

Identification of Sources of Resistance to Bacterial Wilt in Groundnut Germplasm Under Southern Vietnamese Conditions

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Bacterial wilt, caused by *Pseudomonas solanacearum*, is an important constraint to groundnut production in southern Vietnam. Tay Ninh and Long An provinces are the major groundnut-producing regions in southern Vietnam. Two crops of groundnut after rice is the major cropping pattern. Disease incidence in the range of 20–30% has been reported from this region (Hong et al. 1994). The disease is more common in areas where groundnut is cultivated season after season in the same upland fields.

In the 1993/94 winter-spring season, 73 germplasm lines from Indonesia and a local cultivar Ly were screened for resistance to bacterial wilt. Twenty-two germplasm lines with wilt incidence less than 15% were selected for further screening during the 1994 autumn season, after which 13 germplasm lines were finally selected for a replicated trial during the 1994/95 winter-spring season. All the genotypes were of subspecies *fastigiata* var *vulgaris*, with small to medium sized pods and tan colored seeds. The genotypes were grown in a single-row plot of 5 m length, spaced at 30 cm between rows and 10 cm within rows. The susceptible control Chico was sown after every 5 rows of test materials. Plant debris of wilt-affected plants from neighboring fields was collected and mixed in the soil to increase inoculum levels. Bacterial wilt incidence was monitored at weekly intervals.

Cumulative disease incidence in the selected genotypes is shown in Table 1. Average disease incidence was 52.7% in the susceptible control Chico and 32.1% in the local cultivar Ly. Average incidence in the test entries ranged from 0.2% in ICG 8666 to 7.7% in ICG 8637. Except for ICG 8637 and ICG 8654, seed of the remaining genotypes has been increased for an assessment of agronomic traits during the 1995/96 winter-spring season in southern Vietnam. ICG 8666 was also reported resistant to bacterial wilt in a sick-plot test conducted at Habac in northern Vietnam (Hong et al. 1994).

Table 1. Bacterial wilt disease incidence in 13 groundnut genotypes evaluated over 3 seasons, Cuchi, southern Vietnam.

Genotype	Wilt incidence (%) ¹			Average
	Winter-spring 1993/94	1994/95	Autumn 1994	
ICG 8666	0.00	0.64	0.00	0.21
ICG 8625	0.00	0.00	3.33	1.11
ICG 5313	0.00	0.62	3.00	1.21
ICG 8632	0.00	1.63	3.03	1.55
ICG 8627	0.00	4.55	0.73	1.76
ICG 8626	0.00	4.90	2.01	2.30
ICG 8645	2.56	3.77	0.74	2.36
ICG 8675	4.65	0.00	3.42	2.69
ICG 8630	0.00	3.80	7.00	3.60
ICG 8638	8.00	0.71	2.38	3.69
ICG 8662	8.00	3.46	1.10	4.18
ICG 8654	8.51	3.22	8.33	6.68
ICG 8637	8.69	6.63	7.78	7.70
Controls				
Chico	70.43	48.02	39.63	52.69
Local Ly	52.17	25.09	19.68	32.13

1. Nonreplicated trials during the 1993/1994 winter-spring and 1994 autumn seasons.

We are collaborating with Dr Hong of the National Institute of Agricultural Science (INSA), Hanoi, to test these genotypes under northern Vietnamese conditions.

Reference

Hong, N.X., Mehan, V.K., Ly, N.T., and Vinh, M.T. 1994. Status of groundnut bacterial wilt research in Vietnam. Pages 135–141 in *Groundnut bacterial wilt in Asia: proceedings of the Third Working Group Meeting*, 4–5 Jul 1994, Oil Crops Research Institute, Wuhan, China (Mehan, V.K., and McDonald, D., eds.). Patancheru 502 324, Andhra Pradesh, India: International Crops Research Institute for the Semi-Arid Tropics.