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***STAKEHOLDER MEETING***

**Agenda Item 5. Stakeholder Interaction on Key Issues**

Session I: Innovative Approaches to Effective Capacity Building/  
Strengthening

**Background/Process:**

Capacity building/strengthening is a major investment area and a key undertaking of the CGIAR. At the suggestion of the Netherlands delegation and with the cooperation of the CGIAR Centers, this topic will be the focus of stakeholders discussion in a parallel session. The session has the following objectives: a) to highlight and analyze ongoing capacity building approaches undertaken by the different CGIAR Centers; b) to present new and innovative approaches that address partner identified needs; c) to identify areas and incentives for possible inter-Center and NARS collaboration and donor interest; and d) to discuss the role and impact of CGIAR capacity development on sustainable agricultural production and integrated natural resources management.

**Document:** Background documents on Innovative Approaches to Effective Capacity Building/Strengthening

**Comments:**



## **Innovative Approaches to Effective Capacity Building/ Strengthening Background Documents**

1. Capacity Building at CIMMYT: An Overview
2. CIP's Capacity Building Program
3. Strengthening Partner Capacity: An overview of the World Agroforestry Centre's approaches
4. Capacity Building at ICRISAT
5. Directions for Training: Programs for Professional Capacity Building in Agriculture (IITA)
6. Capacity Building at ILRI
7. IRRI and ISNAR Capacity Building Programs
8. IWMI's Strategy on Capacity Building



# Capacity Building at CIMMYT: An Overview

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CIMMYT's mission is to help alleviate poverty by increasing the productivity, profitability, and sustainability of maize and wheat farming systems. In line with this mission, CIMMYT undertakes capacity-strengthening activities to help developing countries enhance their capability for conducting maize and wheat research. Opportunities for capacity building extend across all of CIMMYT's major research areas: maize, wheat, economics, natural resources, and biotechnology. Many kinds of capacity-building activities are sponsored or facilitated by CIMMYT, ranging from group courses to individual study programs, some of which contribute to doctoral or masters degrees. Activities are organized at CIMMYT headquarters, at regional facilities, or within a particular country.

All of CIMMYT's capacity-building efforts are united under a global project (G8) on "Building Human Capital." The project seeks to improve research efficiency by developing human resources and enhancing partnerships with national research programs. Its ultimate objective is the efficient, effective, and extensive use of agricultural research methods and results. A steering committee works within the global project to integrate research and capacity building and to fine-tune the various tools developed to improve the management of CIMMYT's capacity-building activities. All of CIMMYT's research programs are represented on this informal committee.

Capacity-building initiatives are designed to address the following challenges:

- Limited preparation of agricultural scientists in some developing countries in theoretical and applied research methods, especially methods for conducting research on sustainable maize and wheat systems
- Limited access of developing country researchers to research results, especially information on sustainable maize and wheat systems research conducted in other countries or regions
- Limited access of developing country researchers to other kinds of scientific and policy information
- Limited opportunities for national program researchers to interact professionally with colleagues in the global scientific community
- Ineffective links within national research systems among disciplines and institutions, and between research and extension, leading to the inefficient use of human resources in addressing high-priority problems

## Capacity-building activities

The capacity-building opportunities provided by CIMMYT are designed to connect researchers to a broad, interactive scientific community. Course participants and CIMMYT staff share information on best practices for research, and this knowledge sharing continues long after the course work ends (in many cases, CIMMYT staff and course participants continue to interact for decades).

Course listings are sent to CIMMYT regional staff and national agricultural research programs in developing countries and posted on our website, [www.cimmyt.org](http://www.cimmyt.org).

Some of our course opportunities include:

- **General in-service courses.** Offered at our headquarters in Mexico, these courses provide practical, hands-on training in a range of subjects and are an important complement to the academic studies of entry-level professional staff in national programs. Examples include our maize and wheat improvement courses and wheat chemistry and industrial quality courses.
- **Specialized courses.** Offered at our headquarters and other locations, these courses enable researchers to broaden their expertise by studying special subjects of high priority for their organizations and CIMMYT. Many of these capacity-building opportunities have been developed at the request of scientists in national research programs. This kind of capacity building can be structured in many ways: as a formal course, individual instruction, research for a masters or doctoral degree, or participation in workshops, conferences, and seminars. Mid-career and senior researchers participate-level. Examples included courses in molecular marker techniques and genetic engineering; geographical information Systems (GIS); crop and soil modeling; breeding maize for drought and low nitrogen conditions; bed planting and reduced tillage; and workshops and conferences on special topics such as the Septoria diseases of wheat, insect resistance in maize, quantitative data analysis in farmer participatory plant breeding, and the analysis of research impacts.
- **Advanced capacity building.** There is an increasing demand from senior scientists in national research programs for advanced capacity building to remain up to date in their fields. In Mexico (or elsewhere as appropriate), CIMMYT provides opportunities for in-depth studies in maize and wheat improvement, as well as other specialized topics of interest to the researcher, the researcher's host institution, and CIMMYT. Aside from advanced maize and wheat improvement courses, examples include individual research programs undertaken for an extended period on special topics by visiting scientists and pre- and postdoctoral fellows.
- **In-country and regional capacity building.** CIMMYT draws upon its headquarters and regional personnel, former course participants, and other scientific collaborators to support national and regional capacity building, including access to, and participation in, regional networks and workshops. These courses frequently are offered in concert with national research programs. More people can take advantage of these regional/local opportunities, and the

course content is more relevant to local conditions. Examples include courses on maize and wheat crop management courses (various venues); international wheat improvement (various venues); economics and policy research (various venues); Asian Maize Biotechnology Network (AMBIONET) (courses in Mexico and Asia); whole-family courses in wheat production (Bangladesh); biotechnology transfer to national programs (Kenya and Zimbabwe); and maize seed production (various venues).

### **Staffing and funding**

At least 80 staff, approximately 80% of all international staff at the Center, participate in capacity building in one way or another. An estimated 6.17 staff years are allocated specifically to capacity building. A project coordinator and an oversight director provide direction and continuity in CIMMYT's global capacity building project. The Maize and Wheat Programs support specially designated training officers who also have some research responsibilities. Each training officer, in consultation with the crop program director, is responsible for the overall organization and coordination of crop-based courses.

The Training Service Office ensures standardization in policies across the various categories of trainees, especially in the matter of per diem and other allowances. In addition, it maintains a database on courses and participants, and coordinates the announcement of courses, workshops, and seminars.

In its draft Medium-term Plan for 2003-2005, CIMMYT reports an allocation of approximately US\$ 3.4 million for capacity building in 2002, out of a total budget of approximately US\$ 39.5 million.

### **Achievements**

Between January 1966 and October 2002, more than 3,200 people participated in basic courses, mainly for wheat (42%) and maize (32%). The distribution of trainees by region was: Africa (35%), Asia (29%), South America (19%), Central America (including the Caribbean and Mexico) (14%), and other areas (3%). Visiting scientists during the same period numbered 4,566: 31% from Central America and Mexico, 24% from Asia, 18% from Africa, 17% from South America, and 10% from other areas. In addition, CIMMYT funded or managed more than 400 fellowships from 1967 to September 2002, and 107 pre- and post-doctoral fellows and other research associates worked at CIMMYT between 1976 and 2002. More than 700 students completed thesis research with the assistance of CIMMYT since 1966. These figures are underestimates, because CIMMYT's database is incomplete. CIMMYT has also carried out a good deal of informal capacity building and mentoring, particularly in its regional programs, which has not been well documented.

CIMMYT's most recent training review indicated that the gender distribution of course participants varied widely among the various disciplines. The proportion of women was highest among trainees in applied biotechnology (36%) and lowest in maize breeding (9%). The percentage of women participants in all CIMMYT courses increased from

10% in 1981-90 to 18% in 1991-01. It is not known if these gender differences across disciplines are simply the result of gender preferences or if discriminatory factors are at work.

Participants in CIMMYT's courses report that training has made them more competent, and has increased their confidence when undertaking research and transferring technology to farmers. They report that capacity building has also had a positive influence on both the quantity and the quality of their work. These perceptions are frequently reinforced by reports from their supervisors when they return to their home countries.

## **CIP's Capacity Building Program**

CIP's training program is a vehicle for interaction and collaboration with a wide range of partners facilitating the achievement of the Center's objectives. It is strongly linked with the research agenda and responds to partners' needs for enhanced research skills and methods. It provides effective mechanisms for the introduction of technologies to achieve sustainable improvements in the productivity and utilization of CIP's mandate crops, potato, sweetpotato, Andean root and tuber crops, and in the management of natural resources in the developing world.

The training program continues aim is the creation of an international network of highly capable research scientists able to conduct independent studies, to offer skills training to others, and to collaborate effectively in the CIP global community of interest.

CIP's Training Program is a human development initiative to empower global networks and is directly linked with CIP's research and development agenda. It aims to create international networks of scientists and development practitioners to collaborate in research, dissemination of information, and training in priority topics in CIP's agenda.

The Training Program is a mechanism to efficiently overcome current constraints and effectively identify emerging opportunities. Specifically, it:

1. Enables CIP to streamline research priorities to meet clients' needs.
2. Enhances capabilities and promote networking for collaborative technology development and diffusion.
3. Facilitates community-level adaptation of improved technologies.

The program encompasses a range of activities aimed at promoting skills development and capacity building within partner organizations, and is defined by the following significant characteristics:

1. A focus on ultimate users of technologies at family, farm, and community-levels.
2. A networking process that engages research and development partners in priority topics.
3. A set of curricula that are based on sound principles and modes of learning consonant with the abilities of partners and their clients to learn and adapt.
4. An emphasis on sharing information and developing human resources skills.
5. A range of efficient and effective media for reaching targeted partners and clients, including appropriate grass-roots technology for use with community-level partners and technology assisted learning for interacting at distance with research and development partners.

### **Training offered**

Training offered has the necessary flexibility for responding to the demand of a wide range of learner groups. Due to differences in training requirements in different Regions, training activities are organized either at CIP headquarters, CIP regional facilities, or selected national programs. CIP's Training program is divided in two major categories: Research Skills Development and Capacity Building for Sustainable Production.

#### **Research Skills Development**

Emphasize building-up and enhancement of partners' research capabilities by the acquisition of specific methodologies, tools or techniques needed for specific research tasks usually associated with research goals on subjects of common interest. It is usually conducted at CIP's HQ.

