photo: Bert Lof

Making up the balance

During the last 30 years, farming systems analysis and research has brought researchers closer to the realities confronting farmers and today farmers' knowledge is being explored more seriously. Yet despite Farmer Participatory Research and Participatory Technology Development many development and research efforts fail. This is a signal that development and research agendas have to change. New research partnerships must be forged with many different stakeholders. Providing insights into how these partnership can be developed has been one of the main components of participatory assessment and stakeholder concerted action in the ILEIA's Collaborative Research Programme. Looking back on the ILEIA Collaborative Research Programme there are two significant outputs: the experiences with research partnerships in Stakeholder Concerted Action and the results of Participatory Assessment.

Stakeholder Concerted Action for LEISA

Farmers and their research priorities determined ILEIA's research programme but as issues become more complex and scale increases, a wider range of stakeholders must be involved if development efforts are to be sustained (Rölings & Jiggins 1998). The ILEIA research programme was therefore farmer guided and collaborative. It brought stakeholders together in stakeholder or working groups to deal with concrete activities. Each stakeholder was able to define his or her own interest so that together win-win situations could be created. Working groups of farmers and staff from NGOs, government extension services, agricultural research stations and universities were set up to plan, coordinate and monitor PTD and participatory assessment (PA). Working together, they tried to answer research questions that had been developed collectively. The PTD/PA process provided stakeholder groups with a focus and, through SCA, their experiences were disseminated widely.

SCA can be seen as building on some of the steps involved in PTD (see p 8) in the interests of scaling-up and sustaining this process. The analysis of SCA experiences gained during the ILEIA research programme is interesting in this perspective because there are few such documented experience. In the articles by Abon (p 29), Alebikya (p 40), Canales (p 60), and the AME team (p 74) our research partners have discussed their experiences with SCA and PTD. Below some of the different conditions and dynamics of the stakeholder groups and their development will be brought together and the lessons of these SCA experiences will be examined.

Philippines: Scientists learning from farmers

In the Philippines, KADAMA and KALIKASAN farmer organisations were in the forefront of setting the research agenda and programme decision-making. They had

strong political motives for participating in a LEISA working group of university staff and NGO members. First, these farmers' groups wanted to prove - through systematic research - that options other than those offered by Green Revolution technologies would maintain yields. They also wanted to convince policy makers to support such options.

KALIKASAN AND KADAMA had already considerable experience in conducting experiments and they had a strategic interest in verifying and demonstrating the effectiveness of their LEISA or organic agriculture. In this they needed the support of the university staff. The farmers had already made their problem analysis and priority choices before the ILEIA research programme began and with a clear agenda they had an important impact on the PTD process.

It took time, effort and some facilitation from ILEIA during a number of working group sessions to negotiate a balance between farmer' interests and insights, and the demands of formal, scientific research. It was decided that CLSU would provide additional scientific support (context studies relating to sustainability issues and the search for alternatives; documenting the research process and backstopping farmers' groups). The university ensured that the experiments, systematically conducted by about 140 farmers, generated interesting statistical material. Professor Marilou Abon, who coordinated the contribution of the CLSU/LEISA task force, described her staffs' experience of the LEISA Working Group as follows:

"If we try to compare (this) experience with that of the past it is now quite different. In the past it was more the scientist or the academe who imposed ideas or techniques on the farmer. In the ILEIA structure or framework the farmers worked with academics and scientists and each had a role as important as the other" (ILEIA video 'Building Bridges for LEISA' 1998).

Initially, scientists played a limited role in the working group partly because KALIKASAN and KADAMA farmers were afraid of loosing control of their agenda and autonomy. Later more CLSU staff took part in the CLSU/LEISA task force. Any future upscaling of the programme may find it useful to include other partners such as staff from PhilRice and the Ministry of Agriculture in future activities. Although the LEISA working group had its share of tempestuous moments, at the end of the research period there was a general feeling that much had been achieved and that a climate of mutual respect had been developed. Together with CLSU and PRRM, the two farmer organisations have developed project proposals for continuing PTD experimentation.

