

# INRM2001 Workshop

## Integrated Management for Sustainable Agriculture, Forestry and Fisheries.

**August 28-31, 2001 at CIAT, Cali, Colombia.**<sup>1,2</sup>  
**CGIAR Center Directors' Task Force on INRM**  
**Chair: CIAT**

Along with the ongoing discussions on changes of the CG, the CDC Task Force on Integrated Natural Resource Management is advancing its thinking about how to organize INRM research. This has potentially important consequences for how the CG better achieves its goals, including how its research is organized. These issues were discussed at the recent INRM workshop in Cali, which also aimed to develop a set of clearly articulated goals of operational models and guiding principles and success cases to put INRM into practice in the context of the environment of the CGIAR and its partners, and to clarify how INRM can improve the relevance and impact of work by the CGIAR and its partners, in solving major human and environmental problems.

Around 100 participants from the CGIAR centers and their international and national partner institutions, as well as some donors, participated in this facilitated workshop to discuss and exchange experiences on issues related to INRM.

Almost 50 abstracts and papers had been submitted on these issues: Organizational Frameworks, Concepts, Resilience and Adaptive Management, Knowledge Management, Climate Change, Innovative Tools, Scales of Analysis, Policy, Participatory Research, Social Organisation, Agrobiodiversity, Water, Integrated Nutrient Management, and Impact Assessment.

Measurable benefits from INRM research to large numbers of people in reasonable time-frames must be demonstrated. It was emphasized that improved INRM and genetic improvement are mutually inter-dependent. Emphasis on systemic impact assessment as a tool for performance enhancement, negotiation, learning, adaptation, and resource allocation, is important. Moving further along the R&D (and extension) continuum is also critical: all management is experimental, and indicators should provide adaptation and negotiation framework.

### **What is INRM?**

The concept of INRM is evolving, and hence the 'definition' of INRM research is also evolving, perhaps thereby directly reflecting that the 'process' mode of operation, which is such an important part of INRM. The current understanding of INRM is:

***“Integrated natural resources management (INRM) is an approach to solving problems (and seizing opportunities) in the way people use natural resources in agroecosystems. These include forestry and***

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<sup>1</sup> Generous support from IDRC (to enable the participation of national researchers from developing countries), GTZ (sponsoring the workshop facilitator Jurgen Hagmann), DFID (sponsoring Jon Tanner), the Organisation Change Program (which funded the participation of Steve Song), the Systemwide Genetic Resources Programme (for sponsoring Kamal Bawa), and Danida funds John Poulsen's efforts with the INRM Task Force.

<sup>2</sup> A Workshop Steering Committee was tasked with providing conceptual input towards the design and content of the workshop, and its members were: Andres Palau, Richard Harwood, Pail Harding, Jurgen Hagmann (facilitator), Klaas Tamminga, Juan Restrepo, Brian Walker, Jeff Sayer, John Poulsen, William Erskine, Frits Penning De Vries, Larry Harrington, Mike Swift, Robin Reid, Barry Shapiro, Suan Pheng Kam, Joachim Voss, Jacqueline Ashby.

*fisheries as well as agriculture. INRM uses action-oriented research, in partnerships, in specific locations, focused on stakeholder priorities, to deliver benefits at multiple scales. Its objectives are to help improve livelihoods, system resilience, productivity and environmental services in ways that benefit large numbers of people across large areas. Success in this approach is measured by changes in social, physical, human, natural and financial capital. Its effectiveness in dealing with such problems comes from its ability to:*

- *empower relevant stakeholders*
- *resolve conflicts of interest among stakeholders*
- *foster adaptive management capacity*
- *accommodate complexity by focusing on key causal elements*
- *integrate levels of analysis*
- *merge disciplinary perspectives*
- *guide research on component technologies*
- *generate policy, technological and institutional options for stakeholders*

*It focuses primarily on agriculture, forestry and fisheries. It aims to solve only the most important problem sets. It does not deal with all kinds of natural resources, only those of relevant to agroecosystems. It does not embrace all elements and scales of agroecosystems, only the most important. It emphasizes the participation of only the most important stakeholders.”*

### **Organisational frameworks of the CGIAR, for INRM**

Particular focus was put on how the CGIAR can become better positioned and organized to adapt to the INRM “way of doing business“. A working group consisting of designated representatives from centers and some NARS and donors deliberated on critical elements of organizational frameworks for INRM within the CG. It was emphasized several frameworks with some common critical elements were desirable rather than one single framework to suit all cases .

