Food Legume Improvement and Development

Proceedings of a workshop held at The University of Aleppo, Syria, 2-7 May 1978

Geoffrey C. Hawtin and George J. Chancellor, Editors

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/IDRC publication/. Compilation of workshop papers on /legume/ /food production/ in the /Middle East/ and /North Africa/ — discusses agro/bioclimatology/ and /cultivation system/s, /nutrition/al value and /food composition/; /plant production/ (particularly of /chickpea/s, /lentil/s, and /faba bean/s), /agricultural research/, /cultivation practice/s for /plant protection/, /plant disease/s, /insect/ /pest/s, /disease resistance/, /weed control/ problems (use of /herbicide/s in /arid zone/s); /plant breeding/ and /genetic improvement/. /IDRC mentioned/, /list of participants/.

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The Food Legume Improvement and Development Program of the Field Crops Section at ACSAD

L. R. Morsi

The Arab Center for Studies of the Arid Zones and Dry Lands (ACSAD), Douma, Damascus, Syria

Wheat, barley, sorghum, lentil, chick-pea, and broad bean are the main food crops cultivated in the arid and semi-arid areas, and are considered to be of vital importance as sources of nutrition in the countries of the Arab world. To increase the production of these crops horizontally is difficult, if not impossible, in many of these countries due to the severely limited amount of land that can be used for rainfed agriculture. Any increases in production must thus arise primarily through vertical expansion (i.e., increasing the yield per unit area). This may be achieved through a combination of crop development through breeding, and adaptation of high-yielding varieties to the conditions of the region; development of cultural methods and practices designed to conserve soil moisture and ensure its most efficient utilization by the crops; and evolution of production machinery and methods specifically designed for dryland agriculture.

To this end, the Field Crops Section of the Arab Center for Studies of the Arid Zones and Dry Lands (ACSAD) has been established to combine the efforts of specialists from the Arab countries and the available physical resources of the region into a program aimed at developing crops that will produce high and stable yields under the prevailing low and variable rainfall conditions of this part of the world.

Most of the fieldwork at ACSAD is carried out at Izra’a, in southern Syria, which has a Mediterranean-type climate with an average annual rainfall of 300 mm. The soils of this area tend to be of the terra rosa type.

The Food Legumes Research Program

This program, which was initiated in 1977, focuses on the improvement of the three major food legumes of the region, namely, lentils, chick-peas and broad beans. Research will initially be directed toward the development of improved varieties and production practices specifically suited to the drought region of the Arab world, through an interdisciplinary approach involving breeding, physiology, agronomy, weed control, mechanization, microbiology, and seed quality. It is planned to commence a regional nursery program, distributing screening/observation nurseries, field trials, and segregating populations to cooperators in Arab countries in 1979.

Work on food legumes during the 1978 season involved the testing of segregating populations, observation lines, yield trials, and other specific nurseries received from a number of different sources in the region.

Segregating Populations

A collection of populations from various sources is at present being studied to identify germ plasm that may be of value for crop production under dryland conditions. Some crosses between promising lines are planned for the 1978–79 season.

Observation Lines

Since the 1975–76 season, observation lines have been maintained for the three main legume crops. These lines are a composite of a number of local selections together with
material received from regional and international nurseries. Lines planted at Izra’a in the current season include:

<table>
<thead>
<tr>
<th>Nursery/Marriage Nursery</th>
<th>No. entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Lentil Regional Nursery (LRN-78)</td>
<td>91</td>
</tr>
<tr>
<td>The Chick-pea Regional Nursery (CRN-78)</td>
<td>91</td>
</tr>
<tr>
<td>The International Chick-pea Observation Nursery</td>
<td>100</td>
</tr>
<tr>
<td>The Broad bean Regional Nursery (BRN-78)</td>
<td>76</td>
</tr>
<tr>
<td>The Arabian Broad bean Observation Nursery</td>
<td>120</td>
</tr>
<tr>
<td>The Arabian Chick-pea Observation Nursery</td>
<td>150</td>
</tr>
<tr>
<td>The Arabian Lentil Observation Nursery</td>
<td>180</td>
</tr>
</tbody>
</table>

**Variety Yield Trials**

Six of these trials were planted during the 1977–78 season. These were:

<table>
<thead>
<tr>
<th>Trial</th>
<th>No. entries</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Lentil Regional Preliminary Yield Trial (LRPYT-78)</td>
<td>36</td>
</tr>
<tr>
<td>The Lentil Advanced Yield Trial (LAYT)</td>
<td>36</td>
</tr>
<tr>
<td>The Chick-pea Regional Preliminary Yield Trial (CRPYT-78)</td>
<td>36</td>
</tr>
<tr>
<td>The Broad bean Regional Preliminary Yield Trial (BRPYT-78) (large-seeded)</td>
<td>21</td>
</tr>
<tr>
<td>The Broad bean Regional Preliminary Yield Trial (BRPYT-78) (small-seeded)</td>
<td>25</td>
</tr>
<tr>
<td>The International Chick-pea Cooperative Trial</td>
<td>25</td>
</tr>
</tbody>
</table>

As the legume research work at ACSAD expands in the coming years, it is looking forward to increasing and fruitful cooperation with other research programs and international agencies. In this way all the related agricultural research in the region can work together toward the common goal of increasing agricultural productivity, especially in the more marginal areas of the region.