#### **Capacity Building for Sustainable Production**

Directed to partners and practitioners from NGOs, grass-root organizations and development agencies related to the production/utilization of CIP's mandated crops, and the conservation and management of natural resources. Activities aim to capacity and institutional-building, focusing on

methodologies directly applicable to production or development work. It is usually conducted in the regions, at the national level, in partnership with national organizations and networks. Training offered at CIP could be either for groups or individualized

## **Distance learning or technology assisted learning at CIP**

Technology is offering new ways to enhance teaching and learning effectiveness, meet the needs of learners, and reach broader audiences. In recent years CIP has built its capacity to provide rapid, modern, and appropriate learning delivery systems to its developing country partners. The use of specialized techniques and infrastructure for knowledge delivery will allow people with common interests to contact and exchange information within a network. CIP is devoted to develop training material combining both, passive (video-lectures, CD-ROMs, digitized manuals and bulletins) and interactive media (interactive CD-ROMs, videoconferences, on-line courses and forums, internet-delivered interactive activities and other) providing CIP's global program with a cost-effective alternative and useful complement to the conventional training methods.

At present, distance-learning technology is being progressively incorporated at CIP for use in three key areas: capacity building, information dissemination, and research management.

In the last three years CIP has moved rather fast in the progressive incorporation of web-based methods in our training. We are however at a stage of assessing how far we can go, the specific needs of the different priority subjects in terms of content, audience (clients and partners), their capacity to effectively use these media, the possibility of using combined alternatives according to potential utilization, which is a significant departure from the way we have been operating.

# Strengthening partner capacity

## An overview of the World Agroforestry Centre's approaches

### Our mission

To support, nurture and work closely with  
a strategic consortium of  
learning institutions and individuals  
to extend and deepen  
agroforestry knowledge and  
to improve the quality and relevance  
of teaching, research and practice



World Agroforestry Centre  
TRANSFORMING LIVES AND LANDSCAPES

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## Introduction

The World Agroforestry Centre (ICRAF) places special importance to building the capacity of partners, for three key reasons: -

- ⇒ Although agroforestry is an old practice, it is a very young and rapidly growing field of science and technology. Many countries and institutions are at various levels in the institutionalization of agroforestry. Many agroforestry institutions and programmes in the developing world are quite young and inexperienced. ICRAF's accumulated knowledge and experience are valuable in complementing their efforts to put into place policies; institutions and strategies that can best tap the potentials of agroforestry.
- ⇒ The overall human capacity to undertake agroforestry research, education and development in agroforestry is still weak, relative to agriculture and other natural resources management sectors. Concerted efforts are needed to build up that capacity
- ⇒ ICRAF recognizes that ultimately, the challenges of developing and disseminating agroforestry technologies has to be driven and managed by national and local institutions. Building their capacity is one very important way of preparing them for such tasks.

To fulfill its capacity building mandate, the World Agroforestry Centre collates and manages a large volume of knowledge in various formats to meet the needs of various partners, and makes its scientific resources (scientists and facilities) available to partners.

Through our training and education activities, we now boast over 2000 alumni in the tropical developing world. Many of them are engaged in agroforestry research, education or development. They are our partners in the creation and sharing of agroforestry knowledge. We are proud to state that over 100 institutions whose capacity we have helped to build are now our partners in agroforestry training and education. This helps to leverage our efforts.

## Strategic target groups

In order to be effective and to sustain its efforts ICRAF made the strategic choice of working with national agricultural research institutes, tertiary education institutions, development agencies and schools. For these four groups, ICRAF has developed a systematic process for capturing capacity building needs. The process includes visits to institutions, questionnaire surveys, national and regional workshops, and specific requests by individuals and institutions to ICRAF. The needs are aggregated at different levels and responsive programmes and activities developed in a participatory manner. This approach underpins the **relevance** of our capacity building work.

In the following table, we capture in summary form ICRAF's capacity building approaches and objectives by target group.

| Strategic target group  | Objectives   | Key approaches   |
|---|--|--|
| Promising scientists at national agricultural and forestry research institutions                                | <ul style="list-style-type: none"> <li>⇒ Preparing the agroforestry researchers of the future</li> <li>⇒ Strengthening institutional AF research capacity</li> </ul>   | Providing postgraduate fellowships, research internships, joint research projects  |
| Students at universities, and at colleges producing technicians in agriculture and natural sciences             | <ul style="list-style-type: none"> <li>⇒ Preparing graduates that are competent in AF and INRM</li> <li>⇒ Tapping thesis research capacity into agroforestry</li> <li>⇒ Improving the utilization of available capacity and experiences</li> </ul> | Incorporating AF into curricula, training of trainers, providing thesis research opportunities, sabbaticals for senior staff, networking |
| Youth in primary and secondary schools as well as out-of-school youth doing farming or agricultural enterprises | <ul style="list-style-type: none"> <li>⇒ Preparing the youth to carry out better farming and enterprise management practices with AF</li> </ul>  | Life learning through agroforestry, linking schools with local communities through activity classes                                      |
| Development workers working with governments, NGOs or private sector  | <ul style="list-style-type: none"> <li>⇒ Accelerating the adoption of agroforestry by farmers</li> <li>⇒ Achieving policy and institutional innovations</li> </ul>   | Demand-driven training courses and workshops, extension manuals  |

For ICRAF, competence building (that is imparting knowledge, skills and attitudes) is one of the 3 key aspects of capacity building. Others are policy support and institution building (in the form of programmes and resource capture). When all three are done, the built up capacity will be mobilized. It is for this reason that we consider it necessary to make long-term engagement with partners so as to achieve impact.

It is also our ambition is to show how the ICRAF alumni are applying the knowledge and skills they have gained through training. To do this, ICRAF has developed a tool and established a process for following up on past trainees. Our tracer and follow up studies show how and under what circumstances knowledge and skills gained through training are applied. This helps to re-focus our approaches. For this and other reasons, we have developed some principles to guide our work, as expanded in the next section..

## Guiding principles

In implementing capacity building activities, The World Agroforestry Centre and its partners are guided by the following principles:

- ⇒ Capacity building and strengthening is done in strategic partnerships that add value and leverage the Centre's efforts
- ⇒ Specific training and education roles are selected on the basis of demonstrable comparative and collaborative advantage, and especially anchored in research and development products generated at collaborative research sites
- ⇒ In recognition of the various needs of partners and differences in access to methods and tools that support learning, our capacity building approaches include multi media products and approaches, while maintaining quality of content and delivery
- ⇒ To the extent possible and subject to resource availability, ICRAF works with target groups and institutions to help mobilize their built up capacity
- ⇒ The Centre's ultimate target groups are the rural poor in developing countries of the tropics. All training and education activities undertaken by the Centre and its partners are geared to ultimately benefit this group.
- ⇒ ICRAF and its partners aim at sustainable results, especially with respect to institutional innovations and the establishment of mechanisms that nurture the acceptance and growth of agroforestry in partner knowledge systems
- ⇒ To complement ICRAF's capacity building efforts mechanisms are in place to link and collaborate with other advanced research and education institutions

In the following sections we present some details on the key capacity building approaches that are used by ICRAF and its partners. It is important to note that these are very brief summaries of well-developed methods and experiences. For more information we recommend the reader to contact Training and Education at ICRAF using the address at the end of this document.

### **Sustaining capacity building**

Maintaining a good balance between meeting the current needs and strategic sustenance of capacity is a challenge. ICRAF's approach to this is to build a foundation for progressive devolution of specific competence building activities, especially training courses. In this approach, ICRAF offers a given training course for up to three times only. After the third iteration, the partners are expected to take over complete management of the course. To achieve that, the course is first offered entirely by ICRAF scientists. In subsequent sessions the course is offered jointly with resource persons selected from partner institutions. This approach helps to mentor individuals and institutions to take on capacity building responsibilities, especially organizing and managing training events. The process also helps to build up training materials and a cadre of national experts competent to carry out capacity building activities.

An excellent example of how this works is the synergy that was built between two projects – a DSO (Netherlands) supported project that was aimed at training trainers in agroforestry and a Swedish project aimed at developing mechanisms for enhancing collaboration and sharing of information/experiences among educational institutions through networking (ANAFE and SEANAFE). The two grants had highly complementary components that were skillfully managed to ensure effectiveness and sustainability of the results. The networks identified focal institutions that were given

adequate material and logistical support to serve as centers for agroforestry training. The focal institutions have regional mandates, so they helped to organize other stakeholders, identified training topics, assigned resource persons and implemented the training with technical backstopping from ICRAF. The networks then developed other courses of their own and implemented them. This process helped to build knowledge and skills at the same time as agroforestry was being institutionalized. The Netherlands (DSO) grant provided opportunities to train trainers and follow up support in the form of small grants that helped the national institutions to manage own training events. This model was found to work extremely well.

## Group training and supporting materials

### Approaches and experiences

The World Agroforestry Centre (ICRAF) has been organizing and implementing short training courses on agroforestry, and developing supporting training materials, since its inception in the late seventies. The focus of the early group training activities thus focused on promoting agroforestry as a land use approach and teaching course participants how to integrate this in their day-to-day work be it research, development, policy, training or education. These courses also allowed the Centre to initiate agroforestry research and development programmes in various agro-ecological regions in the tropics, through the creation of agroforestry networks. Over 2,000 scientists, technicians, development specialists, policy makers, trainers, teachers, etc., both women and men, from more than 35 countries worldwide attended these 2 to 3-week introductory courses. The courses focus on the diagnosis of land use problems, constraints and opportunities then on design of appropriate agroforestry interventions that could be adopted by farmers. A broad consortium of donors, including long-term support by the Netherlands Government, has funded these courses.

In 1992, the Centre became a member of the CGIAR and by then it was felt that the introductory training courses should be devolved to national training and education institutions using a training-of-trainers approach and gradual disengagement of Centre resource persons. This was achieved through two major training projects funded by the Netherlands' Government; *Agroforestry research for development (1991-1995)* and *Strengthening training and education in agroforestry (1997-2002)*. In addition to this, the Netherlands' Government also funded a training materials development project (1991-1996). The Swedish funded agroforestry education networks in Africa and SE Asia (ANAFE and SEANAFE) played a major role in the second phase project in view of their work to mainstream agroforestry training and education into tertiary education institutions.

