SEARCHING FOR NEW METHODS

The quest for sustainable agriculture brings about a search for new approaches to and methods for research and development. Especially the complexity and diversity of sustainable agriculture challenges professionals. In this editorial, key issues raised in the articles of this issue are placed in a wider perspective.

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Researchers commonly try to ban "undesired variation" to make "scientific" statistic analysis and standardisation possible. However, to make optimum use of resources and minimise risks, diversity in space and time is often deliberately exploited by resource poor farmers. Differences in environment, culture, preferences, knowledge and skill and differences in access to resources and markets make that farmers have very diverse production strategies. Understanding these differences and exploiting "meaningful" diversity is therefore a precondition for improving agriculture, especially in heterogeneous environments. Therefore, new research methods are called for.

De Steenhuijsen Piters (p 6-7) presents an example from northern Cameroon showing how diverse landuse systems can be and what consequences this has for research. Sharland (p 8) points at the wide diversity of growth conditions in fields of small farmers and the difficulties this creates for statistics. Vel (p 21-22) shows that differences in how farmers value resources and social relations are important aspects of diversity too. How often do researchers, economists and developers underestimate diversity and therefore come to wrong conclusions, useless recommendations and wrongly designed projects?

"Participatory" and "scientific"

As farmers are "the experts" in dealing with local diversity and as the need for new techniques in heterogeneous situations is very farm and farmer specific, participation of farmers (men and women) in research is now becoming more and more common practice. Defoer (p 9-11) and Hagmann (p 12-13) show how "participatory" and "scientific" research methods can complement and strengthen each other at farm level. Both methods have their strengths and weaknesses. But how to combine them in the most effective and efficient way?

"Scientific" conventional research has a tendency to be reductionistic. It is often limited to technology development, market farming, particular commodities, scale levels, factors, etc. Complex problems are reduced to models that provide a simplified simulation of reality. These modelling practices often provide an increased insight in complex relations. However, research results are hardly fed back to the subjective reality of farmers. Also integration of different scale levels, like the impact of district and national policies on farm household decision making and vice versa, or the importance of spatial variability of natural resources at different landuse planning levels, is poorly developed.

Development workers also suffer from reductionism: they often address a single group of farmers, one region or catchment area, and limit activities to only a few components of the farming system. Participatory technology development is often limited to only farm households and tends to focus on only a few aspects of the development process, i.e. problem identification and evaluation of tested technologies.

A wider perspective

Causes of unsustainable and inefficient agriculture are found at farm level as well as regional, national or international level. They are rooted within as well as outside agriculture. It is now being recognised that agriculture cannot be made efficient and sustainable by focusing research and development at commodity crops and animals or production problems at farm level alone. Research and development now starts to deal with agriculture in a wider perspective. Different "stakeholders" and different "levels of scale" are acknowledged and complementarity with policy development is sought.

Improving stakeholder interaction

Not only farmers take decisions that affect agriculture. People involved in agribusiness, extension, research, policy making,

banking, education and, not to forget, consumers have a stake in agriculture as well and therefore we call them stakeholders. They all have their own interests in and ideas about agriculture and sustainability. Interaction between different stakeholders, eg. to exchange information, to set research agendas, to make transactions or to formulate policies is often far from ideal. This leads to ineffective technology and policy development and marketing. Engel (p 14-15) presents a method for (participatory) analysis of interactions between stakeholders. Becoming aware of the ineffectiveness of these interactions is the first step towards improvement. To improve networking sometimes can be more effective than to improve research.

Linking macro and micro

In reaction to the challenges mentioned above attempts are being made to integrate research and development, combining research with landuse planning and policy development. Such programmes use a wide range of methods. They combine participatory and conventional methods with high-tech methods such as satellite images (SPOT), Geographical Information Systems (GIS), computerised data processing, modelling and linear programming.

International research centres and western universities, often in cooperation with national research centres and NGDOs, are starting this type of collaborative research and development programmes (Van Duivenbooden, p 16-17). These large "macro-micro" programmes, which are an attempt to improve sustainability of agriculture in a broad and systematic way, may lead to important insights. However, the high-external-input character of such programmes, in terms of funds and know-how for the "high-tech" methods, and the dominance of biophysical sciences risk influencing participatory learning processes in a negative way. And participatory learning is crucial to sustainable development.

