'proof of concept' that might be applied more generally in PPB activity so as to provide gender-equal opportunity. The action-research is not directly reported in this thesis but the findings are included as a background to the study reported here.

Summary of main findings and discussion

The main findings are presented below under each of the four research questions of this study. They are then briefly discussed.

The role of the respondents in agriculture and barley cultivation in particular

In the respondent villages mechanisation was generally said to have reduced drastically the involvement of women in agriculture because women customarily do not use machinery. Feed crops in particular, such as barley in Syria, were considered the domain of men because their cultivation is mechanised and managed by the men and because they are not used for household consumption but mostly sold. The findings, however, show that the roles of the respondent women and men farmers along the food value chain varied, depending on the crops grown, villages, households and also individual circumstances (e.g., age and social status). Generally, the respondent women were found to be involved in farming more than their men folk and mostly in manual activities, regardless of the crop. Barley and wheat cultivation were mostly mechanised and outsourced like all mechanised activities, and were generally performed by male labour, who were hired together with their machinery. All family members were involved in the manual harvesting of barley in the rare cases when mechanised harvesting was not possible. Men from the respondent households were more involved in off-farm, non-agricultural activities than women. Men, older women and female heads of households purchased and sold agricultural produce (including barley) and were involved in the farm management. Men, however, were said to have more decision-making power and more access to both public retailers of seed and wider information sources. Younger women in Souran and Ajaz performed manual agricultural activities both on and off farm. In one household an older woman and her daughter involved in PPB managed the sale of PPB seed, and this became an important source of revenue for the household.

This evidence challenges assumptions that mechanised crops grown for the market, such as barley, are exclusively a male domain. The study shows the importance in the three studied villages, of assessing systematically and empirically gender-based

involvement in each stage of crop cultivation along the production to consumption chain, so that the actual stakeholders can be identified and invited to participate in PPB. Further, when food chain activities are performed by both men and women, this study argues, it is worth assessing how gender might affect the performance of each activity and entail gender-specific variety preferences. This study also argues that including gender-sensitive variety preferences in PPB is likely to increase the relevance of PPB varieties at household level and, thereby, contribute to food security.

The study also shows the potential of PPB in supporting new opportunities for women by providing them with greater access to and control over crops, as well as activities (e.g., the sale of barley) in which they might be interested but have a limited role. Supporting the involvement of women farmers in income generating opportunities was considered to be of particular relevance because the respondent women had fewer opportunities than men to engage in non-agricultural paid work and were becoming more involved in farming than men. Finally, the study argues that a gender-sensitive PPB programme might need to consider expanding its crop portfolio to include also other, possibly minor crops that might nonetheless be relevant for women, household food security, and local market development. Making PPB responsive to gender-based preferences, it is demonstrated in this study, enhances also the equity of the development opportunities the PPB offered.

The two rationales combined in this study to justify the need for a gender-sensitive PPB were the equity of development opportunity and the effectiveness of technological development. It is acknowledged that these two rationales reflect a dualism present among feminist scholars and development practitioners, who remain divided as to the relative merits of justifying change in gender relations on the grounds of difference or on the grounds of equality. We conclude that the pragmatic challenges of designing and managing PPB activities that seek to benefit both women and men can usefully combine the two.

The study chose to position itself between the virtues of exploring and explaining women's lived experiences, and the need to delineate abstract systematisation of ways of being in the world. This tension was expressed through the learning experiences undergone by the PPB programme, as it sought to understand and appreciate the diversity of farmers, while at the same time categorising farmers in broader terms for efficiency reasons. The tension also applied to the overall study, caught between generating in-depth understanding of local processes and the meaningfulness of the data for the wider scientific community.

Local understandings of 'farmer' and changes in perceptions affected by women's involvement in PPB

The findings show that irrespective of the gender of the respondent 'men are considered to be the farmers and to have farming knowledge', and 'farming is man's work'. The respondent women were generally under-valued as farmers by both men and women, at the household and community levels. At the same time the findings reveal more nuanced gender performances between idealised and actual gender roles. The latter were susceptible to changes in daily life, based on household needs and circumstances, idealised gender identities as well as social status considerations. Deviance from behaviours considered appropriate for women was often publicly denied but practically accepted when performed with due respect to the consensus norms. Participation in PPB was shown to provide opportunities that enhanced the public recognition and legitimization of women farmers. Transgression of the dominant norms by women, and the young ones in particular, were shown to carry at times the risk of marginalisation.

The study offered an exploration of gender identities within the respondent households and also the processes of meaning creation of discursive discipline and contestations (Berbary 2012). The study shows the complex interplay between 'public recognition' and 'actual gender roles' where the former seemed in some cases to contribute to 'normalising the identities' of otherwise 'unconventional performances'. The in-depth interviews on empowerment became in some cases a space where norms of appropriate gendered expectations were implicitly disciplined, where their contestation on the ground was stated, and where the social process of identity negotiation was shown and disseminated to the younger generations of women witnessing these coexisting discourses during our discussions (Berbary 2012). In one case, over a number of interviews an older woman confirmed 'women's expected behaviour as compliant to the gender norms' in the presence of men (e.g., 'men are the knowledgeable ones in agriculture'); she stated 'the actual spaces where women move' - that infringed upon men's traditional roles (e.g., 'I am the most knowledgeable in agriculture in the family' Ch. 7) - in meetings involving only the household women folk; finally, she justified the gap between 'expectations and reality' of women's identity by explaining that the men were unhappy about the reality of women's involvement in farming and were therefore not willing to recognise it.