The CGIAR Centres and their broad array of partners have been engaged in various forms of NRM research and its component facets for over 30 years. During the past 10 years the rapid evolution of the underlying science, tools and processes has been especially evident. Underlying theory has been developed and tested in a wide range of projects in every continent and most ecoregions in which we work. The organizational implications from the INRM theoretical frameworks and ecoregional programs, are the following set of principles, which apply to most complex, multi-partner projects:

- Based on a clearly identified problem (or set thereof), a prioritization must be established. This prioritization can and usually should evolve as research and development progress.
- Boundaries of the problem must be set, determined by funding, organizational capacity, priorities and the desirability of keeping the research focused on key “determinant” factors which limit effective resource management and their human and ecosystem utility.
- Institutional and community partnerships should be carefully chosen, based on mutual interest and commitment, potential for contribution to project goals and willingness to work as a team. Teams must be carefully facilitated, use appropriate incentives and be well managed. Team composition in a project should evolve over time as project priorities and the problem set change. Composition must be driven by the problem set, and the role of each partner should be carefully spelled out.
- Project structures need to be flexible, because problem sets are often complex, and unanticipated elements often demand new or different expertise and partners, or even new sites for additional validation. Scientists should be given reasonable latitude to follow new leads, which will encourage scientists to pursue research breakthroughs.
- Any project using an INRM integrative approach must have a clearly defined and effective management structure with appropriate accountability.
- For INRM research and subsequent development to be effective it must operate at several scales both of subject content and geographical. A reasonable number of communities, watersheds or benchmark sites (or whatever the appropriate research unit chosen), must be included to achieve a reasonable and cost-effective sampling of ecoregional variability to give confidence in extrapolation for scaling up and out.
- The dynamic research integration process may need professional facilitation, particularly in larger projects. That integration is essential at benchmark sites and above as the ecoregion itself is addressed. The management team must assure that this integration truly occurs and is effective.

- The structure and management of any project or program with a large INRM component is functionally based on levels of geographical scale. The groups involved, their activities and the level of their participation change with scale.
- CGIAR research activities are concentrated at the multi-community or multi-watershed level, and occur at a national and ecoregional level in policy research and serve as input into research extrapolation and validation.

Key aspects of suitable organizational arrangements for the CG include (a) stakeholder participation in all phases of the work and (b) long-term commitment and good governance. Specific components of stakeholder participation include adequate choice of partners to facilitate subsequent horizontal and vertical scaling up; the building of trust among partners through effective communication; knowledge management (communities of practice); and transparency of decision making. Long-term commitment to the research initiative is critical – this implies and requires long-term donor support.

Identification of appropriate methods and tools should focus on the outcomes that the suite of methods and tools must produce, rather than the tools required for successful INRM. These include identification of the appropriate scale of intervention and the possible interactions between these scales; clear definition and agreement on the problems to be addressed; a mechanism in place for social learning and the building of social capital; a process in place for monitoring and evaluation to support adaptive management; and, an interdisciplinary team that is competent to include and analyze indigenous knowledge.

With both suitable organizational arrangements and appropriate methods and tools in place, any given INRM initiative would be in a good position to achieve success. “Critical factors of success” depend on how success is defined, and visions of success are subjective and will depend on the specific project setting. However, key principles of what success is, should be developed.

### **Resilience and adaptive management**

The importance of adaptive management and “resilience” for sustainable management of ecosystems was discussed in the context of the CGIAR’s work in production systems.