Peru: Building on farmers' knowledge

Two working groups were established in Peru: GIAREC in Huancayo in the Central Andes and GINCAE in Cajamarca in the Northern Andes. Those who participated in the working groups did so informally. There were no signed agreements and the role of coordinator rotated between the member organisations. Though both groups were interested in coordinating activities, each developed in its own way (see Canales p 60).

In Huancayo, GIAREC coordinated a research programme involving three NGOs and three research institutions. Sharing experiences, developing a clear vision of the future and stimulating an exchange of farming knowledge encouraged synergism. At the community level, the NGO and research institutes had their own, distinctive role. Each NGO had contact with a particular research institute. As a result, each worked with a group of farmers to develop its own process of technological innovation. Regular working group meetings were held during which the process and results from each area were shared with and documented by all six members.

Each member gained a comparative advantage from this arrangement. A platform was created where new ideas could be discussed. The research institutions provided studies, training, technical advice and information. Farmers gave insights into their specific farming systems and NGOs organised, monitored, gave technical guidance and liased between farmers and researchers. Local knowledge played a crucial role in identifying possible experiments and in many cases experiment design was based on or derived from established farming practices. As Norma Canales (p 60) remarked:

"It is obvious that the interaction of peasant and academic knowledge and experiences re-values local initiatives for development and generates trust and self-esteem in both men and women farmer innovators".

In this way it became possible to shift the development and research agendas of NGOs and agricultural research institutes and create new and interesting avenues for development. Different knowledge systems were integrated, sustainability aspects were prioritised and local innovative capacity was enhanced. GIAREC now has plans for the future and is committed to continuing collaborative activities.

GINCAE in Cajamarca had a more difficult time. It was unable to hold out against the individual agendas of its member organisations and align with ILEIA's research programme despite a shared interest in LEISA and the effort of CEDEPAS to keep the working group together. GINCAE comprised four NGOs, a university and a research institute. The internal dynamics of the group made role differentiation, the exchange of information and involvement in each other's activities difficult. All six partners became involved in PTD activities in their respective areas but few showed any interest in receiving scientific support from the research institute. This and the distance between the working areas of Centro Ideas and the other NGO resulted in an isolation that hindered complementarity. In addition it is possible that the presence of large amounts of donor funding in Cajamarca meant that ILEIA's limited funds were insufficient to attract the investment of staff and time in collaborative activities.

Nevertheless, a very interesting PTD process responsive to farmers' needs and involving some 90 farmers got off the ground in San Marcos. Centro Ideas in San Marcos and CEDEPAS in Magdalena have now expressed a keen interest in further developing and institutionalising PTD in their programmes.

Ghana: 'Plugging in' to farmer priorities

The start of the ILEIA research programme in Northern Ghana coincided with and gave momentum to the earlier initiatives of ACDEP in developing closer ties with government extension and research. In 1995, this led to a new, but informal institutional arrangement - the Northern Ghana LEISA Working Group - that brought together various organisations concerned with agricultural development in the interests of joint research, extension, advocacy and learning with farmers as equal partners..

An important motive for all participants was a shared critique of the failures of former, mainly HEIA- oriented attempts to improve agriculture in the region. There was keen interest among all professional disciplines to explore the potential of LEISA. Some of ACDEP's agricultural stations had already experienced PTD. The willingness to use it in the Northern Ghana LEISA Working Group programme was based on a determination to make research activities relevant to the development of farmer livelihoods. Both the orientation (LEISA) and the approach (PTD) contributed to strengthening relations within the working group. The major question was how to access farmers' knowledge, problems and priorities in the search for new ways to tackle the problem of soil fertility. As they looked for answers, mutual respect developed between farmers, NGOs and scientists. A sense of collective responsibility was generated and the confidence of both scientists and farmers in farmer-led research increased.

By 1998, after three years of activity, the working group had changed its character. Individual members who had initially become involved because of their personal interest in PTD and LEISA were now supported by their institutions. This combination of individual working group

members participating on the basis of institutional interest but without any formal institutional membership has proved very successful. It created space for experimentation without jeopardising institutional relationships. The NGLWG research committee was responsible for daily management issues such as the planning, implementation and coordination of research programme activities.

