

Training Course Technical Report

Integrated Crop-Livestock Production for Marginal and Favorable Ecosystems

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Amman, Jordan



Funded By

**Arab Fund for Economic and Social Development (AFESD)
Islamic Development Bank (IDB)**

In collaboration with

National Center for Agriculture Research and Extension (NCARE)

Conducted By

The International Center for Agriculture Research in the Dry Area (ICARDA)



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EXECUTIVE SUMMARY

Title of the training course

Strengthening Capacity Development in the framework of Agricultural Research for Development in Dry Areas

Partners

- Arab Fund for Economic and Social Development (<http://www.arabfund.org/>)
- Islamic Development Bank (<http://www.isdb-pilot.org/>)
- National Center for Agriculture Research and Extension (<http://www.ncare.gov.io/>)

Purpose

The main purpose of this course is to train participants in sustainable integrated livestock management in dryland production systems. Major topics addressed included rangeland ecology and rangeland grazing management, feed production and animal feeding, flock management and processing of animal products. The course covered theoretical and practical aspects of state of art knowledge and techniques within the aforementioned areas.

Specific objectives of the training course

Main specific objectives of the course are:

- To strengthen capacity in livestock research and extension in crop-rangeland-livestock production systems;
- To share and to learn about research activities and practical experiences of the trainees in their home countries;
- To strengthen research and development partnerships with NARS partners and establishment of a knowledge exchange platform.

Specific outputs

Seventeen (13 male, 4 female) professionally-trained NARS partners from Arab and IDB member countries with enhanced capacity on improving livestock production in crop-range-livestock systems by providing updated information on research and practical activities in the area of integrated crop-rangeland-livestock production systems management. Eleven participants from Algeria, Egypt, Iraq, Lebanon, Morocco, Oman, Palestine, Tunisia, Sudan (1), and Jordan (2) are funded by AFESD, one Sudanese funded by the Sudan contribution to the CGIAR, and the other five participants from Iran, Mauritania, Tajikistan, Uzbekistan, and Pakistan are sponsored by IDB.

GENERAL OVERVIEW

One distinctive feature of dryland livelihoods systems is the key role of livestock in securing household income and asset security and alleviating rural poverty. Sheep and goat production is an integral part of crop-rangeland-livestock farming in the dry regions of the Near East, North Africa, Central Asia and South Asia. They are the primary form of savings, as living assets for the poor, and their products are an important source of income for rural women, who rank among the poorest livestock keepers. Over the last three decades, there has been significant increases in both the small ruminant population and production in drylands. This in turn has caused unrelenting pressure on natural resources, primarily on rangelands that are gradually giving way to desertification. With the gloomy predictions of high population growth in these developing countries, it is likely that constraints on both the land and food supply will become increasingly evident in both the mixed crop/livestock and grazing systems. In addition, projected increases in the demand for livestock products in these countries presents significant opportunities for poor livestock keepers to increase incomes and build assets to improve their livelihoods. However, the animal feed deficit is already widespread and prevents resource poor livestock keepers from taking advantage of the growing market for animal products that would improve their livelihoods. The proposed intensive training course will enhance the national and regional capacity to appropriately address the constraints of this sector in national agricultural development programs.

TOPICS

The main purpose of this course is to train participants in sustainable integrated livestock management in dryland production systems. Major topics addressed include rangeland ecology and rangeland grazing management, feed production and animal feeding, flock management and processing of animal products. The course covers theoretical and practical aspects of state of art knowledge and techniques.

TARGET AUDIENCE

The course is set to target 17 mid-level researchers and extension staff in the national animal husbandry and veterinary services, forage production and rangeland improvement mainly from Arab and IDB member countries (please refer to Annex III). Globally, the course targets specialists working in integrated rangeland-crop-livestock production systems in arid lands.

