

Figure 2. Chickpea pod setting was excellent in Tanzania in 1994.

Maize and chickpea are sown at the same time. Occasionally, the two crops are mixed. During the 1994 season, rainfall was scanty. Under those limited soil-moisture conditions, the maize crop experienced severe drought and often failed, whereas the chickpea grew satisfactorily (Fig. 3). This indicates a role for chickpea under those situations.

Some farmers in Tanzania indicated that they had problems in selling their produce. Most said that they consume chickpea at home, and sold the surplus in the market. Kenya is the main buyer of chickpea from Tanzania.

During the mission, 87 samples of chickpea landraces were collected and shared between the participating institutes. The seeds of these materials can be obtained from GRD, ICRISAT Asia Center, or NPGRC, Arusha, Tanzania, for research use.

The mission was of the view that

- Chickpea grows very well in Tanzania, and there is a vast scope to expand the area under this crop
- Because the agriculture is largely rainfed, and the environment dry, incidence of disease and insects is minimal
- With some marginal improvement in cultural practices, the productivity of this crop can be further improved
- Chickpea also has good prospects in Arusha because the rains there are low and unevenly distributed
- Some initiatives to demonstrate the uses of chickpea will improve demand for consumption and its acceptance in Tanzania



Figure 3. A field sown with mixed crop of maize and chickpea near Arusha in Tanzania. Because of severe drought conditions, the maize failed but the chickpea produced a good crop.

Reference

FAO (Food and Agriculture Organization of the United Nations). 1993. Chickpea. Page 104 in FAO Production Yearbook for 1992. Rome, Italy: FAO.

Collecting Chickpea Germplasm in Northeastern Maharashtra, India

R P S Pundir¹ and M N Koppar² (1. ICRISAT Asia Center, 2. National Board of Plant Genetics Resources, Indian Agricultural Research Institute, New Delhi 110 012)

With the recent trend in high-input agriculture in India, the area under chickpea is gradually being replaced by crops such as wheat in north Indian states. However, because of its good price, chickpea is becoming more competitive in the central and southern Indian states, and Maharashtra is one of those states. In Maharashtra, the area under chickpea was 368 000 ha in 1970/71, 429 000 ha in 1980/81, and 672 000 ha in 1990/91 (India 1993), which indicates good prospects for this crop in the state. Though there are some chickpea accessions from Maharashtra in the world germplasm collection, the representation is low. As an arbitrary measure of geographic representation in the germplasm collection, while there are about 1.75 accessions 1000 ha⁻¹ of

chickpea worldwide, figure is 1.00 accession 1000-ha⁻¹ for India, and only 0.60 for Maharashtra.

The new chickpea cultivars released for cultivation in India over the last few years are expected to gradually replace local landraces. Local chickpea from northeastern Maharashtra was therefore collected to

- achieve a better representation of this state in the world chickpea germplasm
- salvage the threatened landraces
- record general agricultural practices, and the problems and prospects for chickpea cultivation in this state

The mission was accomplished jointly by the National Bureau of Plant Genetic Resources (NBPGR), New Delhi, and the ICRISAT Asia Center (IAC), Patancheru, from 27 Feb to 10 Mar 1994. The route followed is shown in Figure 1. The mission coincided with maturity of the chickpea crop, and germplasm samples were obtained from crops in the field.

The basis of securing germplasm sample was the apparent chickpea diversity in the fields. If the chickpea in two adjacent fields appeared to differ, both fields were sampled. Samples were drawn at an interval of five or

more km on the travel route. A germplasm sample was constituted by picking a few pods from each of about 100 randomly chosen plants at each site. An average sample consisted of 200 g seeds. One hundred and six chickpea samples were thus collected, and shared between NBPGR and IAC.