Many CGIAR research projects already consider some or most general aspects of resilience and adaptive management. Tacit understanding of adaptive management and resilience and its importance is developing and appreciated among researchers. It needs to be encouraged and fostered. Multiple “models” or approaches to adaptive management and resilience should be maintained. Some critical elements include:

- Sustainability, and the INRM research that goes towards it, is not about achieving an optimal state. There will always be new desired sets of goods and services.
- The significance of redundancy in ecological and social systems needs to be recognized in INRM research.
- Methods for risk and sensitivity analysis need to be included in the INRM portfolio.
- Consideration of where a particular region/system might be in respect to the adaptive cycle in order to better target the most appropriate kind of research. Thus, there is little point in trying to develop optimal use recommendations for a region going through a period of major upheaval.
- Cross-scale effects are of great importance and are inadequately considered in most research. INRM research should not be focused on just one scale, rather it should consider, at least, the scales above and below the one of primary interest, and the interactions between them.
- The major time scales that are operating in the system should be identified.
- The apparent complexity of social-ecological systems can usually be reduced to 3-5 driving (control) variables, though the nature of these variables can change over time, as the system changes.
- In INRM research it is crucial to consider the notion of one or more thresholds, or major break-points in system dynamics.
- Expect surprises and the unexpected. It is important to explore the capacity of the system to respond to: a major external change (e.g., the Asian financial collapse), or, a major change in the system itself (e.g., the Honduras floods). The elements of this ‘capacity’ should be identified and ways for these to be enhanced in the system should be explored.

In developing INRM research, it is imperative to carefully consider interactive effects of ecosystems (including agro-ecosystems), social systems and the economic systems, respectively. A key question is: “How will a change in any one of these influence the other two (considering cross-scale effects) in this regard?”

### **Knowledge management**

Increasingly, more appropriate and effective knowledge management is thought critical to the functioning of organisations, and to multi-organisation initiatives. Of particular importance for success is the development of appropriate means of managing and sharing knowledge. Communities of Practice (CoPs) have been widely and successfully used in the private sector as a more appropriate way to share knowledge and experience among people with similar interests. The CGIAR's Organisational Change Program is sponsoring a pilot program on how to apply CoPs within the INRM research context. The multifaceted nature of INRM will require multiple communities of practice, and a particular challenge is how to ensure sufficient and appropriate interactions among these CoPs.

Some existing CGIAR research activities already employ a modus operandi similar or close to the CoP concept, for example some systemwide programs (such as the Alternatives to Slash and Burn Consortium, and Soil and Water Nutrient Management). However, these and others can function more smoothly and effectively by taking into account key principles advanced by and in the knowledge management literature.

CG centers need to reach out to existing communities of practice outside the CG, and the CG can have an important catalytic role to play in preventing the increasing knowledge divide.

Better means and approaches to sharing and managing knowledge do not come for free, though. CGIAR scientists are not properly trained for the implementation of Communities of Practice. This implies that either scientists need to receive the sufficient training or the CGIAR and its centers should allocate funding to employ professional personnel who are fully dedicated to the task of facilitating and maintaining CoPs and to cover costs of the infrastructure needed to support these tasks.

Other means to catalyse better cross-pollination and collaboration include innovative spaces and mechanisms to create fora for knowledge exchange. In particular, mechanisms for the exchange of tacit knowledge are needed, because tacit knowledge is less "transferable" than explicit knowledge, and hence is not amenable to the existing mechanisms of sharing knowledge, i.e. publications, formal meetings, etc.

### **Climate change**

Climate change issues permeate a number of INRM issues, and approaches, departments and foci of the CG, since climate has both direct and indirect effects on people, productivity and the natural environment. The operational model and principles for success in INRM for climate change focus on integration. Equal resources and effort need to be applied to the integration of science in genetic, crop, farming system, community and policy approaches to NRM as to the actual science itself. Only then can iterative, integrated simulation of scenarios and their outcomes support solutions for which we know the full range of implications, including the balance between positive and negative outcomes across and among all sectors.

The relevance of INRM would be strongly improved by taking climate change on board because the relevance and impact of short term policy and practical solutions would be higher if longer term issues such as climate change are taken into account. Sustainable agricultural and natural resource management solutions can only be provided within the context of understanding climate change: impacts, adaptation and mitigation.

The various modules, addressing different elements of the problem and being environment-specific in their research and development implementation, should be focused on regions and ecoregions. This, along with the requirement to harmonize local and national priorities with global concerns, requires the multi-scale approach outlined above.

