

Scaling up the **impact** of agroforestry research

Report of the Agroforestry
Dissemination Workshop

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Delivering on the promise of agroforestry: reaching 80 million rural poor in 10 years

GLENN L. DENNING

Introduction

In a departure from traditional CGIAR approaches to the dissemination of knowledge and technologies—that is, a reliance on networks, publications and training as the principal vehicles for technology transfer—ICRAF has adopted a more comprehensive and iterative functional model based on a research and development continuum. With this new approach, ICRAF and its partners accept joint responsibility and accountability for ensuring the adoption and impact of agroforestry innovations. Moreover, through feedback from farmers and related stakeholders, ICRAF's research agenda becomes more directly relevant to current and emerging development needs.

While retaining and continuing to strengthen its strategic and applied research functions, ICRAF now also serves as a responsible and committed development partner. Through partnership with organizations with strong developmental concerns and capabilities (like NGOs, government extension agencies, international and bilateral development organizations), ICRAF now takes a more hands-on proactive role in identifying, facilitating and catalyzing agroforestry-based opportunities for greater adoption and impact.

Through the innovative use of agroforestry, ICRAF aims to improve the well-being of 80 million rural poor within 10 years.

Creation of a Development Division

In 1998 ICRAF created a Development Division—the first of its type in the CGIAR. The new division brought together the existing development-oriented programmes and units of the Centre: systems evaluation and dissemination, capacity building and institution strengthening, and information. In

addition, at the global and regional levels, ICRAF assumed a more explicit mandate to accelerate the impact of its work. The challenge put to the Development Division was to increase the speed and scale of adoption and impact—to scale up—from thousands to millions of farmers.

ICRAF's development mission

To stimulate, catalyze and support the greater adoption and impact of agroforestry-related technologies, policies and institutional innovations.

Elements of the strategy

In order to reach 80 million people in 10 years, the ICRAF development strategy is designed around seven key elements.

Innovation assessment. To generate impact through agroforestry, we first assess the adoption potential of innovations. This process usually requires on-farm research—both biophysical and socio-economic—and the design and implementation of pilot development projects. The latter serve as field laboratories that help define the potential scope and resource requirements for wide-scale adoption and impact.

Germplasm supply. The lack of seed, seedlings and other planting material is frequently identified as the most important constraint to greater adoption of agroforestry. Dependence of farmers on centralized, government-run seed-supply facilities has often ended in disappointment. Our goal is to develop and apply better methods of forecasting germplasm needs, and to facilitate establishment of sustainable, community-based germplasm production and distribution systems that draw on the strengths and capabilities of the private and public sectors.

Market development. Markets for agroforestry products provide the basis for income generation for poor farming households. We envisage several key roles for ICRAF in marketing research and development. In particular, we see an opportunity for ICRAF, in partnership with others, to serve as a knowledge broker, thereby helping link agroforestry producers in the south with potential processors and consumers in the north and south.

Strategic alliances. ICRAF is forging creative new alliances with organizations that have complementary expertise, resources and geographical access to generate adoption and impact on a large scale. Partners include national agricultural research systems (NARS), national extension agencies, national planning and policy agencies, the private sector, development banks, universities, schools, non-governmental organizations (NGOs) and farmer organizations.

Capacity building. ICRAF's success crucially depends on the capacity of individuals and institutions that collaborate with it at various points along the research and development continuum. The Centre is continuing efforts to enhance the productivity and sustainability of agroforestry research and development institutions. One important innovation in capacity building is a 'Farmers of the Future' programme, to be launched in 2000. Through this initiative, ICRAF will explore, initially on a pilot scale, the use of schools as a means of reaching current and future generations of farmers.

Knowledge sharing. The rapid advance of agroforestry as both a science and practice has resulted in a substantial global knowledge base. But this knowledge base remains difficult to access for many of those who need it most—national researchers, field-level extensionists and development workers, policy makers, schools and farmers, to name a few. The challenge is to move this information 'off the shelves' as quickly and as effectively as possible. To this end, ICRAF plans to establish an Agroforestry Information Resource Centre in

collaboration with other organizations that share this mission.

Technical support. As with published information, the knowledge and skills base of individuals can have a transformational effect in providing crucial technical advice. ICRAF envisages an on-going role in mobilizing and providing technical expertise in support of the adoption and impact of scaling up. We will strengthen in-house capacity in key development fields such as germplasm supply, market development, extension and development communication. ICRAF will also mobilize technical expertise from other organizations (including its national partners) to support agroforestry development.

These seven elements constitute the heart of ICRAF's development strategy. Each element will require talented people and financial resources. Each element will generate measurable outputs that will contribute towards the attainment of ICRAF's goal.

Delivering on the promise

Since joining the CGIAR in 1991, ICRAF has greatly enhanced its capacity and output in applied and strategic agroforestry research, focusing on tree domestication, soil-fertility replenishment, and improved policies for natural resource management. The Centre's research and capacity-building investments are now generating valuable knowledge and technologies with the immediate potential to positively affect the lives of millions of low-income households in the developing world. The repeated promise of agroforestry has been heard. The time has come to deliver on that promise.

This workshop, which brought together experts from Kenya, Uganda, Malawi, Tanzania, Zimbabwe, Indonesia, the Philippines, Germany and the UK, was explicitly intended to help ICRAF create a solid platform for successful and sustainable scaling up of the adoption and impact of agroforestry.

Aims and objectives of the workshop

The workshop aimed at clarifying the way forward for ICRAF and its partners in their efforts to reach and have a real impact on the livelihood of millions of farm families over the next decade. The workshop participants agreed on the following four objectives for the meeting:

- To identify key elements of scaling up through the presentation and discussion of selected case studies
 - To define a conceptual framework (fundamentals and frame conditions) to guide the development of strategies for scaling up at national and regional levels
 - To specify effective strategies and approaches to scaling up (objectives and activities within fundamentals)
 - To clearly delineate ICRAF's comparative advantage in scaling up agroforestry innovations
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Fundamentals and frame conditions defined

The following definitions were clarified and accepted by the participants as an essential initial step in achieving the workshop's objectives.

A 'fundamental' is a key element of a strategy that needs to be in place for that strategy to be successful. Fundamentals can be actively addressed and influenced by research and development partners, and are not usually mutually independent of each other.

Participants recognized that although such fundamentals will be applicable to all agroforestry development initiatives, their relative importance and the amount of effort that may be required to ensure that any given fundamental is in place will vary from situation to situation. In other words, the development of scaling-up strategies through considering such fundamentals will be situation specific.

A 'frame condition' is an external factor that is likely to have a positive or negative impact on the successful outcome of the strategy. Research and development partners can usually exert little, if any, influence on frame conditions, but need to be aware of their implications and take them into account.

Seven selected case studies were presented of successful scaling up of natural resource management innovations. The presenters were asked to focus on the following aspects:

- What was done and how?
- What was the successful impact?
- What were the major factors that led to success?
- What are the remaining challenges?

Following brief presentations, time was allocated for questions and discussion of each case study. The specific lessons learned from each provided important inputs into subsequent sessions of the workshop, which defined the fundamentals and frame conditions for scaling up agroforestry innovations. Summaries of these presentations are provided below. We begin with a summary of a seminar held the previous day on the Landcare Movement in the Philippines. That seminar was attended by almost all participants and provided additional valuable insights on key issues affecting the success of scaling up agroforestry.

