

Poverty alleviation among farmers

The role of knowledge

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Abstract

There are large and rapidly growing differences in gross national product between countries and in income between citizens within countries. Of the world's poorest people, 75% live in rural areas, often in countries where labour productivity in agriculture is less than 1% of that in countries with the highest labour productivity. Decreasing poverty amongst farmers requires increasing productivity, however, increasing agricultural productivity in turn results in fewer employment opportunities. In order to increase productivity much knowledge is needed, not only amongst farmers, but also in institutions supporting agricultural development. This chapter discusses the kinds of knowledge needed and how new insights in knowledge management can help to generate this knowledge and improve its utilisation. Different kinds of knowledge are needed, and must be generated by different institutions and people. A challenge is to integrate different kinds of knowledge in such a way that it becomes useful and indeed used in decision making for agricultural development.

To decrease farmer poverty, knowledge generation in regions with concentrations of poor farmers, needs to be more effective in order to enable competition with richer farmers. While successfully orchestrated in some areas, work must be done to understand and discover how to replicate effective knowledge generation more widely.

1 Introduction

Several chapters in this book discuss the eco-challenge facing society. This chapter focuses on the social challenge of increasing income differences and widespread poverty amongst farmers and farm workers in developing countries. Fortunately the literature on approaching and alleviating poverty is expanding at a rapid rate, (e.g. IFAD, 2001; World Bank, 2000). The realisation that knowledge can play a major role in overcoming poverty is dawning. For example, the President of the World Bank is quoted as saying: "We used to think of capital as a scarce factor in production and of transfer of capital as the key instrument for growth. Knowledge is now as, if not more, important a factor in development, and this trend is to intensify" (Wolfensohn, 1997). A result is that the interest of social scientists in knowledge management is growing. Quintas estimates that the number of articles published on this subject increased more than 25-fold between 1994 and 1999 (Quintas, 2002). Most of these articles discuss how knowledge management can increase the competitiveness of large commercial firms. In this chapter, I attempt to discover how these new insights can help

increase the income of poor farm families. Clearly, we must integrate different kinds of knowledge developed by different persons and institutions. Much more work must be done regarding the role that knowledge management, social and other kinds of learning can play in our efforts to reduce poverty among farm families.

This chapter is based on the assumption that farmer income increases with productivity, duly cognisant that this assumption is challenged by some. To increase productivity one can increase capital investment and/or the level of knowledge used in agricultural production. This chapter discusses contributions made by agricultural researchers and extension agents, farmers, agri-business firms and policy makers to increase the knowledge used in agricultural production and the integration of knowledge developed by different actors.

2 Poverty and productivity

In 1960, the average Gross Domestic Product per capita in the 20 richest countries was 18 times higher than in the 20 poorest countries. By 1995, this gap had increased to 37 times (World Bank, 2000). In the rich countries, there was considerable increase in per capita income, but in many poor countries hardly any increase or even a decrease. Many causes influence this development, amongst them, concerning agricultural development is changing productivity in agriculture. In many countries farmers have been able to increase their productivity mainly by using more knowledge in the production process. Less resources were needed to produce a given amount of grain or other agricultural product. Knowledge made it possible to produce at lower cost and through competition, necessarily sell at a lower price. Worldwide the prices of maize, wheat and rice have decreased by 50% or more over the past 20 years (Rosegrant et al, 2001:3). In the Netherlands, this process forced many Dutch farmers or their children, to leave agriculture. However, those who increased their productivity more than their competitors are still able to earn a good income (see Berdegué in this publication on Cochrane's agricultural treadmill). In many poor countries, and especially in marginal areas of poor countries, little increase in agricultural productivity can be observed over the same time period. Again this has many causes, such as:

- Low education level of farmers and lack of access to new knowledge developed by farmers, researchers or agri-business companies,
- Lack of access to inputs, credit and markets,
- Biophysical conditions, such as mountainous areas or low levels of rainfall, which make it difficult to adopt many modern technologies,
- Population growth,
- Lack of employment opportunities outside agriculture.

Poverty in rural areas is much higher than in urban areas. About 75% of the 1.2 billion people in the world living on less than one dollar a day, live in rural areas (IFAD, 2001). Most are farmers and farm labourers, although they may also have non-farm sources of income.