Data don't speak for themselves

In diverse situations statistical analyses are difficult to make (Sharland p 8) and not very reliable (Hagmann p 12-13). Instead, analysts often substitute coefficients derived from elsewhere. Thus, in many cases the apparent rigour of calculations is misleading (Moris and Copestake 1993). But does participatory inquiry offer an alternative? It is commonly believed that this provides subjective information. Terms like "informal" and "qualitative" are used to imply poorer quality or second-rate work. Rigour and accuracy are commonly assumed to be missing from such inquiry. But the choice of methods has increased to guarantee trustworthiness. However, also with conventional methods, absolute trustworthiness will never be possible, as criteria for trustworthiness themselves are value-bound. Therefore, the process of gathering information, and being sure that no key elements have been omitted should provide the guarantee. By knowing about the process, information users should be able to judge whether to trust the findings or not. Data, qualitative nor quantitative, do not speak for themselves (Pretty 1994 and De Steenhuijsen Piters p 6-7)!

Economic appraisal

Agriculture is commonly analysed on the basis of monetary criteria. For economic analysis of sustainable agriculture, ecological and sociocultural criteria also need to be included and, as much as possible, quantified and valued in monetary terms. Ruben and Heerink (p 18-20) point at the need for financial appraisal and economic evaluation to improve insight in the economic feasibility of alternative practices. However, they have to admit that readily available procedures to account for additional criteria for ecological and social sustainability are difficult to find. Even if we do not agree with the limited focus of economic analysis, still these analyses define very much the feasibility of farming practices as farmers as well as funders to a high extent are guided by profitability.

Vel (p 21-22) shows that, nevertheless, it is not uncommon for economists and farmers to use different rationales for analysing farming practices. To understand low-external-input farming and for (participatory) development, insight in "indigenous economics" is a necessity. In most traditional societies the indigenous economic system is gradually being replaced by "market economics". Are, for that reason, these societies becoming less sustainable?

Comparing systems with different rationales and different resources only on the basis of monetary data is, in our opinion, insufficient and can lead to wrong conclusions. Users' values, goals, preferences and circumstances need to be taken into account and the opinion of the users should complement and give meaning to economists' financial data.

Not all conventional economic methods seem to us equally useful in assessing sustainable agriculture. For instance, contrary to the opinion of Ruben and Heerink (p 18-20), we have strong doubts about the usefulness of production functions. Such functions can be established more easily for chemical agriculture than for organic, low-external-input and sustainable agriculture. The relations between inputs and outputs in these complex and diverse systems are difficult to measure and depict in simple functions.

As long as decision making in agriculture by policy makers as well as farmers is based on financial appraisal which "externalises" the ecological and social effects, this will lead to unsustainability. But what alternative methods of economic evaluation could be used?

Relearning holistic assessment

Santhakumar (p 24-25) complains that the "goals" of farmers, development workers and scientists have been narrowed down to increasing production and profitability. The need for sustainability urges development professionals and farmers to also look at environmental and social production goals. But how to make agriculture contribute again to "holistic" goals?

Sriskandarajah et al (1991) propose to look at farms as "sustainable learning systems in constant coevolution with their environment." The focus should not be on development of new technologies for sustainable farming systems as such, but on helping farmers and rural people to create new learning systems - new ways for them to learn how to create new sets of persistent relationships between themselves and the biophysical and sociocultural environments that surround them.

On creating such learning systems some authors report. Rist (p 23) writes about how the agroecology research programme of AGRUCO, Bolivia, evolved into an interface for intercultural dialogue between the scientific and the indigenous worldview. In this way AGRUCO tries to contribute to social processes, which permit the reaffirmation and innovation of the objectives, perceptions, interests and relations of different stakeholders.

The Center for Holistic Resource Management (Vanderburg p 26-27) developed a learning and testing approach which starts from setting the "holistic goal" instead of being trapped in continuous problem solving.

Bimbao et al (p 28-29) present a method for farmers and other stakeholders to learn about sustainability. By focusing on four indicative criteria: diversity, recycling, biomass production and economic efficiency sustainability can be discussed and plans can be made for improvements.

Conclusion

Challenging new approaches and methods are developed to make research and development more appropriate. Most of the approaches and methods presented in this issue of the ILEIA Newsletter are still very fresh and need further ripening. Still, they indicate new directions. These are only a few examples and, for sure, there must be many more valuable methods. ■

References

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