The study also raises a number of issues relative to the 'politicisation' of women's identity by asking for example, what might be the appropriate balance between change in women farmers' identity and change in women farmers' circumstance? Or

what is the long term gain if positive discrimination (e.g., a pro-active PPB initiative for women farmers) entrenches women in their particular identities? Also, if publicly displayed identities are shown to monolithically reproduce customary understandings of 'women' and 'men' while obscuring fluid identity discourses that characterise daily performances, will an identity of 'women as farmers' not recreate a crystallised definition that is decontextualized from individual circumstances?

The study explored the tension between addressing gender-based discrimination in women's circumstances without 'removing from view' their subjective experiences, as women in a specific context bound in time, space and individual social positionalities. By exploring the understandings and performances of women's 'identity' as farmers the study faced the conundrum of whether reading gendered identities is tied to 'appropriate sexed bodies', or relies on the explanatory presupposition of a 'feminine essence' or a 'feminine performance' (Francis 2012). In other words, how well does this thesis avoid the trap of interpreting the study's respondents' views in terms of: 'you think that because you are a woman (or, man)', only to fall into the trap of asserting 'no, he or she thinks that because it is true'. The first interprets the material presented in this thesis in terms of a feminine essence; the second, however, while liberating the interpretation from the assumption of some essential feminine character, also airbrushes out the (female) subject from the picture, and the impact of 'the body' and social structures on identity discourses and performances (Francis 2012).

Seed management in the respondent households

The findings show that in the three villages it was the older women respondents who were mostly in charge of seed selection and preservation; for all crops, they sowed seed retained from their own harvest (including barley, wheat and some vegetables). Generally, the respondent women, and particularly the younger ones, were disadvantaged in comparison to their men folk in terms of access to quality seed, and in decision-making about farm management and crop-based agricultural revenues. Farmer to farmer seed exchange was found to be an important source of new varieties and information - particularly for women farmers who had a more limited access to public spaces than men. Seed exchange was found to move along gender lines (i.e., farmers preferred to exchange seed and information with other farmers of the same sex). The PPB programme was shown to be able to provide women and men farmers with varieties that are consistent with their gender-based agronomic interests, activities and knowledge. However, gender discriminatory practices embedded in the routines of everyday life limited the ability of the respondent women farmers to participate in PPB activities, and to access and control PPB seed.

The lack of national legal frameworks and policies regulating the rights of farmers to the co-developed PPB seed, and the lack of international legislation that explicitly protects the right of women farmers to seed, were found to further affect the opportunity women farmers had to enjoy the benefits of PPB.

This evidence highlights how customary rules, coupled with a lack of gender-equal institutions, can hinder women's empowerment, particularly their capability to assert their role and knowledge in farming, and to claim new spaces in revenue-generating and decision-making activities such as the sale of barley and variety selection through PPB. The evidence indicates a causal connection between marginalisation and empowerment at micro level and structural dynamics at meso and macro levels. It thereby makes a case - that might be useful to consider in contextually similar situations - for addressing the wider institutional context in any effort to support the empowerment of women farmers, rather than focusing on individual and local solutions only (Anderson and Scott 2012). Gender scholars have warned about the de-politicisation in forms of gender mainstreaming, that focus on practical 'solutions' at local levels, and in measures to bring about women's empowerment that ignore structural inequalities in the distribution and exercise of power (Batliwala 2007). Such de-politicisation obscures how patterns of gender subordination are reproduced, how the macro level is implicated in the very construction of the local, and the policy implications of gender discrimination (Anderson and Scott 2012; Baden and Goetz 2012).

How PPB can affect the empowerment of the respondent women

The findings showed that a gender-sensitive PPB can provide the participating women farmers with opportunities for empowerment by increasing the recognition of women as farmers, making visible their contribution to the household economy, supporting their access to information and relevant seed and impacting on their decision-making in agriculture. However, the study also discussed three events that had a negative impact on the respondent women. We might conclude that empowerment is constituted in non-linear processes of change where the different positionalities of the respondent women, within their households and communities, entail individual pathways of empowerment that involve risks and costs.

The study further shows how, by accessing new public spaces and information, and open discussion of women's roles in farming and PPB, new understanding of empowerment and self-determination arose, that in some cases led to a questioning of traditional gender models. In this setting, and given the limited set of life opportunities that the respondents perceived for themselves, it is argued in this

study that PPB opens up novel opportunities to experience new contexts and conceive different life-paths. Whether this can translate into actual changes in women's circumstances is a longer term issue that in this thesis has been partly explored through an empirical analysis of changes in women's access to PPB seed vis-à-vis seed governance regimes.

However, because actions that were meant to positively impact the empowerment of the respondent women were found in a few cases to have negative consequences this study warns against a blueprint approach to empowerment. It suggests that empowering strategies that are grounded in the contextual specifics of the participants and that facilitate the collective action of farmers are less likely to result in failure.

Overall, the findings of the study are in line with a common understanding that emerges from gender research that there is an irreducible 'otherness' in gender relationships (Rice 2009). This study argues that only empirical investigation can discover the practical implications of gender-based 'otherness' in any particular circumstance. It shows that both understanding and achievement of 'freedom' and 'independence' in personal and social relationships are problematic, not least because of the impossibility of achieving any kind of liberation without 'the other' as well as because there can be no universal, standard measure of what empowerment might mean to those directly involved. This brings back the question (partly addressed above) of whether recourse to universal principles is valuable in justifying intervention in gender relationships that are necessarily and irreducibly situated in the specific.