The farmer-driven Landcare Movement: an institutional innovation with implications for extension and research

DENNIS GARRITY

It is clear that watershed degradation need not be an inevitable consequence of using sloping land for agriculture. Smallholders can engage in farming and managing natural forest resources in both a productive and resource-conserving manner. Awareness of this has focused attention on evolving demand-driven, community-based approaches to watershed management. In such approaches, those who occupy the land actively participate in the management and sustainable utilization of their local watershed resources for multiple purposes. A look at current prescriptions for more sustainable farming systems in Asian watersheds reveals an

enormous variability in conditions, and consequently a high degree of technical uncertainty about the effectiveness of the solutions proposed. Simple recipes do not solve the problems, and often the issues need to be tackled on a larger scale than that of the individual household. Local community-based initiatives have an important role to play. Among the organizational models for enhancing local initiative in attacking land degradation, one of particular interest is called 'Landcare'.

Through this approach, local communities organize themselves to tackle their agricultural problems in partnership with public-sector institutions. Some distinguishing features of Landcare groups are:

- They develop their own agendas and tackle the range of sustainability issues considered important to the group
- They tend to be based on neighbourhoods or small sub-watersheds
- The impetus for formation comes from the community, although overt support from outside may be obtained
- The momentum for and ownership of the group's programme are the community's

The Landcare Movement in the Philippines began in Claveria, Mindanao, in 1996. There are now about 200 village-based Landcare groups in Claveria and in other municipalities in northern, central, southern and eastern Mindanao, with a membership of several thousand households. They have established more than 1500 conservation farms based on the use of natural vegetative strips to control soil erosion, and more than 200 community and household nurseries that produce hundreds of thousands of fruit- and timber-tree seedlings, all done entirely with local resources. But since the groups' agendas are determined by their own members, we observe a wide range of issues being taken up by different groups, including, for example, dairy and beef farming, cut-flower production, and problems in vegetable-crop farming. Because of their community 'ownership' and wide range of interests, Landcare



M. STARK

Members of the Landcare Movement in the Philippines have established conservation farms using natural vegetative strips to help control water and soil erosion on steep slopes. They have also established nurseries to produce hundreds of thousands of fruit- and timber-tree seedlings for the community.

groups also provide possibilities for major innovations in the way on-farm participatory research is done. Research could be prioritized, carried out and managed by the groups themselves. This would multiply the amount of work and the diversity of trials that can be accomplished, and would ensure a clearer understanding of the performance and recommendation domains of technical innovations. Currently we are conducting surveys through the Landcare groups to obtain feedback on their priorities for research.

The Movement has attracted the attention of the national government. The national watershed management strategy is now based on Landcare as a foundation for building an effective community-based approach to sustainable agriculture and managing natural resources. This has provided the

opportunity to scale up Landcare principles and experiences to other parts of the Philippines. Landcare groups have also gained significant influence at the local political level. Local governments are actively and enthusiastically assisting the Movement with budgetary allocations and solid political support. At the community level, Landcare has proved to be a powerful force for evolving initiatives that protect the whole watershed.

We may summarize by listing four important functions of these farmer-led knowledge-sharing Landcare organizations:

- They enhance the efficiency of extension or diffusion of improved watershed- and farm-management practices
- The community takes responsibility for search

ing for new solutions or adaptations suited to the diverse and complex environments of smallholder farming

- Participatory research can be enhanced through the involvement of large numbers of smallholders in formal and informal tests of new practices
- The community is mobilized to understand and address landscape-level environmental problems related to water quality, forest and biodiversity protection, soil conservation, and others

There are, however, three significant concerns about the sustainability of the Landcare Movement:

- The Landcare concept is becoming so popular that there is a definite risk of attracting support projects that do not understand the concept, provide funds in a top-down mode and thus defeat the whole basis of a farmer-led movement
- How do such movements sustain themselves in the long run? Networking, and the stimulation from outside contacts, is widely considered to be crucial for the long-term success of such institutions. This can be provided through Landcare Federations, as have evolved locally in Claveria, and through provincial and national federations, which are currently being explored in the Philippines
- Group leadership is a time-consuming and exhausting task, particularly when it is done on a voluntary basis. Landcare is still a new movement in the Philippines, but already leadership 'burn-out' is becoming an increasing concern

We believe that the following measures are required in order to realize the full potential of the Landcare concept:

- The public and non-government sectors should assist in facilitating the formation of groups and networking among them, enabling them to grow, develop their managerial capabilities and enhance their ability to absorb new information from the outside world

- These sectors can also provide leadership training to farmer leaders, helping ensure the sustainability of the organizations
- Cost-sharing external assistance should also be provided. For this, the use of trust funds should be emphasized, where farmer groups can compete for small grants to implement their own local Landcare projects

The evolution of participatory research and extension in Zimbabwe

JÜRGEN HAGMANN

The experience described here reflects the work of a bilateral co-operation project between the Zimbabwean Government Extension Service and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). The project started in 1990 with the development and promotion of soil and water conservation.

At the beginning of the on-farm research work in 1990, conservation-tillage techniques were tested as an entry point for a process of technology development with farmers. The focus of the project changed repeatedly over time as the shortcomings of various approaches to achieving the ultimate goal (that is, the large-scale spreading of technologies) became apparent. The approach changed from adaptive on-farm research to participatory research, then to participatory technology development and then participatory extension as the vehicle for scaling up technologies and processes. Once the approach developed in the project was accepted by the Extension Department, the project developed into an institutional reform project. Subsequently, this supported the Extension Department with the aim of helping to increase performance in order to scale up processes and technologies. It is important to emphasize that throughout the life of the project it was clear project policy that no material incentives were to be provided to farmers.

The impact of this project has been technology development, as well as the spreading and adoption of technologies. More than 25 different natural resource management (NRM) technologies were developed, and in the pilot areas up to 80% of the households were practising soil and water conservation technologies. A third important impact was the commitment of the Extension Department to adopting a more participatory approach to scaling up.

The major success factor was the learning-process approach that was applied in the evolution of the project, as well as the field intervention with farmers. This allowed the optimum adaptation of innovations to specific local conditions. We called this approach 'kukuraya' (farmers' research) and, later, the participatory extension approach (PEA). Key elements within this approach, are:

An increase in the self-organizational capacity of communities involved in the innovation process. This was enhanced through needs-based local organizational development involving the whole community. Through this process, a free sharing of ideas and experiences on innovations took place, greatly accelerating the technology-adoption process.

The spirit of experimentation which emerged among farmers. Through enhancing this, it became the social norm for farmers to aspire to carrying out their own experimentation with ideas and technical options in order to improve natural resource management.

Sharing of experiences from farmer to farmer, and exposure of farmers to other sources of innovation. This approach generated many ideas, introduced technical options to the communities and enhanced the dissemination of innovations from farmer to farmer.

Facilitation of this process, initially through outsiders and later through members of the community.

Several challenges remain, the major ones being the following:

- To 'induce' the extension agents who implement such approaches into the 'process mode'. In the past, these technical agents have mainly implemented linear programmes using standard solutions. The change towards flexible site- and situation-specific management of a process is very demanding
- Building up facilitation skills among implementing agents
- Implementation of this 'process approach to innovation' by government bureaucracies which requires a change in their mode of operation, institutional culture and management behaviour. Organizational development is a complex process
- The creation of accountability by the service providers to their clients. This involves structural and behavioural measures to guarantee that farmers do not only depend on the good will of extension agents but can claim the right to high-quality services from them

In our case, the strategy for scaling up was based on the Extension Service, as these agents are available and operational in all rural areas throughout the country. We decided not to implement these activities beyond the pilot case studies ourselves but to institutionalize the capacity for implementation within the Extension Service, thus attempting to ensure a sustainable impact over a wider area.