Following the devolution on agroforestry introductory courses to national partners, the Centre has been able to focus its short training courses on specific topics and areas needed to implement its global collaborative research and development agenda. The Centre developed short courses and supporting training materials on subjects such as tree domestication, agroforestry experimental design, data management and analysis, science writing, tree propagation, agroforestry and soils and geographic information systems. Whereas the introductory training courses were mostly delivered entirely by ICRAF, specialist training courses were often conducted based on training needs assessments for specific research and development areas and regions and delivered jointly with national partners. As a supportive follow up, the Centre also facilitates the application of knowledge, skills and attitudes acquired as a result of the training through 'small grants projects' designed for this purpose.

All of these group-training activities take place in close collaboration with national partner institutions, both at the Centre's headquarters in Kenya and in all the six regions where the Centre has collaborative research and development activities.

## Lessons learned

The following are some important lessons learned from the Centre's group training activities and projects:

- ⇒ Even though their direct impact on institutions and individuals can be considered limited, a training-of-trainers approach can lead to an important multiplier effect
- ⇒ Participatory approaches in training needs assessment, course content and supporting materials development, course implementation, facilitation, monitoring, evaluation and impact assessment are needed to secure buy-in from collaborating persons and institutions
- ⇒ Support for the development of quality and relevant training materials is crucial for effective training-of-trainers and to backstop devolution strategies
- ⇒ Application of training outcomes through 'small grants projects' make short training courses more purposeful and effective, especially if they lead to collaborative activities engaging the Centre and course participants
- ⇒ Partner institutions appreciate the experience gained in participating in the complete training cycle as opposed to mere attendance to training events
- ⇒ Formal training and education institutions are more appropriate partners when it comes to 'mainstreaming' certain courses or topics than other research and development institutions. Networking and close collaboration with these are important factors contributing to success.
- ⇒ Experiential learning approaches are more appropriate and effective than theoretical classroom sessions even though resource persons for the sake of time saving often prefer the latter.

## Future plans

Based on the success of past training activities and projects, the Centre will increase emphasis further on specialist topics enabling it to foster a more cutting-edge, global research and development agenda. Such training will strengthen the work in the regions and be more attractive to Centre resource persons and partners because it will allow them to progress in various research areas and development areas.

In order to increase the multiplier effect of its short training courses, the Centre will explore the use of modern information and communications technology and distance learning approaches to reach more beneficiaries at regional and global scales. This will be achieved through strategic alliances between the Centre, advanced institutions in developed countries and national training and education institutions in developing countries.

In the area of training materials development, the focus will remain on written and audio-visual training materials and the exploration of certain computer-based materials that can enhance these.

A major boost to the implementation of short specialist training courses and the development of supporting materials at the World Agroforestry Centre will be the implementation of a new 5-year training project entitled *Advancing agroforestry research and development through training and education (2002-2007)*, funded by the Netherlands' Government.

## Support for tertiary education

### Partnerships and Ownership

In 1992, ICRAF recognized the potential role of tertiary education institutions in advancing agroforestry science and practice. To utilize this potential, ICRAF facilitated the establishment of networks of educational institutions. Thus the African Network for Agroforestry Education (**ANAFE**) was formed in 1993 and, the South East Asia Network for Agroforestry Education (**SEANAFE**) was formed in 1999. In 2002, ANAFE has 120 while SEANAFE has 35 member institutions. The networks consist of universities and technical colleges offering programmes in agriculture, forestry and related natural resource management subjects. The two networks have proved to be excellent vehicles for disseminating agroforestry science and practice, now and in the future. The Swedish International Development Cooperation Agency (Sida) has provided financial support for the networks. Participating institutions provide complementary resources for activities specific to them.

### Methods and Approaches

The core business of the networks is anchored on eight areas pertaining to agroforestry/INRM: -

- ⇒ Assessing education and training needs at all levels from farmer organizations through extension agencies, research institutes to educational establishments.
- ⇒ Providing advice and advocacy on education policies as they relate to agroforestry
- ⇒ Supporting the review of curricula
- ⇒ Supporting the training of trainers and educators
- ⇒ Facilitating the development of educational materials
- ⇒ Facilitating linkages of educational institutions with research and development (extension) organizations
- ⇒ Providing thesis research opportunities to promising scientists doing postgraduate studies
- ⇒ Enhancing inter-disciplinary and inter-institutional collaboration and information sharing

### Experiences, Results and Impact

The networks are making impact at individual, institutional and regional levels. Agroforestry is growing very rapidly as a component of agricultural, forestry and natural resources education in Africa and South East Asia. For example, new fully-fledged programmes in agroforestry have emerged and they are gaining popularity. The emergence of a wide range of educational programmes at universities and colleges that are members of these networks has opened up opportunities for studies leading to certificate, diploma degree and even postgraduate qualifications in agroforestry. The networks have played a significant and demonstrable role in building the capacity of

colleges, analyzing education programmes, developing or reviewing curricula, and delivering integrated natural resource management programs. Both networks have been able to

- ⇒ Facilitate curriculum reviews for 67 and 22 colleges and universities respectively in Africa and Southeast Asia
- ⇒ Provide educational materials in the form of books and publications to all member institutions
- ⇒ Provide support over 160 postgraduate theses in agroforestry
- ⇒ Build strong partnerships with international and regional institutions in Africa and South East Asia

As a result of these achievements, colleges and universities are now producing graduates that are competent in agroforestry and better informed of the value of integrated natural resource management approaches. By taking on this training function, these institutions are increasingly improving their contacts with farmers and in the process contextualizing their learning processes.

### Success factors

The key factors in the use of the networking method are

- ⇒ Achieving a change in the mindset of educators to better appreciate collaborative and integrated approaches to education in natural resources management
- ⇒ Setting long-term goals for engagement with ICRAF and among participating institutions
- ⇒ Acceptance of cost sharing mechanisms as a condition for the implementation of all activities. Ensuring that each member contributes to the costs of running activities in the network instills the sense of ownership and underpins sustainability
- ⇒ Being modest and realistic in setting goals and milestones.

### Future Directions

The demand for ANAFE/SEANAFE interventions is rising with more universities and colleges embracing agroforestry. This is generating new challenges such as

- ⇒ Providing adequate opportunities to train trainers/lecturers
- ⇒ Developing high quality educational materials that are also ecoregionally relevant
- ⇒ Putting into place mechanisms that will ensure close linkages between educational programmes and farmers to facilitate better application of knowledge

To get closer to farmers, the two networks have formed regional and national chapters of the networks and are developing training events that are focused on farmers and extension workers. The networks are also expanding the thematic area from agroforestry to INRM. To increase their ability to deliver, the networks are also mobilizing investor resources for collaborative training activities.

## **Individual training**

### **Goals and objectives**

The greatest asset of a research institute is a cadre of competent researchers. For national institutions, the future researchers in agroforestry are those that are doing their thesis research in agroforestry or strengthening their agroforestry research skills today. These two statements summarize the philosophy that drives ICRAF's commitment to support graduate education in agroforestry. ICRAF's objective is to strengthen national agroforestry research capacity now and in the future.

### **Methods, approach**

ICRAF provides opportunities to promising scientists to tap the experiences of its senior scientists as thesis research co-supervisors, and makes its facilities easily accessible by students. Training opportunities for individual scientists are available through degree or research fellowships. Undergraduate student attachments/internships are also accepted, but generally such attachments are done within national boundaries. Universities, colleges and polytechnics show great interest in this activity. Opportunities are also available for senior staff at research institutes, universities or government departments to benefit from practical training through short-term attachments. Each year the centre registers between 20 and 30 new trainees to begin research on agroforestry related topics.

To fund individual training, some competitive grants are made available through various research and development projects. However, the majority of students joining ICRAF for thesis research secure their own financial resources through a wide range of mechanisms with universities and investors in research and capacity building.

### **Experience**

Thesis research students contribute a significant proportion of the scientific output of ICRAF and its partners. During the last 10 years, approximately 400 scientists have been registered for individual training at ICRAF. The majority of these trainees were degree fellows who were working towards completion of a thesis for a masters degree, supervised by ICRAF scientists for periods of between 12 and 18 months. Among all the trainees, 31% were involved in research related to soils and water management in agroforestry systems and 24% studied tree domestication. Many trainees (21%) were involved in research on the utilization of agroforestry technologies.

The majority of trainees (70%) were drawn from educational institutions in Africa and Asia (47% and 23% respectively). Sixty seven percent of all trainees registered at the centre between 1989 and 2001 were male.

## Benefits

- ⇒ There is a significant improvement in the number and quality of agroforestry scientists in national institutions. The capacity for developing the science in agroforestry is building up in research and educational institutions as more qualified scientists benefiting from this program complete their studies and rejoin their national institutions
- ⇒ In the majority of cases, individual trainees come from partner institutions. Thus upon completion of their studies, they become ICRAF's collaborators in research, education or development. This is an excellent way of strengthening and sustaining partnerships
- ⇒ Through joint supervision of graduate students, university lecturers and ICRAF scientists are forming acquaintances that getting stronger and more productive. In some cases, functional collaboration with educational institutions is emerging
- ⇒ Internationalizing the work of our partners: through peer contacts and collaboration, many of our partners have been able to participate in international forums and publishing

## Future challenges

- ⇒ Some national institutions lack the necessary programmes or resources for young scientists to excel in agroforestry research
- ⇒ Building up the capacity of ICRAF scientists as mentors
- ⇒ Making a good follow up of individual training alumni

## Farmers of the Future

### Methods and approaches

The World Agroforestry Centre's new "Farmers of the Future" initiative is aimed at facilitating the integration of integrated natural resource management into basic education, contributing to the improvement of rural livelihoods, land use management and environmental conservation, while bringing direct benefits to all learners and their families and communities. Providing children a wide array of knowledge and skills related to land, soil and water management, as well as a more positive attitude towards sustainable agriculture and rural life, will prepare them better for new challenges in farming and related enterprises.

