RUNNING TITLE: IDRC Support for Food Legume Research

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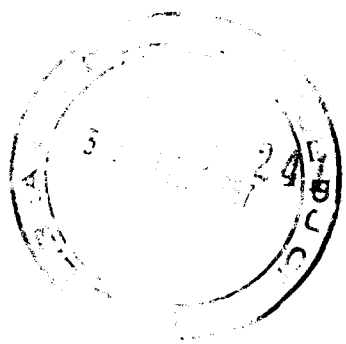

IDRC SUPPORT FOR TEMPERATE FOOD LEGUME RESEARCH IN ASIA AND NORTH AFRICA

by

G.C. Hawtin and G.R. Potts

SUMMARY

The International Development Research Centre (IDRC) was created by the Parliament of Canada in 1970 to encourage and support scientific research for the benefit of developing countries. Since 1973 IDRC has supported a network of 27 projects on temperate food legumes in western and southern Asia and northern Africa. Grants have totalled more than $14 m. Canadian. The international centres, especially ICARDA, continue to play a key role in this network. However, as the national programmes become stronger, they are increasingly able to take on a more active role in technology generation and research coordination. Many promising new cultivars and technologies have been developed. Extra attention is now needed to ensure these meet the needs of, and reach, their intended primary beneficiaries, the resource-poor pulse producers of the developing world.

1. INTRODUCTION

The International Development Research Centre (IDRC) is a corporation created by the Parliament of Canada in 1970 to stimulate and support scientific and technical research by developing countries for their own benefit. The Centre's activity is concentrated in five sectors: agriculture, food and nutrition sciences; health sciences; information sciences; social sciences; and communications. In addition there is a fellowships and awards division responsible for training, and a cooperative program division responsible for supporting collaborative research between Third World and Canadian scientists. IDRC's headquarters are in Ottawa and regional offices are located in Colombia, Senegal, Kenya, Egypt, India, and Singapore. The main division responsible for supporting research on the temperate pulses is the Agriculture, Food and Nutrition Sciences (AFNS) division, but both the Information Sciences and Communications divisions have also been active in promoting the exchange of information on these crops.

2. AGRICULTURE, FOOD AND NUTRITION SCIENCES DIVISION

Three-quarters of the population of the developing countries live in rural areas. These people are usually the last to benefit from the advances of science and technology and it is to the improvement of the quality of their lives that most AFNS projects are directed. Priority is given to research aimed at increasing food production in the poorest countries, with a special emphasis on those commodities which are important in the diets of the rural communities yet are neglected by researchers.

The major portion of the funds are allocated to support research in national programmes by local scientists; the strengthening of national institutions being an important subsidiary objective of IDRC. Support is given

to regional and international agricultural research centres when their activities are linked to, and complement, research at the national level. These centres play a vital role in backstopping the national programmes through research, encouraging the exchange of germplasm and scientific information, in coordinating research internationally and through training.

In order to avoid a wide and disparate scatter of projects, the AFNS division concentrates in a few major areas. Groups of related projects are supported with mechanisms for linking the various scientists involved in the different national and international research centres into informal, or formal networks. The cluster of projects on temperate pulses in north Africa and west Asia provides a good example of the AFNS division's approach to research support.

3. SUPPORT FOR PULSE RESEARCH

Recognizing the agronomic and dietary importance of pulses, research on these crops worldwide has received a high priority by IDRC. Until the early 1970s research was largely neglected in most developing countries. IDRC support has contributed to an increasing awareness of the need for research, and to the strengthening of several national pulse research programmes to the level where today pulses can no longer be regarded as neglected, even though the problems are far from solved and there remains much to be done. In addition to the projects on temperate pulses, described below, IDRC has supported clusters of national and regional research projects on cowpeas in west Africa, groundnuts in eastern and southern Africa, and on warm season pulses (mung bean, soya bean, cowpea) in south and south-east Asia.