The working group provided information and training, and monitored and planned activities. It began documentation and developed extension material. Farmers gradually became more involved in planning activities and in the process of sharing experiences. In a relatively short time the working group had succeeded in raising the interest of other stakeholders as well as district directors of agriculture, universities and research institutes outside the Northern Ghana region. This created a much wider platform where issues of agricultural development and the task of advocating LEISA and PTD could be discussed. In this way momentum was increased at the regional policy level. While farmers see the NGLWG as an organisation that collaborates in experimenting with LEISA technologies: policy makers know it best for its advocacy work.

Encouraged by the positive results of NGLWG, several institutions have indicated that LEISA and PTD will become part of their approach. The University of Development Studies has incorporated LEISA and PTD into its teaching curriculum and the Savanna Agricultural Research Institute and ARI include PTD and LEISA in their research proposals. District Agricultural Extension services also intend to use the approach and a World Bank programme for natural resource management in the Northern Ghana will be using the PTD approach and intends to draw on the experience of the NGLWG.

A factor that contributed to the internal coherence of the working group was ACDEP. As an NGO it had more freedom to promote and experiment with new institutional arrangements, such as the NGLWG, than government extension services or research institutions. ACDEP was readily accepted as working group coordinator. It had the skills needed to ensure that everybody was kept informed and interested. Great care was taken to maintain each stakeholder's sense of ownership as the working group was built up.

NGLWG, as a partner in the ILEIA Research Programme, seems to have contributed to shifting research and development agendas in the direction of LEISA and PTD. By accessing farmers' interests it created new hopes and avenues for agricultural development. NGLWG has decided to continue as a platform under the legal framework of ACDEP. In its new programme it will go on with action-research, platform building, scaling-up and advocacy.

India: Platforms for innovation

In less than five years, the Groundnut Working Group (GWG) on the Deccan Plateau in Southern India has become a platform for a multitude of research and NGO organisations. Meeting together in its annual workshop, the GWG provides a forum for debate and the exchange of ideas and technical support. It is not a consolidated stakeholder group in the sense that all members work together on specific subjects or in specific areas. However, there are subgroups in the GWG that do have special fields of interests.

NGOs do most of the PTD work with AME support. AME also brings in scientists and plays a key role in steering, coordinating and facilitating this stakeholder process. It regards activating a wide range of stakeholders to be of strategic importance. In this way the GWG has reached a very large number of farmers (see p 74). The GWG experience illustrates stages in the PTD/SCA scaling-up process

photo: Bert Lof

Farmers discussing experiences gained in farmer to farmer exchange.

Critical steps in scaling up PTD/SCA

- Starting small, local and specific by carrying out one crop /single factor field experiments which, over a two year period, provided a fairly good insight into the factors that affected groundnut production.
- Organising farmers interested in experimenting through NGOs serving also as an interface between farmers and government (and research). Increasing technical and PTD skills of NGOs and overcoming mistrust between NGOs and government and research was also important.
- Building expansion on positive results. Going to other communities in the same area. Having determined problems through PRAs and found similarities 'looking for things to try' is less necessary. More emphasis can then be put on demonstration and further development of found options.
- Recognising the need of scientific expertise and gradually expanding the platform. Learning from each other and establishing important links between NGOs and researchers. In this way the GWG, a platform for SCA came into being.
- Beginning with a single NGO or a homogenous group of NGOs, the steady build-up of relationships with other institutional actors is facilitated including community councils, government departments, input suppliers and credit institutions. This cumulated in the establishment of stakeholder platforms as a strategy for up-scaling participatory and integrated landuse development.
- Demonstrating the benefits of working together contributed to improving synergy between actors in the agricultural (groundnut) knowledge system and stimulated up-scaling.
- Good documentation is essential. On the basis of earlier experiences a provisional groundnut production manual was published in 1997. This laid the basis for further expansion to other areas.
- Not everything scales up automatically. Technologies, once validated by farmers, spread fast. Yet the experimentation process itself which provided the initial insights into these technologies does not scale up so easily. It requires continuous nurturing, able guidance and intensive monitoring.