There are different ways to measure productivity in agriculture, mainly: 1) the value produced per hectare of land, 2) per 100 Euro invested, 3) per person working in agriculture. Irz et al (2001) have shown that both land and labour productivity in agriculture are related to the incidence of poverty, but the relationship with labour productivity is much stronger. Labour productivity differences between countries and differences in the rate of change of productivity, are very large (see table 1). The comprehensive list indicates 30 countries where the added value per worker is less than 1% of that in the most productive countries: 47% of the world population live in countries on this list. Unsurprisingly, many farmers are poor in the 30 countries cited. For them, it is very difficult to compete with farmers having higher levels of productivity and/or with those who increase productivity more rapidly.

| | 1997-1999 | change |
|--------------------|-----------|--------|
| Australia | 31423 | 37% |
| Brazil | 4030 | 47% |
| China | 316 | 42% |
| France | 50171 | 73% |
| Hungary | 4860 | - 2% |
| India | 395 | 22% |
| Indonesia | 740 | 13% |
| Nepal | 189 | 4% |
| Netherlands | 51594 | 65% |
| South Korea | 12252 | 123% |
| Sub-Saharan Africa | 380 | 3% |

Table 1: Agricultural value added per worker per year in agriculture in 1995 dollars and the change in this value between 1987-1989 and 1997-1999. (Source: World Bank, 2001, table 3)

The incidence of poverty among farmers and farm labourers is related to the broader society in which they live. Important causes of poverty in some countries are related to the systemic collapse of society, through crises such as civil war, high rates of corruption and crime, and the HIV/AIDS epidemic. This chapter will not discuss these issues, because I lack experience working on them. See however: Christoplos, Farrington and Kidd (2001), and Qamar (2001). Lack of first-hand experience also keeps me from discussing the impact of disability on poverty, although it is estimated that in India nearly 10% of the population have a serious disability (Seeley, 2001). In countries experiencing civil war, this percentage can be much higher. The gender aspects of poverty are so important that they deserve more serious discussion than is possible as a part of this short chapter. As such, gender will not be addressed here.

3 Role of knowledge in development

This section explores why learning and new knowledge are important for successful agricultural development, the kinds of knowledge needed and how social learning through knowledge sharing can help to integrate knowledge developed by different actors.

Adjusting to changes in environment

According to Quintas, “the management of knowledge is a core process in organisations” because:

- wealth is increasingly generated from knowledge and intangible assets;
- the rediscovery that people are the locus of much organisational knowledge;
- the acceleration of change in markets, competition and technology, making continuous learning essential;
- the recognition that innovation is the key to competitiveness, and depends on knowledge creation and application;
- the growing importance of cross-boundary knowledge transactions;
- technology limits and potentials: the limits of information systems and the potentials of communication and knowledge technologies (Quintas, 2002:4)

Therefore “organisations must develop absorptive capacity: the capability to access and assimilate new knowledge from external sources” (Quintas, 2002:7).

Although Quintas formulated these statements with large commercial companies in mind, I am convinced that they are also valid for agricultural development. It is important that farmers, research, extension and development organisations, agribusiness firms and policy makers are well aware of the threats and opportunities caused by changes in their environment. The earlier they adjust behaviour to these changes, the better they will find themselves able to compete.

Senge et al (1994), pose four questions to managers:

- Do you continually test your experiences?
- Are you producing knowledge?
- Is the knowledge shared?
- Is learning relevant?

These points are relevant in agricultural development. Some agricultural extension and development organisations consider themselves to be change agencies, but do not try to instigate change by applying the points mentioned above. The managers of these organisations do not regard management of the learning processes within their organisation as an important task (Van den Ban, 1997). Two major reasons emerge to explain this situation:

- It is more likely that staff members are penalised for making a mistake than rewarded for introducing new ideas which might make their organisation more effective;
- There is no systematic process of decision making regarding goals and strategies of the organisation.

For instance, in the Training and Visit (T&V) system, contact farmers were expected to, “represent proportionately the main socio-economic and farming conditions of their group” (Benor and Baxter, 1984:45). In reality, the chosen representatives were often the more financially well-off and better educated farmers. Rarely were extension managers, who succeeded in selecting representative contact farmers, rewarded for finding ways to make this choice. Instead they risked punishment by powerful farmers in

their area, who felt they ought have been selected. Also there was seldom discussion of the advantages and disadvantages of working with large and small contact farmers (Van den Ban, 1996). It is claimed that farmers should have more power to influence decisions on extension programmes, but often, "rural big men run local institutions in their (own) interest (this) is a fundamental difficulty for the current modes of top-down institutional devolution, decentralisation and participation" (IFAD, 2001:223). This is again an issue that is seldom discussed when planning extension programmes.