The "Farmers of the Future" initiative intends to achieve these goals by:

- improving agricultural and natural resource management knowledge, skills and attitudes of youth
- enhancing effectiveness of formal and non-formal education through active, experiential and contextualized learning
- promoting the integration of sustainable natural resource management into basic education
- linking with and making good use of existing national and global policy frameworks such as "Education for All" and "Food for All"
- strengthening linkages between schools, homes and communities, particularly in rural areas
- encouraging local and regional collaboration and networking through flexible participatory multi-stakeholder approaches.

### Experiences and lessons learnt

Although Farmers of the Future is a very recent initiative at the World Agroforestry Centre, experiences from our and our partners' ongoing work in Kenya, Uganda, Tanzania, Malawi, Zimbabwe, Mali, Philippines and Thailand have shown the following key lessons:

#### ***Tangible benefits***

In many countries, introducing agriculture into schools has bad connotations, largely due to bad experiences in the past whereby agriculture was introduced as a labour intensive and punitive subject. This initiative intends to demonstrate that there are tangible benefits for the learners, parents, educators and the community. Participation by staff, students and parents is more assured if there are tangible incentives or benefits derived from this initiative.

#### ***Partnerships***

Due to the interdisciplinarity of natural resource management education projects, collaboration between different agencies is essential. A common element in the success

of youth programs is indeed collaboration between different organizations. Project development should address a recognized need. Therefore, all relevant stakeholders will be consulted in project design, implementation and evaluation. Sensitization of all stakeholders (policy makers, wider community, etc.). Awareness creation is also a key factor for sustainability of such initiatives.

### ***School-community linkages***

Making use of indigenous knowledge allows to incorporate local, cultural, social and historical issues into a programme. Effective projects empower local communities and use their expertise. Projects succeed only with the will and support of the people. There is a variety of ways to involve local communities, including helping them to assess their situation and viewpoints, encouraging their suggestions, enabling them to make good decision, and helping them to share in the benefits.

### ***Teacher training and education materials***

Teacher training is a key factor for successful education programmes. Teachers need to develop new knowledge, at both practical and theoretical levels. In addition, they often need to learn new instructional techniques and new skills in working outside the classroom. A wide variety of newsletters, posters, magazines, pamphlets and teachers' guides can be used. Quality materials are critically important.

### ***Gender***

Women's groups often serve useful advocacy roles in communities. At the same time, young girls are hardest to reach through education programmes, because of their low school enrollment. To be successful, an education programme needs to address the importance of gender. Gender, agriculture, natural resource management and environment are inextricably linked.

## **Achievements**

A detailed literature review on the integration of natural resource management in basic education has been carried out. Stakeholders from different countries have been consulted at various meetings and events to develop a coherent strategy for Farmers of the Future. The World Agroforestry Centre has also joined FAO and UNESCO in the establishment of a new Flagship on 'Education for rural people' within the Education for All Millennium Development Goal.

Current activities include the following:

- Production of a booklet on the Farmers of the Future approach for general information and fundraising
- Development of different posters and a teacher guide to be used in primary and secondary schools on indigenous fruit trees in Southern Africa
- Teacher training, production and pilot-testing of an agroforestry teacher's guide and establishment of agroforestry demonstration plots in 30 schools in Mali

- Organization of teacher training and field visits in 25 schools in Western Kenya, networking with NGOs active in the field of basic education and natural resource management
- Production of a promotional poster
- Development of a project proposal to bring in resources for scaling up in other regions

## Future plans

The World Agroforestry Centre and its partners would like to actively take on the following areas of activities:

- Contribute to the integration of natural resource management principles into school syllabi and teachers' training; support to teacher-training programmes (pre-service and in-service) in alternative teaching/learning strategies and methods (including knowledge and skills in contextualization of the curriculum) of relevance to the Farmers of the Future approach; organization of participatory curriculum development workshops.
- Develop and distribute relevant learning materials, concerning content (technical resources on natural resource management) and process (alternative pedagogies, learning management approaches); review of existing and available materials and recommend the inclusion of agroforestry and natural resource management topics; organize participatory teaching materials development workshops aimed at producing relevant teaching materials at local levels.
- Support the establishment of school farms, gardens and demonstration plots that include agroforestry options and that will allow the practical and contextualized teaching and learning of various related subjects.
- Develop collaboration mechanisms and networking between organizations active in natural resource management in primary and secondary schools; supporting partnerships for education for rural development at national, regional and global levels.
- Link schools and communities through consultation, field days, training and other mechanisms; research on the effects of schools on communities in natural resource management projects.
- Encourage debates on future trends in education and training of children and youth for agriculture, rural development, food security and natural resource management.
- Carry out advocacy for basic education policy shifts to incorporate natural resource management; sensitization of policy makers to issues relevant to Farmers of the Future, and capacity building for those engaged in policy implementation and operations at national and local levels.
- Support the institutionalization of the Farmers of the Future approach and multi-stakeholder dialogue processes and networks at different levels.

## Impact assessment

### Goals and objectives

ICRAF has invested heavily in capacity building and, together with its partners and investors, feels a strong need to assess the impact of these efforts. The aims of impact assessment are:

- ⇒ To establish the relevance and effectiveness of capacity building outcomes especially in relation to specific training approaches
- ⇒ To understand processes that work well in the dissemination and application of knowledge and skills – that is capacity mobilization

These aims can only be achieved if there is a systematic way of tracing and following up on training alumni and their institutions. In 2001, the ICRAF initiated a project with the following objectives.

- ⇒ To establish the location, roles and activity of training alumni.
- ⇒ To establish the usefulness of past training events to individuals, institutions and overall agroforestry development.
- ⇒ To put into place an effective tracer and follow-up instrument and methodology that ICRAF and its partners can use.

### Methodology

The starting point is to get all training course participants to assess the effectiveness and relevance of each topic in a course immediately after it is delivered. This allows improvements to be made even as the course progresses. Then at the end of the course, participants develop personal action plans as their follow up programmes. Outcome and impact assessment are carried out at least six months after the course. At that time, alumni can assess the usefulness of the course by reflecting on:

- ⇒ The relevance of the objectives and contents of the training to their current work
- ⇒ The frequency with which they apply the skills and knowledge acquired during the training
- ⇒ How far they have progressed with action plans developed during the training

ICRAF has developed a questionnaire to help alumni record this information. Data collected using this tool helps to throw light on where and how acquired knowledge and skills are applied, factors that motivate alumni to strengthen their competence in agroforestry and specific elements of the training that the alumni find most useful.

### Experience

In a pilot survey, 180 alumni from five training courses were contacted to test the tracer survey methodology. Ninety seven percent of respondents are either very satisfied or satisfied with the training according to the three criteria identified above. Over half of the satisfied respondents (52%) use the skills very often, as opposed to "often" or "occasionally". The main ways in which respondents have observed improvements in their competence are when they give advice to colleagues, conduct research, or serve as facilitators during training events. Seminars, supervision of students and developing

plans and strategies are also important activities, being undertaken by 40-48% of respondents. The respondents describe key achievements and challenges during implementation of their personal action plans (PAPs).

Some respondents described specific ways in which they have:

- ⇒ Taken on additional responsibilities at their workplace
- ⇒ Improved standards when carrying out routine duties or tasks
- ⇒ Obtained higher academic qualifications
- ⇒ Developed innovations for existing techniques and methods
- ⇒ Redesigned projects that were planned before the training
- ⇒ Observed greater recognition and utilisation of their skills by colleagues and collaborators.

### **Future directions**

The preliminary results show that the tool needs further improvement before it is shared for wider usage. Then the process has to be installed in the organization as a viable mechanism to follow up capacity building efforts. The tool provides up-to-date records on roles and activities of ICRAF training alumni. One interesting outcome is the great enthusiasm shown by alumni to cooperate and maintain links with ICRAF. This helps to strengthen partnerships. The centre also expects that, with time, there will be an active network of agroforestry alumni. This will facilitate greater understanding and sharing of information about agroforestry knowledge systems.

# Capacity Building at ICRISAT\*

**Rex L. Navarro**

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## About ICRISAT

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is a nonprofit, non-political, international organization that helps developing countries apply science to increase crop productivity and food security, reduce poverty, and protect the environment. Established in 1972, it is one of 16 Centers supported by more than 50 donor governments, foundations, and development banks through the Consultative Group for International Agricultural Research (CGIAR). A three-time winner of the prestigious King Baudouin Award of the CGIAR, ICRISAT works to improve the farming systems of the semi-arid tropics (SAT) of the developing world, including genetic conservation and improvement of five crops that are particularly important in the diets and livelihoods of the poor: sorghum, pearl millet, groundnut, chickpea, and pigeonpea.

## ICRISAT's Strategy

ICRISAT carries out its mission by forming research partnerships with government, civil society, and private sector organizations in developing countries, and linking these partners to advanced research institutions worldwide. Each partner contributes its unique strengths to make the whole greater than the sum of its parts. ICRISAT excels in strategic research on global issues, and on international exchange of information, knowledge, technologies, and skills. These products and services help partners enhance their capabilities to meet regional, national, and local development needs.

## Where is ICRISAT?

ICRISAT maintains strategic presence in several locations across South Asia and Sub-Saharan Africa. It has three regional hubs in Sub-Saharan Africa (Nairobi, Kenya; Bulawayo, Zimbabwe; and Niamey, Niger) supplemented by focused country teams (Bamako, Mali; Kano, Nigeria; Lilongwe, Malawi; and Mozambique). ICRISAT's headquarters are in Patancheru, Andhra, Pradesh (near Hyderabad), India.

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\* Background paper for the parallel session on capacity building, CGIAR Annual General Meeting, Manila, Philippines, 28 October-01 November 2002.

## **ICRISAT's strategy for capacity building**

ICRISAT envisions a world in which all stakeholders in the agricultural innovation process can easily access and share information, knowledge and skills they need - anywhere and anytime – to enhance the food security and livelihoods of the poor.

Hence, ICRISAT is committed to harness new tools and concepts of information and communication technology (ICT) and knowledge management to enhance the awareness, appreciation, understanding, sharing, and application of ICRISAT-generated technologies by stakeholders, accelerating its impact in the semi-arid tropics.

To realize the foregoing, capacity building has been made as an integral component of an Information Resource Management Office (IRMO) at ICRISAT. This office is anchored on the strategic importance of facilitating linkages among policy-makers, researchers, extensionists, farmers, support providers, and other stakeholders in the agricultural innovation process. This is done primarily by collecting, processing, and sharing the right information, knowledge, and skills with the right people at the right time.