The Nakuru and Nyandarua Intensified Forestry Extension Project and the farm forestry component of the Kenya Forestry Master Plan

CHRISTINE HOLDING

The project, jointly funded by the Kenya government and the Finnish International Development Agency (FINNIDA), was conducted in two phases, from 1990 to 1995 and from 1997 to 1998. The project's objectives were to intensify the conventional extension system and to develop participatory extension approaches. Local-level planning was one of the approaches developed. This presentation highlights the two methods used to measure the effectiveness and impact of the agroforestry extension activities undertaken in this project. These were:

- On-farm wood biomass surveys (aerial photography and ground surveys)
- Assessment of the effectiveness of conventional extension channels: schools, groups and contact farmers (household interviews and focus-group discussions)

The presentation concludes with a summary of the key factors that appear to have contributed to the success of this project.

An intensive aerial survey was made to assess changes in farm wood biomass resulting from project interventions. Eight flight lines resulted in six hundred photographs on a scale of 1:10,000 and taken at 1-km intervals. The central part of each photograph was enlarged to a scale of 1:2,500. The sampling unit of the inventory was the farm, and some of the sampled farms were visited in 1993 and again in 1998 in order to make detailed measurements as on-the-ground verification of the results obtained from the aerial survey. The data collected covered planting niches, tree species,

origin of germplasm, trunk diameter and projected end use. Between 1993 and 1998, the usable volume of wood in the project area rose from 7.5 m³ to 16.8 m³, exceeding the calculated annual household requirement by 12%.

Reliable interpretation of the results of such a woody biomass survey can only be made if contextual information such as that on settlement patterns, land tenure, germplasm availability, and tree-utilization preferences, is also available. In the two phases of the project, several socio-economic and marketing studies were conducted. These provided in-depth analysis of the issues and complemented the findings of the biomass surveys.

The second survey, assessing extension channels, covered a total of 216 farming households selected in a two-stage sampling process. The contact points (schools, groups, and contact farmers) were classified into three agro-ecological zones, and households selected in four directions at a distance up to 2 km from the contact points. The participatory component of the survey used focus-group discussions with participating and non-participating farmers to better understand the dynamics at contact points.

The conclusions were that schools were the most effective mechanism for outreach in Nakuru (which also reflected the heavy investment in this channel as an extension medium), and that in Nyandarua, farmer groups were the strongest channel. In both districts, contact farmers were the weakest and least preferred channel.

Within the conventional forestry extension approach, five key factors appear to have contributed to success:

- The withdrawal of tree-felling permits
- Availability of germplasm (quantity and diversity)
- Reinforcement of extension 'messages' through various channels
- Selection of approaches and technologies to match specific site requirements
- Training, training and more training

Scaling up the use of agroforestry with farming families in southern Africa

ANDREAS BÖHRINGER

In 1986, ICRAF started its first regional agroforestry programme in southern Africa. A diagnosis and design (D&D) exercise was carried out in four countries, namely, Zambia, Malawi, Tanzania and Zimbabwe. Major farming-system constraints identified were declining soil fertility and decreasing availability of wood and fodder. During the following ten years, research was conducted to develop agroforestry innovations that would overcome these constraints, for example, improved fallows, woodlots and fodder banks. The emphasis of research gradually moved on farm, involving approximately 5000 farmers by 1996. Since 1997, a small dissemination team has been in place to facilitate the process of scaling up in the region.

Current work aims at addressing the four major constraints to accelerating the impact of agroforestry in the region. These are:

Limited awareness by stakeholders, including farmers, of the potential and benefits of agroforestry. Awareness is increased by facilitating field days (reaching on average 2500 farmers, 50% of whom are women, in each of the four countries every year), the production and distribution of agroforestry extension materials (leaflets, manuals, posters, etc.), and the production and distribution of one regional and four national newsletters.

Capacity at the grassroots level. This is enhanced by supporting the formation of farmers' groups, facilitating direct farmer-to-farmer training in villages, training of farmer trainers who will lead community-based extension, and technology-related skill training such as that on nursery and tree management. We have found this 'farmer-first' approach in capacity building to be very efficient.

It costs, on average, approximately USD2.50 to train one farmer, who then reaches about ten other farmers.

The restricted availability of germplasm, mainly tree seed, at the village level. We are supporting decentralized grassroots-level germplasm production and supply networks. It is projected that by 2001 the programme will have supported the establishment of 800 farmer seed multiplication plots and over 6000 farmer nurseries.

Poor partnership and cooperation among stakeholders. The number of partners/collaborators in the region had increased from 30 in 1996 to 165 in 1998. During 'networkshops' in the four countries, representatives of all key stakeholders, including farmers, plan activities and assess successes and failures. These networkshops, along with regular field visits, help to improve overall coordination.

The factors contributing to success so far can be summarized as follows:

- Feasible and profitable agroforestry innovations were developed
- The current economic and policy framework in the region has forced farmers into abandoning conventional 'modern' farming practices such as the use of fertilizer
- Strict adherence to a farmer-first approach in technology development and extension has increased both the relevance and scope of our work
- Wider dissemination of the work was achieved mainly through the strengthening of collaboration and partnerships and improving coordination, which helped us to use our scarce resources more efficiently

The last factor also poses one of the future challenges of the programme; namely, how to assess the transaction costs of collaboration and partnership as neither can be scaled up indefinitely and a sustainable 'optimum' must be found. This constraint also implies that we have



A NIENGA

A key to successful scaling up in southern Africa has been the development of feasible and profitable agroforestry options. Here Mrs Jennifer Zulu, a Zambian farmer, has adopted an improved Sesbania sesban fallow to increase soil fertility and boost her maize yields.

to improve our techniques for measuring successes and failures. On the technological front, the programme is not meeting the ever-increasing demand for germplasm. This is mainly because sustainable germplasm production necessitates major initial investments in local capacity building. Further, technology options available to farmers are still limited and need to be diversified through technology development at the local level. In meeting some of the above challenges, it appears likely that ICRAF will have to reconsider its current capacities in development so it can remain at the forefront in scaling up agroforestry in southern Africa and elsewhere.

Scaling up agroforestry adoption: what role for democratically elected and decentralized government structures in Uganda?

THOMAS RAUSSEN

In 1998, an ambitious decentralization programme was initiated in Uganda. Government functions were strengthened in more than 40 districts of Uganda, and this process extended downwards to lower administrative levels. Each village is now involved in the decentralized government functions. Budgetary and policy development powers are decentralized down to subcounty level. Typically, a district has between 10 and 30 subcounties.

Strong support from decentralized governments is considered a major factor in the successful Landcare Movement in the Philippines. The AFRENA – Uganda Agroforestry Project is currently working with some local councils to explore whether, and with what support, this approach could also be a successful dissemination pathway in Uganda.

As is often the case, collaboration began by accident when a farmer from a village with 40 households located some 20 km west of Kabale (in western Uganda) requested help. The farmer knew about the agroforestry project since he had worked there in the past on a casual basis. Farmers in his village, located at the lower end of a large and steep watershed, experience severe erosion on the hills and flooding of the fertile valley bottom. Through the decentralized structures, the village had a committee for ‘production and environment’ that was willing to do something about their common environmental problem.

After a fact-finding visit by the project staff, it was agreed that the erosion and flooding problems could not be overcome by initiatives on the part of individual farmers. This was shown by the failed initiative of one farmer who had tried to protect his fertile garden in the valley bottom by building a strong stone wall—after the first heavy rain it was destroyed by the floodwater from an otherwise small stream. From their first visit, the project staff made it clear that they could provide help with technical options to reduce runoff but that the community would have to organize itself and try to convince others in the upper watershed to join in their conservation efforts.