Lessons learned in SCA

Bringing stakeholders together is not easy. Differences in social background and culture, the distrust farmers and NGO often exhibit towards researchers and competition between NGOs and government/research organisations are some of the factors that contribute to this situation. There are important preconditions for SCA and some of these are discussed below.

It is essential that stakeholders have a ***genuine interest*** in learning from each other and that they share activities, responsibilities and the work of achieving a common goal. Stakeholders may cooperate for opportunistic reasons and this is not a problem in itself. However, when financial benefits are the main reason for joining a stakeholder group, the group will be neither viable or sustainable. Having and building respect for the capacities, knowledge, limitations and institutional concerns of others is a must and a challenge. Such cooperation has added value and removing prejudices strengthens mutual respect.

Common goals are important but not sufficient. There must be concerted action from which all stakeholders benefit professionally. In the ILEIA situation it was the combination of the PTD process and additional studies which kept everybody involved. Stakeholder groups must be realistic about the time and resources available to different members if disappointments are to be avoided.

Leadership in stakeholder groups is a sensitive issue. An organisation or person with considerable credibility, accepted by all stakeholders (such as ACDEP in Ghana) and able to assume a coordinating or leadership role may not always be available. Sooner or later researchers have the tendency to take the lead and this can cause resentment among farmers who want to secure control over technology development. Finding a pragmatic solution - ensuring that the position of chairperson is rotated regularly (Peru) or establishing an external facilitator (the Philippines) - that is acceptable to everyone and that is evaluated regularly then becomes crucial.

Proper management of ***individual and institutional capacities and sensitivities*** is extremely important. Careful attention has to be given to ownership in goals, processes and activities. These matters should be dealt with by an accountable member of the stakeholder group. Considerable investments in awareness building, orientation and training in LEISA and PTD are necessary both at the beginning of the process and also at later stages. Although it is important that stakeholder groups build on the knowledge, skills and experiences of their members, it may sometimes be necessary for an experienced external institution or individual to give guidance and advice on the processes of SCA, PTD and the development of LEISA.

There must be a commitment to ***transparency*** in programme conception, internal decision making and financial aspects and the requirements of financial administration and reporting should not be underestimated. If not handled in an accountable, timely and transparent way there will be serious frustrations.

It has been shown that the ***documentation*** of the process and results together with the organisation of workshops involving a wider audience is an important way of achieving outside recognition and ensuring up-scaling and advocacy. It also gives weight to the stakeholder group itself.

Although every situation has its own dynamics stakeholder groups should not be ***institutionalised*** in a formal way. The 'in practice' recognition of an informal group of interested individuals perhaps with an institutional affiliation may be both flexible and workable (see Ghana p 40). However, more formal working relations may be required later. (see India p 74).

A Stakeholder Group may start with a relatively small number of members in order to ensure that the process is clear and manageable. However, there is the risk that a small group will continue to be inward-looking. In order for full technology development to occur new members from other groups and categories of farmers, scientists and institutions bringing other specialisations and insights must be involved. Such stakeholders may come from the banking world, for example, or from commercial or policy sectors. They will be crucial in broadening the scope of technology development and in ***up-scaling the process***.

Impact of SCA

The four case studies referred to here demonstrate that SCA contributed to the creation of a learning environment for all the stakeholders involved. It was instrumental in ensuring the effective, complementary use of knowledge both from farmers and scientists and lead to both groups acquiring new insights. Subsequent reassessments of the role played by farmers and the contribution indigenous knowledge can make to the development of technology lead to the break-down of the roles adopted by researchers, NGO staff and farmers. This and the building of skills have encouraged the collaboration of a wide range of stakeholders in participatory research and development. SCA has also been important in strengthening farmers' innovation capacities and empowering farmers and farmer organisations such that they become equal partners in agricultural research and grow in self-consciousness and enthusiasm. Finally SCA proved effective in coordinating the definition, monitoring and evaluation of participatory research and development programmes. In some cases it was able to influence land use policies and the scaling-up of research and development programmes. As such SCA seems to be an important pre-condition and methodological tool for developing sustainable agriculture and LEISA.

photo: Bert Lof

Farmers and scientists discussing groundnut production.