Program structure and management must reflect and support that framework. Thus, an oversight body, with an independent "expert" (i.e., with INRM experience and expertise) chairperson, is needed. Funding should be assured for a reasonable time frame both to enhance probability of success and to justify the transaction cost of partnerships, and should be progressive, with project plans being specific for only a portion of available funds, leaving funding for project flexibility and the adding of partners / expertise as the program evolves. Further, a portion of funds should be available for local and ecoregional visionary and priority setting and for integration costs and activities

### **Innovative tools**

Development of tools is generally driven by demands of different stakeholders and decision makers. Tools increasingly respond better to specific questions and to the increasing complexity of resource management, provide elements of conceptual frameworks for problem-solving and assist in forging systematic thinking about issues at hand. Tools and modeling framework increasingly include and

allow for integration across scales, disciplines, ecosystem components, different stakeholders and stakeholder objectives – all important components of INRM. Tools and frameworks are particularly powerful when the development of these is embedded into a joint-learning process and acknowledging that stakeholders are more than just users of the tools.

### **Scales of analysis**

Scale is a paradigm or tool for analysis of resource management, rather than a problem to be overcome. The time is right for making advances in understanding the relationship of spatial scale to both bio-physical processes and decision making processes. New methods for addressing natural resource management are emerging that will advance our understanding of processes at different scales and their interactions across scales. A demand for information across different scales is rapidly emerging as decision makers realize its relevance.

New and innovative approaches, concepts and methods to address issues of scale for resource management research, have been and are being developed within and outside the resource management field. This includes the emerging use of various GIS tools and geostatistical techniques for analyzing and visualizing various types of data at various scales, multifractal scaling and related concepts for assessing suitable scales for different types of analysis, development of new down-scaling and up-scaling techniques and their application of both bio-physical and socio-economic data, and development of process and decision models that are appropriate for different scales.

Many if not most resource and environmental management problems operate across spatial and temporal scales. Gaining a better understanding of how to incorporate scale into research and decision making will significantly improve their relevance and usefulness.

### **Policy**

Local policy is a particularly important dimension of policy, as often INRM related policy need to be made at a decentralized local level to achieve desired outcomes.

Any specific factor (such as population density, market access, susceptibility to soil erosion) will lead to very different natural resource outcomes in different situations. Effective policy requires local information about local circumstances, because the effect of every specific factor will be context specific. Local policy must be linked to national policy and global issues. If broader global issues such as global warming or biodiversity loss are ignored, local policy may lead to locally preferred results at the expense of global resource issues. Likewise, national policies such as output prices, interest rates, foreign exchange rates, subsidies, education, investment in infrastructure, and the legal framework, can all have a major influence on incentives for INRM at the local level. Local policy needs to take these higher level factors into account.

Often, relatively little reliable or scientific information is available to support policy decision making, and obtaining such information can be very costly. Much could be done by the CGIAR to more effectively synthesize the implications of its many important research results for policy purposes. This would require a clear definition of the expected clients, be they local, national, or international, to ensure the relevance of the information to policy at the appropriate level.

### **Participatory research**

Whilst participatory research is often location specific, the participatory models and methods employed can be synthesized to draw out principles to enable approaches to be used to scale out and up. Participatory research can contribute by linking research and development agendas with farmers' priorities and opportunities

The type(s) of participation incorporated into a research-management activity will depend upon the objectives and desired outcomes of the activity. There may be a tendency to marginalize specific segments of a community from research-management work at the grassroots level, thus the process of inviting affects who participates (e.g., in terms of gender, wealth, etc.). Before selecting participants for community-based work one needs to engage in some "anthropology of participation" – examining venues, networks, and language of participation at grassroots level.

Different modes of entry into a community may apply. One can begin by establishing community acceptance and subsequently select specific farmers, or one can start with the formation of farmer research groups and then work toward community acceptance, realizing that there are problems associated with both approaches.

Political stakeholders are often left out of the process, yet they are often very important in (shaping) decision making processes (e.g., workshops with policy-makers and researchers on the ground to work out a common problem).

Rather than simply building new forms of social organisation in communities, we need to tap into existing forms of social capital such as social networks and local/regional political institutions as

these are key local decision-makers and holders of power. One can then branch out from these local organisations, but to forget or exclude these institutions could be disastrous.

Farmer decision making and risk management strategies need to be considered, involving stakeholders at all stages. Impact indicators of desired outcomes should be developed. An “exit” strategy needs to be developed at the beginning of the work – research activities are too often stopped abruptly with insufficient attention paid to how the process is maintained in the longer run. Extension/NGOs should be involved to enable work to be continued once the researchers leave, and increasing emphasis must be given to farmer knowledge and innovation to build adaptive capacity/empowerment. Finally, before the involvement of researchers ends a process for self-financing of the groups must be developed.