Different types of knowledge

In knowledge management, different types of knowledge are distinguished. An important distinction is between science - which develops knowledge to understand nature, and technology - which tries to control nature through the production of artefacts (Faulkner, 2002:144-147). Technology seeks to develop better ways of solving practical problems. For instance, the control of a plant disease demands scientific knowledge of phytopathology. However, knowledge from other disciplines is also needed to determine, for example, the best spraying technique or to consider the profitability of different control measures. Knowledge on cooperation between different actors is also often important, (e.g. in a campaign relying on the same control measures being used at the same time by all farmers in a village). The discussion by Röling (1974) regarding the potential contribution of the social sciences to the development of technologies is still valuable. By conducting problem solving research which contributes to the development of solutions for pressing social problems, the social sciences offer significant insight.

Faulkner (2002:149) states that the following types of knowledge are needed for technological innovation:

- Scientific theories, laws and general principles
- Properties of materials and components
- Design-based information, and operating principles
- Test procedures and techniques
- Knowledge of knowledge

One study showed that 70% of this information is generated or available inside the company, both from their research division and from the experience and creativity of the staff. About 20% is learned from other companies and 10% from public sector research. There are also large differences in sources for different types of information. It would be interesting to know how this works in agriculture. As very few farms have their own research division, I expect that the role of internal information will be less influential and the role of public sector research, more significant. In recent years, the role of agri-business companies in developing information is growing. The results will differ for technical innovations as studied by Faulkner (2002), and for social innovations.

Knowledge management literature now gives a lot of attention to the distinction between explicit and tacit knowledge. Tacit knowledge resides in the minds and motor neurone systems of people and is neither codified nor made explicit. An example is the knowledge most Dutchman have about keeping a bicycle in balance. In farming, this tacit knowledge is quite important, for instance, the clinical glance of a good farmer by which (s)he judges the health of crops and animals. It is not possible to learn this tacit knowledge from a lecture or a website, unless it has first been made explicit by somebody who learns it from farmers. Such skills are learned through practical experience or from observing people in practice. Knowledge management literature gives much attention to tacit knowledge because it is quite important for improving cooperation between people and organisations.

Learning from experience is more effective if placed in a theoretical framework. For farmers, it will be easier to learn about soil fertility management, if they know that use of nitrogen increases yields in the short term, but will result in larger losses of potassium, phosphorus and other plant nutrients from their field, unless these nutrients are added simultaneously. In the long term, this way of using nitrogen will cause a decrease in field fertility. We learn from both scientific theories and experience - combining the two ways of learning. Combining knowledge is especially important for developing technologies in locations with great variation. For example, when I worked in Tanzania, the ecological situation and the farming system were quite different 2 km from my house in one direction as compared to 3 km distance in the other. Our research institute was expected, with 50 researchers, to develop suitable technologies for an area 7 times the size of the Netherlands. This could not be done without the cooperation of the 700,000 farmers in the area.

Problem specific knowledge

In agriculture, different types of knowledge are needed for developing solutions to different development problems. Each type of knowledge may be developed by a different group of persons or institutions or can only be developed jointly by different actors through a process of social learning.

A major objective of agricultural research and extension is typically, to increase the yields per hectare and per animal. However, increasing labour productivity will often contribute more to increasing farm income. Increasing labour productivity will often require a change in the farming system, (e.g. from land preparation by hand to animal traction). Studying change on a research station is very different to the reality of change on a private farm with considerations for example, regarding the number of hours per day a worker is willing to work. In developing new farming systems, much of the knowledge must come from the experience of farmers.

In agriculture, it is often researchers who develop new knowledge, which is then used to formulate recommendations which extension agents are expected to persuade farmers to follow. Already over 80 years ago, Chayanov (1918) wrote that this is not the kind of help farmers need. Farmers need help in increasing their capacity to make

decisions, combining knowledge from research with other kinds of knowledge such as knowledge about their situation, resources, markets relations, goals and experiences. Capacity building is needed in order to address, what often are large differences between farmers (Ravnborg, 1993; Van den Ban and Mkawa, 1997).