Stakeholder Assessment of LEISA alternatives

The studies on history and trends show that in each research zone agricultural development has been influenced by the pressures of market-oriented agriculture and modern technologies. Agriculture in each zone showed specific signs of an increasing lack of ecological, economic and social sustainability. Farmers are being forced to search for alternative ways to meet their food and cash needs.

Ecological degradation

Since the 1970s, rice farmers in the Philippines have adopted intensive Green Revolution practices. However, farmers have found that as the cost of these input continued to rise and the soil was becoming increasingly degraded, yields stagnated and financial benefits declined. Indiscriminate use of pesticides and herbicides has lead to a reduction in the numbers of living organisms and human health suffered. Water sources necessary for irrigation became less secure as water tables fell because of over-pumping and increased runoff in the up-lands.

In the Peruvian Andes the effectiveness of modern inputs has also declined. Presently, these are only being used in irrigated agriculture where market opportunities are good. Their use results in problems similar to those in the Philippines. Rain-fed agriculture faces severe soil erosion, overgrazing, loss of agrodiversity and, as a result, pest and disease incidence is high.

In Ghana, attempts to introduce modern agriculture have failed. In rain-fed agriculture soil fertility and water holding capacity have decreased due to nutrient mining. At the same time vegetation and the amount of organic matter in the soil have been seriously effected by burning and mechanised tillage has caused soil compaction. This has reduced food and cash security. Moreover, population growth has lead to an increase in the cultivation of marginal lands and the disappearance of fallow periods has lead to further deforestation, soil erosion and nutrient depletion.

In India, the cost of modern inputs is steadily increasing. On the Deccan Plateau, soil erosion, a scarcity of organic manures, an imbalance in the way chemical fertilisers are being used and groundnut monoculture have lead to an increased susceptibility to water stress, micronutrient deficiency and a vulnerability to pests and diseases.

Economic marginalisation

Economic transformation and the liberalisation of the market economy are important reasons for the marginalisation of many small farmers. In the Philippines farmers are being forced to look for other economic alternatives and these are often outside agriculture. In India during the last 20 years, small farmers have become

strongly dependent on groundnuts for their cash income. As no other profitable crop is available, farmers continue with groundnut production despite the ecological degradation that is threatening their income. Often their only alternative is to leave farming and seek work elsewhere. Many farmers in northern Ghana have reverted to or remain in subsistence production. The difficult economic situation in the country means there are limited opportunities for labour migration and this is forcing farmers to look for ecologically sound strategies to intensify agriculture using whatever resources are available locally. The problems faced by Peruvian farmers are very similar. Food insecurity makes it necessary to look outside farming for an income and many farmers migrate to the coast or the Amazon to work as labourers.

Social disintegration

Many social problems found in the research sites are related to the ecological degradation of the natural resource base and the economic marginalisation of farmers' livelihoods. Social disintegration aggravated by migration (India, Peru, Ghana), land conversion (Philippines, India), indebtedness (Philippines, India), health hazards (Philippines, Peru) and the loss of indigenous knowledge (Peru, Ghana) threaten the future of many rural communities.

LEISA technologies needed

It is clear that the conventional HEIA technologies create many ecological problems and are no longer a profitable option for many farmers. In northern Ghana and the Andean highlands rain-fed agriculture is, of necessity, dependent on locally available resources. External inputs, whether organic or chemical, are necessary in market-oriented agriculture. Situation specific LEISA practices that make optimal use of local resources and ecological processes and, where feasible, complement these to secure ecological, economic and social sustainability are therefore more viable than conventional HEIA and LEIA practices. They are also an absolute necessity for sustainable agriculture.

Most farmers and development workers in the ILEIA research programme are convinced of the need for LEISA in both subsistence and market-oriented agriculture and have shown a keen interest in identifying the LEISA practices most appropriate to their situation.