Support for research on temperate pulses has concentratged almost exclusively on chickpea (Cicer arietinum), lentil (Lens culinaris) and faba bean

(Vicia faba), although others such as pea (Pisum sativum) and grass pea (Lathyrus sativus) have received attention in projects in certain national programmes (e.g. pea in Algeria and Burundi, grass pea in Bangladesh and Nepal). In the Andean region of Latin America research on faba bean has been a small component of several research projects aimed at the improvement of traditional Andean crops.

4. TEMPERATE PULSE RESEARCH IN ASIA AND NORTH AFRICA

IDRC has provided grants through 27 projects for research on temperate pulses in thirteen countries. Total funding has exceeded Canadian $14 million, (Table 1). Detailed reports on many of these will be given in other papers and only a general overview of IDRC support will be given here.

The first grants were provided in 1973 for a regional project with the Arid Lands Agricultural Development (ALAD) Program of Ford Foundation based in Lebanon, and for core support of the grain legume programme at the International Crops Research Institute for the Semi Arid Tropics (ICRISAT) in India. When ALAD became the International Center for Agricultural Research in the Dry Areas (ICARDA) in 1977, IDRC was appointed by the Consultative Group on International Agricultural Research (CGIAR) to be the implementing agency responsible for its establishment. Partial core support for ICARDA's food legume programme has continued since then with funds originally being allocated for research at the headquarters in Aleppo, Syria and later for the outreach programme in North Africa for Tunisia, Algeria and Morocco.

In parallel with this support, IDRC has provided grants to many of the national programmes in the region to help strengthen them and to enable them to interact effectively with the International Centres. Through these grants funds have been provided for the purchase of equipment and supplies, local travel, international travel to attend meetings, etc., publications, consultancies, and

training. Training has involved both postgraduate degrees, and short term training, primarily for junior scientists and technicians to attend courses at ICARDA and ICRISAT.

The first national programme grant to be provided by IDRC was in 1974, when a project was initiated by the government of Algeria. This was followed by grants to Egypt, Sudan, Bangladesh, Turkey, Jordan, Pakistan and most recently Nepal (Table 1). A pattern has been followed in developing these projects. In most cases the national programmes were comparatively weak when the projects were first established, and as a result broad-based programme support was provided with the primary objective of strengthening the institutions concerned. An important output in the early years of these projects has been the identification of major production constraints. Over time it has proved possible to more narrowly focus the research on those problems offering the best opportunity for making a significant impact on productivity at the farm level. With the development of promising new technologies by the International Centres and national programmes, IDRC's funds have increasingly been targeted to support research aimed at evaluating these technologies, and adapting them to farmers' conditions. Support for on-farm research in which the farmers and often the extension services, are intimately involved in the research process, now receives a high priority.

In addition to this more broadly-based programme support, IDRC has provided a number of grants for research on specific problems. In 1974 a grant was given to the American University of Beirut in Lebanon for research on the uses and processing of food legumes, and similar research has been supported at the University of Alexandria in Egypt on faba bean. The processing and storage of pulses has also been addressed through two projects in Bangladesh. Research

on Orobanche, a parasitic weed which can be devastating in many Mediterranean countries, has also been supported in Egypt, Syria, and Lebanon.

The cost of hand harvesting pulses, especially lentil, has come to be recognized as a major production constraint in many countries of West Asia and North Africa. Mechanical harvesting systems used elsewhere, for example in North America, have proved of limited applicability. In response to this, IDRC has supported two projects aimed at finding economic and acceptable solutions; one in Jordan, as a component of a broader project on food legumes, and a regional effort based at ICARDA.

In addition to providing funds to national and international programmes, IDRC has supported four research projects in Canada which enable Canadian expertise to contribute to finding solutions to problems of importance in the Asia and North Africa region. These are funded under IDRC's cooperative programme and all involve scientists at the University of Manitoba in Winnipeg. A project on faba bean disease resistance was started in 1980, and subsequently projects were supported on carriers for chickpea rhizobia, dihaploid production in lentil and pollination control systems in faba bean.

