ICARDA’s Rangeland Ecology and Management Research Strategy for Nontropical Dry Areas

By Mounir Louhaichi

The International Center for Agricultural Research in the Dry Areas (ICARDA), established in 1977, is one of the 15 centers supported by the Consultative Group on International Agricultural Research (CGIAR), which is a strategic alliance of countries, international and regional organizations, and private foundations. The CGIAR grew out of the international response to widespread concern that many developing countries would succumb to hunger. Its main objectives are to reduce poverty and hunger, improve human health and nutrition, and enhance ecosystem resilience through high-quality international agricultural research, partnership, and leadership through generation of global public goods. The technologies and knowledge developed over the last four decades by CGIAR-supported centers and their partners have delivered significant gains in terms of reduced hunger and improved incomes for smallholder farmers across much of the developing world. They have also contributed to sustainable management and conservation of natural resources, thereby protecting millions of hectares of forest and grasslands, safeguarding biodiversity, and preventing land degradation.1

In particular, ICARDA’s mission is to contribute to the improvement of livelihoods of the resource-poor in dry areas by enhancing food security and alleviating poverty through research and partnerships to achieve sustainable increases in agricultural productivity and income, while ensuring the efficient and more equitable use and conservation of natural resources.2 ICARDA has a global mandate for the improvement of barley, lentil, and faba bean and serves to improve on-farm water use efficiency, rangeland ecology and management, and small-ruminant production in the nontropical dry areas of developing countries. ICARDA meets this challenge through research, training, and dissemination of information in partnership with the national, regional, and international agricultural research and development systems.2 This paper focuses on ICARDA’s research strategy for sustainable rangeland management in nontropical dry areas of developing countries. Rangelands in these areas represent by far the most widespread land use. For instance, in the Central and West Asia and North Africa (CWANA) region, they occupy more than 750 million hectares, translating to approximately 70% of the total land area.3,4 These complex landscapes and agro-ecological systems are influenced by geology and climate, as well as by current and historical management. They are the main source of livelihoods for the poorest and most marginal communities.5

Integrated range–livestock production systems have a high socioeconomic as well as cultural value due to the multiple roles these systems play as sources of subsistence, food security, income, capital reserves, and social status.6 More recently, with the increasing outcomes of global warming, there has been increasing attention to the role of rangelands as carbon sinks.7,8 However, rangeland area is decreasing as proved by measurements of the rangeland rain use efficiency coefficient; the capacity of rangelands to produce products and perform functions is declining and their biodiversity is threatened due to a combination of environmental and human-induced factors.9,10 Worldwide, rangeland research has undergone considerable change and continues to evolve, exploring new approaches (use of satellite imagery, geographical information systems [GIS], social studies) to understand how rangelands systems function and how they might be better managed. Security of land tenure, community participation, and empowering legitimate community institutions are vital for the sustainable use of rangeland ecosystems.11

Review of Past Strategy

Rangelands are by far the most widespread land use in CWANA arid and semi-arid zones, and are home to most of the region’s poorest inhabitants. These are the lands that are too rocky and too sloppy, often have too-shallow soils, and...