Another possibility, in addition to new technologies for improving farm income, is to increase the production of high value horticultural or animal products at the expense of cereal production. In countries with high economic growth, this will often have more impact on farm income than increasing yields, although research and extension in many countries focuses mainly on cereal yields. Producing products with a higher value changes both capital and labour requirements at different times of the year. It can also result in higher risks for disease and price variations. Here again, much of the information regarding consequences of change must come from farmers' experience. The desirability of such change depends on values held by the farm family and not on the values of researchers, change agents or policy makers. Any changes in production systems also require changes in the system of input supply and marketing of farm products. For these kinds of decisions, collective decision making is necessary as is cooperation between farmers and agri-business firms. For these decisions, all partners necessarily expect that consequences will be favourable for them, however, the consequences may be more favourable for one partner than for another depending on the power each holds. Sharing knowledge may help each partner understand the consequences for the other partners. For instance, an agri-business firm may realise that if they force farmers to accept the lowest possible price for their product, it is no longer profitable for farmers to produce this product. Such a deal may increase the short-term profit of the firm but is not profitable in the long-term.

For many poor rural families, knowledge on non-agricultural production is more important to improve their livelihood than is knowledge on agricultural production (Ellis, 2000). Many poor rural families already depend on non-agricultural income from family members working in other sectors, or combining farm and off-farm income. Often there are more possibilities to increase off-farm income than to increase on-farm income. For obtaining knowledge regarding the possibilities of earning various kinds of off-farm income and the expected consequences for family welfare, farm families must rely almost entirely on informal information and knowledge sources, such as relatives or friends who turned to non-farm sources earlier than they. For these types of decisions, social learning is quite important. Information from relatives or friends may not be reliable, because people may hesitate to admit if decisions to change were not successful. Seldom do government agencies or NGOs help farm families make such decisions, although they are far more important for income and welfare than decisions as to how much fertiliser to give a main food crop. We must recognise that as long as 60% or more of the labour force in a country works in agriculture, the majority of farmers will remain poor, even if they are very knowledgeable about agriculture production. Much poverty can only be solved by creating more non-agricultural employment. Many farmers realise this and regard their children's education to be one of their main goals, so the children are no longer obliged to become farmers. Unfortunately many policy makers do not use this knowledge and as such do

not promote alternatives to agriculture for income generation. Another challenge is the creation of sufficient employment opportunities outside agriculture in remote areas and those facing social and political instability.

Sharing of knowledge

The willingness of different actors in the agricultural knowledge and information system to share knowledge, is important for agricultural development for several reasons:

- 1 *Together different actors will be able to produce more knowledge than each can produce on its own.*

A group of Dutch horticulturists was afraid of competition with colleagues in the South of France, because of the more favourable climatic conditions for growing the products there than in the Netherlands. The horticulturists went on a study tour to France and their conclusion was: "growers are not willing to share knowledge. Therefore they are not able to reach a level of knowledge, which makes them dangerous competitors". A major tool these Dutch growers use to share knowledge and to increase their capabilities is the study club. Study clubs are groups of growers of the same crop, who meet regularly in the field of one of the members to observe crop growth and discuss the consequences of crop management practices chosen by the grower (Oerlemans, Proost and Rauwhorst, 1997).

- 2 *Different actors are better able to gather or generate different types of knowledge (as shown in the earlier section 'Adjusting to changes in environment').*

For his decision making a farmer needs knowledge about:

- his own resources: land, labour, capital, knowledge;
- his own goals, e.g. willingness to take risks;
- optimal production technologies;
- the choice and management of different kinds of farming systems;
- the market for inputs and products and expected changes in these markets;
- government policies and expected changes in policies;
- non-farm sources of income;
- the competence and reliability of different institutions providing knowledge.

Parts of this knowledge can be generated by research. But, much more comes from the experience of the farm family or from their colleagues. Choosing the right combination of knowledge sources is important for success in farming. Usually it is necessary to integrate knowledge from different sources. The process of knowledge integration requires more attention from extension scientists than it has received so far.

- 3 *As a group, farmers and farm women together have more brain power than that of the researchers and government officers involved in agricultural development.*

The total number of farmers and farm women is much larger than the total num-

ber of researchers and government officials. Some are very intelligent. In China, amongst other countries, willingness to learn from these farmers is not widely apparent. As such, I am convinced that farmer brains are the most under utilised resource for agricultural development.

