indicated no symptoms and 9, plant mortality). The results are presented in Table 1.

In general, the lines maintained their expected relative rankings. The reactions of most of the lines were not affected by spacing. In the resistant group, the reaction of one line (ILC-2952) increased from 3 to 4.5 at the closer spacing. The reactions of the susceptible and highly susceptible groups were not affected.

Table 1. Mean *Ascochyta* blight scores (log^e) of 25 chickpea lines at two interrow spacings.

Line	Interrow spacing[1] 30 cm	20 cm
Resistant		
ILC-72	3.0 (1.10)	3.0 (1.10)
-191	3.5 (1.25)	3.0 (1.10)
-202	3.0 (1.10)	3.0 (1.10)
-482	3.0 (1.10)	3.0 (1.10)
-2952	3.0 (1.10)	4.5 (1.50)
-3279	3.0 (1.10)	3.0 (1.10)
Tolerant		
ILC-195	4.5 (1.50)	4.0 (1.39)
-196	4.5 (1.50)	4.0 (1.39)
-201	5.5 (1.70)	5.0 (1.61)
77 Ms. 76134	5.0 (1.61)	Not planted
Susceptible		
ILC-192	7.0 (1.94)	7.5 (2.01)
-193	6.7 (1.90)	7.0 (1.95)
-197	7.0 (1.95)	7.0 (1.95)
-198	7.0 (1.95)	7.5 (2.01)
-199	7.0 (1.95)	7.5 (2.01)
-2955	7.0 (1.95)	7.0 (1.95)
-2957	5.2 (1.65)	6.0 (1.80)
-3248	5.5 (1.70)	6.0 (1.80)
-3274	6.7 (1.90)	6.5 (1.90)
Highly susceptible		
ILC-2956	9.0 (2.20)	9.0 (2.20)
-3273	9.0 (2.20)	9.0 (2.20)
-8921	9.0 (2.20)	9.0 (2.20)
-8922	9.0 (2.20)	9.0 (2.20)
NEC-1235	9.0 (2.20)	9.0 (2.20)
-1237	9.0 (2.20)	9.0 (2.20)
SE (±)	0.07	0.10

[1]Average of four replications.

Aurora, a bean cultivar tolerant to white mold under a within-row plant spacing of 4-5 cm became susceptible under a wide within-row spacing of 30.5 cm as it developed much more dense plant habit and canopy at that spacing (Coyne, D.P., Steadman, J.R., and Schwartz, H.F. 1977. Plant Disease Reporter 61:226-230). In this study in the majority of cases the reaction of lines to Ascochyta blight was not affected by spacing indicating that resistant lines may be safely recommended for planting at higher density. However, the change in the reaction of certain lines is interesting and indicates the need for further studies and testing of resistant lines at closer interrow spacings.

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Major Disease Problems of Chickpea in North Africa

Broad bean (*Vicia faba* L.), chickpea (*Cicer arietinum* L.), lentil (*Lens culinaris* Med.), and pea (*Pisum sativum* L.) are major grain legumes in Algeria, Morocco, and Tunisia. In May 1980, during a visit to the region, the principal diseases evident on these crops were recorded, particularly chickpeas. At the time of visit, the chickpea crop was in preflowering to flowering stage and provided an opportunity to assess various disease problems.

In Algeria, the major legume-growing areas (Alger, Oran, and Sidi-Bèl-Abbes) in the northwest were surveyed. Diseases observed, in order of importance, were blight (*Ascochyta rabiei* (Pass.) Lab.), stunt (pea leaf-roll virus), rust (*Uromyces* sp), and a mosaic (Alfalfa mosaic virus ?). In farmers' fields, blight was in the initial development stage. At Sidi-Bèl-Abbes experimental station, 80 km south of Oran, blight development was very severe and enabled thorough evaluation of the materials in the Chickpea International Ascochyta Blight Nursery (CIABN-80) and other trials. High stunt incidence (up to 50%) was observed at El-harasch (Alger) and Ain-el-Hadjar (Sida) research stations. Incidence at Ain-el-Hadjar experimental station was higher in earlier plantings (15 December) than in late plantings (15 January, 15 Feb-

ruary, and 15 March). High stunt incidence was also observed in lentil, broad bean, and peas.

In Morocco, the major chickpea-growing areas (Rabat, Meknès, Fès, and Casablanca) in the west were surveyed. Disease problems observed, in order of importance, were blight, stunt, rust, Sclerotinia stem rot, and mosaic. In a plot near Bouznika experimental station, 30 km south of Rabat, stands in an ICARDA F_4 yield trial were badly affected but the cause was not certain as mortality had occurred long before the visit. In farmers' fields blight was developing and up to 10% stunt incidence was observed. Blight development at Douyete experimental station, 200 km east of Rabat was severe and enabled a thorough evaluation of the materials in CIABN-80.

In Tunisia, Tunis and areas in the northern part were visited. The diseases observed in order of importance were blight, wilt (*Fusarium oxysporum* f sp *ciceri*), root rot (*Fusarium* sp), Sclerotinia stem rot, and stunt. Symptoms of iron deficiency were also observed in certain fields. However, none of these problems were severe in farmers' fields.

In North Africa, Algeria, Tunisia, and Morocco have good potential for increased production of chickpeas. Among diseases, blight and stunt are of major importance and the incorporation of resistance will be essential for increased and stable production. The higher incidence of stunt in the region appears to be due to large-scale cultivation of chickpea, broad bean, lentil, and peas (all hosts of the pea leaf-roll virus) in contiguous areas and the presence of aphid vectors, especially on broad beans.

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Entomology

Effect of Sowing Dates on the Infestation of *Heliothis armigera* (Hb.) and Yield

At Kanpur, Uttar Pradesh, India in 1978 to 1980, we conducted sowing date trials and recorded the pod damage and yield from the individual plots. Almost all the pod damage was caused by *Heliothis armigera* (Hb.) which is the major pest of chickpea in most areas of India. *Autographa nigrisigna* Wlk. (formerly known as *Plusia nigrisigna*) was also recorded. The trials were of randomized block design with three replications, the treatments being four dates of sowing, at monthly intervals commencing on 6 October each year. Cultivar H-208 was sown, in plots measuring 4 m x 3.6 m and rows were spaced at 30 cm with 2.5 cm between plots. Superphosphate at the rate of 50 kg P_2O_5/ha was applied as a basal dressing. Natural infestation of the pests was allowed to develop and no pesticides were used. The total number of healthy and damaged pods were counted on 20 plants sampled at random from the middle rows of each plot. Seed yields were determined from the plots after discarding the border rows. The study was intended to provide information that would contribute to our understanding of the interaction of pests, crop and climate and so provide us with base data for planning pest management.

The percentage infestations and yields recorded from the trials are shown in Table 1.

Table 1. Effect of sowing dates on the percentage pod damage caused by *Heliothis armigera* and yield of chickpea (1978-79, 1979-80) at Kanpur.

Sowing date	Pod damage percentage		Grain yield (kg/ha)	
	1978-79	1979-80	1978-79	1979-80
October 6	2.46	1.41	2193	2880
November 6	4.33	3.50	2545	2200
December 6	8.21	7.19	1775	1080
January 6	7.36	6.58	1690	650
SE (m) ±	1.33	1.35	198	162

Although the climatic conditions in the two crop years are very different -- with 1978-79 being an unusually wet year and 1979-80 being unusually dry -- the trends of infestation and yield were similar for both years, with pest damage increasing and yields decreasing with the later sowings. The data were found to have linear relationship with the sowing