normal-leafed counterpart. The multipinnate "isoline" was also significantly (P <0.001) later in time to 50% flowering at Tamworth (Table 1), although the difference averaged only 1.1 days. Time to 50% flowering was not recorded at Breeza. At Tamworth, sowing time significantly affected differences between ICC 7526 and its multipinnate 'isoline' for 100-seed mass (P <0.05), percentage of erect stems (P <0.001) and time to 50% flowering (P<0.001).

Ideally, genetic evaluation of a character requires that the test genotypes vary only by the gene conditioning it. For these trials, the multipinnate composite and ICC 7526 were not strictly isogenic, the theoretical isogenicity being 98.4%. Notwithstanding this limitation, the high degree of genetic similarity, and the magnitude of the differences observed point strongly to an overriding effect of the multipinnate gene on the characters measured. Therefore, a provisional conclusion from this work is that the negative effects of the multipinnate gene on yield and lodging preclude its use in breeding programs. Further evaluation may, however, identify genetic backgrounds and/or environments conducive to a more favorable expression of the gene.

Reference

Pundir, R.P.S., Mengesha, M.H., and **Reddy, K.N.** 1990. Leaf types and their genetics in chickpea (*Cicer arietinum* L.). Euphytica 45:197–200.

Genetic Resources

Collection of Chickpea Germplasm in Myanmar

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Chickpea is the most important pulse crop in Myanmar cultivated over 255 000 ha (FAO 1988). However, since the local germplasm was not collected and conserved, a germplasm collection mission was organized in March 1990 jointly by the Agricultural Research Institute (ARI), Yezin, Myanmar, and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India. The major chickpea-growing areas of the country—Yangon, Pegu, Magwe, Mandalay, and Sagaing—were covered (Fig. 1), and 97 seed samples of