The issue of 'otherness' is also relevant in discussions about the 'dilemma of representation' (Rice 2009). The reflexive practice in feminist research that focuses on ethics, power and difference, particularly when interpretation of empirical data is attempted across colonial or hegemonic histories (Doucet 2008; Rice 2009; Womersley, Maw and Swartz 2011), asks for clarity in the relationship between those who have power to interpret research and research subjects. In the context of this study, a white, middle-class, newly-married, Arabic-speaking female, ICARDA researcher from Italy set out to assess the changes in empowerment of (mostly middle aged) women small-scale farmers from the most marginal areas of Syria. If, as poststructuralist feminism holds (Rice 2009), the narratives that people compose of their life experiences contribute to the construction of identities, then how did the power dynamic between researcher and researched affect the creation of the narratives reported in this thesis, and the identities of all those involved? The present

author's attempts to respect ethical practices in creating meaning and identity attenuate the difficulties but in the end "dilemmas of power and difference remain" (Rice 2009, 262).

Because some of the monitored changes in empowerment could be attributable to the in-depth and qualitative discussions with the respondent women rather than the PPB activity the researcher herself questioned how the findings on empowerment related to PPB. She concluded that the discussions undertaken during in-depth fieldwork seemed to mostly affect changes in the indicators of empowerment, in a reflexive process, as they informed all those involved in the PPB activity and entered the reality of other PPB stakeholders, and of male farmers in particular. PPB provided, in this sense, a space where discourses about gender-equal norms and spaces could find actualization.

'Marginality' emerges as a further issue for reflection in a study that presents PPB as an activity that addresses marginalized farmers from marginal areas, and an assessment of changes in empowerment as bringing the subjectivity of the respondent to the centre of analysis. Marginality has been conceived as spaces occupied by individuals who by choice or because of lack of capabilities do not fit within mainstream life-styles and systems or as exclusion from the mainstream sites of power (Bush and Ayeb 2012). Some researchers discuss whether the whole concept of empowerment as 'the solution' to bringing marginalized people into the mainstream, is mis-conceived. Indeed, what are the power implications of defining a given social groups as 'marginal' on the basis of a taxonomy of the world centred around those who have the power to define others' existences (Richards 2011)? Some see marginality alternatively as a creative space where new 'ways of being' can be created and performed (Bush and Ayeb 2012).

The choice of this study to adopt a definition of empowerment based on the principle of self-determination was believed to be appropriate to the setting, and that might transcend predefined models of life while respecting the individual and local specificities. Empowerment as a means for self-determination rests on and reifies individuals' choices. It avoids conceiving empowerment as progress along a yardstick of absolute values from 'marginalised' and 'disempowered' to 'empowered', that can be monitored independently of those who experience it. We have shown that PPB in this perspective can provide opportunities for empowerment, where individuals' centeredness can expand in ways meaningful to individuals' conception of self-determination within the margins or at the centre of mainstream power structures.

These are some of the profound questions that the findings of this thesis raise. No definitive answers can be offered here (because they were neither the purpose nor the direct focus of enquiry). We note, however, that the efforts of feminist scholars such as Elisabeth Badinter (2012) and Caroline Fourest (2003) to defend a universal 'human reality' to which both women and men can aspire, has stigmatised public manifestations of Islamic women's identities (such as the wearing of a headscarf). The Syrian PPB programme's emphasis on 'change in women's circumstance' and on offering a broader range of choices to rural women, would seem to be both a pragmatically effective and a socially progressive way forward.

Concluding remarks

This study has provided understandings and raised some important issues related to the empowerment processes of 12 Syrian women farmers as affected by their participation in a PPB programme. The study established the link between empowerment and seed security in the framework of social and gender equity. It put forward the concept of empowerment as self-determination and showed empowerment as constituted in non-linear and individual processes of change. The study can be useful to assess the impact of PPB on the empowerment of participating farmers by combining qualitative and quantitative analysis on a wider scale - when conditions in Syria return once more to stability. It can also help appreciate processes of change in empowerment for interventions taking place in a context broadly similar to the one of this research - such as PPB operating in other countries in the region. By showing how technical interventions, such as the PPB, are likely to have an impact on the life circumstances of the stakeholders the study can help integrate both equity and effectiveness concerns in agricultural research for development.

The study has demonstrated the value of integrating gender concerns into plant breeding in terms of involving the actual stakeholders in gender-differentiated crop management, of appreciating how gender affects the performance of activities, and, also, of considering the aspirations of female and male farmers - in addition to the realities of their involvement in farming - to access new crops, activities and opportunities they might be otherwise excluded from. The study discussed the value of connecting micro, meso and macro levels to understand the contextual and institutional circumstances that affect the empowerment of women farmers. It discussed how this understanding might facilitate the creation of a conducive policy environment, address the systemic arrangements that might reproduce gender subordination, and empirically assess the impact of policies for both women and men on the ground.

Finally, considerations of 'otherness' emerged as essential in this study of empowerment when:

- a. Conceptualising gender - as defined by interactions of individuals with 'others' through 'public discourses of identity' and 'actual performances of gender roles'
- b. Formulating strategies for empowerment - definitions and pathways of empowerment are specific to the individual in their context and are relational i.e., affected by others and the power dynamics affecting relationships
- c. Establishing breeding priorities - as individuals' crop and trait preferences might vary based on intra-household arrangement of farming activities and of livelihood strategies, and
- d. Analysing research findings - that are affected by the power relations between researcher and researched.