In Maharashtra, chickpea is sown on receding soil moisture after the preceding crop of maize, or soybean, or in the fallow fields by mid-Oct and harvested by Feb thus giving a crop of about 110–120 days. A considerable diversity was noticed among chickpeas in the state. In most cases typical desi chickpeas were grown; there were also plots with distinct types such as

- tuberculated seed type (*katila*): seed surface rough and heavily reticulated
- pink seed type (*gulabi*): stem is without anthocyanin, i.e., green stem with roundish, smooth seeds. This type is good for parching, a snack food popular in India

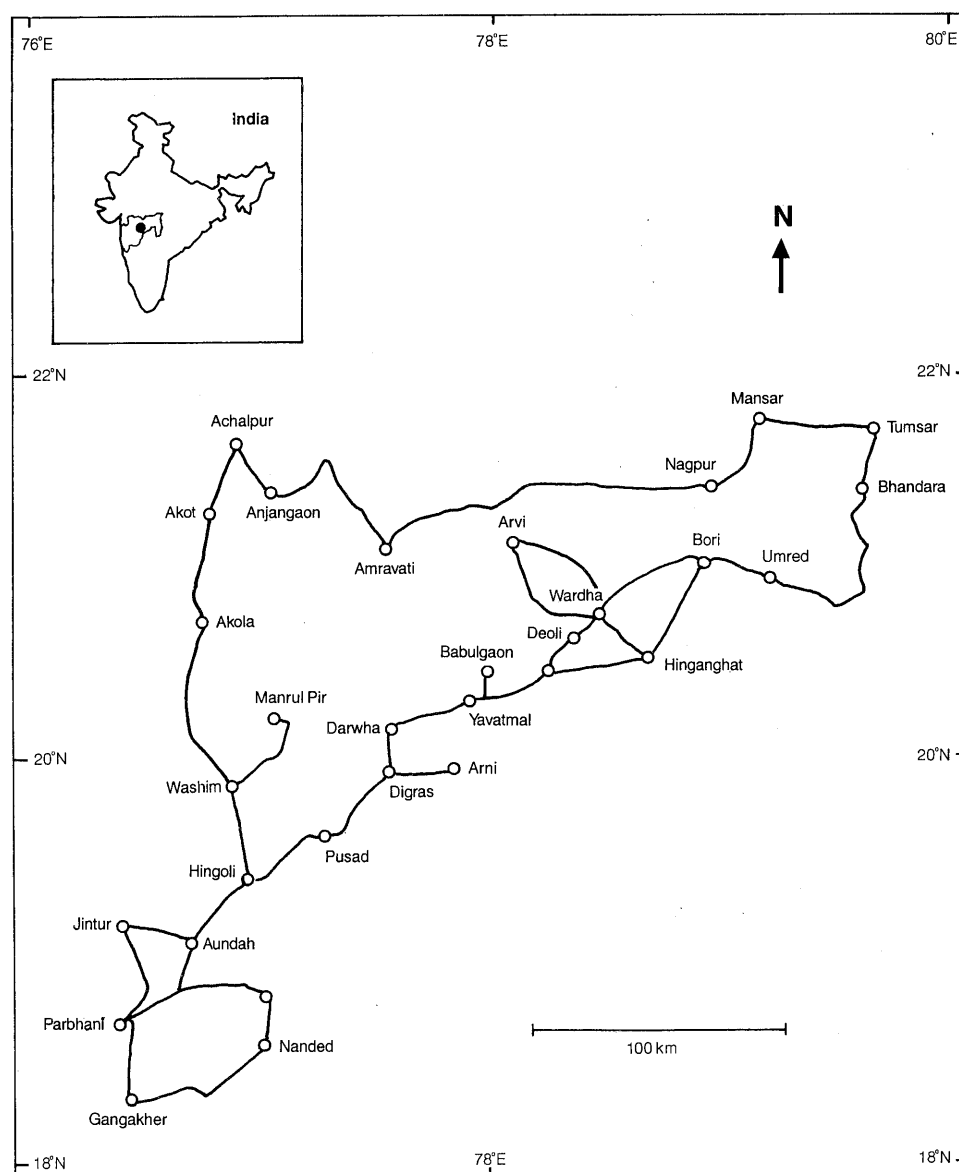


Figure 1. Route followed during chickpea germplasm collection mission in northeastern Maharashtra, India, 27 Feb–10 Mar 1994.