Up to this point the story sounds all too familiar. What is impressive is how the community took up the challenge and what they have achieved with minimum support from the project staff:

- An information tour was organized when village representatives visited on-farm trials and individual farmers who had adopted soil-

conservation measures. No facilitation, lunch, snacks or drinks were provided

- In a period of only two days, 6000 seedlings delivered to the roadside were carried over 3 km of hilly terrain and planted in the form of about 4 km of contour hedges on a ‘demonstration slope’
- Four small local nurseries were started. Only tree seed and training were provided by the project
- Contact was made with the subcounty administration (higher level), and its chairman and village chairman became involved in identifying the ‘hot spots’ for erosion in the watershed

Again, this sounds much like a ‘normal’ progress report, except for the minimal involvement of the project staff. To plan scaling up, a major condition has to be a ‘minimum input strategy’. This is for two reasons:

Availability of resources. Neither the project nor its development partners can supply 10 million farmers with a watering can, a wheelbarrow or other common inputs often made in the promotion of agroforestry projects.

The usual roles need to be reversed. The dissemination officer should not be ‘pushing’ farmers to work on solutions to their problems, but farmers should be motivated to push the dissemination officer to give them the really vital inputs—information, skills and germplasm.

Four factors were found to be very important for potential success in scaling up:

A demand-driven approach. Farmers had a problem that was obvious to them and knew where to get help from (highlighting the need to create awareness).

Appropriate technology immediately available to the project. Contour hedges with shrubs effectively control runoff and also produce products that are much in demand—firewood, stakes and fodder.



D PEDEN

Decentralized decision-making at the village level in Uganda. Village committees are discussing soil erosion control options with ICRAF scientists.

The farmers were already organized through the local-government system. Here an elected committee is available (and there are tens of thousands of them in Uganda) and one can assume that more than 50% of the villagers (their electorate) trust the people involved.

Minimum input strategy. In spite of a lack of hard evidence regarding the benefits, project staff felt that it is important to put the ball firmly in the court of the village committee: 'Yes we can help you with information, advice and seed—the rest is up to you'.

The next two years will show whether this is a sustainable approach. Action on the ground will show the real commitment, and also determine the level of support required from the project to help in scaling up.

The main challenges foreseen in scaling up with this approach are:

Maintaining the momentum. Very soon farmers in the initial village will master the contour-hedge method, including production of seed and seedlings. To maintain their interest, other attractive options must be made available (e.g. fruit trees, putting them in touch with other NGOs that help in the acquisition of dairy animals, etc.).

Non-uniformity of approach by different NGOs. This is a major challenge since the direct incentives that NGOs offer when dealing with natural resource management range from zero to a very attractive set of farming tools. Unless some policy guidelines are produced (and, again, the political power for this has been decentralized), most NGOs will feel bound by the commitment made to their donors and use direct incentives to help achieve their targets.

Remain flexible. Obviously, the example used here is one of a community that was already active—otherwise they would not have contacted

the project. Not all decentralized government structures will be as responsive.

There is a widespread willingness at grassroots-government level to do something about the environment. It might not be the best subject for a re-election campaign, but in the absence of a health centre, school or road to build, it is attractive. Environmental degradation is an issue. Farmers feel it every day—in their empty pockets and stomachs.

Integration of Tree Crops in Farming Systems Project (ITFSP)

MANFRED VAN ECKERT

Experiences in Kenya, Tanzania, Malawi and Zimbabwe show that the main stakeholders—the government extension services, NGOs, parastatals, research organizations and private-sector companies—do not have an appropriate approach to utilizing the existing production potential in the smallholder tree-crop subsector. A stakeholder consultation process that was conducted by ITFSP to analyse the subsector in the different countries revealed the following challenges that required addressing by the project:

- How to organize a decentralized and demand-driven germplasm production and distribution system
- How to develop and organize cost-effective, implementable and sustainable extension approaches for developing practical skills for tree propagation and management, as well as for processing and marketing of tree products
- How to design a research and development strategy which will readily assist in identifying and developing new tree products, as well as in developing appropriate marketing strategies for the smallholder farmer
- How to achieve improved cooperation and networking among farmers, extension and

research staff and the private sector, at different levels within a country and the region

- How to develop transparent, sustainable and private business-oriented farmer organizations which can adequately support or facilitate smallholder farmers in the future with required information and skills, training and marketing services

In order not to create ‘project island’ solutions, these challenges have been dealt with within the existing legal framework and service infrastructure. To develop the new approaches, ITFSP collaborated with district agricultural, horticultural and home economics officers of the ministries of agriculture, district forestry officers and extension staff of various NGOs, to develop a new farmer-trainer training approach for tree-crop extension. This approach consisted of the following elements.

Farmers first. This philosophy is based on the hypothesis that there will always be farmers who have above-average skills, knowledge and talents for different farm enterprises. These farmers can be more effectively motivated to improve their own skills and pass them on to other farmers in training than can salaried extension workers. Such farmers are trained to become Farmer Trainers.

Training for skill development. ITFSP, jointly with the facilitating officers, developed an on-the-job training approach for the identified Farmer Trainers. A sequence of training based on the production cycle of the various trees, with practical sessions in nurseries and orchards, has been conducted. This sequential training aims to produce skilful and knowledgeable farmers and service providers who can improve the tree-crop enterprises in their communities and locations. Consent to change the roles and responsibilities of the extension officers and staff was required as a precondition for the development of this farmer-trainer training approach.

Demand-driven extension. Fruit trees, such as mangoes, avocados, pawpaw and citrus, which are in high demand for subsistence and sale and



MI VAN ECKERT

A key to success for the adoption of high-value tree crops is linking small-scale producers with market outlets. In Kenya, women's groups are involved in drying, grading and packaging mangos for urban markets.

which are easy to manage, were identified as a transmission route for the dissemination of tree technologies and improvement strategies. The introduction of grafting technologies and new fruit varieties or improved pawpaw seeds, for example, gave quick results and contributed to changed farmers' perceptions about trees. Farmer Trainers contributed to the improvement of the existing local demand for quality fruit-tree seedlings and scions since farmers are prepared to pay for their services or are attending their training sessions. Farmer Trainers are encouraged to establish fruit-tree nurseries and were helped to set up mother-tree blocks of improved cultivars for scion production. ITFSP has introduced a participatory farm analysis approach as a tool for identifying the most profitable tree-planting options. This can be used as the transmission route for the dissemination of the technologies.

Group formation and networking. Farmer Trainers have started to create interest groups for tree crops, or have teamed up with already existing community nursery groups that demand their services, partly against payment. ITFSP supports the view that these group-formation processes will eventually result in sustainable producer groups and will lead to the development of farmers' producer associations at district or provincial level.

Results from the implementation of these concepts indicate that the approach is effective and is appreciated by the participants. There is increasing demand for training coming directly from the farmers' groups who are ready to share training costs. To date, nearly 200 farmers have become Farmer Trainers, and they in turn have trained over 1000 fellow farmers. More than 8000 farmers have attended Farmer Trainer meetings.

Scaling up the use and adoption of agroforestry-based innovations in western Kenya: experiences of the Soil Fertility Pilot Project

AMADOU NIANG

When the pilot project was initiated, the challenge was how to go about the wide-scale testing and dissemination of soil-fertility-based agroforestry innovations that had been introduced in western Kenya by ICRAF, the Kenya Forestry Research Institute, the Kenya Agricultural Research Institute, and by farmers. This challenge recognized that a knowledge gap, mainly due to poor accessibility to information by the majority of farmers, was one of the most important factors responsible for the low and declining agricultural productivity and increasing poverty of farmers.

To address this challenge, two approaches were adopted:

Working with government extension services using the extension services' training and visit (T&V) approach. This was done both at the catchment level within the framework of the government Soil and Water Conservation Programme, and through the national extension system which focuses on farmer contact groups. In addition, ICRAF established direct collaboration with 14 NGOs and 13 community-based organizations.