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Summary

This study has explored changes in the empowerment of women farmers. It is based on a panel of women in Syrian rural households who chose to become involved in a participatory plant breeding (PPB) programme. The multi-level seed governance regimes that influence the panel members' access to and control of seed, and women's and men's attitudes toward women as farmers, and their knowledge of farming, are also examined. The study provides empirical evidence of gender aspects in farming – and women's role in the management of barley seed, in particular – in a part of the world, Syria, where understanding of gender roles in agriculture is generally lacking. It also provides in-depth analysis of the process by which PPB can offer empowering opportunities for the participating women. The findings are used to explore the inter-relation between seed governance and women's empowerment in the framework of equitable development for food security. The study opens up an area of research that interlocks the fields of agricultural technology development, social and gender analysis, and governance of genetic material. It provides qualitative findings that can be used to frame further exploration and testing across a wider population. At the practical level, the findings contribute to engendering PPB and Agricultural Research for Development (AR4D) in a region, and at a time when modest opportunities, unprecedented in recent history, are opening up in seed systems and for rural development.

The analysis is framed by four key concepts: food related rights, social justice and gender equity, and empowerment. All four express contested, normative aspirations, that are explored throughout the thesis. Initial considerations include: Food related rights encompass three value-laden concepts: food security, the right to food and food sovereignty. Each of these, albeit from different perspectives - argues for the human right to access quantitatively and qualitatively appropriate food or the means to produce or purchase food, and for farmers' right to control their own agri-food systems. Social and gender justice addresses the right of all individuals to equally benefit from the outcomes of development, by having access to means and opportunities adequate to their diverse needs and aspirations. Empowerment is seen by many as a means for individuals to take control of their own development. Women's empowerment is considered to provide women with the capacity to counter the structural disadvantages they face e.g. in accessing and controlling resources, in taking advantage of opportunities, and in shaping their own development path. In addition, some consider the empowerment of farm women to be the means by which to improve the effectiveness of AR4D in enhancing food

security, and to protect the gendered heritage of seed-related biodiversity and knowledge.

The research was designed as an exploratory small-N study in order to assess in close focus changes in the process of empowerment as perceived by selected respondent women in relation to the PPB programme. The research also analysed seed governance regimes at international, national and community level, and assessed empirically their interrelation with the women's actual access to and control of PPB seed in the selected households. The research was conducted between 2006 and 2011 with (i) a panel of 12 women respondents from 10 households; (ii) an additional number of women – maximum five at any time, in each village – who joined regularly in oral discussions; and (iii) 24 men from 10 households. The study was located in the Syrian villages Ajaz, Souran and Lahetha. These households and villages were selected purposefully, along the continuum of existing participation in the PPB programme, as offering contrasting settings that could increase the contextualised understanding of the observed changes in relation to the PPB intervention.

The research was executed using participatory exercises, participant observation, self-reporting life histories and semi-structured interviews with single-sex groups, conducted iteratively over the study period to build rich descriptions of change. The main research activity was complemented by desk research and key informant interviews that sought to elucidate and appreciate the formal and informal rules regulating the governance of seed; by action research to support the women's involvement in the PPB activity; and by an International Farmers' Conference that was evaluated in order to provide insights into participants' views of various gender-based aspects of farming and agricultural knowledge.

Syria was chosen as a particularly interesting case because in Syria food security has been a national priority since the 1980s. Prior to the recent turmoil, small-scale farming has been central to the economy and supported the livelihoods of half the population. The majority of the rural population lived in extreme poverty, particularly in the marginal and dry areas of the country. The selective migration of men to look for paid work has increased the number of women in farming yet the women have remained invisible to policy, and generally disadvantaged in terms of accessing land, seed and water, agricultural inputs, information, and agricultural services, as well as to non-traditional forms of education, market access or paid employment.

The study opens, in Chapter 2, with an introduction to the PPB programme, coordinated by the International Centre for Agricultural Research in the Dry Areas

(ICARDA) in Syria. The experience of the programme up until 2005 led ICARDA researchers to take a more pro-active approach to the involvement of women in PPB. The Chapter indicates that the PPB programme could since provide both female and male farmers with opportunities to participate in and benefit from crop improvement.

Chapter 3 presents an analysis of intra-household gender differences in the organisation of farming activities, and barley cultivation in particular, in the respondent households. It discusses the reasons for involving women farmers in PPB. The Chapter shows that the involvement of women and men in activities along the food chain varies depending on crops, villages, and households. Also, men and women are shown to rely on parallel systems of information access. The study found that the respondent women were generally disadvantaged in ownership of productive resources (such as land and water), in accessing quality seed, and in decision-making related to farm management.

Chapter 4 explores the perceptions of women's roles and identity as farmers in the respondent households. It reveals that, despite their substantial role in farming, the women are generally considered to be 'helpers for the men' and that it is their menfolk who are considered to be 'farmers'. This association between men and farming is related to the traditional organisation of Syrian rural society where men are seen as the sole family providers and decision-makers, and to the ownership of land, that is generally held in men's name. These factors affect also gendered perceptions of who does important work and who has knowledge in farming. The Chapter, however, also shows there to be a dissonance between normative gender roles and the actual lived experiences of men and women, who are shown to cope pragmatically with changing farm circumstances. It reveals a nuanced understanding of the actual contribution of women and men to farming in the respondent households and explores some of the dynamics of how the identities of those who do not conform to the norm are constructed.