Information resource management is carried out by three operational units, namely: Learning Systems, Information Systems, and the Library. These units are primarily involved in designing, piloting, and upscaling innovative schemes of accessing and sharing information, knowledge and skills to enhance ICRISAT's research impact on the ground.

## **Capacity building programs**

Within the foregoing context, ICRISAT has five types of capacity building initiatives:

- Scholarly studies
- Joint project attachments
- Specialized skills courses
- ICT-enabled distance learning
- Computer-based tutorials

### **Scholarly Studies**

Research scholars are candidates for MSc, PhD, or equivalent degrees, carrying out their thesis research at an ICRISAT location while completing their course work at a recognized university, either in a developing or developed country. In the spirit of learn-by-doing, the thesis work must be congruent with a priority area of the shared ICRISAT-NARS research agenda, involving the scholar in an active research thrust. Typical disciplinary areas within the agenda include: genetic resources management, genetics, plant breeding, cytogenetics, biotechnology, physiology,

agronomy, land and water management, soil science, modeling, agro-climatology, entomology, pathology, virology, socio-economics, and statistics.

### **Joint Project Attachments**

This track is not degree-oriented but provides a practical yet leading-edge opportunity for partners to learn-by-doing while contributing to the shared ICRISAT/NARS research project agenda. This opportunity is also provided for research support and administrative functions, because these are also important to the overall institutional capacity-building. ICRISAT welcomes applications for these attachments from national scientists (Research Fellows) as well as from students carrying out their student project work (Apprentices).

The joint research project agenda is described in detail in each year's revised medium-term plan, available on the internet or by writing to ICRISAT.

The length of the joint project attachment is variable depending on the task and objectives of the participant. Interested partners are invited to contact the respective Project Coordinator for the area of interest to explore opportunities. Names of Coordinators can be provided either by contacting ICRISAT directly, or by checking our internet website: [www.icrisat.org](http://www.icrisat.org).

### **Specialized skills courses**

On-site courses on new cutting-edge technologies, research methodologies, research management, and other contemporary topics are conducted regularly by ICRISAT in partnership with the Agri-Science Knowledge Resources Group (ASK), a private foundation based in Hyderabad, India. By gaining these skills, national partners and the private sector are better able to contribute at the front lines of the shared research-for-development agenda. Announcements of these courses are sent to potential clients in advance, allowing them ample time to seek support for their participation. Supported mainly by tuition, all courses at ICRISAT are self-sustaining.

ICRISAT also offers in-country training courses on the same topics above in collaboration with national systems and the private sector.

Likewise, an international course on "Facilitating the Agricultural Innovation Process" will soon be offered in 2003 in collaboration with ISNAR, a sister Center within the CGIAR.

### **ICT-enabled distance learning**

Experience has shown that conventional methods of information-knowledge sharing are no longer adequate especially for wider agricultural research and extension impact. The contemporary situation demands a more innovative and efficient access to appropriate information, knowledge, and skills by the poor. Hence, a novel method of sharing information, knowledge, and skills with poor, unreached

communities is now being piloted by ICRISAT in collaboration with the Commonwealth of Learning and other national partners.

This method combines the potentials of open distance learning (ODL) and information and communication technology (ICT). This initiative primarily aims to educate residents of a poor and vulnerable village in coping with drought by sharing information, knowledge, and skills on crop-livestock management under various scenarios of rainfall and groundwater inadequacy. Likewise, it will develop off-farm knowledge and skills on viable livelihood opportunities identified by field-based needs assessment.

The module will be delivered in distance mode through an ICT-enabled rural community information hub established by ICRISAT in a poor village in Andhra Pradesh.

The rural community information hub involves a low cost connection to the Internet via satellite, allowing easy access to graphics and audio on the worldwide web. Manned by trained community volunteers, this was essentially patterned after the successful experiments of the MS Swaminathan Foundation in Pondicherry, India. The hub is managed by the Adarsha Welfare Society (AWS), a federated body composed of 4,200 women who are members of micro credit societies.

Experiences from this pilot initiative will soon be upscaled in Asia and Sub-Saharan Africa.

### **Computer-based tutorials (CBTs)**

Complementing ICT-enabled distance learning, ICRISAT also uses other modern tools in capacity building, particularly computer-based learning methods. Hence, online interactive tutorials have been developed on the mandate crops. These tutorials are designed for independent and self-paced learning. These are accessible both on the Internet, and on CD-ROM for learners lacking Internet access. By providing anytime/anywhere access, these new media promise a revolution in the scope and effectiveness of learning at a tiny fraction of the cost of travel to a 'live' on-site skills development course. To see these CBT materials, visit our website at [www.icrisat.org](http://www.icrisat.org).

### **Impact of capacity building at ICRISAT**

Over the years, ICRISAT has trained more than 4,000 participants mostly from national systems. Recently, ICRISAT conducted an impact evaluation study of its on-site training programs. This study has confirmed the usefulness, relevance, and sustainability of capacity building programs at ICRISAT.

Among the significant findings are as follows:

- The training programs at ICRISAT were in line with the job requirement of participants.

- Training at ICRISAT has significantly developed the knowledge and skills of participants.
- Intellectual capacity and on-the job performance of participants were enhanced due to training at ICRISAT.
- Many participants obtained higher professional qualifications due to the training received from ICRISAT.
- Most of the participants continue to apply the skills and knowledge gained at ICRISAT in their on-going national programs.
- After returning from ICRISAT, participants were increasingly involved in developing new technologies in the NARS.
- Supervisors of participants indicated that training at ICRISAT led to enhanced intellectual capacity and on-the job performance of participants they nominated. Likewise, they have recognized these participants by providing opportunities for higher academic training and/or increasingly involving them in their research and technology sharing programs.
- ICRISAT has provided high quality learning. Almost all participants and their supervisors endorsed training at ICRISAT to their colleagues.

## Availing ICRISAT's capacity building programs

### **Admission requirements**

- Nomination by an organization, university, or institution working or having an interest in the SAT. Recommendations of sponsoring agencies are evaluated according to study opportunities at ICRISAT locations.
- Requisite academic background, experience, and performance records.
- Willingness to conduct laboratory or field-based research in areas compatible with ICRISAT/NARS shared research agenda.
- An identified sponsor/source of funding for the program.

### **Nomination and sponsoring agency**

Candidates are ordinarily nominated and sponsored by their employer or university. However, participants may seek sponsorship from a funding institution. Financial sponsors provide funds for:

- Travel fares and transit allowances to and from the ICRISAT location.
- Maintenance allowance for food and personal expenses.
- Room, medical insurance, research costs, and other expenses.
- Course fees where applicable.



## **Directions for Training: Programs for Professional Capacity Building in Agriculture**

**Chris Okafor (IITA)**

### **Background**

The International Institute of Tropical Agriculture (IITA) recognises and appreciates the training and educational needs that accompany every research activity. From its inception, it has supported both formal and non-formal education as a means for improving food security and reducing poverty. IITA training has been guided by the overall goal to strengthen the capacity of NARS to conduct the research and training necessary for the development of agriculture in their countries as well as facilitate research collaboration between IITA and NARS. It has pursued this objective through a comprehensive strategy, comprising graduate research training, individual training attachments, group training, training materials development and distribution with a substantial support from its core funds. As the institute is presently experiencing serious financial shortfalls, alternative sources of funding training activities should be explored

Human capital development is a continuing process. The needs for it are always changing. Any intervention that can contribute to and advance the process must take cognisance of the realities of the time. The present reality calls for a re-assessment of the present approach to training. There is the need for a readjustment of the present approach to more service-oriented programs that will provide the opportunity for skill-based professional capacity development and enhancement for NARS employees and for graduate students of agriculture to develop their professional skills. Three key innovative approaches are proposed for consideration.

### **1. Professional Capacity Advancement Program (PCAP)**

The program is targeted at professional staff of partner research institutions and universities. Specifically, it focuses on young and bright researchers (who have a BSc or an MSc plus several years of experience) including fresh PhD holders who will undertake research work in similar research areas to those of IITA. The participants will be known as **Visiting Fellows (VFs)**. The program will emphasise the enhancement of the professional capabilities of VFs through acquisition of new skills, attitudes, values, knowledge and access to information that enable them to perform effectively. It will be designed such that the VF will be responsible for managing the learning-process in a team work environment while the IITA collaborator (host scientist) working with the Training Unit ensures quality management and control of the

learning process. Professional abilities of NARS staff must be maintained if there are to be meaningful and long returns on training investments.

**Major objectives.** This initiative is designed to:

- enhance the ability of VFs to: think strategically about research priorities, develop and /or enhance their research and research management skills, and contribute to increased research capacity building in their home organisations;
- offer IITA the opportunity to emphasise competency-based training which is essential for sustainable agricultural production in Africa;
- provide a unique opportunity for NARS to update and replace their ageing workforce;
- foster productive partnerships between IITA and NARS and enable them share responsibility for agricultural development; and
- ensure flow of scholarly communication between IITA scientists and NARS colleagues, thus breaking the professional isolation of NARS scientists.

**Methodology.** Applications will be solicited from NARS through announcement of openings and individual contacts by scientists, depending on the number of openings available. Applicants will be required to route their applications through their employers.

Successful applicants will be engaged to join IITA research projects as well as use IITA facilities to analyse and write-up their previous research results.

The duration of appointment will range from 6 months to a maximum of 18 months depending on the availability of funds and time. It is expected that the VFs will spend sufficient time on research to gain a deep understanding of the subject. Appointment will be made on the recommendation of a scientist and the approval of Director of Research and Development.

The IITA host scientist (must be a senior scientist) is responsible for all matters pertaining to research while the Training Unit co-ordinates non-research including monitoring and evaluation, and administrative functions. Visiting Fellows are not the same as Visiting Scientists who are senior scientists of collaborating partners.

The terms and conditions of engagement will cover accommodation, stipend (their employers will be required to retain their salary while on the program), international travels, insurance, mandatory seminars and reports, leave, property rights and status.

**Funding.** The major source of funding envisaged for the program is special project funding either provided for in special research projects and networks or through an independent grant

to IITA. While Training Unit will seek independent funding with donors, the scientists will be encouraged to provide for two to four VFs openings in their project proposals.