Another area in which IDRC has been active is in information sciences. A grant was provided to ICARDA in 1981 to support the FABIS information service on faba bean. Separate funds were also provided to the University of Saskatchewan and ICARDA to expand the activities of the Lentil Experimental News Service (LENS), originally established by the University of Saskatchewan in 1974. In addition to the FABIS and LENS Newsletters, these information services provide reprints of literature, specialized publications and, together with the Commonwealth Agricultural Bureaux, publish the Faba Bean and Lentil Abstracts journals.

IDRC has also provided support for other specific activities including the publication of regional workshop proceedings, individual grants for postgraduate training, travel funds for scientists to attend workshops and conferences, and a workshop bringing together agronomists and economists in conjunction with the ICARDA/IFAD Nile Valley Project on faba bean.

5. FUTURE SUPPORT FOR TEMPERATE PULSE RESEARCH

Over the past thirteen years or so, an impressive network of international and national programmes has been built up in the Asia and North Africa region. This network has also broadened internationally and now includes many programmes in other developing and developed countries. Although this paper has concentrated on the activities supported by IDRC, the bulk of funding has come from the national governments of the countries involved. Many other donor organizations have also provided funds for the International and National research centres and for research at institutions in developed countries linked to the network. FAO has also been active, especially in the early years, in supporting pulse research in the region.

The network today comprises national programmes, linked to the International Centres, which in turn are back-stopped by advanced research institutions (Fig. 1). The research output of this system has been impressive, and solutions to many of the main production constraints are now in sight. However few innovations have yet reached the farmers and in future IDRC will increasingly focus its support on helping to develop the linkages between national agricultural research systems, the extension services and the farmers they seek to serve.

Other linkages within the network will also receive greater attention in the future. While recognizing the key role of the International Centres in the

generation of genetic materials and other new technologies, and in research coordination, their role is seen as an evolving one. As the national programmes become stronger, they are increasingly taking on more active roles in technology generation. Activities which were once a major domain of the International Centres can increasingly be assumed by the stronger national programmes. The International Centres, in turn, will then be able to concentrate their resources on those activities for which they have a continuing comparative advantage. As this network evolves, direct links between national programmes are expected to become increasingly important, as will direct links between national programmes and advanced institutions in developed countries.

An excellent start has been made, and IDRC intends to continue to provide support and encouragement to the various elements and linkages within this network, and to support efforts designed to ensure that the results of the research reach the intended primary beneficiaries, the resource-poor farmers of Asia and North Africa.

TABLE 1

Main IDRC supported projects on temperate pulses

Country/ Centre	Project Title	IDRC Division (program)*	Main Focus	Dates and total grant (Canadian $)
Algeria	Triticale/ Grain Legumes	AFNS (CAPS)	breeding & agronomy; chickpea, lentil, faba bean, pea, triticale	1974-81 $380,100
Bangladesh	Grain Legumes	AFNS (CAPS)	breeding & agronomy; grasspea, lentil, chickpea, & warm season pulses	1978-87 $891,200
Bangladesh	Legume Processing	AFNS (PPS)	food legume dehulling	1981-86 $123,500
Bangladesh	Legumes Post-Harvest Technology	AFNS (PPS)	on-farm drying and storage systems	1981-85 $187,400
Burundi	Maize and Pea Improvement	AFNS (CAPS)	breeding & agronomy; pea and maize	1979-87 $1,121,440
Canada (U. of Manitoba)/ICARDA	Faba Bean Pathology	AFNS (CAPS-COOP)	resistance in faba bean to Ascochyta, Botrytis, Uromyces	1980-88 $956,086
Canada (U. of Manitoba)/ICARDA	Faba Bean Pollination	AFNS (CAPS-COOP)	pollination control methods in faba bean	1985-87 $ 99,000
Canada (U. of Manitoba)/ICARDA	Lentil Haploids	AFNS (CAPS-COOP)	methods for dihaploid production from anther culture in lentil	1985-87 $146,600
Canada (U. of Manitoba)/ICARDA	Rhizobial Carrier Systems	AFNS (CAPS-COOP)	methods for production, maintenance and application of chickpea rhizobia	1982-86 $185,000
Egypt	Food Legume Improvement	AFNS (CAPS)	breeding & agronomy; faba bean, lentil, chickpea	1977-84 $555,000
Egypt	Orobanche	AFNS (CAPS)	control methods for Orobanche in faba bean	1977-80 $ 45,000