In this approach, it was necessary to train development agents in participatory approaches, the specific agroforestry innovations, propagation techniques and seed production. To facilitate this, ICRAF arranged field visits, planted demonstration plots, helped procure initial seed supplies and provided extension material.

Building upon existing village-level social organizations and their aggregation at higher levels.

The rest of this summary describes activities undertaken within this second strategy.

Clusters of pilot villages were selected to represent priority land-use systems and were based on a biophysical and socio-economic stratification of the mandate area. A range of activities was undertaken to characterize the circumstances of the farmers in these villages and their farming systems, and to identify potential impact indicators. These included participatory wealth ranking, social mapping, characterization of soil-fertility management by farmers, and village-level workshops to identify impact indicators.

Farmers were taken to visit demonstrations of possible innovations that they might wish to experiment with on their farms. In addition, researcher-designed and farmer-managed trials were established in villages, both as demonstrations and as sources of information about the performance of the innovations and farmers' reactions.

This close interaction with farmers and village communities has resulted in a widespread awareness of the potential of agroforestry to mitigate soil fertility problems, and has also led to substantial experimentation, adaptation and adoption of a range of solutions. The process of agroforestry dissemination, farmer experimentation, adoption and impact is being monitored and evaluated by ICRAF and its partners. But, as the innovations spread, it is clear that a more formal and structured monitoring and evaluation approach is required to fully assess what is happening and to provide feedback to researchers.

The pilot project started in one village in February 1997. Such is the enthusiasm of the communities involved, that the project had expanded to 8 clusters of 131 villages by late 1999. Approximately 50% of those experimenting with or adopting agroforestry innovations are women.



P. SANCHEZ

*Improved fallows, which help to boost soil fertility, are becoming popular with small-scale farmers in western Kenya. Here, Rispa Onanda from Luero village demonstrates her *Crotalaria grahamiana* fallow.*

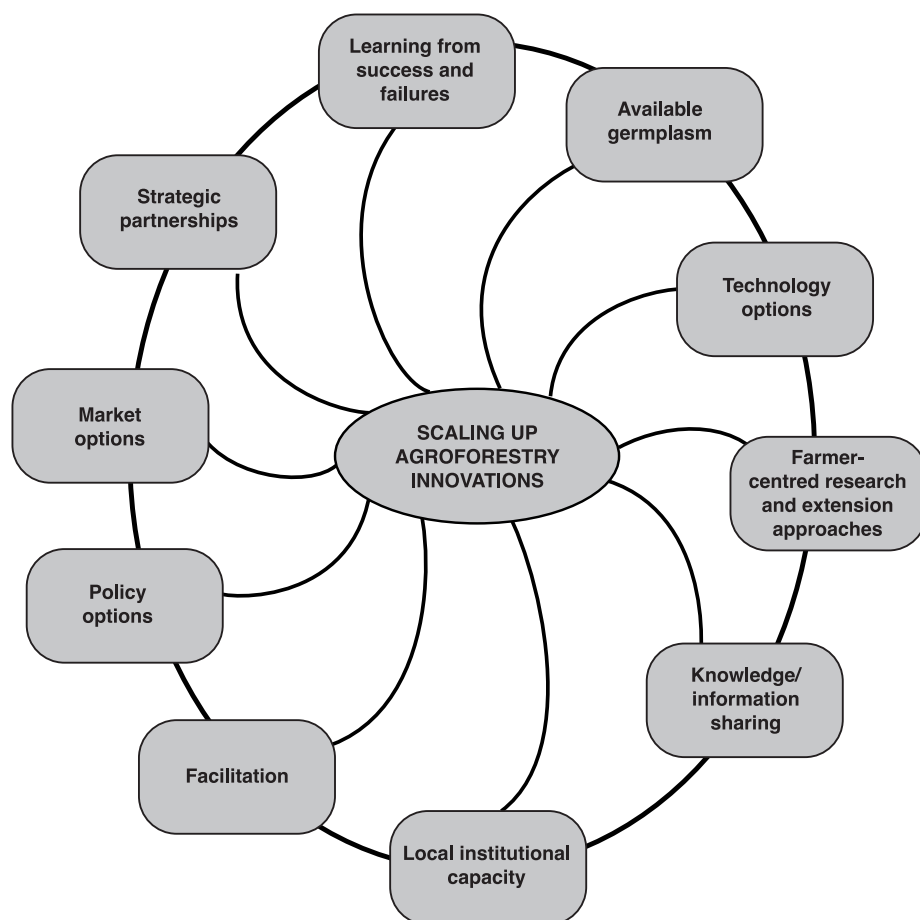
Interestingly, this approach appears to be more successful with some ethnic groups than others. For example, in homogenous ethnic communities of the Luo (0.6 clans per village) with a highly structured society (14 groups per village), the approach achieved quicker results than in the more heterogeneous communities of the Luhya (3.7 clans per village) with a less structured society (6 groups per village).

Given the success of the approach, it is intended to hand over the major responsibility for the project to the government extension services, but it is accepted that further training of extension staff in participatory extension approaches will be required.

Based on the lessons learned from the case studies and from their own experiences, participants held a plenary brainstorming session with the objective of identifying the key elements (or fundamentals) that need to be in place for successful scaling up of agroforestry innovations. There was consensus that the many elements identified by the participants could be grouped into 10 fundamentals.

Participants then split into working groups, and were asked to identify the key objectives, activities and outcomes associated with each fundamental. In addition, each group was asked to identify important considerations that need to be borne in mind for each fundamental.

Following the reporting back of the working groups in plenary, the participants then agreed on the key roles that ICRAF should play for each fundamental. The Marketing fundamental was not discussed further in this workshop as a specific marketing workshop was scheduled for the following two days. Separate proceedings have been produced for that meeting, but a summary of the key points that emerged is presented here. The output of the working groups and plenary discussions is summarized in this section for each fundamental.



Fundamental A: Technical options

Objective 1

To identify existing technical agroforestry options that are likely to be appropriate in a defined and characterized project area for farmer experimentation, adaptation and adoption.

Activity (a)

Undertake informal surveys to assess farmers' indigenous-tree-based knowledge and tree-management and utilization strategies.

Activity (b)

Access the experience of other research and development projects in similar environments through cross-site visits and literature review.

Activity (c)

Expose farmers to a range of new potential agroforestry innovations through visits to research stations/demonstration plots and obtain their feedback through structured group discussion.

Activity (d)

Hold farmer/community workshops to review new ideas, identify their priorities and formulate plans for participatory on-farm experimentation.

Outcome

A range of relevant agroforestry innovations will have been identified, discussed with farmers and prioritized, and a plan for their participatory evaluation developed.

Objective 2

To define the social, economic and biophysical boundary conditions (recommendation domains) of new potential agroforestry innovations.

Activity (a)

Assemble key secondary data on soils, climatic and socio-economic variables in the form of maps, tabulated data or in GIS format, and develop a systematic stratification of the project area.

Activity (b)

Establish multilocal researcher-designed and -managed trials which sample key strata to quantify the impact of biophysical variables on tree-species adaptation and systems' performance.

Activity (c)

Establish researcher-designed and farmer-managed trials (as above) to obtain farmer feedback on socio-economic factors that might affect technology performance and adoption.

Outcome

The biophysical and socio-economic boundary conditions of potential agroforestry innovations will be determined and mapped, allowing more targeted farmer-centred research and dissemination (Fundamental B).

Important considerations

The research–development team needs to have the capacity (or access to it) to be able to identify farm- and community-level problems and opportunities, and to generate and analyse options. Farmer/community involvement is central throughout the process.

ICRAF's role

Participants felt that ICRAF had a clear role to play, both directly and with partners, in all the activities identified under the two objectives of this fundamental.