## **2. Research Studentship Program (RSP)**

This program is focused on graduate students from either developed or developing countries pursuing either an MSc or a PhD studies in universities who desire research experience in the areas of IITA current research either in partial fulfilment of their degree requirements or to develop their career as agricultural professionals. The research that should be hosted by an IITA research project should contribute to IITA research objectives as well as to the student's professional development and academic interest. In the long run, it is expected that many of the "trained professionals" will eventually find their way to the national research institutions and even step into leadership positions in their home countries.

**Objective.** The main objective is to enable budding professionals to develop the necessary research skills, attitude and confidence for a successful career in agriculture.

**Methodology.** Scientists will be requested to make available yearly research topics/areas with research locations for graduate research for advertisement. Candidates with their own proposals that fit into IITA's ongoing projects will also be considered. The Training Unit in collaboration with the Multimedia staff will package the advertisement as openings for "research studentships " for marketing to universities worldwide on a yearly basis.

**Funding.** Since the research will be an integral part of an ongoing project, the research expenses/operational cost will be borne by the project. Applicants will be required to seek funding from their employers, universities and donors to cover the costs of their living expenses, medical, insurance and travel costs to and from IITA.

On a case by case basis and depending on the nature of research, applicants from developed countries may be asked to cover either all or a part of their research costs. If the need arises, a special "professional development product" may be packaged and marketed imaginatively to such students

However, full scholarship openings through special projects funds or scholarships grants to IITA will be advertised as and when available. With the exception of such awards, all other forms of graduate research appointments including the present visiting research studentships' scheme will be handled through the RSP.

### **3. Advertised Short-term Courses (ASTC)**

It is expected that IITA scientists must continuously have new knowledge and skills to share in our core research areas of Crop Improvement, Plant health and Resource and crop management. Therefore, group training courses should continue to be used as vessel to rapidly disseminate new technologies developed by IITA. There is a growing need for short-term training in core areas such as: *breeding, plant biotechnology, soil management, post harvest technology, plant health, post flask management, GIS, and statistical computing and data analysis*. As new technologies are developed, appropriate courses will be packaged, advertised and marketed aggressively to NARS, NGOs, universities, community-based organisations and donors.

**Methodology.** Scientists will propose courses which will be packaged and advertised by the Training Unit. Courses to be offered will be confirmed at work planning and advertised for the in-coming year with price tags for each course. This will allow potential applicants ample time to seek support for their participation. Based on response, the course/workshop may be run or cancelled.

**Resource persons.** IITA scientists will constitute the bulk of resource persons for a course. The services of a course coordinator who is an expert in course design and curriculum development, proper management of the adult learners and the training process including quality control may be needed depending on the nature of the course.

**Funding.** Prospective applicants will apply with their own funding. Scholarships will be available from special projects. Special projects should make provisions for scholarships for degree training as well as short-term courses in their proposals.

**Network courses.** At the request of a Network, Training Unit can assist it with logistic and administrative support and where necessary in identifying and recruiting resource persons including a course coordinator.

### **4. Partnerships**

The Training Unit, in collaboration with the Project Coordinators and Information Services, will welcome as well as explore with relevant institutions (universities, development agencies, NGOs, CBOs, NARs) partnership ventures with a donor support in training materials production and adaptation, on line and CD-ROMs interactive tutorials, joint organisation of courses, workshops and conferences

Note. Costs estimates for the various programs described above are below.

|   |                  |                   |
|---|------------------|-------------------|
| <b>Professional Capacity Advancement Program (PCAP)</b> | <b>\$/Month</b>  |                   |
| Accommodation (airconditioned)                          | 305              |                   |
| Stipend   | 500              |                   |
| Food*   |                  |                   |
| Insurance   | 77               |                   |
| Airport/Shuttle Services**                              | 190              |                   |
| Program Support   | 65               |                   |
| IITA Overhead***  | 360              |                   |
| <b>TOTAL</b>  | <b>1192</b>      |                   |
| <b>Research Studentship Program (RSP)</b>               | <b>\$/Month</b>  |                   |
| Accommodation   | 305              |                   |
| Food*   |                  |                   |
| Insurance   | 77               |                   |
| Airport/Shuttle Services**                              | 190              |                   |
| Program Support   | 65               |                   |
| Operational/Research Cost****                           |                  |                   |
| IITA Overhead***  | 250              |                   |
| <b>TOTAL</b>  | <b>887</b>       |                   |
| <b>Advertised Short-Term Courses (ASTC)</b>             | <b>On-campus</b> | <b>Off-campus</b> |
| <b>Direct Participant Cost</b>                          | <b>\$</b>        | <b>\$</b>         |
| Accommodation   | 150              | 500               |
| Food  | 180              | 200               |
| Pocket money  | 50               | 100               |
| <b>Sub Total</b>  | <b>380</b>       | <b>800</b>        |
| <b>Program Support</b>                                  |                  |                   |
| Medical   | 25               | 25                |
| Local Transport   | 15               | 20                |
| Classroom hire  | 70               | 100               |
| Materials   | 40               | 60                |
| Photocopy   | 30               | 50                |
| Tea/coffee/cocktail                                     | 100              | 100               |
| Secretarial support                                     | 20               | 20                |
| <b>Sub Total</b>  | <b>300</b>       | <b>375</b>        |
| <b>One Resource Person (External)</b>                   |                  |                   |
| Honorarium  | 100              | 100               |
| Per die m   | 25               | 35                |
| Accommodation   | 45               | 50                |
| Local/International Travel                              | 5                | 45                |
| <b>Sub Total</b>  | <b>175</b>       | <b>230</b>        |
| <b>Three Resource Persons (IITA Staff)</b>              |                  |                   |
| Honorarium  | 0                | 0                 |
| Per diem  | 0                | 105               |
| Accommodation   | 0                | 150               |
| Travel  | 0                | 135               |
| <b>Sub Total</b>  | <b>0</b>         | <b>390</b>        |
| <b>Total</b>  | <b>855</b>       | <b>1795</b>       |
| <b>IITA Overhead</b>                                    | <b>195</b>       | <b>410</b>        |
| <b>Grand Total</b>                                      | <b>1050</b>      | <b>2205</b>       |

|  |
|--|
| * Student will be responsible for managing his/her food money and cost will range between \$400 to \$500/month |
| ** Includes airport assistant, accommodation at the Ikeja Guest House and Transport to and fro Ibadan          |
| ***Applies to independently sponsored students and visiting Fellows  |
| ****To be determined in consultation with the IITA prospective supervisor                                      |

## Capacity building at ILRI

### **Background and Justification.**

The national agricultural research systems (NARS) are faced with enormous challenges for which they are not adequately resourced. Perhaps the most critical requirement at this time is for strengthening their human resource capacity for cutting-edge science. With a combination of internal and external resources there has been considerable progress in building capacity, especially in the crop sciences. However, NARS remain crucially lacking in capacity for livestock research and ILRI is committed to doing what it can to work with them in rectifying this. In doing so, ILRI looks forward to having the strongest possible NARS with which to collaborate in research that will capture the opportunities provided by livestock for improving livelihoods and conserving the environment.

In livestock related sciences, ILRI is well placed to provide opportunities:

- ♦ Graduate students do field and bench work with internationally recruited colleagues and mentors.
- ♦ Developing country scientists work alongside ILRI colleagues in applying cutting-edge science in research for development.
- ♦ For building professional connections between scientists in NARES, CGIAR centres and their partners in advanced research and training institutions.
- ♦ For producing information that is relevant socially, economically and environmentally, and developing related knowledge products and distance learning materials for tertiary agricultural education institutions in developing countries.
- ♦ For facilitating international networking to build the critical mass of scientific peers that is essential, especially for researchers in small countries.

Needs assessment within ILRI: Requests for technical training and graduate programmes at ILRI continue to pour in. All applications for technical training and graduate programmes, whether solicited or unsolicited, are accompanied by explanations of the need for the activity and the impact that the training will have in the applicants institution and/or career. From the many applicants that keep coming in it is clear that there is a strong demand for the opportunities that ILRI provides.

The past value and future need of training and education activities at ILRI have been documented by all partners. In addition to contributing to capacity building, ILRI recognises the contribution that the trainees and visiting scientists make to its own research programmes both while they are at ILRI and when they return to the institutions with which ILRI collaborates. To date more than 300 graduate students have contributed to ILRI's research and these graduates along with other trainees are key players in ILRI's long term collaborative research with the NARS.

Despite past achievements, there is a continuing need to strengthen the human resources of NARS to support the necessary R&D for the sustainable development of the livestock sub-sector. This conclusion is informed by the following:-

- There are still insufficient numbers of livestock researchers in many developing countries.
- The scientists find it difficult to fulfil the continuing need to update their knowledge and skills to allow them to make effective use of new technologies and methodologies.
- There is a remaining need to build capacity to address the complexities of integrating crop and livestock research.

- There is insufficient capacity for amongst national scientists for conducting human, livestock and environmental health and production research within integrated programmes.
- More knowledge and skills are required to improve research-extension-user linkages in the process of developing and transferring new technologies.

### **Objectives**

Based on the above, the broad objectives of the training activities at ILRI for the next decade are to recognise and respond to the needs of stakeholders to enhance human resource capacity in livestock research for development. There are two separate components to strengthening NARS capacity; firstly to increase the numbers of national scientists with postgraduate research qualifications, and secondly to provide existing, and future, scientists and technical staff with new knowledge and skills.

The specific objective of ILRI training is to provide technical and research training to NARS employees in response to demands. These demands will come from three sources

- NARS priorities
- NARS Network priorities, and
- ILRI's collaborative programmes.

### **Strategy**

The strategy has three inter-linked components. The first will remain as at present, the second contains new initiative linked to existing activities and the third is new and innovative:

1. To strengthen NARS research capacity for specific NARS-ILRI collaborative research projects through courses and individual training activities.
2. To strengthen and improve the capacity of NARS to educate and train their own staff through workshops, seminars, training materials and training for senior NARS managers and decision-makers.
- 2.3. To repackage the information, knowledge and technologies generated by ILRI to provide training resources to developing country universities, with materials structured to meet the needs of universities; NARS courses, using a structure for adult education and training; and for NARS scientists working on their own, with materials structured for adult distance learning.