Facilitation of the process is critical, particularly when the project involves collaboration across institutional barriers. Facilitation should be performed by either a professional facilitator, or a local NGO, or another strong national partner.

### **Agrobiodiversity**

Agro-biodiversity is a subset of biodiversity, encompassing the diversity of the species important for productivity and function of agricultural systems and the livelihoods of agricultural communities. It includes plants (crops, trees and others), livestock, invertebrates and microorganisms. In relation to agrobiodiversity, the CBD definition of biodiversity includes all components of biological diversity of relevance to food and agriculture.

Planned (managed) and associated types of agrobiodiversity carry different types of value to people and agro-ecosystem. Planned agrobiodiversity can have productive, functional and/or cultural/religious values, and includes genetic resources of harvested crop varieties, livestock breeds, fish species and non-domesticated (“wild”) resources within field, forest, rangeland and aquatic ecosystems.). Associated diversity has mainly a functional value (i.e., ecosystem services), such as nutrient cycling, pest and disease regulation, pollination, maintenance of local wild life, watershed protection, erosion control, climate regulation and carbon sequestration.

The agroecosystem is complex and the main entry point for INRM research should be the point of human interventions on the system, to maximize success. Planned agro-biodiversity should be the main entry point for INRM research, which should focus on key functional groups.

Agro-biodiversity management and improvement must be an integral part of INRM research in the CGIAR, because agrobiodiversity and interventions to manage it can have a significant influence on agroecosystems and the livelihoods of people who depend on them.

### **Water**

Conflicts over management and use of common property (water) cause increasing instability in livelihood systems. Land and water management for livelihood improvement encompasses a complexity of interrelated issues and problems, and tackling only one aspect would not remedy the situation satisfactorily.

Multi-institutional and multi-disciplinary teams of local and international research institutes and local government professionals can collaborate with farmers at different scales of analysis, and can jointly identify scenarios for farmers and local planners to manage water for the improvement of livelihoods.

Effective management of water, perhaps more than that of other resources, requires and provokes greater social organization. Entry and exit strategies in participatory action research on INRM vary according to institutional mandates, and should be made explicit from the start.

Sophisticated GIS, modeling and multi-media tools can be truly integrated with farmers’ participatory research.

Knowledge at one detailed level (farm) can be brought into the framework of knowledge at a higher level (district, irrigation scheme, watershed), thereby allowing stakeholders to ‘see’ the broader pictures and to explore realistically different scenarios (provided that sufficient process knowledge at the lower level is available, which was the case in these case studies). Moreover, approaching the problems at two or more levels allows adaptation of the overall results to other watersheds/environments, enhancing strongly the possibilities for knowledge transfer.

### **Integrated Nutrient Management**

Advances in integrated nutrient management include new strategic research and means to engage farming communities with the scientific community using new approaches.

Key processes that can be used to indicate changes in the status of the ecosystem can and should be identified. Thus, soil nutrient flow and health can be based on organic matter or carbon

management as shown by a Michigan State University team. The key indicator here is a range of a pool of active C, related to the available N pool. This concept and process have been taken up and used with farmers enabling them to better manage their ecosystems.

More in-depth understanding of farmers' circumstances and available resources, through a more holistic approach, is helping to better target and promote the use of herbaceous multipurpose legumes. An example from IITA seeks a focus on integrating crops and livestock, and this helps to increase the adoption of herbaceous legumes.

Development of a common language is a prerequisite for successful INRM and should be used as a starting point for INRM. A common language by the involvement of stakeholders can have a positive effect on institutional change and a change in the mind set of the various stakeholders. For example, a tool on soil quality indicators (developed by CIAT, SWNM and partners) and an organic matter decision tree (developed by TSBF and partners) helped to develop a common language with farmers, NGO's, NARES, universities and IARCs. Further, university professors saw the benefit of a common language after they tried to put themselves in the place of farmers. And farmers saw the utility of commonly developed indicators once they realized that it would mean that they could avoid the costs of soil analyses, which they cannot afford.