A NIENGA

If agroforestry innovations are to meet farmers' needs, farmers must be active partners in research. Here researchers and farmers discuss improved cattle fodder supply systems in Embu, Kenya.

Fundamental B: Farmer-centred research and extension

Objective 1

Through participatory research, and in collaboration with development partners, to determine the adoption potential of agroforestry innovations.

Activity (a)

Characterize and identify potential partners and communities with whom this work could be undertaken.

Activity (b)

Hold partner/farmer/community workshops to plan for the participatory research and develop appropriate monitoring and evaluation tools.

Activity (c)

Execute a holistic programme of participatory research over different ecological zones and socio-economic conditions (see Fundamental A, Objective 2) to determine the biophysical feasibility, profitability and acceptability of new innovations.

Activity (d)

Hold village-level workshops with experimenting communities to identify their views on potential impacts of adoption and the impact indicators for subsequent monitoring (see Fundamental G).

Outcomes

1. Research and development partners will have worked with farmers in developing and adapting a range of new agroforestry innovations, and will have described their adoption and impact.

2. Development partners and farmers, through being part of the research process, will be well placed to act as agents of change in the scaling up of agroforestry innovations.

Objective 2

Through participatory research, build the capacity of farmers and communities to become agents of change and to take over some functions of existing research and extension bodies (see also Fundamental H).

Activity (a)

Hold community-level and farmer-group-level discussions to identify key questions to be addressed, and facilitate group experimentation and monitoring to identify solutions and provide feedback to researchers.

Activity (b)

Identify farmers, communities and groups who could take the lead as agents of change in 'farmer-to-farmer' scaling up, and facilitate this process.

Activity (c)

Identify opportunities for farmer-to-farmer scaling up of agroforestry innovations across similar ecological and socio-economic conditions, and provide the necessary facilitation and support to such activities.

Activity (d)

Monitor, evaluate and analyse the successes and constraints of farmer-led research and dissemination.

Outcomes

1. Farmers, communities and local-level organizations will have become the central players and leaders within the research and development continuum.
2. New agroforestry innovations will more closely respond to farmers' problems and opportunities.

3. Farmer-to-farmer scaling up will greatly enhance the adoption and impact of agroforestry.

Important considerations

Farmer-centred research and extension will be most effective when communities are willing to experiment and when agroforestry innovations are directly linked to improved livelihoods. Systems that effectively monitor experimentation, adaptation, adoption and impact, and that also provide feedback on second-generation research issues associated with scaling up, are central to success.

ICRAF's role

In addition to being involved in all the activities involved in farmer-centred research and extension, participants agreed that ICRAF is well placed to take a lead role in documenting and promoting approaches to farmer-centred research and extension.

Fundamental C: Local institutional capacity

Objective

To create broad-based support and effective local implementation of scaling-up activities through the empowerment of farmers and local communities.

Activity (a)

Increase farmer and community awareness of agroforestry through field days, farmer-driven newsletters, extension materials and farmer-to-farmer visits (see Fundamental I).

Activity (b)

Identify lead farmers and communities and provide training in leadership and conflict resolution.

Activity (c)

Assist communities in identifying problems and possible solutions, and in setting their research agendas.



ICRAF

Enhanced local institutional capacity is a major component of sustainable development. Farmer groups, especially women groups, are a powerful force for change.

Activity (d)

Build communities' capacity to produce and distribute quality germplasm (see Fundamental D).

Activity (e)

Help create and facilitate support for community action from local government, NGOs and farmer-led organizations.

Activity (f)

Analyse and document the impact of enhanced local institutional capacity with special emphasis being given to wealth and gender analyses.

Activity (g)

Act as advocacy agents for enhanced local institutional capacity.

Outcome

Through training and facilitation, local communities will be empowered as agents of change, and the impact of this on scaling up agroforestry innovations will be analysed, documented and made available to key decision makers and support agents.

Important considerations

Key to the success of enhanced local institutional capacity is the existence of village-level organizations representing diverse groups, the ability to mobilize community resources, and the accountability and transparency of resource use at the local level. Care must be taken to avoid political hijacking of successful local institutional initiatives.

ICRAF's role

Participants felt that ICRAF should take a lead role in acting as an advocacy agent for enhancing local institutional capacity. This role would involve identifying, characterizing, analysing and popularizing successful case studies. In addition, participants felt that ICRAF should initiate and support pilot projects in local institutional innovation.

Fundamental D: Germplasm

Objective 1

To ensure timely availability of quality germplasm to meet development needs.

Activity (a)

Undertake and reconcile germplasm-demand forecasting at different levels over several years, and identify locations and timings of germplasm requirement.

Activity (b)

Determine when farmer self-sufficiency in germplasm supply is likely and appropriate.

Activity (c)

Ascertain the availability of germplasm from various sources, including that of substitute species.

Activity (d)

Coordinate the procurement and collection of foundation germplasm and/or facilitate proactive production of nucleus quantities of germplasm for seed-orchard establishment.

Outcome

Strategies will have been formulated and implemented which will ensure that the adoption and impact of agroforestry are not constrained by non-availability of tree germplasm.

Objective 2

To analyse and compare the processes and cost-effectiveness of different methods of supplying and producing sufficient quantities of germplasm.

Activity (a)

Develop strategies for germplasm procurement, production and supply for each tree species.

Activity (b)

Establish various sourcing and production options for each species, and monitor costs, scale of production, rate of uptake, appropriateness and contingencies required.

Activity (c)

Determine germplasm delivery pathways for each species, and evaluate distribution, dissemination and diffusion of germplasm released.

Activity (d)

Document and monitor germplasm production and releases.

Outcome

A range of contrasting germplasm-production systems and diffusion pathways will have been identified, analysed and compared for priority tree species. Refinements for them will have been determined, as well as their cost effectiveness, and results made available to key stakeholders and the scientific community.

Objective 3

To build the capacity of development partners, and especially farmers, to produce and distribute, disseminate or diffuse quality germplasm.

Activity (a)

Develop appropriate naming and certification systems for each species so that quality germplasm is labelled and recognized.

Activity (b)

Set up, with partners, germplasm production areas for priority species.



ICRAF

Effective systems for supplying germplasm are crucial for widespread adoption. One important activity is training farmer groups, such as this one in Uganda, on nursery techniques.

Activity (c)

Provide training in germplasm harvesting, processing, storing and packaging.

Activity (d)

Encourage marketing opportunities (including contractual production) for tree germplasm, and the formation of farmer associations concerned with commercialization of germplasm.

Outcome

Local-level capacity and opportunities for germplasm production, marketing and diffusion will have been developed as a key component of integrated and sustainable germplasm supply systems (see also Fundamental C).

Important considerations

Central to success must be the recognition that quality tree-germplasm supply, or lack of it, is often the single greatest factor affecting large-scale adoption of agroforestry. If farmers do not have access to good germplasm, they will plant what they can get, and this may often be of inferior quality. If no germplasm is available, enthusiasm may quickly fade.

ICRAF's role

Given the critical role of agroforestry tree seed and seedling supply systems for scaling up, participants felt that ICRAF must play a lead role in all the activities within this fundamental. They agreed that ICRAF should enhance its regional research and development capacity in this field.

Fundamental E: Marketing

What is presented below is a summary of key points that emerged from a second two-day workshop held on 16–17 September 1999. The proceedings of that workshop, which appear in a companion publication to this one, present and discuss these key points in greater detail.

Objective 1

To build local and institutional capacity and develop strategic partnerships in the marketing process.

Activity (a)

Enable people and institutions to have the organizational and marketing capacity to successfully market products and services and to train others in these skills.

Activity (b)

Enhance linkages among market participants, especially local organizations and companies, which have complementary agendas and expertise.