### **Current Status of Training.**

ILRI offers the following training opportunities:

*Graduate fellows* are registered for MSc, MPhil or PhD studies. Currently most students come to ILRI to undertake the research component of their graduate work after completing the necessary course requirements at their university of registration. A few, for whom no course work or residency is required, spend their entire degree programme at ILRI. About 10% of graduate fellows are from donor countries undertaking research in projects that are collaborative between ILRI and their registering university department/supervisor. However the vast majority of students are from developing countries and most of these are employees of NARS who apply in response to advertised positions and are selected after a competitive process. ILRI has a number of standing relationships (MOU) with universities and with many other universities it operates through ad hoc but formalised links. The research projects of all graduate students fit into ongoing research activities, meet the requirements of the registering university and the home institute/employer, and the interests and background of the student. Each student has both a university and ILRI supervisor. The registering university is expected to accord full recognition to the ILRI supervisor, within the regulations of the university.

An independently run and analysed assessment of the value, impact and contribution of ILRI's graduate programme to strengthening livestock research in Ethiopia and Kenya has been completed. The study showed the value of ILRI as a place for graduate students to complete high quality degree research. It showed that a high level of supervision was provided and that the students were well

integrated into ILRI research projects. Students benefited from publishing their research and on returning to their institutions contributed to training of their colleagues. ILRI published the methodology as tool and process report (Eley 2002). This impact assessment will be a strategy built into all future activities.

*Research fellows* are scientific staff at any level who, at the request of their home institute, come to ILRI for periods of up to one year to acquire certain scientific skills or gain assistance in development of their research. For example a scientist may come to ILRI to write a research proposal which if subsequently funded would involve collaborative research. Funding for the costs of this project development exercise may be through the home institution or from project funds that are earmarked for such development.

*Student Associates* are undergraduates for whom a period of work in a research institute is a requirement of their degree course. They come to ILRI to do small projects within specific laboratories. These positions are open world-wide but students from developed countries must be completely self supported.

*Technical Associates* are technical or scientific staff from NARS who come to ILRI for up to six months to learn new research techniques. ILRI does not offer generalised training that may be gained elsewhere (e.g. general immunology) but it does provide training on very specific techniques (e.g., antigen preparation from cowdria ruminatum), for which alternative locations are not easily found, or for which ILRI needs trained personnel in the NARS for continuation of a collaborative research programme. Trainees are only accepted after nomination by their employer and costs are now paid for by the home institute or donor.

*Group Training Course Participants* are also NARS technical or scientific staff who are taught new skills, with an emphasis on practical skills but in the format of a group course of two to four weeks. Most courses have contents which are direct importance to the ILRI's projects and without trained staff the NARS will not be able to sustain any products of ILRI's research or contribute to ILRI's research programme. An example of this is with the diagnostic tests for tick-borne diseases. Without trained technical staff in the NARS, validation of the tests could not be undertaken nor when the tests were ready for use could the staff use them. Costs of these courses are now incorporated into project proposals or specific funding sought. Other courses may provide training in areas which are not project related (e.g. biometrics). This type of course is only supported when funding is available from external sources and no such courses were held in 1998.

The specific objectives of ILRI training materials development will be to develop training resources

- for NARS research institutes for use in their own in-service training or development thrusts. Training materials for training trainers already exists and ILRI will incorporate this into its training materials.
- in courses offered in ILRI sites
- in distance learning courses, and
- to repackage the information, knowledge and technologies generated by ILRI to provide training resources to faculty of universities and training institutions that can use them for developing their teaching materials.

*Training materials* produced by ILRI facilitate learning through group or individual training. The materials produced focus on ILRI research areas and mandate. During the last two decades ILRI have produced twelve text based and thirteen audio-visual materials largely to support its courses although in a few cases stand-alone materials were developed. In the past training materials were text or audio-visual formats that focused only on African situations and had limited distribution, however during the last decade new information technologies have provided tools that open the scope for new types of training materials. As a result the most appropriate format may be chosen to create the best learning environment and more frequent use is made of a variety of media combined in an integrated manner to produce multimedia-training materials. When a multimedia material product contains all the

pedagogical elements of a course e.g. content, objectives, exercises etc., the product is termed courseware. It is a virtual classroom that simulates face-to-face interaction and may be used for learning by group or individual trainees and as training resource to extract material for reconstruction of new courseware or any teaching tools. Being electronic in format it is easy to distribute these globally and easy to update with minimum cost.

Users can download free of charge the material from ILRI's web site <.....>. The material includes text based as well as visual and audio material. ILRI's Training Materials Group is currently packaging animal genetics resource information in interactive format which will be distributed in CDROM and placed in the web site.

### **Training Resources Audience and Partners**

*There are two broad audiences for training resources.* The first audience is research staff in NARS using material incorporating adult education techniques. The second audience is university teachers who are teaching future livestock scientists. ILRI provides university teachers with up to date training resources that they can use to create material tailored to their curricula and particular circumstances.

#### *Existing and potential partners*

- NARS
- Universities/Virtual Universities
- Networks
- INTG

Partners play a vital role to:

- identify the need for the new training resources
- review the material for technical correctness and clarity
- raise funds for joint projects on training resources.

### **Interaction with other ILRI programmes**

Aside from the capacity building aspects of the training programmes at ILRI, many of the training activities contribute to ILRI's research programme. Many technical trainees return to their NARS to become resource personnel and collaborators with ILRI in joint research programmes.

Training resources production requires interaction with subject matter specialists from ILRI and elsewhere derived from close links with ILRI research programmes and scientific networks. Collaboration with NARS networks will become increasingly more important as a means of identifying and delivering training.

### **Conclusion**

ILRI recognizes the need of NARS to strengthen their human capacity. To achieve this goal ILRI developed a strategy that is innovative in its approach. Key elements in this strategy are partnership with NARS, universities in developing and developed countries. This will focus on professional connectivity among the NARES, CGIAR centers and their partners in advanced research and training institutions. ILRI strategy also will make use of new advances in information and communication technologies. Tools such as distance learning and training resources will be vital in this approach.

## **IRRI and ISNAR Capacity Building Programs**

**IRRI:** <http://www.knowledgebank.irri.org/#>  
<http://www.training.irri.org/index.htm>

**ISNAR:** <http://www.isnar.cgiar.org/activities/training/index.htm>



## IWMI's Strategy on Capacity Building

### Introduction

The International Water Management Institute's mission is: "*improving water and land resources management for food livelihoods and nature*". To achieve this, IWMI conducts a research and capacity building program in some 20 developing countries. The research is put into action in five research themes managed through five regional offices across Asia and Africa.

### Capacity Building as part of IWMI Strategy 2000-2005

IWMI's approach is to integrate research and capacity building in its program. All projects are done in partnership with organizations such as local universities, the NARS community and increasingly, local NGOs. We see capacity building as a 'delivery mechanism' for the knowledge and experiences generated through IWMI projects.

The exchange of lessons and experience is often a two-way process, which transfers know-how into developing countries, but also increases the quality and relevance of IWMI research in the local context through close collaborations with partners.

### New Approaches

IWMI Strategy 2000-2005 calls for capacity building to be embedded in its research program. Some new approaches that we have put in place include:

- Benchmark Basins concept – long-term partnerships (20 years) with NGOs, Government agencies and local universities to study the water, food, livelihoods situation as a part of IWMI research. These are IWMI's field laboratories, which typically bring together 15-20 partners in a given basin.
- Including post-doctoral scientists, Ph.D. and M.Sc. students as a capacity building component in many projects at the proposal stage.

### The Strategies

- Specifically target interactions with senior policy makers and members of the development community to take up the knowledge produced.
- Targeting more funds for postdoctoral candidates, Ph.D. and graduate students and research assistants.
- Making partnerships a part of the way IWMI conducts its business.
- Systematically "translating" the recommendations and benefits of research to a variety of target users.

IWMI has always been engaged in capacity building activities and started a program as part of its Strategy 2000-2005.

## **The Program**

IWMI's Capacity Building program calls for action in six main areas:

### **1. Policy Roundtables**

IWMI is a well-placed international organization to discuss water policy and strategy issues with governments. IWMI research has produced tools to help developing countries better understand and manage their land and water resources. Roundtable discussions are organized to gain access to senior policy makers and those responsible for decisions at a senior level and create awareness of water issues and IWMI researched policy options. A total of nine seminars were held in 2001 and 2002 in Asia, Southeast Asia and Africa. A few examples:

- “Private sector participation and Irrigation Expansion in the context of Asia-Africa exchanging experiences”, 22-26 October, 2001, Accra, Ghana, organized in collaboration with FAO-Africa and the Colombo Plan Secretariat, Colombo.
- “Water Resources Management in River Basin” 19-20 March 2002, Nepal, organized in collaboration with Water and Energy Commission and the Irrigation Department of the Government of Nepal. Senior policy makers in the Nepalese government participated in the discussions on institutions for river bank management based on IWMI case studies carried out in East Rupti river basin.
- “Water and Sustainable Development in Africa: Priority Setting” 15-17 April 2002, Accra, Ghana. A regional stakeholders' conference supported by the Government of Netherlands and organized in collaboration with the African Development Bank. It brought together more than 200 participants from 42 African countries including representatives from governments, NGOs, universities, river basin organizations, and international organizations working on water. The primary outcome of the Conference was the Accra Declaration, which outlines Africa's primary water challenges and recommendations for action.
- “Ministerial Roundtable Dialogue on Water Sector Challenges, Policies and Institutional Development in Asia” 22-23 May, 2002, UN Conference Centre, Bangkok, brought together the ministers and senior officials responsible for the water resources sectors of ten Asian countries - Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Thailand and Vietnam. The discussion focused on challenges for water resources and best options of possible solutions for addressing them. Based on the discussions, the ministerial delegations released a joint statement on shared priorities and points for action. This event was sponsored by the Asian Development Bank and was organized by IWMI in collaboration with Economic and Social Commission for Asia and the Pacific (ESCAP) and the Office of National Water Resources Committee of the Royal Thai Government.