- twin-podded (*do ghanti*) that produce two pods per leaf axil⁻¹ in contrast to the normal one pod
- large-seeded desi (*thakkar*) with large brown seeds 30 g 100-seeds⁻¹, compared to the normal mass of 16 g 100-seeds⁻¹

Of the 106 seed samples collected, seed mass was 13–16 g 100-seeds⁻¹, (Fig. 2). Although rainfed crops

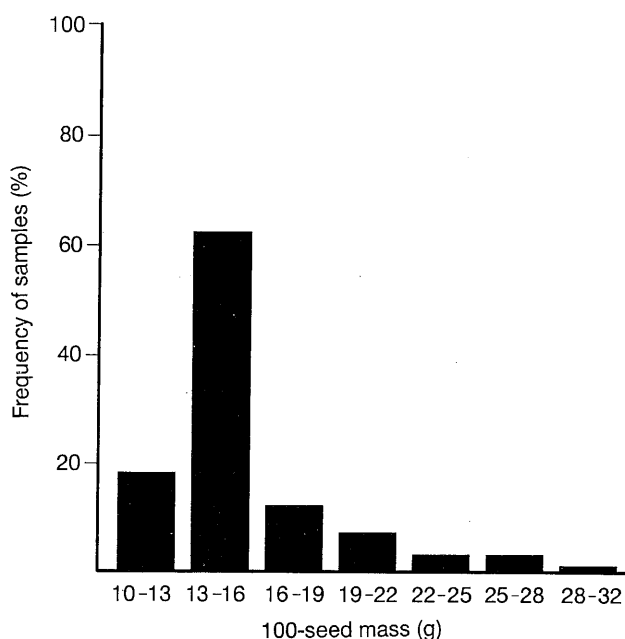


Figure 2. Variability of chickpea seed mass among the samples collected in Maharashtra.

were the most common, some fields received 2–3 irrigations and the chickpea crop there was excellent. Fusarium wilt, dry root rot, collar rot, and stunt were the major diseases. *Helicoverpa* pod borer also causes considerable damage.

Seeds of the germplasm collected can be obtained for research from the Genetic Resources Division of ICRISAT.

Reference

India: Ministry of Agriculture, Directorate of Economics and Statistics. 1993. Districtwise area and production of gram, 1990–91. Agricultural Situation in India. India: Ministry of Agriculture.

Breeding/Genetics

Vishal—A Bold-Seeded, Wilt-Resistant, High-Yielding Chickpea Variety for Western Maharashtra, India

R B Deshmukh, L B Mhase, R P Aher, N J Bendre, and T B Kolte (Pulses Improvement Project, Mahatma Phule Krishi Vidyapeeth, Rahuri 413 722, Ahmednagar, Maharashtra, India)

Chickpea is a major postrainy season pulse crop in Maharashtra, India. Fusarium wilt is the disease most commonly responsible for decline in yield levels. Also, wide seasonal fluctuations and poor adaptation of local cultivars result in a low average yield.

Breeding for disease and drought resistance is the most effective strategy to overcome these constraints. Mahatma Phule Krishi Vidyapeeth (MPKV), Rahuri, India, has developed a bold-seeded, wilt-resistant chickpea cultivar, Phule G 87207, named Vishal, to achieve a stable and high yield. Vishal was developed through pedigree selection from a cross, K 850 × ICCL 80074 which was originally received from ICRISAT. It was recommended for commercial cultivation in west-

Table 1. Mean yield performance of Vishal in State Multilocation and Coordinated Trials in Maharashtra and Central Zone, 1988/89–1994/95.

	Grain yield (kg ha ⁻¹)	
	Vishal	Phule G-5
State trials		
1988/89	2026 (1) ¹	1743
1989/90	2077 (2)	1517
1990/91	2058 (6)	1829
1991/92	2021 (8)	1771
1992/93	1931 (10)	1640
1994/95	2013 (8)	1742
Coordinated trials		
1991/92	2394 (6)	2088
1992/93	1628 (5)	1309
1993/94	1946 (7)	1757
Mean	2004 (53)	1729
% increase of Vishal over control		15.91

1. Figures in parentheses indicate number of test locations.