Not only the sharing of knowledge among farmers is important, but also amongst other actors in the knowledge and information system. The knowledge management literature now gives a lot of attention to *networks and alliances*. This is related to the development of a pluri-form extension system and to the support farmers need from different kinds of farmers' organisations and agri-business companies. In a network, an established system of cooperation between different companies can be observed in which each company provides certain products or services to other company(ies) or obtains these from another. This allows a certain degree of specialisation, not only in the equipment they have, but also in knowledge. Through the development of information and communication technology, it is possible to work with partners in a network extending to different parts of the world. In alliances, cooperation is even closer. One may produce a new kind of product for which the partners need to cooperate in the design process as each has a part of the knowledge required for a better or cheaper product than the competitors can design. This may occur as a joint venture of two or more companies. We see a similar development in agriculture, where for example, an animal feed company may not only sell feed, but also knowledge about a whole system of animal management and perhaps even design a new stable for its customer.

Willingness to share knowledge is important for successful agricultural development. Unfortunately, in some countries people are inclined not to share their knowledge. They may see their knowledge as a source of power. If others get this knowledge also, they may fear loss of this power.

As already stated, the design of new technologies usually demands the use of knowledge from different scientific disciplines, however, such cooperation is often very difficult to realise. Each discipline has its own language and way of thinking. This makes it difficult to understand the ways of thinking used by scientists of other disciplines and to appreciate different ways in which problems are approached. Further, the reward system in a university or research institute may make it difficult to realise necessary cooperation. Staff members are more rewarded for articles in journals of their own discipline than for interdisciplinary work or for developing technologies which are widely used by farmers. In an African research institute, I saw much good research, aimed to increase potential yield of maize, the main food crop, from 7 to 8 tons per ha. But little research however, focused on trying to increase the average yield from 1.5 to 2 tons. The latter would have required cooperation between biological scientists and people who study the organisation of input supply and marketing. Further, it would require close cooperation between scientists and farmers for analysis of factors limiting maize yields and possible ways to overcome these limitations. To have an article accepted for publication would indeed be difficult considering that the discussion would concern how an average yield of 2 tons had been reached, whereas on many experimental plots, a 7 ton yield had been attained.

Farmers are not always eager to share knowledge with other farmers, whom they may see as potential competitors. When a dairy farmer in the Netherlands has a social visit from a colleague, they probably visit the cows and discuss how to manage the dairy herd. This discussion is for both, an important means of learning for the improvement of dairy management. A Tamil farmer in Sri Lanka may try to hide his animals from a visitor, because he is afraid that the visitor, through the evil eye, may harm his animals. In order to increase the ability of farmers to compete, it is important that they are willing to learn together. Sharing allows the creation of new knowledge by integrating knowledge from different sources and by forcing participants to think critically about assumptions.

4 Knowledge gaps between rich and poor farmers

Development and utilisation of knowledge can increase productivity for farm families, but this will not always contribute to a decrease in poverty. One reason is that this can result in an increased gap in knowledge between the rich and the poor families.

Knowledge of agricultural production will only contribute to decreasing poverty among farmers, if poor farmers use the knowledge more effectively than their competitors and/or the extra income generated goes at least partly to poor farmers, not only to other actors in the chain (from producers to consumers). Experience in The Netherlands in the last century, illustrates that there are circumstances in which this is possible. Dutch small farmers used opportunities from increased demand for horticultural and animal products offered in the market, more effectively than large farmers (Van den Ban and Bauwens, 1988).

Small farmer success was possible because:

- Production was labour intensive, which gave small farmers an advantage over larger farmers, who worked with hired labourers (IFAD, 2001, ch. 4),
- There was a good, largely cooperative, input supply and marketing system, which offered small producers about the same price as large farmers,
- Through the system of vocational agricultural education and extension and the sharing of experiences with colleagues, the competence of small farmers in producing these products was often greater than that of the large farmers. The large farmers did not do much manual work themselves and so did not acquire the necessary tacit knowledge.

We now observe similar phenomena happening in some developing countries, for instance, in Himachal Pradesh, Northern India. The bio-physical conditions in Himachal Pradesh are less suitable for cereal production than in the plains, but more suitable for horticultural production. Careful analysis of circumstances suitable for the possibility of this kind of development is necessary. However, there are a number of difficulties in realising such development in many countries, including:

- The development of Information and Communication Technology (ICT) offers many new possibilities to gain access to knowledge from all over the world. For

many poor farmers with a low education levels, it is difficult to use ICT as effectively as well-educated, rich farmers.

- With the tendency towards privatisation of extension services, increasingly farmers have to pay for knowledge. For a privatised extension organisation, it is not easy to make a profit by serving the information needs of small farmers (Van den Ban, 2000).
- With globalisation and increasing prosperity, the demand for large quantities of a uniform product of a good quality, increases. In theory, a well-organised group of small farmers can meet this demand, but often this can more effectively be done by central management on a large farm. The IFAD (2001) notes that many small farmers can earn more leaving their farm for work as labourers on large farms, with better access to knowledge and markets.