Activity (c)

Mobilize and catalyze actors, resources and capacity in marketing.

Activity (d)

Learn from successes and failures in order to enhance the effectiveness of marketing interventions.

Outcomes

1. People and institutions with capacity and skills to successfully market and train others.
2. Effective strategic partnerships among institutions with complementary strengths.
3. More effective marketing activities linking producers, intermediaries and consumers.
4. Lessons documented and incorporated into existing plans and implementation.

Objective 2

To improve marketing information systems, define successful marketing strategies and product-development plans, and help develop an enabling policy framework.

Activity (a)

Collect and use information to improve the marketing of agroforestry products.

Activity (b)

Define successful market pathways for supply (marketing available products) and demand (identifying what needs to be produced).

Activity (c)

Identify new products that meet consumer demand and can be successfully marketed.

Activity (d)

Understand the effect of policies on the marketing of agroforestry products and facilitate policy change to achieve a favourable policy climate for effective and efficient marketing.

Outcomes

1. Improved marketing information and recommendations made available and used by market participants.
2. Prospects increased for higher returns to investments, new markets opened and market efficiencies improved.
3. Comprehensive product-development plans drawn up that meet consumer demand and that result in successful new products or new uses for existing products.
4. Reports and seminars for policy makers to assess policy options and their likely effects.

Important considerations

We need to ensure that the major factor in marketing is identifying the products that consumers need and prefer. We must also focus on increasing home consumption and the demand of local markets before considering regional or international markets. While seeking to increase the



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Agroforestry products, such as fuelwood, can provide many opportunities for income generation. It is essential to understand current market options and identify future opportunities.

incomes of small-scale participants, we also need to ensure that they understand the sources of market risks and their likely impacts. An effective marketing programme should strive to stabilize and diversify production and income sources.

ICRAF's role

Participants agreed that ICRAF's comparative advantage in marketing is in mobilizing and catalyzing resources, capacities and actors, learning from successes and failures and disseminating and sharing information. ICRAF already performs these functions within regional agroforestry networks with respect to production research and development. The challenge for

ICRAF now is to add a strong marketing dimension to the networks. To facilitate this effectively, ICRAF must develop strategic partnerships with institutions with complementary strengths in marketing, particularly in local organizational development, product development, marketing strategies and information. ICRAF can also play an important role in undertaking policy research and encouraging dialogue among stakeholders to ensure an enabling policy framework.

Fundamental F: Policy options

Objective

To achieve a favourable policy climate for the scaling up, adoption and impact of agroforestry.

Activity (a)

Identification of key policy makers at a range of levels who could influence the scaling-up process.

Activity (b)

Through farmer-centred extension, and learning from successes and failures (see Fundamentals B and G), to identify priority policy-intervention areas that could facilitate the scaling up and adoption of agroforestry.

Activity (c)

Undertake research on key policy and institutional issues at local, national and regional levels that affect scaling-up processes and the adoption of agroforestry.

Activity (d)

Participate in policy dialogue and public advocacy to build political support for scaling-up processes.

Activity (e)

Build the capacity of researchers to undertake policy research and of communities to better address local policy issues and thus be better able to participate in and contribute to discussions of national policy.

Outcomes

1. Greater awareness on the part of policy and decision makers of the key issues and options for successful scaling up.
2. Increased capacity of NARS and other research partners to undertake policy research, and increased capacity of local communities to address local policy issues and to participate in the policy dialogue process.
3. Identification of key policy and institutional

changes required to improve the scaling up process and its impact.

Important considerations

Central to successful policy research is the establishment of communication links and trust between researchers and policy makers. Policy makers, at all levels, need to feel part of the team, and this can be achieved in many ways, such as frequent briefings, encouraging them to attend farmers' field days and to be part of planning and analyses stages. Research and development partners can play a key role in facilitating policy-maker–farmer dialogue.

ICRAF's role

Participants felt that ICRAF has a role to play in all aspects of participatory policy analyses and dialogue. However, given the relatively small number of policy specialists in ICRAF, highest priority was given to ICRAF's role in advocating the need for policy research and building capacity (at all levels) for policy analyses.

Fundamental G: Learning from successes and failures

Objective

To enhance analytical and systematic learning about the performance of agroforestry innovations and the process associated with scaling up, both at a range of different scales and from the perspective of multiple stakeholders.

Activity (a)

Design and implement appropriate participatory instruments which monitor and evaluate the impact of technology diffusion and the scaling-up process at site and national levels.

Activity (b)

Across-site synthesis and analyses of contrasting scaling-up approaches and outcomes.

Activity (c)

Provide feedback to research and development partners and to participating farmers and communities on lessons learned from the monitoring and evaluation process.

Activity (d)

Publish and disseminate the lessons learned from monitoring, evaluation and analyses to a wider audience of stakeholders.

Activity (e)

Incorporate recommendations on improved scaling-up approaches into the iterative planning process.

Outcomes

1. Methods developed for assessing the impact of scaling-up processes on farmers and communities, and for participatory monitoring and evaluation.
2. Improved awareness, capacity and demand for undertaking monitoring, evaluation and impact assessment among the partner institutions.
3. Recommendations to improve scaling-up processes and to enhance their impact identified and implemented.

Important considerations

Essential to the process is the development of an 'analytical learning culture' amongst partners and the involvement and empowerment of local communities (see Fundamental C). Local communities will need consultation, training and facilitation for them to become effectively involved. Also key to the process is an effective mechanism for ensuring that lessons learned are fed back into the activity-planning process across the research and development continuum.

ICRAF's role

Monitoring and evaluating the wider dissemination of agroforestry innovations was seen as central to ICRAF's development agenda. Participants stressed that ICRAF must take the lead in this activity from three perspectives: firstly, the development and promotion of cost-effective

methods of monitoring and evaluation; secondly, the analyses, documentation synthesis and feedback of monitoring and evaluation; and, thirdly, the establishment and implementation of regional and global monitoring and evaluation systems.

Fundamental H: Strategic partnerships**Objective 1**

Expand and strengthen links amongst institutions and organizations with complementary agendas, expertise, resources and 'reach'.

Activity (a)

Compile an inventory of potential scaling-up partners, together with summary information of their operational characteristics.

Activity (b)

Establish criteria for selecting and identifying partners through whom scaling-up goals can be met.

Activity (c)

Hold workshops with potential partners to establish clear rules of engagement, plans of action, responsibilities and strategies for mobilizing resources.

Activity (d)

Together with partners, identify key areas of training required for effective scaling up and the target audience for such training.

Activity (e)

Establish appropriate networking activities between all partners for sharing information on lessons learned from successes and failures (see Fundamental I).

Outcome

A strong and analytical network of partners with a shared and complementary scaling-up agenda will be established and functional.



A NIENGA

Strategic partnerships between research and development are vital for successful scaling up. Here World Vision International and ICRAF sign a formal memorandum of understanding on collaboration.

Objective 2

To improve the efficiency and effectiveness of partnership mechanisms.

Activity (a)

At regular intervals, undertake participatory reviews to identify and analyse possible constraints in partnership and networking mechanisms and produce solutions to overcome these constraints.

Activity (b)

Document and share the outcome of these meetings within partner networks as an integral part of the learning process.

Activity (c)

Ensure that lessons learned are effectively incorporated in annual planning meetings.

Outcome

Partnership networks will be continually reviewing their efficiency and effectiveness and will be incorporating the lessons learned into their operational strategy.

Important considerations

Agroforestry innovations will only reach millions of families through collaboration between ICRAF and development partners. However, partner networks must allow for the inevitable transaction costs involved and resources required. Existing government, non-government and community-based partners should be engaged rather than creating new organizations. A wide stakeholder representation should be sought throughout, with special emphasis being given to the inclusion of policy makers and local leaders in the planning process. In the development of each partnership arrangement, clear time frames for collaboration and exit strategies must be considered.

