

Iron Chlorosis in Chickpea

Symptoms of iron chlorosis are commonly seen in chickpeas grown on Vertisols as a yellowing of the younger leaves about 20 days after emergence. Pronounced genotypic differences have been noted and susceptible lines are easily identified. Although the symptoms may disappear after 10 to 15 days and plants recover from iron deficiency, iron chlorosis results in a substantial and significant reduction in yield; so breeders should avoid the use of susceptible lines as parents and eliminate susceptible progenies during evaluation. Since the symptoms disappear after early growth stages it is imperative to score when iron chlorosis is evident in the field.

During the 1980-81 crop season symptoms were first noted in experiments sown on 15 and 16 September. There were four trials, each having lines of different maturity - trial 1 (early maturity), trial 2 (medium maturity), trial 3 (mid-late maturity) and trial 4 (late maturity). Iron chlorosis symptoms appeared after 25 days and the

lines were scored visually on a 1 to 9 scale (1, no symptoms; 9, severe yellowing of leaves and stunting of growth). Scores were consistent across three replications in each group; each showed ranges of variation from 1 to 9. Lines with mean scores of 5 or more are listed in Table 1.

The proportion of susceptible lines increased progressively with duration. In trial 1, only three lines showed ratings greater than 5, trials 2 and 3 had four and seven lines, respectively, while in trial 4 there were eight lines. Late-maturing lines are slow in growth, and roots may be unable to tap iron available in lower zones. This remains to be tested. We are making crosses using highly susceptible and resistant lines to study the inheritance of susceptibility to iron chlorosis.

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Table 1. Germplasm lines showing iron chlorosis in early sown trials at Hyderabad, 1979-80.

ICC No.	Pedigree	Score ¹	Maturity group
11006	RPSP-397-1	5.6	Early
11010	RPSP-401	6.0	Early
11101	Pant G-121	7.3	Early
2223	P-1789	7.3	Medium
5184	GC-663	9.0	Medium
10550	RPSP-281	7.6	Medium
10911	RPSP-211-1	8.0	Medium
2209	P-1780	7.6	Mid-late
4598	P-6179	7.6	Mid-late
4580	P-6142-1	5.3	Mid-late
4667	P-6257	8.6	Mid-late
10558	RPSP-289	5.3	Mid-late
10563	RPSP-294	8.3	Mid-late
9918	RPSP-9	5.0	Mid-late
103	P-80	7.6	Late
1874	P-1503	7.6	Late
1875	P-1504	7.0	Late
2053	P-1655	5.6	Late
5146	F-300	5.6	Late
5140	F-235	6.6	Late
5386	NP-62	9.0	Late
693	P-542	6.0	Late

¹Means of three replications.

Effect of Salinity on the Seed Size and Germinability of Chickpea and Protein Content

Marked decreases were recorded in the seed size and protein content of chickpeas grown in a saline field (EC 0.6 to 3.4 and pH 7.85 to 8.25) in 1977-78. The mean protein percentage and weight of 100 seeds of 19 cultivars in saline fields was 12.0 and 13.7 g compared to 21.4 and 22.2 g of those grown in normal fields. Most of these lines showed poor emergence.

In 1979-80, on a different set of cultivars, we confirmed that seed protein content and size and germination are considerably reduced in saline conditions. Our studies also indicate that there are differences among cultivars for their tolerance to saline conditions and studies are in progress to identify tolerant cultivars for use in breeding.

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