- "Smallholder Land and Water Management Systems, sharing experiences in Africa, Asia and the Pacific" 1-5 July, 2002, Bangkok, Thailand, organized by IWMI-Southeast Asia in collaboration with FAO, Economic and Social Commission for Asia and the Pacific (ESCAP) and the Colombo Plan Secretariat, Colombo. A total of 32 participants from Bangladesh, Bhutan, Cambodia, Fiji, India, Indonesia, Lao PDR, Malaysia, Mongolia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam, Tanzania and Zimbabwe attended the seminar. The main focus was to collect and scrutinize promising experiences from Africa and Asia, and to encourage exchange and interactions among key players within and across continents. The seminar highlighted some of the major issues related to smallholder promotion such as financial and technological requirements, entrepreneurship development, private sector participation, and the possible establishment of a regional network for smallholders enabling them to have access to information and regional market places.
- *"Forward-Thinking Policies for Groundwater Management: Energy, Water Resources, and Economic Approaches"*, New Delhi, India, 2-6 September 2002. This seminar was organized by IWMI's regional office in India in collaboration with the Indian Council of Agricultural Research (ICAR), India and the Colombo Plan Secretariat, Colombo.

## 2. Ph.D. Scholarship Program

This is a major activity through which IWMI builds the capacity of future researchers – Ph.D. students – interested in doing research in an area that fits in with IWMI's research interests. IWMI's Ph.D. policy is focused on students from developing countries in the South and provides for student support under two main categories:

- Full scholarships for students from the South through the development of "sandwich programs" with joint IWMI/University responsibility; and
- Partial/limited support for students already registered with universities, on a case by case basis.

*Full Ph.D. Scholarships for students from the South:* Through the development of 'sandwich programs' focused on specific subjects of interest or on specific projects, IWMI together with its university partners offer joint scholarships for a complete Ph.D. program. The course work is carried out at the strategic partner universities and the field research is usually at an IWMI research site as part of its research program, supervised by IWMI scientists. Joint appropriate funding and financing is worked out on a case-by-case basis between the university and IWMI. Some of the universities and research institutions with whom we have established long-term partnerships to support Ph.D. students from the South under "sandwich programs" are as follows:

- Asian Institute of Technology, Bangkok, Thailand
- Cornell University, USA
- Center for Development Research (ZEF), Univ. of Bonn, Germany
- Institute for Hydrological Engineering (IHE), Delft, the Netherlands
- Mekelle University, Ethiopia
- Sokoine University of Agriculture, Tanzania

- University of Colorado, Boulder, USA
- University of Free State, South Africa
- University of Minnesota, USA
- University of Natal, South Africa
- University of Pretoria, South Africa
- University of Venda, South Africa
- Wageningen University, the Netherlands

Research support for registered Ph.D. Students: Students from the South who are already accepted as Ph.D. candidates by recognized universities and have their own topics are considered for partial or limited support during the research phase. A major criterion for acceptance is that the research should closely fit with IWMI’s research program.

In addition to these two major categories of student support, IWMI provides intellectual guidance, research supervision, and some research costs to graduate students whose work closely relate to IWMI’s research interests. Currently, there are approximately 52 such graduate students (M.Sc./Ph.D.) from North/South doing their research at various IWMI research sites in Asia and Africa.

Students from the North: IWMI normally expects students who are citizens of developed countries to have access to sufficient funding for their research. As mentioned above they will be provided intellectual guidance and supervision, sponsorship and logistical support; but IWMI expects them to cover all other costs of their research.

Development of Ph.D. research projects: A list of 75 “Ph.D. research topics” suggested by IWMI researchers serve as guidance for prospective students on IWMI’s research interests and also to mutually select and advertise for Ph.D. fellowships together with interested universities and research institutions. The Ph.D. policy, guidelines, and research topics of interest are all available on IWMI’s website [www.iwmi.org](http://www.iwmi.org)

Summary of students currently funded/co-funded by IWMI:

- Ph.D. students from the South – total 20

| Male | Female |
|------|--------|
| 12   | 08     |

- IWMI Staff – total 06

| Male | Female |
|------|--------|
| 04   | 02     |

Our target was to support 25 Ph.D. students from the South during the 2000-2005 period. Of the above 26 Ph.D. students funded/co-funded by IWMI, 24 are from the South.

- Graduate students (Ph.D./M.Sc. from the North/South) engaged in research at various IWMI research sites – total 52

|       | Male | Female | Total |
|-------|------|--------|-------|
| Ph.D. | 06   | 05     | 11    |
| M.Sc. | 31   | 10     | 41    |

A few partnerships and students:

- > Ph.D. scholarships for South Asian women scholars were advertised and awarded to four students, funded by the Ford Foundation.
- > AIT - We have a MoU with AIT providing a framework for joint research and education projects including M.Sc. and Ph.D. student support. Currently IWMI is providing intellectual guidance and limited support to an AIT student from Nepal doing his doctoral dissertation research in Nepal on “*Performance indicators of irrigated agriculture in relation to farm livelihoods system in Chitwan, Nepal*”.
- > Cornell University – An IWMI staff member from Sri Lanka following her Ph.D. program on joint sponsorship of Cornell and IWMI will complete her coursework by the end of the year. Her research phase due to commence January 2003 is focused on: “*Integration of remotely sensed ecological zones and surface water features to an inverse modeling approach of ground water sustainability and recharge*”.
- > University of Colorado – Two IWMI staff members, one from the North and the other from the South commenced their Ph.D. programs at the University of Colorado during academic year 2000 and 2001 respectively, with co-funding from IWMI.
- > University of Minnesota – In joint sponsorship with the University of Minnesota, IWMI-MacArthur Program Collaborative Fellowships were awarded to three students from the South (Bangladesh, China and South Africa) this year, following a competitive selection process.
- > Imperial College of London – IWMI is providing part funding for a Sri Lankan Ph.D. student with Imperial College of London for her research phase which began early this year.
- > IHE, the Netherlands (Infrastructural, Hydraulics and Environmental Engineering) - IWMI’s agreement with IHE provides for joint sponsorship of six Ph.D. students on a 50-50 cost sharing basis, during 2002-2004 of which we are already committed on five candidates - two students from Africa have already commenced their Ph.D. programs, arrangements are finalized for the third student (from Ghana) to commence his studies in 2003, and two other students are committed tied up with a project.
- > IWMI awarded three Ph.D. fellowships to Tanzanian students as part of IWMI’s contribution to the project RIPARWIN (Raising Irrigation Productivity and Releasing Water for Intersectoral Needs), partially funded by DFID, and in collaboration with the University

of East Anglia and Sokoine University of Agriculture, Tanzania. All three students are registered at the University of Dar es Salaam, Tanzania.

- > Wageningen University – IWMI and the Wageningen University is jointly sponsoring the Ph.D. program of a student from Sri Lanka who is currently engaged in his field research on “*Remote sensing of irrigation management practices in Sri Lanka*” supported by IWMI.
- > ZEF (Center for Research Development, Germany) – Joint IWMI/ZEF sponsorship of the research phase of Ph.D. student from Thailand.

### **3. Post-Doc Fellowship Program**

IWMI builds its staffing through the recruitment of post-doctoral scientists, a majority of them selected from the South. This is a significant benefit for young, promising researchers from the South who have few opportunities or exposure to do research in a multi cultural environment. Positions are identified, advertised, and selected on a competitive basis.

There are 15 postdoctoral scientists currently posted at headquarters and regional offices of which ten are from the South. Their disciplines cover soil and water resources engineering, applied economics, irrigation and health, crop protection, institutions and policy research, irrigation and water resources, geographic information systems- remote sensing, agri economics, etc. In addition, we have seven Associate Experts funded by the Netherlands Associate Expert program.

An item of note is an IWMI-Pakistan staff member who is currently completing his Ph.D. at Wageningen University, co-funded by IWMI is scheduled to join IWMI as a postdoctoral scientist in early 2003.

Our target is to have 30 postdoctoral scientists from the South by 2005.

### **4. NARS Partnership**

Another way of building capacity is to establish longterm relationships with national agricultural research institutes in Asia/Africa and offer sabbaticals and fellowships to university staff and have them write lecture notes and other course material based on IWMI research knowledge. IWMI staff will reciprocate by lecturing at these universities and have their students involved in IWMI research.

#### *A few highlights:*

Several IWMI researchers coordinated and conducted a course in Integrated Water Resources Management at the Asian Institute of Technology, Bangkok last year.

IWMI was granted membership in the “Waternet” South Africa in April 2001. Waternet is a regional network established in Zimbabwe by 18 university departments and training institutes from nine countries in Southern and Eastern Africa. Its mission is to enhance regional capacity in IWRM through training, research and outreach by sharing complementary expertise of the members.

A lecturer/researcher with the Department of Soil Sciences and Ag Engineering, University of Zimbabwe, is currently spending a 7-month sabbatical with IWMI South Africa jointly sponsored by IWMI and Waternet.

IWMI has actively supported the Global Water Partnership, particularly in the South Asian region through its offices in Pakistan and Sri Lanka. In order to formalize and expand its support for GWP it has become a resource center by hosting an office at IWMI headquarters in Colombo.

## **5. Private Sector Program**

A program that opens avenues for private sector organizations to second their staff to IWMI as visiting scientists for short periods. National and international consulting firms and institutes are vehicles for implementation of irrigation and water resource related development projects. It gives access to thousands of field sites across the developing world, where data is gathered and where IWMI research is tested and applied. Through this we disseminate IWMI research knowledge as well as gain from their expertise.

Under this program, “Uni Lever” a leading private sector company in Sri Lanka has seconded one of its senior technical directors to IWMI for a three-year period.

A Senior Economist, Middle East & North Africa (MNA) region, the World Bank was seconded to IWMI’s regional office in India as part of WB/MNA-IWMI Water Team Collaboration from February 2002 to January 2003 with the provision for renewal by one year following evaluation.

A scientist from Arcadis, a consulting firm in the Netherlands has commenced a 6-8 month sabbatical with IWMI-India.

IWMI has also expressed interest in joining the Associateship Scheme instituted by the Third World Academy of Sciences (TWAS) in cooperation with UNESCO. This is a cost-shared program which offers the most promising, active researchers from developing countries working in a particular center’s field of expertise to visit the relevant center on a regular basis as “visiting scientists” over a period of 3 years.

Our target is to have 25 Visiting Scientists in the next five years.

## **6. Workshops**

As a part of research projects, training sessions, workshops, seminars and hands-on training are being conducted to disseminate IWMI’s research knowledge and findings to academics, irrigation professionals, students, researchers and farmers and many others in the field. During this year, we have had 50 events with approximately 2000 participants.