Poverty alleviation among farmers does not only require an increased level of knowledge among poor farm families, but also a more efficient knowledge, information and marketing system, where all actors learn from each other through a process of social learning. To decrease poverty facing poor farm families it is important to increase access to appropriate social capital. Such capital enhances the benefits of investment in human and physical capital. Social capital is the set of norms, networks and organisations through which farmers gain access to power and resources that are instrumental in enabling decision making and policy formulation (Serageldin and Grootaert, 2000: 54, 45). In an irrigation project in Sri Lanka, Uphoff (2000) showed that social learning can help build social capital in a way which gives much higher rates of return than investments in physical capital. Further study should explore when and how this is possible.

5 Empowering farm families

Many people are convinced that less than a fair share of the wealth created by farming stays with farmers and more than a fair share goes to traders, money lenders, landlords, politicians and other powerful people. Increasing the power farmers have in society is an important way to decrease their poverty. One problem surfacing is that, "while we want institutional change to help the poor, institutions, including the state and NGOs [and farmers' organisations, my addition], tend to be controlled by the non-poor" (IFAD, 2001:191). For a discussion on what can be done to address this situation I refer to the many publications on this topic, including the chapter by Berdegué in this book, World Bank (2000) Part III, and IFAD (2001) chapter 6. I will discuss only briefly, power relations in international markets, which become quite important with processes of globalisation.

Rich OECD countries spend 70 times more on price support for their own farmers than on development aid in the field of agriculture (Snerge, 2001). This causes a distortion in world markets making it difficult for farmers in developing countries to export their products to rich countries (Pinstrup-Andersen, 2001). It is difficult to change these policies, because politicians are elected by voters in their own country. Therefore politicians in rich countries are not rewarded for giving attention to the

consequences of their policies for the poverty of farmers in developing countries. Few people in rich countries realise the cost of these policies for consumers and taxpayers in their own country, and the poverty they cause in developing countries. Further, the impact of rich country policies on people's eagerness to migrate both legally or illegally to a rich country is not discussed.

Farmers' organisations in poor countries, wanting to change price support policies should look for allies in rich countries. Perhaps allies can be found in consumer organisations or trade unions, if the link between policies and the cost to their members can be made explicit. Cooperation with allies against the large-scale migration of people from developing to rich countries can even be considered. Another possibility is to ask help from strong farmers' organisations in rich countries to enhance the power of counterparts in developing countries. This could include an analysis of reasons why farmers in developing countries get a low price for their products. Telling farm leaders in rich countries that one of the causes is the agricultural price policy in their own countries is unlikely to be effective. Creating an opportunity for farmers in rich countries to discover the link themselves, may well prove to be more effective.

6 Conclusions

- 1 One of the most important social problems in coming decades is the growing gap in income between rich and poor countries and between different social groups internally. The largest group of very poor people are farmers and farm labourers in developing countries. Society expects agricultural scientists, including those working on extension, communication and adult learning, to make real contributions to solving this problem.
- 2 Through an increased use of knowledge in agricultural production, product prices decrease. This is an important cause of poverty amongst farmers who do not increase their knowledge as much as their competitors or farmers who have less support from agri-business firms and other institutions playing a role in agricultural production.
- 3 Knowledge plays an important role in decreasing poverty among farmers by increasing their ability to use human and social capital. It is necessary to integrate knowledge generated by different people and institutions and in different disciplines. Special attention must be given to the generation and communication of knowledge by learning from and about:
 - the experience of and experimentation by farmers,
 - markets and expected developments in markets,
 - the production of high value products,
 - the impact of agricultural policies in one country on the incidence of poverty among farmers in other countries.
- 4 For this purpose, full use should be made of rapidly growing theories on knowledge management with special attention to possibilities for improving cooperation between different actors and institutions in knowledge management or social learning.

- 5 We should not only look for possibilities to increase on-farm income. Off-farm sources of income are at least as important for rural families in areas with:
 - low levels of economic growth,
 - difficult biophysical situations,
 - lack of well-organised markets for inputs and products, and
 - low levels of education.

Often it is difficult for rural families to get reliable information on possibilities for off-farm income and on the consequences of working outside agriculture for the family welfare. The informal social network is for many, the only available source of information.

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