LEISA technologies that fit

In identifying which LEISA technologies fit best within a particular farming context, local LEISA practices were documented and PTD experimentation initiated. PTD experiments were intended to result in technology innovation that respond to farmers' felt needs. More detailed information on the PTD experiments and results can be found in (Abon p 29; Millar p 43; Karbo et al. p 49; Aalongdong et al. p 47; Reyes p 67; Alvarez p 62; Canales and Canto p 65; AME p 74). Here only some highlights are mentioned:

In the Philippines the use of chicken manure, (improved) traditional rice varieties, natural pest management and diversification (ducks, vegetables, fruit trees) in rice farming proved to be popular alternatives for lowland rice producers. On land with a history of chemical farming about 126 PTD farmers demonstrated that chicken manure could be as productive as chemical fertiliser. On land with a history of organic farming, chicken manure gave even better results. The farmers also showed that improved traditional rice varieties could be as productive as high yielding varieties. Costs and benefits of these levels of chicken manure and chemical fertilisers were identical. However, farmers concluded that organic farming is less expensive: after a number of seasons less chicken manure is needed, there are fewer problems with pests and diseases and natural pest management is much cheaper than chemical pest management. Major constraints still seem to be the limited availability of chicken manure and other sources of organic fertilisers, lack of good quality, improved traditional seeds, a very underdeveloped alternative rice marketing system and few sources of credit for (alternative) rice production. However, experiences with integrated rice farming and the ecological system of rice intensification developed in Madagascar (see ILEIA Newsletter Vol. 15, No. 3/4) suggests there is still considerable potential for improving rice farming.

In Northern Ghana ILEIA Research studies revealed that an increasing number of farmers are adopting non-burning. In both research sites whole communities have decided to stop burning and to protect their fields. One of the major revelations of the research programme for farmers, however, was a visit to Burkina Faso where farmers had adopted many different techniques for water and soil conservation and soil fertility improvement including composting. These techniques could be also viable in northern Ghana where climatic conditions are not yet as dry as in Burkina Faso. Composting and the incorporation of left over biomass into the soil have been particularly successful. In two seasons 88 farmers in Langbensi and 55 in Sandema have taken over these practices. Many farmers are now in the process of further adapting and refining the technology to their specific conditions.

Experimentation with cover crops (*Mucuna, Calopogonium* and *Stylosanthes*) for improved fallow has raised farmers' interest and experimentation is still going on. There are also some isolated but successful experiences with agroforestry and organic farming.

In Peru there was overwhelming evidence that farmers were looking for alternative pest management strategies. In the course of ILEIA research new practices for potato storage and combating pests emerged. *Shipita* is being used to combat distomiasis (*alicuya*), a parasitic disease that has serious economic consequences for sheep breeders. Within a short space of time this practice was adopted both

photo: Bert Lof

Droughts, floods, lack of irrigation water and over-irrigation influence rice production to great extend.

within the community and further afield. In pasture management, farmers have started to grow fodder crops and conserve them for the dry season. Small-scale irrigation systems are being tested. These are low-cost and flexible enough to serve different users. Farmers have also taken up composting crop residues and combining these with cow dung to improve soil fertility. However, not all the new practices have been fully accepted by the communities and so experiments are continuing.

Quantitative underpinning

In all research sites, an attempt has been made to quantify the viability of LEISA practices in specific contexts. This has been particularly successful in the Philippines and India where statistically analysed data was developed. Results were seriously affected, however, by adverse weather conditions. In the Philippines, reliable quantitative data is only available for the first season because of drought and typhoons in the second and third seasons. In India quantitative data are available from 1994 onwards. Less quantitative data are available for Peru and Ghana where conditions in the experimental fields were less homogeneous making quantification unreliable.

As the data obtained from the PTD experiments only covers two or three seasons it is only possible to draw preliminary conclusions about the viability of LEISA practices under specific conditions. However, farmers used criteria and indicators that were important to them and their positive appraisal of LEISA technologies indicate that LEISA technologies better satisfy farmers' needs than current practices. However, the large-scale adoption of these practices by farmers is the best proof of viability and PTD experimentation in Ghana, Peru as well as India has lead to a rapid expansion of new technologies.

From LEISA practise to LEISA systems

The research programme also identified a number of viable transition strategies for a further development towards LEISA systems. In Peru there was shipita; in Ghana compost and other soil fertility management techniques; in the Philippines chicken manure and in India farmyard manure.