Chapter 5 presents the results of an evaluation of an International Farmers' Conference organised by the PPB programme in 2008. The evaluation assessed the impact of the Conference on the knowledge and practices of 50 participating farmers and 64 farmers who did not attend the Conference. The Conference was shown to have had a number of positive impacts - particularly on the participating female farmers, and in terms of acknowledging the evidence that women can be farmers and have relevant knowledge.

Chapter 6 shows that progress towards women's seed governance and empowerment is affected by (both the presence and absence of) formal and informal rules and institutional arrangements. Because of gender discrimination at village and household level the respondent women farmers faced difficulties in participating in and benefiting from the PPB programme in terms equal to the male farmers. The evidence suggests that to achieve a gender-equitable access to and control of PPB seed women's rights to genetic material need to be explicitly protected by the relevant legal and regulatory provisions in order to avoid the reproduction of gender-discriminating norms at ground level.

Chapter 7 illustrates how the PPB can have a positive impact on women's perception of their self and on public recognition of women as farmers; on their access to and control of relevant and quality seed; on their access to opportunities (e.g. variety selection, income-generating activities, exposure to new contexts and life-paths) and to information; and on their decision-making regarding seed improvement. The study shows how the process of empowerment interlocks self-development, intra-household negotiations, and public discourses that shape the changing boundaries of the behavioural spaces in which different women are allowed to act. Empowerment is revealed in the cases studied not to be constituted in linear progress towards an end-goal, but to be a complex process affected by individual circumstances, that may vary in time. The Chapter thereby shows the value of grounding understanding of empowerment in local and individual contexts.

Chapter 8 concludes the thesis by discussing the main findings concerning the empowerment opportunities offered by the PPB programme to the respondent women. It highlights some of the issues raised by this thesis vis-à-vis current gender research.

This study demonstrates that in the study villages the respondent women had key roles in food provisioning and production. It is argued that the access of these women to new seed of appropriate varieties, that PPB can deliver, is vital if they are to strengthen their food-related roles and contribute to increased food security. This was shown to be the case also for barley, a crop which in Syria is considered to be the domain of men only but that this study found also involves women. The study further suggests that through the provision of PPB seed women in farming would have more equal access to development opportunities. In this perspective, the ability of Syrian women farmers to assert their entitlement to improved varieties, to information, and to decision-making over variety adoption is of growing importance. The study shows that PPB can provide the participating women with opportunities for empowerment.

The main mechanisms for this were found to be: by enhancing the visibility of the women as farmers and as contributors to the household economy; by involving them in setting breeding priorities for relevant crops and varieties; by strengthening their access to PPB seed and information; and by providing collateral opportunities for self-determination. The study draws the lesson that, in order to support such empowering opportunities, seed legislation would need to explicitly protect the rights of women farmers to genetic material and to be based on empirical evidence of seed management at intra-household level. Finally, the study's findings point to the need to discuss the risks and costs of empowerment, as an individual process affected by the diverse positionalities of the respondent women in their context, and their own strategic choices as they seek to find their way in a changing world.

Samenvatting

Deze studie verkent de toename van de zeggenschap van boerinnen uit Syrische plattelandshuishoudens. We noemen die toename 'empowerment'. Die empowerment trad op onder de invloed van deelname van deze boerinnen in een participatief veredelingsprogramma (PVP). Daarnaast verkent de studie de invloed van regelgeving op verschillende niveaus van het Syrische zaaizaadsysteem op de mate waarin deze boerinnen toegang hadden tot zaaizaad en waarin ze in hun eigen situatie invloed konden uitoefenen op beschikbaarheid van zaaizaad. De studie heeft als doel:

1. Gender aspecten in de landbouw in het algemeen – en de rol van vrouwen in het beheer van gerstzaad in het bijzonder – empirisch te beschrijven voor een deel van de wereld, waar gender rollen in de landbouw in het algemeen sterk onderbelicht zijn gebleven
2. Een diepgaande analyse te leveren van de processen die de empowerment van vrouwen die deelnemen in een PVP beïnvloeden, en
3. In het kader van een rechtvaardige ontwikkeling van voedselzekerheid, de relaties te verkennen tussen de regelgeving op het gebied van zaaizaad en de empowerment van vrouwen.

De studie ontsluit een terrein van onderzoek dat zowel landbouwtechnologie, sociale en gender ontwikkeling, als regelgeving rond genetisch materiaal omvat. Deze dieptestudie leidt tot kwalitatieve bevindingen die verder kunnen worden onderzocht en getoetst in een grotere populatie. De bevindingen konden – zo was de verwachting ten tijde van het onderzoek – een bijdrage leveren aan de verbetering van de gender balans in het PVP en aan het landbouwkundig onderzoek ten behoeve van ontwikkeling (AR4D) in Syrië, op een moment dat zich ongekende mogelijkheden voordoen voor de verbetering van zaaizaadsystemen en ontwikkeling van het platteland. Tot deze nieuwe mogelijkheden behoorden: de nieuwe prioritaire rol van AR4D bij het verbeteren van de voedselzekerheid, de globalisering van de handels- en marktverhoudingen, en de nieuwe, meer democratische vormen van bestuur die, ten tijde van het schrijven van de studie, in het Midden-Oosten leken te ontstaan.

De analyse wordt bepaald door drie kernbegrippen: (1) rechten gerelateerd aan voedsel, (2) sociale rechtvaardigheid en gelijke kansen voor mannen en vrouwen, en (3) empowerment.

