

CAPACITY BUILDING FOR SUSTAINABLE USE OF ANIMAL GENETIC RESOURCES IN DEVELOPING COUNTRIES – A NEW APPROACH

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INTRODUCTION

The efficient utilisation of Animal Genetic Resources (AnGR) in developing countries is important for improving the livelihood of poor people. Presently 800 million people suffer from hunger and malnutrition ; a livestock revolution has to take place to meet the demands for food of animal origin and other livestock outputs (Delgado *et al.*, 1999 ; ILRI, 2000). The productivity, and not numbers, of farm animals must increase. Animals and production systems should be adapted to local environmental, socio-economic and cultural conditions, and we have to ensure enough genetic diversity for the unknown future. Livestock improvement programs in developing countries have often failed due to lack of infrastructure, technical and human resources, and by neglecting adaptive traits in breeding programs. Temperate breeds have been used in poorly conceptualized “upgrading”, and the potentials of indigenous breeds have largely been neglected (Payne and Hodges, 1997 ; Rege, 1998).

The sustainable use of AnGR in developing countries requires capacity building at all levels, which must be based on relevant research in tropical environments, utilizing modern science as well as “indigenous” knowledge. Despite the role of higher education in supporting development (World Bank 2000) surveys have shown that the number of trained scientists in developing countries with skills for animal genetics or breeding is seriously limited, and that few teaching resources are available (Malmfors *et al.* 1994 ; FAO, 1997).

A NEW APPROACH FOR CAPACITY BUILDING

The engines for capacity building for sustainable food production in developing countries are the national universities and agricultural research institutes (National Agricultural Research Systems - NARS). NARS have collaborative capacity building programs with the Consultative Group on International Agricultural Research (CGIAR) institutes, as well as with higher education institutions in developed countries. CGIAR works to reduce poverty, increase food security and sustain the world’s natural resources through research on food crops, forestry, livestock, irrigation, aquatic resources and policy issues, and in its services to national agricultural research systems. These programs often focus on training MSc/PhD students. However, the impact would be greater if activities also targeted university faculty and trainers rather than students, e.g. by providing “refresher training”, as well as exposure to new research and teaching methodologies. Therefore, to strengthen sustainable use of AnGR in developing countries, ILRI in collaboration with the Swedish University of Agricultural Sciences (SLU), and supported by Sida (Sweden), adopted the approach of “*training the trainers*” in a project

addressing NARS teachers/scientists teaching animal breeding and genetics at least up to MSc level. The specific objectives of the project are to :

- Strengthen knowledge and skills for AnGR of NARS staff teaching, researching and supervising animal breeding and genetics.
- Strengthen teaching and communication skills of these teachers/scientists.
- Catalyze curriculum development and use of new and expanded teaching methods.
- Develop electronic training resources for use by NARS teachers/scientists.
- Stimulate contacts and networking within and between countries, regions and continents.

It is expected that this model for capacity building will substantially increase awareness and knowledge on AnGR in the future through the large number of students reached by the trained teachers/scientists. It will also increase the potential for *relevant* research by placing AnGR issues in local contexts and including modern technologies in teaching and research programs.

MAIN ACTIVITIES OF THE AnGR CAPACITY BUILDING PROJECT

The “training the trainers” project on AnGR includes a number of activities to be carried out in Sub-Saharan Africa, South-East Asia, South Asia and Latin America.

Questionnaire, visits, planning workshop.

To learn about the state of higher education and research in animal breeding and genetics, and to identify needs, in 1999 a questionnaire was sent to 53 universities and colleges in Sub-Saharan Africa teaching animal breeding and genetics up to MSc level. To further increase our understanding a sample of universities and research institutes in 9 countries in Sub-Saharan Africa were visited by members of the project team. Major issues revealed from the questionnaires and visits in this region were:

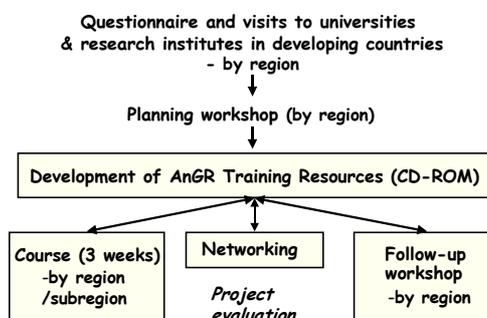
Staff. Often few teachers in animal breeding ; need for updating their skills, especially in biometrics, applications of molecular methods, and in design of sustainable breeding programs; lecturers lacked training in teaching methodologies, but they are motivated and enthusiastic.

