Research on cool season food legumes at the International Center for Agricultural Research in the Dry Areas (ICARDA)

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Abstract

ICARDA was established in 1977 to undertake research and training relevant to the needs of developing countries and specifically of the rainfed agricultural systems in areas of limited winter rainfall in West Asia and North Africa. It is designated as a world center devoted to the improvement of barley, lentil and faba bean crops and, together with CIMMYT and ICRISAT, it has a regional responsibility for bread and durum wheat, triticale and chickpea crop improvement. Research and training activities on lentil, faba bean and kabuli chickpea are concentrated at ICARDA’s principal research station at Tel Hadya, north Syria, and undertaken by the Food Legume Improvement Program (FLIP), one of the four major research programs of the Center.

The large genetic diversity available at ICARDA includes about 3200 accessions of faba bean populations and 5000 of pure lines, 6000 accessions of lentil and 5990 of kabuli chickpea. This germplasm is being used by FLIP to develop genotypes with improved productivity and more stable yields. Breeding efforts are accompanied by intensive research on major diseases and pests, and on the development of production agronomy designed to improve crop productivity through more efficient use of water, and better symbiotic nitrogen fixation and weed control. The improved genotypes and production practices are passed on to national programs for evaluation under local farming situations through a network of International Testing Programs. The intent is to hasten the transfer of technology to farmers in order to increase total food production and to improve the dietary intake of proteins; to increase rural income; and to make the cropping systems of the region less dependent on nitrogen fertilizer. This strategy has benefited several national programs through the identification of improved genotypes and appropriate production practices for local farmers.

Introduction

The International Center for Agricultural Research in the Dry Areas (ICARDA) is the youngest of the agricultural research centers established...
under the auspices of the Consultative Group on International Agricultural Research (CGIAR). The CGIAR worked closely with the International Development Research Center (see pp. 17–24, this Volume) so that the new Center could take over and build on the crop improvement programs of a predecessor organization based in Lebanon — the Arid Lands Agricultural Development (ALAD) program. The Center was formally established in 1977 to undertake research and training activities relevant to the needs of developing countries and, specifically, to the rainfed agricultural systems in those areas where limited rainfall is primarily received in winter (CGIAR, 1976). A large proportion of agriculture in West Asia and North Africa is practiced in such environments, and so that region (which extends from Pakistan in the East to Morocco in the West, and from Turkey in the North to Sudan and Ethiopia in the South) became the one of primary concern to ICARDA.

Objectives, organization and research strategy of ICARDA

Objectives

The overall objective of the Center is to contribute towards increased agricultural productivity, thereby also increasing the availability of food and so improving the economic and social well-being of people. More specifically, there are five principal objectives:

(a) to serve as an international center for research devoted to the improvement of barley (Hordeum vulgare), lentil (Lens culinaris), faba bean (Vicia faba) and any other crops as may be assigned to it by the CGIAR;

(b) to serve as a regional center, in cooperation with other agricultural research centers, for the improvement of other crops of significant importance to the region — such as bread and durum wheat (Triticum spp.), triticale and chickpea (Cicer arietinum);

(c) to develop improved systems of cropping, farming and livestock husbandry;

(d) to collaborate with and encourage the development of a research and communication network of scientists in various national, regional and international institutions in order to promote the testing, demonstration and adoption of improved crops, farming, and livestock systems; and

(e) to conduct and foster training in research.

Organization and research strategy

ICARDA’s research efforts have to focus on a wide range of agricultural environments. The region includes low elevation (up to 1000 m) littoral areas having a Mediterranean-type climate with cool, moist winters, and hot, dry summers, with an annual precipitation which ranges from 200 to 600 mm. It