Voedselgerelateerde rechten omvatten drie benaderingen: voedselzekerheid, het recht op voedsel en voedselsoevereiniteit. Deze pleiten – zij het vanuit verschillende invalshoeken en met verschillende doelen – voor het mensenrecht op toegang tot voedsel, dat zowel kwantitatief als kwalitatief adequaat is, dan wel tot de middelen om dat te produceren of te kopen, alsook voor het recht van boeren om zeggenschap te hebben over hun eigen voedselproductie.

Sociale rechtvaardigheid en gelijke kansen voor mannen en vrouwen richt zich op het recht van iedereen om in gelijke mate te profiteren van de uitkomsten van ontwikkeling, door het hebben van toegang tot middelen en tot kansen die zijn afgestemd op hun uiteenlopende behoeften en aspiraties.

Empowerment wordt door velen gezien als een voorwaarde voor de zeggenschap van individuen over hun eigen ontwikkeling. In het geval van vrouwen wordt empowerment geacht hen het vermogen te geven om te gaan met de structurele achterstelling waarmee zij worden geconfronteerd, bijvoorbeeld als het gaat om de toegang tot, en controle over, productiemiddelen, het benutten van kansen, en het vormgeven van hun eigen ontwikkelingstraject. Ten slotte beschouwen sommigen empowerment van boerinnen als een voorwaarde voor het vergroten van de effectiviteit van AR4D bij het verbeteren van de voedselzekerheid, alsook voor het beschermen van genetische biodiversiteit en kennis als erfgoederen met gender eigenheid.

Het onderzoek is ontworpen als een verkennende studie van een klein aantal vrouwen, bedoeld om veranderingen in empowerment vast te stellen die werden waargenomen bij de vrouwen die deelnamen aan een PVP. Het onderzoek analyseerde ook de regelgeving rond zaaizaad op internationaal, nationaal en gemeenschapniveau, en voerde een empirische analyse uit van de relatie van deze regelgeving met de feitelijke toegang van vrouwen in de geselecteerde huishoudens tot zaaizaad geproduceerd door het PVP en zeggenschap daarover. Het onderzoek vond plaats over een veel langere tijd dan in de meeste studies mogelijk is, t.w. tussen 2006 en 2011, met 12 vrouwelijke respondenten (een extra aantal vrouwen - maximaal 5 in ieder dorp op elk gegeven moment – voegde zich regelmatig bij de mondelinge discussies) en 24 mannen uit de 10 huishoudens geselecteerd in drie dorpen: Ajaz, Souran en Lahetha. Deze drie dorpen werden geselecteerd op grond van verschillen in deelname van huishoudens in het PVP. Op deze wijze ontstonden contrasten die konden bijdragen aan het ontstaan van een gecontextualiseerd begrip van de veranderingen als gevolg van de PVP interventie die werden waargenomen.

Het langjarig onderzoek werd uitgevoerd met behulp van een aantal participatieve oefeningen, participerende observatie, zelfrapportage van levensgeschiedenissen, en semi-gestructureerde interviews met groepen van hetzelfde geslacht. Deze belangrijkste onderzoeksactiviteiten werden aangevuld met onderzoek, dat bestond uit deskresearch en interviews met sleutelpersonen, om formele en informele regels uit de zaaizaadregelgeving op waarde te kunnen schatten; er werd actieonderzoek gedaan om de vrouwen effectief te betrekken in het PVP; en er werd een internationale boerenconferentie georganiseerd en geëvalueerd om inzicht te geven in een aantal gender gerelateerde aspecten van landbouw en agrarische kennis.

Syrië werd gekozen als een bijzonder interessante casus omdat het land, ten tijde van het onderzoek, voedselzekerheid sinds de jaren 1980 als een nationale prioriteit had verkozen. Kleinschalige landbouw stond centraal in de economie en ondersteunde het levensonderhoud van de helft van de Syrische bevolking. Het grootste deel van deze bevolking leeft in extreme armoede, vooral in de marginale en droge gebieden van het land. Er wordt algemeen aangenomen dat ‘feminisering’ van de agrarische arbeid door arbeidsmigratie van mannen het aantal vrouwen onder de boeren heeft doen toenemen. Er zijn maar heel weinig studies van de rol van vrouwen in de kleinschalige landbouw in Syrië. In het algemeen hebben vrouwen op het Syrische platteland slecht toegang tot productiemiddelen (zoals grond, water, zaaizaad, kunstmest, etc.), informatie, agrarische dienstverlening en kansen, zoals onderwijs, nieuwe markten of banen. Ook programma's voor plattelandsontwikkeling en het beleid richten zich in het algemeen alleen op mannelijke boeren.

Deze studie toont aan dat de boerinnen uit de drie dorpen die in de studie betrokken waren, belangrijke rollen vervulden in voedselvoorziening en -productie. De studie concludeert dat de toegang van deze vrouwen tot relevant zaaizaad voor hen van vitaal belang is om hun taken in voedselproductie met succes uit te kunnen voeren, gelijke ontwikkelingsmogelijkheden te hebben, en, uiteindelijk, om vooruitgang te boeken in de richting van een meer rechtvaardige voedselzekerheid in de kleinschalige landbouw. In deze context is het vermogen van Syrische boerinnen om hun recht te doen gelden op verbeterde rassen, op toegang tot informatie, en op een rol in de besluitvorming over adoptie van variëteiten van toenemend belang.

