Pathology

Sources of Resistance to Wilt and Root Rots of Chickpea

Extensive field screening of chickpea germplasm in wilt-sick nurseries, followed by pot and laboratory screenings, has helped in identifying 41 chickpea lines resistant to wilt, caused by *Fusarium oxysporum* f sp *ciceri*. Of these, 14 lines were reported resistant in an earlier communication (Nene, Y.L., and Haware, M.P. 1980. Plant Disease 64:379-380). In addition to wilt the lines have general resistance to several root rots as evidenced by less than 10% mortality in two consecutive years in a multiple disease sick plot. The latter had the following pathogens: *Fusarium oxysporum* f sp *ciceri*, *Rhizoctonia bataticola*, *Sclerotium rolfsii*, *R. solani* and the white root rot fungus (sterile fungus).

Table 1. Variety names, origins, and characteristics of chickpea lines resistant to wilt.

ICC No.	Pedigree	Origin	Growth habit	Seed color
11311	P-165	India	Semispreading	Light brown
11312	P-289	India	Spreading	Brown
11313	P-517	India	Semierect	Yellow
11314	P-678	India	Semispreading	Brown
11315	P-1265	India	Semierect	Light brown
11316	P-1270	India	Semierect	Yellow
11317	P-1353	India	Semierect	Brown
11318	P-4116-1	Iran	Semierect	Brown
11319	P-6099	India	Semierect	Light brown
11320	JG-74	India	Semispreading	Brown
11321	NEC-790	Iran	Semierect	Light brown
11322	WR-315	India	Semispreading	Yellow
11323	CPS-1	India	Semispreading	Brown
11324	BG-212	India	Semispreading	Brown
12233	P-180-1	India	Semierect	Brown
12234	P-253	India	Semierect	Yellow
12235	P-392	India	Semispreading	Dark brown
12236	P-394	India	Semispreading	Brown
12237	P-436-2	India	Semispreading	Dark brown
12238	P-690	India	Semispreading	Dark brown
12239	P-1514	India	Semierect	Brown
12240	P-1670	India	Semispreading	Yellow brown
12241	P-1683	Mexico	Semispreading	Yellow brown
12242	P-1684	Mexico	Semispreading	Yellow
12243	P-1696-1	Mexico	Semispreading	Yellow brown
12244	P-2559	Iran	Semispreading	Yellow brown
12245	P-2686-2	Iran	Semispreading	Yellow
12246	P-3251	Iran	Semispreading	Yellow
12247	P-3614	Iran	Semispreading	Brown
12248	P-3617	Iran	Semispreading	Yellow brown
12249	P-4237	India	Semierect	Yellow
12250	P-4321-2	Iran	Semispreading	Yellow
12251	P-6067	India	Semispreading	Yellow
12252	Annigeri	India	Semispreading	Reddish brown
12253	T3 Gwalior	India	Semispreading	Brown
12254	NEC-1089	Iran	Semispreading	Yellow
12255	NEC-1470	Iran	Semierect	Yellow
12256	NEC-1621	Lebanon	Semispreading	Yellow
12257	P-1179	India	Semispreading	Brown
12258	NEC-426	Iran	Semispreading	Brown
12259	P-6131	India	Semispreading	Yellow brown

These lines are now being extensively used in crossing programs at ICRISAT and elsewhere.

Of the wild species tested in pots, only *Cicer judaicum* collections were found resistant to Fusarium wilt.

Seeds of the resistant lines (Table 1) are maintained by ICRISAT's Genetic Resources Unit and are available on request.

- M.P. Haware and Y.L. Nene (ICRISAT)

Calixin M - An Effective Fungicide for Eradication of *Ascochyta rabiei* in Chickpea Seed

The seedborne nature of chickpea blight (*Ascochyta rabiei* (Pass Lab.), in addition to its role in the perpetuation of the fungus, poses a serious problem in international seed movement. Seed dressing is one means of reducing seedborne inoculum. At the International Research Center for Agricultural Research in the Dry Areas (ICARDA), Syria, new chemicals and combinations were tried and the results are briefly reported.

Seeds of a highly susceptible cultivar (ILC-1929) with conspicuous lesions of the blight were used in the study. The efficacy of the treatments was assayed by both blotter and agar plate methods. In the blotter test, 10 seeds were placed on three layers of fully moistened blotting paper in a plastic petriplate. In the agar method, the seeds were surface sterilized with 0.1% mercuric chloride and plated on chickpea meal agar (40 g chickpea meal, 20 g dextrose, 20 g agar, 1 liter water). The plates were incubated at 24°C in 12 hr day length and the number of seeds showing fungal growth recorded after 10 days.

The results are presented in Table 1. In both tests, Calixin M alone and in combination with Benlate in the agar test gave complete eradication of the blight fungus from infected seed. Benlate and Bravo were less effective. To the best of our knowledge this is the first report of Calixin M, which is a systemic fungicide, completely eradicating *A. rabiei* from chickpea seeds.

- M.V. Reddy (ICRISAT)

Table 1. The percentages of seeds of ILC-1929 showing growth of *Ascochyta rabiei* following fungicidal seed dressing (percentages of 50 seeds).

Fungicide (3 g/kg seed)	Blotter test	Agar test
Calixin M (tridemorph)	4	0
Bravo (chlorothalomil)	20	80
Benlate (benomyl)	6	20
Benlate + Calixin M (1 : 1)	0	0
Control	100	80

Effect of Inter-row Spacing on the Reaction of Chickpea Lines to *Ascochyta* Blight

Chickpea stands in farmers' fields are generally poor and one of the ways to improve the yields is by increasing the plant populations. Also, efforts are being made to improve yields by developing erect cultivars for closer plantings. Blight caused by *Ascochyta rabiei* (Pass.) Lab. is a major problem of chickpeas and development of resistant cultivars appears to be the best way of controlling it. Since changes in agronomic practices are known to affect disease incidence, seeking information on the effect of different interrow spacings on the reaction of chickpea lines to Ascochyta blight was considered essential.

The study was carried out at the International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo, Syria, during the 1979-80 winter season. A set of 25 lines (6 resistant, 4 tolerant, 9 susceptible, and 6 highly susceptible) were planted at two interrow spacings, 30 and 20 cm, in a randomized block design with four replications. The plant-to-plant distance within the row was 10 cm. The plot size was 6 m^2. Planting was done in the third week of November 1979. Inoculation was carried out on 10 March 1980 by scattering infected plant debris collected from the previous season. Because of the favorable weather conditions that prevailed during the season, disease development was very rapid and severe. Observations of disease severity were recorded twice (15 and 30 days after inoculation) on a 9-point scale (where 1