ORGANIZING COMMITTEE

Mr. Charles Kleinermann, Head, ICARDA Capacity Development Unit (CDU)

Dr. Mourad Rekik, Small Ruminant Production Scientist, ICARDA SIRPS scientific course coordinator

Mr. Masafumi Tamura, Technical Training Officer, ICARDA CDU

COURSE STRUCTURE

The course accounts for a total of about 60 theoretical and practical hours spread over two weeks. It is organized into six different modules and a large share be dedicated to practical demonstrations and field applications: 1. Module 1: Rangelands/Rangelands inventory, monitoring and assessment and grazing management (Week I) 2. Module 2: Feed crops/Promising drought tolerant feed crops in drylands (Week I) 3. Module 4: Nutrition and feeding/feeding system optimization and feed quality improvement techniques (Week II). 4. Module 5: Genetic improvement/ sheep and goat genetic improvement, data recording, management and analysis (Week II). 5. Module 6: Management/ smart management interventions integrating feed, health and reproduction (Week II) 6. Module 7: Value addition/ processing of animal products (Week II).

COURSE IMPLEMENTATION

The course implementation and program is summarized in the course agenda (please refer to Annex I). The course progressed according to schedule with no major changes to be mentioned. A high level of commitment and presence was shown by the trainees throughout the theoretical and the practical parts of the course.

The course started with a presentation by Dr. Mourad Rekik on the expected goals to be achieved during the two-week program by the trainees. Dr. Mounir Louhaichi gave the first session on the description of



rangeland types, range plant eco-physiology, and rangeland ecology. This was followed by Dr. Azaiez O. Belgacem to introduce grazing management. In the afternoon, Dr. Belgacem continued to deliver the lecture elaborating on grazing management (rangeland vegetation sampling and measuring techniques) followed by Dr. Kathryn Clifton on rangeland ecosystem services.

On the second day, Dr. Louhaichi presented a lecture on applications of technology for rangeland monitoring and assessment and this was followed by sessions by Dr. Belgacem who provided insights into different aspects of grazing management. Dr. Louhaichi and Dr. Belgacem shared ICARDA experiences on reclamation methods and techniques which was followed by interactive sessions where participants learned from each other's experience of rangeland restoration and rehabilitation.

On the third day, the trainees were taken for a field visit to the Muchaqqar Station and Majidya site.

On the fourth day, Ms. Sawsan Hassan started with a session to introduce dryland forage production and explained dryland the role of pasture and forage legumes as part of rangeland management and methods for forage evaluation followed by Dr. Jane Wamatu providing a lecture on feeding system optimization and feed assessment tools.

On the fifth day, Dr. Wamatu offered additional insights on feed assessment tools and alternative feed resources. Ms. Hassan concluded with a session on dryland forage production to explain principles of forage experiments.



On the sixth day, Dr. Muhi El-Dine Hilali gave a lecture on how to add value to animal products. In the afternoon, half of the trainees attended a practical session in Muchaggar Research Station. The remaining trainees listened to a lecture by Dr. Rekik on sheep and goat management constraints in low input system and fertility management packages in sheep and goats.

On the seventh day, the group was switched and the other group did the practical session at the station with Dr. Hilali and the rest of trainees stayed for the lecture by Dr. Rekik. In the afternoon, a session was given on sensory evaluation of dairy products by Dr. Hilali and Dr. Rekik provided a lecture on synchronizing feeding inputs and reproductive rhythms.



On the eighth day, a session was delivered by Dr. Aynalem Haile on phenotypic characterization, breed descriptions, breeding objectives and selection criteria. This was followed by Dr. Rekik providing an introduction to reproductive technologies to support delivery. In the afternoon Dr. Haile illustrated concepts and organization of community-based breeding programs.

On the ninth day, the trainees visited Khanassry sheep improvement station in Irbid to learn about morphometric measurements, data recording, and editing and storage reproductive biotechnologies.



The last day of the training started with a case study of sheep and goat genetic resources management from the participating countries and was followed by a certificate award ceremony

and feedback from the trainees on their experience and suggestions on how to improve the courses.

GENERAL COURSE EVALUATION BY TRAINEES

At the end of the training course, each participant provided feedback on their perception of the effectiveness of the training process, format and content. Most participants qualified it as excellent or very good, and the average score of each criterion range from 4.0 to 4.6 pts/5.0 pts, which indicates a high level of participants' satisfaction (Please refer to Annex IV).

CONCLUSION

The course was successful in reaching its specific objectives and much appreciation was expressed by the participating trainees. The course was a forum for very fruitful and constructive discussions and was enriched by the different country cases that were presented by the participating trainees. The course, has already created a network of knowledge sharing between the trainees which will be supported by the ICARDA scientists to ensure continuity.