De studie toont aan dat PVP de empowerment van deelnemende vrouwen kan vergroten door het verbeteren van de zichtbaarheid van vrouwen als boeren en van hun bijdrage aan de economie van het huishouden, door ze te betrekken bij het vaststellen van prioriteiten voor het veredelen van relevante gewassen en rassen, door het versterken van hun toegang tot PVP zaaizaad en -informatie, en door het

bieden van mogelijkheden voor zelfbeschikking. De studie voert ook aan dat, teneinde dergelijke mogelijkheden voor empowerment te ondersteunen, de zaadwetgeving expliciet de rechten van boerinnen op genetisch materiaal moet beschermen en dit moet baseren op empirische analyse van het zaaizaadbeheer binnen het huishouden. Tot slot bespreekt de studie empowerment als een individueel proces, dat wordt beïnvloed door de verschillen in de posities van de geïnterviewde vrouwen in hun context, en dat voordelen, maar ook risico's en kosten, met zich meebrengt.

De studie opent, in Hoofdstuk 2, met een beschrijving van het PVP, dat gecoördineerd werd door het Internationale Centrum voor Landbouwkundig Onderzoek in de Droge Gebieden (ICARDA), dat ten tijde van het onderzoek in Syrië zijn hoofdkwartier had, en de daarbij horende proactief op vrouwen gerichte aanpak. Het hoofdstuk laat zien dat het PVP zowel vrouwelijke als mannelijke boeren kansen kon bieden om deel te nemen aan, en te profiteren van, verbetering van gewassen. Hoofdstuk 3 geeft een analyse van de gender verschillen die werden waargenomen in de onderzochte huishoudens en in de organisatie van de landbouwactiviteiten, de gerstteelt in het bijzonder. Het bespreekt de redenen voor het betrekken van boerinnen in het PVP. Het hoofdstuk laat zien dat de betrokkenheid van vrouwen en mannen in de activiteiten in de gehele voedselketen afhankelijk is van het betreffende gewas, dorp en huishouden. Ook wordt aangetoond dat mannen en vrouwen vertrouwen op parallelle systemen voor toegang tot informatie. Het bleek dat de responderende vrouwen over het algemeen benadeeld waren t.o.v. mannen inzake eigendom van productiemiddelen (zoals land en water), toegang tot zaad van goede kwaliteit, en besluitvorming met betrekking tot bedrijfsvoering.

Hoofdstuk 4 onderzoekt de perceptie van de rol van vrouwen en hun identiteit als boer. Het toont aan dat Syrische vrouwen, ondanks hun belangrijke rol in de landbouw, in het algemeen worden beschouwd als 'helpers voor de mannen' en dat hun mannen worden beschouwd als 'de boeren'. Deze vereenzelviging van mannen en landbouw houdt verband met de traditionele organisatie van het Syrische platteland waar mannen worden gezien als de enige kostwinners en besluitvormers in de familie, en met het feit dat grondbezit in het algemeen op naam van de man staat. Deze factoren beïnvloeden ook gender gestuurde percepties van wie het belangrijke werk doet en wie kennis heeft van landbouw. Het hoofdstuk toont echter ook aan dat er een dissonantie bestaat tussen de in traditionele waarden en normen verankerde gender rollen en de werkelijke beleving van de relaties tussen mannen en vrouwen die pragmatisch omgaan met veranderende omstandigheden op de boerderij. Het onthult een genuanceerd inzicht in de daadwerkelijke bijdragen van

vrouwen en mannen aan de landbouw in de onderzochte huishoudens en verkent (een deel van) de dynamiek, die geleidelijk aan leidt tot alternatieve vormen van identiteit.

Hoofdstuk 5 presenteert de resultaten van een evaluatie van een internationale boerenconferentie die in 2008 werd georganiseerd door het PVP. Die evaluatie toonde de invloed aan die de conferentie had op de kennis en het alledaagse handelen van 50 deelnemende boeren in vergelijking tot 64 boeren die niet deelnamen aan de conferentie. De conferentie bleek vooral invloed te hebben op de deelnemende vrouwelijke boeren - en op de erkenning dat vrouwen boeren zijn en over relevante kennis beschikken.

Hoofdstuk 6 laat zien dat de voortschrijdende zelfbeschikking en empowerment van vrouwen op het gebied van zaaizaad wordt beïnvloed door (zowel aan- als afwezigheid van) formele en informele institutionele regelingen. Door gender discriminatie zowel op dorpsniveau als in het huishouden vonden de onderzochte boerinnen het moeilijk om in de zelfde mate deel te nemen aan, en te profiteren van, het PVP als de mannelijke boeren. Dit onderzoeksresultaat suggereert dat het bereiken van een gender gelijke toegang tot, en controle over, PVP zaaizaad vereist dat vrouwenrechten op genetisch materiaal expliciet moeten worden beschermd door de relevante wetten en regelgeving. Anders zal het moeilijk zijn te voorkomen dat gender discriminatie zich op het lokale niveau gaat verankeren.

Hoofdstuk 7 laat zien dat het PVP een positief effect kan hebben op

- a. De perceptie die vrouwen hebben op hun erkenning als boer, zowel door henzelf als de goegemeente
- b. De toegang van vrouwen tot, en controle over, relevant zaaizaad van goede kwaliteit
- c. De toegang van vrouwen tot informatie en tot kansen op verbetering (bijv. selectie van variëteiten, inkomensgenererende activiteiten, blootstelling aan nieuwe contexten en carrièremogelijkheden), en
- d. Hun besluitvorming met betrekking tot zaaizaadverbetering.