TABLE 1 (continued)

Main IDRC supported projects on temperate pulses

Country/ Centre	Project Title	IDRC Division (program)*	Main Focus	Dates and total grant (Canadian $)
Egypt	Faba Beans	AFNS (PPS)	factors affecting cooking quality and screening methods; faba bean	1978-84 $265,300
Egypt	Faba Bean Processing	AFNS (PPS)	uses and consumer requirements of faba bean	1985-86 $ 46,000
Jordan	Lentil & Chickpea Improvement and Mechanization	AFNS (CAPS)	breeding & agronomy; lentil and chickpea. Mechanization of lentil harvesting	1980-87 $574,600
Lebanon	Food from Grains	AFNS (PPS)	improved technologies for processing lentil, chickpea and faba bean	1974-81 $127,200
Nepal	Grain Legumes	AFNS (CAPS)	breeding & agronomy; lentil, chickpea, lathyrus, and warm season pulses	1985-87 $280,400
Pakistan	Food Legumes	AFNS (CAPS)	breeding & agronomy; lentil, chickpea & warm season pulses	1980-88 $711,700
Sudan	Food Legume Improvement	AFNS (CAPS)	breeding & agronomy; faba bean, lentil, dry bean	1978-88 $475,400
Turkey	Food Legumes	AFNS (CAPS)	breeding & agronomy; lentil, chickpea, bean, pea	1979-88 $453,700
Arid Lands Agricultural Development Program (Lebanon)	Sorghum, Millet and Food Legumes	AFNS (CAPS)	regional program on breeding, agronomy & training; faba bean, chickpea, lentil, sorghum and millet. West Asia & North Africa region	1973-77 $1,280,300
ICARDA (Syria)	Grain Legumes	AFNS (CAPS)	partial core support for ICARDA food legume program; global, but primary focus West Asia & North Africa	1977-83 $2,942,850

TABLE 1 (continued)

Main IDRC supported projects on temperate pulses

Country/ Centre	Project Title	IDRC Division (program)*	Main Focus	Dates and total grant (Canadian $)
ICARDA	Orobanche	AFNS (CAPS)	Orobanche control through synthetic stimulants; breeding & cultural practices; Syria, Lebanon & Egypt	1974-81 $192,012
ICARDA	Food Legumes in North Africa	AFNS (CAPS)	partial support for ICARDA and national programmes in Tunisia, Algeria and Morocco; faba bean, lentil and chickpea	1984-87 $599,300
ICARDA	Lentil Mechanization	AFNS (PPS)	lentil mechanical harvesting systems	1985-88 $226,900
ICARDA	Faba bean Information Service	IS (STI)	support for FABIS information service	1981-86 $486,150
ICARDA/ U. of Saskatchewan	Lentil News and Information Service	IS (STI-COOP)	support for LENS information service	1981-86 $ 97,000
ICRISAT	Grain Legumes	AFNS (CAPS)	partial core funding of ICRISAT grain legume program; global; chickpea & pigeonpea	1973-78 $595,800

* AFNS: Agriculture, Food and Nutrition Sciences division
CAPS: Crops and Animal Production Systems programme
PPS: Post Production Systems programme
COOP: Cooperative programme
IS: Information Sciences division
STI: Science and Technology Information programme

Fig. 1

IDRC Support for the Food Legume Research Network
in South and West Asia and North Africa