Efforts on integrated nutrient management focus on better management of natural capital (soil fertility, water quality) by increasing productivity and/or profitability (financial capital) and introducing a common language that builds social capital. It addresses a major cause of land degradation i.e. nutrient depletion.

- Success in INRM difficult to attribute to development indicators
- Acknowledging that there are winners and losers
- Participatory research has a function to promote farmers capacity to innovate
- Site-specificity no longer seen as a major bottleneck
- Need to be doing research on local, regional and macro/international/global issues and integrating these. Research not only done at the local level (e.g. Indonesia – intervention needs to be systemic across scales – changing the way people understand and do things at all scales at the same time and integrating across these). Research needs to be taking place at all scales – new model for scaling-up and vertical integration. New concept of scaling-up – systemic vertical integration strengthening scaling up and out.
- Significant convergence toward process of linking research with all (or relevant) stakeholders (institutions, activities, practices) as a way of doing business
- Success in INRM difficult to attribute as development indicators become more highly aggregated. Can look at changes in different forms of capital at the household and community level – good way of measuring INRM impact at these levels. Nevertheless it remains difficult to attribute changes strictly to INRM (other variables at play).
- If we are focusing on changing development trajectories we need to be cognizant of macro-level variables at play (in the real world) and their role in shaping. E.g. structural adjustment policies and their impact on forest management. We also need to begin thinking about the influence of our work on the ground on processes and issues at the policy level (e.g. structural adjustment).
- CG can be represented at macro level. For example, many countries are now developing their poverty reduction strategies. CG can contribute in this area. Need to be active politically at these levels.
- Participatory research methods need to be applied to help farmers to innovate not a means of persuading farmers to use a specific technology (as extension). Need to use it to support farmers to innovate (building social capital and SES resilience). PR as more than a tool.

### **Impact assessment**

Monitoring and evaluation, and impact assessment, must both be an integral part of the INRM process. While ex-post impact assessment is still essential, a greater emphasis is needed on monitoring and evaluation, because INRM attempts to catalyse change in complex environments with complex interventions. Perfect knowledge is not possible before a project starts, and projects need to learn as they go along – monitoring and evaluation provides the feedback mechanism.

It is necessary to know what success looks like before progress in achieving that success can be evaluated. Changes in the five capitals (natural, social, physical, financial, human) would capture changes in production functions, human well-being, and ecosystem functions, but actual indicators chosen for a specific project should be guided by what people think and want. Participatory evaluation is an essential part of INRM.

Evaluation of success must include scaling up. INRM research by CG centres to produce location-specific solutions is not enough. Processes by which location specific solutions can be scaled up both horizontally and vertically, must also be developed and considered.

Both horizontal and vertical scaling up is about changing people's opinions, thinking and practices at different levels from farmer to national stakeholders to international researchers. This is a vital impact of INRM, often overlooked by CG center research. Effective approaches are needed.

Innovation is a social learning process, including the use of new knowledge. There is an attribution gap. Learning itself is a social process because people construct new knowledge often in interaction with others. People 'socially construct' technology and in the process adapt new technologies and ideas to their systems, which are adapted to the new technology. Innovation is therefore inherently a complex process with high degrees of non-linearity. This would seem to make conventional impact assessment that seeks to determine the impacts of INRM activities on highly aggregated development indices, such as poverty alleviation, almost impossible.

Economic impact assessment will not span the attribution gap. Non-linearities make the task of defining a linear impact pathway between the direct benefits of a project and highly aggregated development progress very unlikely. Hence, economic impact assessment methods, which require this link, cannot work. Other approaches need to be developed and is a critical research area for INRM. We can learn from other fields, for example evaluation of social programs. However, different skills are required, such as those offered by anthropologists, ecologists and sociologists.

IA is also essential for establishing accountability and (hence) to secure (continued) funding.

Technologies of the Green Revolution were scaled-up with high rates of return, but INRM is not as easily scaled-up. There are problems associated with scaling-up of site-specific technologies. INRM involves far more complex technologies than those coming out of the Green Revolution and conventional extension approaches are therefore not likely to be successful. It is difficult to attribute impacts on the ground to INRM (given the array of other factors affecting local livelihoods and resource management).