ICRAF's role

Partnerships, by their very nature, demand that ICRAF be involved in all activities within this fundamental. Participants, however, identified three particularly important activities: analyses and choice of partners; facilitating effective networking of partners for information sharing; and, lastly, creating and nurturing a culture of joint learning.

Fundamental I: Knowledge and information sharing

Objective

To ensure informed, effective and appropriate decision making by a wide range of stakeholders in the scaling-up process through the sharing of knowledge and information.

Activity (a)

Facilitate knowledge sharing through farmer-based extension and local institutional capacity (see Fundamentals B and C).

Activity (b)

Analyse and document farmer sources of information and farmer-to-farmer communication channels.

Activity (c)

Create enhanced stakeholder awareness of agroforestry innovations, their adoption and impact through 'best-practice information kits', regional research and development newsletters, farmer-led newsletters and through the development of extension material by teams that incorporate all stakeholders.

Activity (d)

Facilitate field visits by local government officials and policy makers to farmer-managed demonstration plots and catchment-level projects (Fundamental F).

Activity (e)

Establish community-based information centres that have access to modern information technology.

Outcome

All stakeholders responsible for decisions affecting and promoting the scaling up of agroforestry innovations will have easy access to relevant, high-quality and appropriately packaged knowledge and information.

Important considerations

Successful knowledge and information sharing depends on three key elements: financial and institutional sustainability of the information systems, appropriate packaging of information for different stakeholders, and easy access to that information. In order that information is continually reviewed, refined and improved, it is essential that information sharing not be seen as a one-way process. Feedback mechanisms must be in place.

ICRAF's role

All aspects of facilitating the development and sharing of agroforestry information are integral parts of ICRAF's development agenda. However, participants agreed that, being an international centre, ICRAF has a special role to play on the global stage in three areas: analyses, syntheses and documentation of diverse experiences in scaling up for a wide range of stakeholders; facilitating access to agroforestry and related information on natural resource management; and, thirdly, to act as a global focal point for public awareness and advocacy for agroforestry.

Fundamental J: Facilitating scaling up

Objective 1

To mobilize both existing and external expertise and resources to support the process of scaling up.

Activity (a)

Identify appropriate partners and jointly develop collaborative proposals of action for investor support (see Fundamental H).

Activity (b)

Together with partners, identify key areas of training required for effective scaling up (see Fundamental H).

Activity (c)

Ensure that effective germplasm supply systems are in place to meet development needs (see Fundamental D).

Activity (d)

Ensure that an effective M&E mechanism is in place to analyse and report on the adoption and impact of agroforestry (see Fundamental G).

Outcome

Collaborative scaling-up initiatives will be well planned, resourced and effectively implemented. The impact of scaling up will be monitored, analysed and reported.

Objective 2

To assist the coordination and integration of the scaling-up process within and between countries and regions.

Activity (a)

Ensure that effective and efficient knowledge- and information-sharing systems are in place (see Fundamental I).

Activity (b)

Create a network of 'facilitators of scaling up' who regularly share experiences and learn from each other.

Outcome

There will be greater capacity to facilitate scaling up, and improved mechanisms for mutual sharing of experience across countries and regions will be in place.

Objective 3

To ensure the sustainability and multiplier effect of scaling up through the empowerment of local institutions.

Activities

See those of Fundamentals B and C.

Outcome

Sustainability of scaling up agroforestry innovations will be achieved through broad-based support and effective farmer-led research and dissemination.

Important considerations

There is a need, both within ICRAF and among its partners, to strengthen their in-house capacity to facilitate the scaling-up process of adoption and impact. This need recognizes the time, resources and energy required for effective facilitation, and the need, in the longer term, to ensure that these skills are embedded in national and local institutions. There is also a need to document and make available information on successful facilitation tools and approaches.

ICRAF's role

Facilitation is a fundamental that cuts across all other fundamentals from the perspective of an international centre such as ICRAF. However, given the restricted human resources available to ICRAF, and the enormity of the challenge the Centre has set itself, participants felt that certain aspects of facilitation warrant special attention. These are: strengthening the facilitation capacities of partners; coordination and integration of the scaling-up process (i.e. the other nine fundamentals) at the global and regional levels; and, lastly, and perhaps most importantly, facilitating the mobilization of resources (human and financial) for the scaling up of agroforestry.

Participants recognized that successful and sustainable development can only take place within the context of many external factors (frame conditions) over which research and development partners can exert little, if any, influence. Even so, when designing development initiatives, ICRAF and its partners need to be aware of the positive and/or negative influences such factors can have, and plan accordingly. The following key frame conditions were identified during plenary discussions:

- National and regional peace and security
- Good and transparent governance
- Demand for agroforestry products and market access
- Sound national and global economies
- Legislation in place covering intellectual property rights
- An active process of democratization
- Functional rural infrastructure
- Decentralization of decision-making authority
- Donor priorities and resource availability

The concept of the research and development continuum is becoming well recognized by many research and development organizations. This has led to an acceptance that the priorities and foci of research must be for development, and that the outcomes of such research will therefore form the essential building blocks from which development initiatives can be structured. Such research outcomes, or building blocks, clearly equate to the fundamentals identified in this workshop—key elements that need to be in place for any agroforestry scaling-up strategy to be successful.

Seen in this light, the ten fundamentals described in these proceedings provide the logical common ground on which research and development partnerships should build. As such, they constitute the underlying substance of the concept of a research and development continuum.

What are the challenges that ICRAF needs to address? It has a long history, both as a council and as a research centre, and has provided effective and multipartner regional networks for research and technology development. The Centre now needs to institutionalize the concept of the research and development continuum and the fundamentals required for successful scaling up within these partnerships. This can be achieved both by strengthening its own skills in key fundamental

areas such as marketing and germplasm supply, as well as by actively seeking new alliances that complement its current areas of expertise and collaborative partnerships.

In seeking to meet these challenges, it is perhaps useful to recognize that, although all fundamentals are critical, ICRAF will have a different role to play in each, depending on the relative strengths of its partners and the intrinsic nature of the fundamentals. For example, 'technical options' and 'germplasm supply' are clearly knowledge-based fundamentals and are central to ICRAF's mandate. In contrast, 'farmer-based research and extension', 'learning from successes and failures', 'strategic partnership development', 'facilitation' and 'knowledge and information sharing' are process-based fundamentals that will determine how effectively ICRAF goes about its business. Since it works exclusively in the partnership mode, these are fundamentals that ICRAF must address in close discussion with those partners, especially when there are many partners whose skills complement its own. A third group of fundamentals, namely, 'enhancing local institutional capacity', 'enabling policy options' and 'marketing', are perhaps ones where ICRAF should primarily play an advocacy role, and hence are areas where it should emphasize reaching out to new partners who have the relevant skills and capacities in these fields.

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AFRENA	Agroforestry Research Networks for Africa
AHI	African Highlands Initiative
CBO	community-based organization
CGIAR	Consultative Group on International Agricultural Research
CIAT	Centro Internacional de Agricultura Tropical
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo
D&D	diagnosis and design
FINNIDA	Finnish International Development Agency
GIS	geographic information systems
GTZ	Deutsche Gesellschaft fur Technische Zusammenarbeit
HASHI	Hifadhi Ardhi Shinyanga
ICRAF	International Centre for Research in Agroforestry
ITFSP	Integration of Tree Crops in Farming Systems Project
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
NARS	National Agricultural Research Systems
NGO	non-governmental organization
NRM	natural resource management
PEA	participatory extension approach
RELMA	Regional Land Management Unit
SADC	Southern Africa Development Community
T&V	training and visit