Facilities. Computers often available for MSc students, but very limited for BSc students ; poor Internet connections ; recent journals often lacking in library ; few textbooks available and most have little material relevant to developing countries ; lecture rooms often poorly equipped.

Teaching. Heavy load of undergraduate teaching ; large student groups in BSc, small in MSc ; decreasing numbers of students specializing in animal breeding ; great variation in quality and relevance of curricula and course contents ; lectures predominate and not enough practical classes ; teaching materials are limited.

Research. Teachers often lack time and money to do research ; limited access to data for animal breeding research at universities ; few national livestock recording systems, or only for exotic breeds ; little attention to research on characterisation of indigenous breeds.

Main activities of the AnGR training project



Collaboration. Need for collaboration between universities and research institutes recognized, but not always practised ; limited collaboration between universities, both within and between countries.

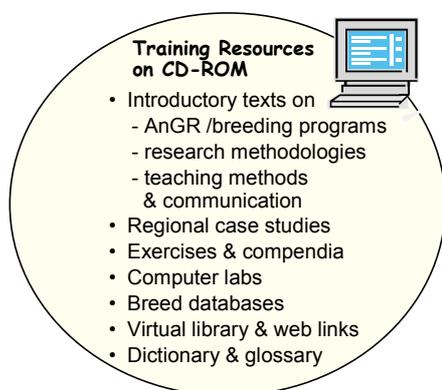
To further discuss the project, a three-day planning workshop was conducted in January 2000 at ILRI-Addis, where leading NARS teachers/scientists in animal breeding and genetics from Sub-Saharan Africa joined the ILRI-SLU team. Design and content for training resources and training course for the region were developed. A similar planning procedure, i.e. questionnaire, visits and workshop is presently underway for South-East Asia.

Regional courses. So far, a three-week course has been given twice for NARS teachers/researchers from Sub-Saharan Africa : in 2000 for 20 scientists from ten countries of Eastern and Southern Africa, and in 2001 for 18 scientists from 10 countries of Central and Western Africa. The course facilitators were mainly from the project team.

In brief, the course covers :

- Importance and role of AnGR for sustainable agriculture in developing countries.
- Characterization of indigenous AnGR and design of sustainable breeding programs.
- Methods for genetic analyses.
- Computer exercises and searches in databases.
- Field visits.
- Critical review of structure and content of training resources being developed by project.
- Teaching methods and communication.

What makes the course unique is the combination of animal breeding topics *and* how these can best be handled in university teaching. A number of teaching methods are practised during the course; the approach is interactive, leaving many opportunities for discussion and exchange of ideas and experiences. Computer labs and information searches play an important role, as well as project work on the sustainable use of indigenous animal genetic resources.



AnGR Training Resources available on CD-ROM. The lack of literature and course materials on AnGR relevant to developing countries prompted the development of training resources for use by teachers/scientists, both in their teaching and in updating their own knowledge. Access to the Internet in many developing country universities is presently expensive and not very effective. Although web-enabled, the AnGR training resources being produced within the project will initially be produced on CD-ROM. The main contents of the AnGR training resource are listed in the circle. The case studies are produced jointly with NARS

scientists in different regions. Materials on the CD-ROM can be printed, and also copied to students if desired.

Follow-up workshops. Two to three years after the training course all participants will be given the opportunity to attend a follow-up workshop, to exchange experiences and discuss further impacts of the project.

SOME EXPERIENCES AND DIRECT IMPACT TO DATE

The *planning activities*, i.e. questionnaire, visits and workshop, have been crucial for establishing needs and for designing the course and training resources. The activities have created contacts and captured local knowledge. Country representatives have ownership of the project and increased willingness to support changes for improvement back home.

Main experiences and impacts from *courses, training resources and networking* (presently this includes only Sub-Saharan Africa) can be summarized as :

- The training course has so far been highly rated by participants; average scores for “overall impression” were 7.7 and 8.5 (scale 1-9) for the two African courses. Project work and presentations show that the participants’ awareness of AnGR subject areas and methods in teaching, research and information search improved during the course.
- Course participants have confirmed the need for both the training course and computerized training resources.
- Course participants emphasized that the AnGR training project will have a large impact both on their teaching and research, as well as for future collaboration within and between countries. They have also established a viable electronic network for African animal breeders, “*Afrib*”, open to all teachers/scientists interested in African AnGR.

CONCLUSION

It can be concluded that “training the trainers” is an effective form of AnGR capacity building due to the large numbers of university students reached by the teachers/scientists trained. Furthermore, linking universities between north and south, with a CGIAR institute playing both a facilitating and catalytic role is beneficial. The capacity building training project focuses on the sustainable use of animal genetic resources, but can be seen as a model for capacity building in developing countries that could be applied also in other disciplines.

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