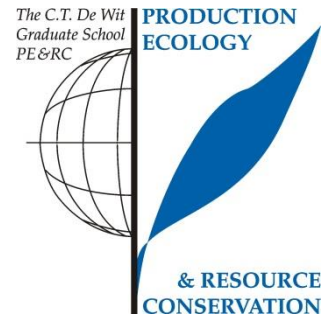
De studie laat zien hoe het proces van empowerment ook leidt tot zelfontplooiing, onderhandelingen binnen het huishouden en deelname aan publieke debatten. Hierdoor verschuiven de grenzen die de ruimte voor gedrag bepalen, en dus de grenzen waarbinnen vrouwen kunnen handelen. Het onderzoek laat zien dat empowerment niet een lineaire vooruitgang naar een einddoel vertegenwoordigt, maar een complex proces is, dat wordt beïnvloed door individuele omstandigheden

die kunnen variëren in de tijd. Het hoofdstuk onderstreept daarmee de waarde van het verankeren van inzichten in het proces van empowerment in de lokale en individuele context.

Hoofdstuk 8 sluit het proefschrift af door de belangrijkste bevindingen te bespreken en daaruit conclusies te trekken vooral ten aanzien van de mogelijkheden van empowerment voor vrouwen als gevolg van deelname aan zulke programma's als het PVP. Het bespreekt ook enkele van de kwesties die door dit proefschrift worden aangeroerd in relatie tot het hedendaagse gender onderzoek. Overwegingen van het 'anders-zijn' in gender relaties en in de reflexieve praktijk van het feministisch onderzoek worden kort besproken, alsook de kwestie van 'marginaliteit'.

PE&RC PhD Training Certificate

With the educational activities listed below the PhD candidate has complied with the educational requirements set by the C.T. de Wit Graduate School for Production Ecology and Resource Conservation (PE&RC) which comprises of a minimum total of 32 ECTS (= 22 weeks of activities)



Review of literature (6 ECTS)

- Issues of gender, governance and rights in relation to Participatory Plant Breeding (2007)

Writing of project proposal (4.5 ECTS)

- Participatory Plant Breeding in Syria; women, rights and governance

Post-graduate courses (3 ECTS)

- Social impact assessment; Janice Jiggins (2007)

Laboratory training and working visits (2 ECTS)

- Participatory Plant Breeding Techniques; ICARDA (2007/2008)

Deficiency, refresh, brush-up courses (3 ECTS)

- Quantitative genetics and plant breeding (2009)

Competence strengthening / skills courses (4 ECTS)

- Knowledge management; IDRC, IFAD (2011)
- Advanced Arabic; INVENT (2009)
- Knowledge sharing; CGIAR ICT-KM (2008)
- Intermediate Arabic; Private accredited (2007, 2008)

PE&RC annual meetings, seminars and the PE&RC weekend (0.6 ECTS)

- Location scaling & governance discussion-group (2009)

Discussion groups / local seminars / other scientific meetings (8.6 ECTS)

- ICARDA Weekly seminars; Aleppo, Syria (2010)
- IDRC Team leaders' workshop; ICARDA, Aleppo, Syria (2010)
- ICARDA Weekly seminars; Aleppo, Syria (2009)
- ICARDA Weekly seminars; Aleppo, Syria (2008)

- International Farmers' Conference; ICARDA, Aleppo, Syria (2008)

International symposia, workshops and conferences (30 ECTS)

- A framework for understanding the qualitative impact of participatory research on farmers; ICARDA, Aleppo, Syria (2011)
- Monitoring and Evaluation: an overview, IFAD-GEF workshop on cross-cutting M&E on INRM; ICARDA, Aleppo, Syria (2011)
- IDRC Social and gender analysis; Beirut, Lebanon (2010)
- PPB Seed and Syrian law, int. workshop; Marseille, France (2010)
- The future role of women in organic plant breeding; IFOAM, Santa Fé, New Mexico, USA (2009)
- Science Forum in Wageningen (2009)
- KSinR Synthesis workshop; ILRI, Addis Ababa, Ethiopia (2008)
- Rethinking Impact; PRGA, Cali, Colombia (2008)

Supervision of MSc student (2 ECTS)

- Social and gender analysis in participatory plant breeding

Curriculum vitae

Alessandra Galiè grew up in an organic small-scale farm in the Italian countryside. She has a background in social sciences applied to agricultural development with a focus on the Middle East. She obtained her BA and first MA at Università di Bologna, Italy, in Foreign Languages and Literature, specializing in Arabic and English language, culture and literature. After obtaining an MA in Anthropology of Development, University of London, she worked a few years in the NGO sector in Europe and the Middle East focusing on governance models developed at grass-root level in Asia and Latin America that provide people-centered alternatives to current globalization trends. In 2007 she joined the International Centre for Agricultural Research in the Dry Areas (ICARDA) in Syria, as a Research Fellow. Here, she undertook her PhD research as part of the Participatory Plant Breeding programme. As Research Fellow at ICARDA and as Consultant for a number of organizations she worked on projects focused on gender analysis applied to natural resources management, knowledge sharing, governance and empowerment within the framework of agricultural research for development. In 2011 she received the Storm-van der Chijs award that Wageningen University gives every two years to the most talented female PhD researchers. Currently, she is working as a Social Scientist: Gender at the International Livestock Research Institute (ILRI) in Kenya, where she mainly focuses on the gender aspects in dairy value chains, particularly in Tanzania. She applies her commitment to a sustainable rural development also through her involvement in the small-organic farm that belongs to her family in Italy.

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