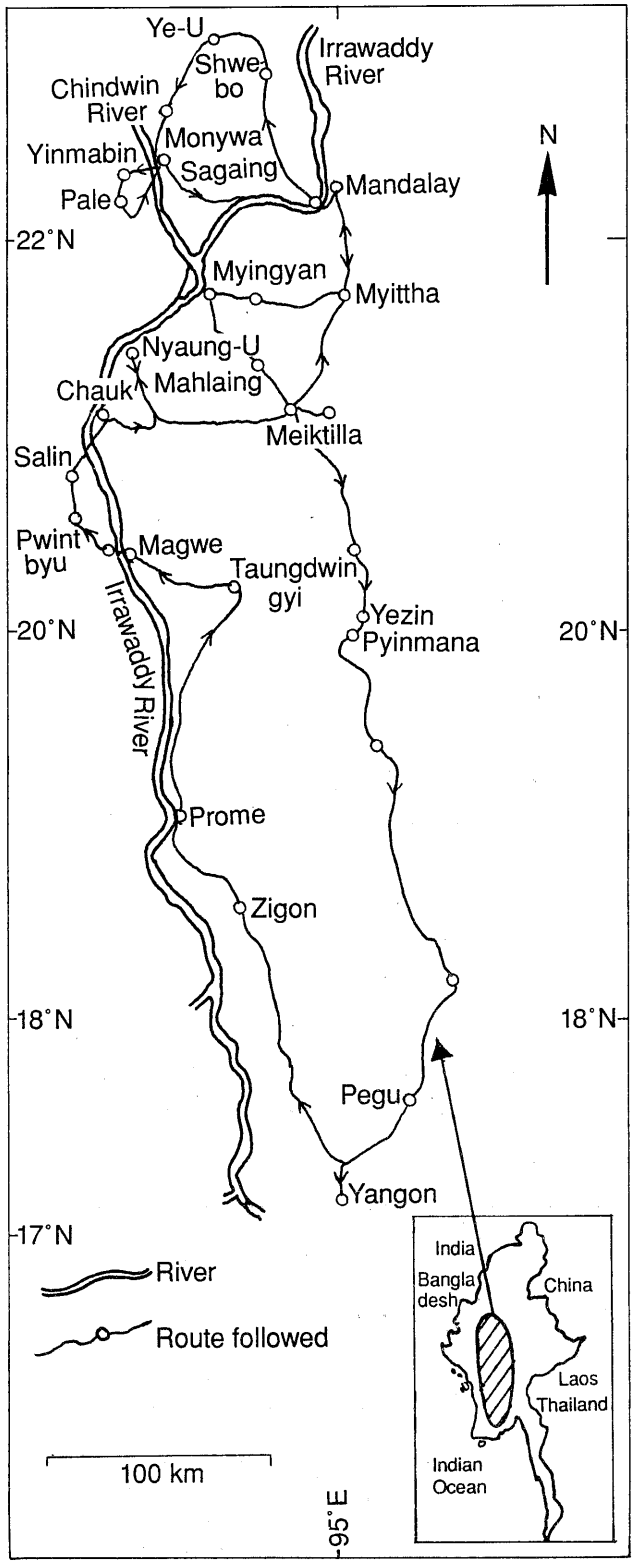

Figure 1. Route followed during the chickpea germplasm collection mission in Myanmar, March 1990.

chickpea, 2 of pigeonpea, and 3 of *Rhynchosia bracteata* (wild species related to pigeonpea) were collected. The seed samples were shared between ARI and ICRISAT.

In most cases, the mission time (8-25 Mar) coincided with the ripening stage of chickpea crops and germplasm samples were collected by picking a few pods each from about 100 random plants in a field. Samples were collected from the field presumably sown with local chickpeas and with a distance of at least 5 km between two sites unless chickpea plots with apparent diversity were noticed. Samples were collected from farm stocks when the crop had already been harvested. These samples will be evaluated for morphoagronomic traits and conserved for present and future utilization. The seeds can be obtained for research use from the Genetic Resources Unit, ICRISAT.

In general, chickpea is sown in rice fallows with minimal or no tillage operation (Fig. 2). Crop stand and vegetative growth were good. Soilborne diseases such as fusarium wilt and dry root rot, were widespread problems damaging up to 80% of the plants in some fields. In some areas which were relatively wet, excessive vegetative growth of chickpea was seen, that resulted in damages due to crop lodging and gray mold disease. Appreciable losses due to pod borer were noticed only in late-sown chickpea, particularly in irrigated areas.

Desi type chickpea which had typically yellow or brown seed was the most common. However, in some fields, kabuli types were also grown. The 100-seed mass of the samples collected showed a range of 9.9–36.1 g with a mean of 14.7 g. Seventy percent of the samples weighed between 11–16 g only. Many farmers named their chickpea landrace as 'Karachi' which was introduced in Myanmar during 1920. The presently available 'Karachi' cultivar is highly heterogenous within and between fields. Diversity for plant type was apparent and semispreading and semierect types were most common. In one field, a mixed population of twin-podded and single-podded plants were noticed though the proportion of first type was only about 5%.

Prospects of chickpea cultivation in Myanmar

- During 1964, the area under chickpea cultivation in Myanmar was 117 000 ha producing 500 kg ha^{-1}, whereas during 1988 the figures have increased to 255 000 ha and 943 kg ha^{-1} (FAO 1971, 1988). This indicates bright prospects for this crop in the country.
- For the acidic soil (5–6.5 pH) areas of Yangon and Pegu divisions, it is desirable to screen germplasm to identify lines which can do better in those conditions.

Figure 2. Chickpea grown in rice fallows with minimum tillage.

- Fusarium wilt and dry root rot of chickpea cause serious problems. Therefore, in order to identify suitable types, resistant varieties should be tested against the above diseases at various locations.
- Some instances of lodging and gray mold disease were seen. It is desirable to consider these constraints while identifying varieties for cultivation.
- Most of the chickpeas in Myanmar are cultivated on rice fallows, and hard clay soils, and in these soils presowing field preparation for chickpea is a difficult task. Therefore, a study of the cultural practices to get a higher yield in such environments would be desirable.
- Chickpea crop is also important because it improves soil fertility, allows diversification in the cropping system, and provides protein rich food. During the chickpea season, plenty of vacant land is available in many parts of Myanmar. It is hoped that with the introduction of improved cultivars and remunerative prices for the produce, the area under chickpea cultivation can be increased substantially.

References

FAO (Food and Agriculture Organization of the United Nations). 1971. FAO Production Year Book. Vols. 25:167.

FAO (Food and Agriculture Organization of the United Nations). 1988. FAO Production Year Book. Vol. 42:153.