In Peru, the positive results of the shipita trials gave way to new experiments in managing the crop and to studies of the disease vector in order to improve natural pasture management. The success of composting in Ghana led to new practices of animal housing near the compost pit so dung could be collected more easily and to investments in donkey carts to transport the compost. Experiments were also carried out with fodder legumes for biomass production. These examples indicate that farmers and researchers have received fresh impetus to look for solutions with a new orientation.

The research partners see many of the results of the PTD experiments as valuable contributions that can help convince farmers, researchers and policy makers of the need for and potential of LEISA. The experiments and studies also helped convince research partners of the value of indigenous knowledge (see Kauffman p 9 ; Alvarez p 62 and Appiah p 44).

PA as methodology

In the ILEIA research programme, participatory assessment - farmers assessment complemented by scientific validation and studies - functioned as an approach that guided and monitored the development of sustainable agriculture at regional level. Participatory assessment is, in the first place, an integrated part of the PTD process in which farmers formulate their own objectives, values, criteria and indicators for the development of (sustainable) agriculture. The evolution of their farming or livelihood system and the impact of their experiments are analysed on the basis of these criteria. In a participatory cyclic process of experimentation, analysis and growing insights, these values, criteria and indicators gradually become more sustainability focused. Scientist can play an important role in participatory assessment by contributing their insights, information, skills and time.

The ILEIA research programme was only able to scratch the surface as far as the potential of this approach was concerned. Further development is needed at several levels including working effectively with criteria, values and indicators for monitoring and evaluating the development of sustainable agriculture. An important issue in PA is how to keep the balance between farmer and scientific assessment. In India a farmers' chance remark left the AME team wondering.

"Are we doing experiments for ourselves or for the researchers? We are convinced about technologies long before we can convince them".

Shifting R&D agendas and scaling-up

At the end of the Research Programme, the research partners and the ILEIA team concluded that the process and results had contributed to a deeper understanding of the need for and the potential of LEISA. The programme had demonstrated the usefulness of LEISA and SCA/PTD approaches for the development of sustainable agriculture.

"Through LEISA and the PTD process farmers gain a lot of self-confidence and self respect. They become more motivated to work by themselves, to identify their own problems and solutions and to transfer this into practical terms. I think this is a sustainable base for development" (Moses Appiah Abaare, Project manager Sandema Agricultural Station).

It also contributed to shifts in research, development and policy agendas something that is urgently needed if there is to be a scaled-up development in sustainable agriculture. In the Philippines, for example ILEIA research has demonstrated how farmer experience can be effectively combined with scientific approaches at a time when researchers are trying to understand why HEIA approaches have such significant weaknesses. Results of the ILEIA research programme and experiences of other organisations were discussed in a countrywide workshops attended by farmers, NGOs and scientists, in May 1999. The proceedings of this workshop will be published in a special IIRR/ILEIA publication towards the end of 1999.

In India the Groundnut Working Group has successfully raised the interest of formal research in farmer-identified problems in the neglected rain-fed areas and has helped lessen farmer and NGO distrust of formal research. Development agendas of NGOs, research institutes and universities are now becoming more sensitive to farmer priorities.

In Peru, new pathways were opened up by using local farmers' knowledge. Research institutes and universities are now doing more serious research on these local solutions, while NGOs are shifting their development programmes to incorporate farmer priorities.

In Ghana it has become evident that conventional extension and research focusing on HEIA solutions has very little to offer to farmers in the region. The dynamics of the NGLWG with their emphasis on LEISA and SCA/PTD has raised new hopes among farmers and development practitioners and stimulated interest among regional policy makers. The NGLWG is receiving recognition as a platform for debate, exchange and advocacy in Northern Ghana and the special publication devoted to the results of the Ghana research programme will undoubtedly contribute to this process.

ILEIA is aware that much more has to be done to understand and develop LEISA. Documenting and assessing strong LEISA cases that involve many more farmers are essential. In the next few years ILEIA intends - with the help of regional networks - to go on documenting and analysing LEISA experiences. The dynamics created in the Working Groups are definitely worth continuing. Some initiatives have already being made and others are in need of funding. The ILEIA team hopes that follow-up initiatives that build on PTD, SCA and LEISA will find active and financial support from regional stakeholders as well as national and international funders.

■