Scaling up and out is an issue but there are only few examples of where it has been done. The difficulty is in how to attribute the scaling up and out of INRM to our work and not other variables. Some work is ongoing in this area (e.g., rules of thumb on how to deal with attribution).

Emphasis should be on "participatory" impact assessment/evaluation in any discussion of adaptive management and sustainable INRM.

#### **Critical factors for success in INRM include**

- Improvements in livelihoods, system resilience, system productivity and environmental services benefiting many people over a large area.
- Improvements above attributable to the development and scaling out of a set of innovations (developed through INRM research) that address key problems. Mechanisms in place for vertical and horizontal scaling up and scaling out.
- Local institutional innovations that empower communities to continue the process of experimentation with and adaptation of natural resource management strategies beyond the project life span.

#### **Challenge Programs**

Implications of the INRM approach for and in the context of several proposed Challenge Programmes, including Climate Change (see above), Integrated Nutrient Management, Conserving and using biodiversity in agro-ecosystems (proposed by IPGRI), Integrated nutrient management, and, Water, were discussed. The INRM "way of doing business" may provide a framework to guide the organization and execution of challenge programs.

#### **Contribution of the CGIAR and its partners to the CBD and other Conventions**

The INRM Task Force recently signed a Memorandum of Understanding with the Secretariat of the Convention on Biological Diversity. In further developing the collaboration with the CBD, a wider discussion within and involvement of the CG will be ensured, and the many existing shared activities between CGIAR institutes and the CBD Secretariat will be taken into account. For example, much ongoing agrobiodiversity work within the CGIAR contributes to the objectives of the CBD, and there is ongoing collaboration between CIFOR and the CBD Secretariat on forest biodiversity.

The INRM approach could provide a framework for the CBD to link itself better with the other major conventions on climate and desertification, and to Agenda 21 in general which will be discussed further at the World Summit on Sustainable Development next year in Johannesburg.

### **Building Communities of Practice for INRM**

Organizing research and people to encourage and ensure knowledge sharing within a large and diverse group is a particular challenge to ensure that INRM research is successful. Communities of practice were adopted as a way to diffuse the best practices, cross-fertilize ideas, develop a common language, help people keep up to date, and foster innovation in INRM. Five communities of practice were created during the Cali workshop. Ensuring that these communities of practice are kept integrated is a major challenge and we are working on developing a Meta-Communities of Practice to network. Further, people who are part of many Communities of Practice and proper central facilitation can increase the chances of important cross-pollination of ideas. The five CoPs and their respective champions are:

- Impact. Monitoring and evaluation especially of indicators for success. Boru Douthwaite ([B.Douthwaite@cgiar.org](mailto:B.Douthwaite@cgiar.org)) and John Poulsen (J.Poulsen@cgiar.org)
- Learning to work together. Forging partnerships for stakeholder involvement in research; bridging scientific and local knowledge. Contact: Pending to be confirmed
- Advocacy. Spreading the message to top CGIAR decision-makers and members. Champion Anne Marie Izac ([a.izac@cgiar.org](mailto:a.izac@cgiar.org))
- Mainstreaming implementation promoting and facilitating the adoption of INRM principles and participatory approaches into existing programs. [j.poulsen@cgiar.org](mailto:j.poulsen@cgiar.org)
- Learning from cases. Documenting and sharing failures and successes to identify entry points for INRM. F. Penning de Vries ([f.penningdevries@cgiar.org](mailto:f.penningdevries@cgiar.org))

### **Next steps**

- Proceedings and Publications
  - Proceedings including “*Integrated management for Sustainable Agriculture, Forestry and Fisheries: workshop documentation*”, together with approximately 70 abstracts and papers presented is available in CD and on the INRM web site (<http://www.ciat.cgiar.org/inrm/workshop2001/index.htm>)
  - The editorial committee is preparing a journal special edition for selected papers from INRM 2001.
- The next workshop of the INRM Task Force will be hosted by, and take at the headquarters of, the International Center for Agricultural Research in Dry Areas (ICARDA), in 2002/2003. CIAT has become member of the Resilience Alliance. Training module for the CG will be developed. John Poulsen to collaborate closely with the Resilience Alliance (Brian Walker) and colleagues at the Beijer Institute in Stockholm.
- Complementarities between SCBD and the INRM Task Force: a detailed programme of work will be developed.