

## Reactions of Groundnut Germplasm Types to ring Mosaic Disease

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Of the 497 germplasm types of groundnut tested, 397 entries were found to be susceptible to ring mosaic disease by field screening. Among the remaining germplasm types, when tested under controlled conditions, Ah. 35, Ah. 6677, Ah. 7043 and Ah. 7284 showed tolerance to this disease.

The need for developing resistant varieties of crop plants has been well recognised because of increase in cost of plant protection measures and the difficulty of applying the chemicals at appropriate time to control the diseases effectively. The attempts to identify sources of resistance to diseases and other adverse conditions and subsequent incorporation of resistance in cultivars have met with remarkable success in rice (IRRI, 1974). The ring mosaic disease of groundnut has been observed to occur in all groundnut tracts of Tamil Nadu (Narayanasamy *et al.*, and the disease causes considerable loss when the crop is affected in the early stages (Narayanasamy and Ramiah, 1977). With a view to identifying sources of resistance to ring mosaic disease, the present study was taken up and the results are reported hereunder.

### MATERIALS AND METHODS

Four hundred and ninety seven germplasm types of groundnut main-

tained by the Department of Agricultural Botany, Tamil Nadu Agricultural University, Coimbatore, were examined under natural conditions for their resistance to groundnut ring mosaic disease. The groundnut types showing susceptible reaction were eliminated at this stage and the types showing no visible symptom of infection under field conditions were tested under controlled conditions. The test plants were graft-inoculated following detached single leaf technique (Narayanasamy *et al.*, 1975), when the plants were 20 days old. The percentage of infected plants and the mean incubation period in days were recorded. The following scale to assess the reaction of different germplasm types under controlled conditions was used and five reaction types were classified;

	Percentage of infection	Reaction type
I	0	Immune
II	1 - 10	Resistant
III	11 - 30	Tolerant
IV	31 - 60	Susceptible
V	61 - 100	Highly susceptible

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## RESULTS AND DISCUSSION

Under natural conditions 379 germplasm types comprising of 110 bunch 117 semispreading and 152 spreading types were found to be susceptible and hence these types were eliminated at this stage. The reactions determined under natural conditions are not reliable because of the possible inadequacy of disease pressure resulting in the assumption of disease escapes as resistant ones. This fact reduces the usefulness of the results based only on field observations (Ravindranath and Indira, 1975). Therefore, 118 germplasm types which were entirely free from infection under natural conditions were tested under controlled conditions. The reactions of the types are presented in Table.

TABLE Reaction of groundnut germplasm types to ring mosaic under controlled conditions

Germplasm types	Percentage of infection	Mean incubation period (days)
(1)	(2)	(3)
<b>A. Bunch types</b>		
<b>i. Resistant - Nil</b>		
<b>ii. Tolerant (11-30%)</b>		
Ah. 35	15.4	17
6677	16.7	19
7043	15.2	21
7284	25.0	17
<b>iii. Susceptible (31-60%)</b>		
Ah. 7175	42.1	15
7435	45.5	22
1720	52.2	20
6985	54.2	21
7318	54.2	19
6906	56.0	20
6676	57.7	19

[Contd.]

(1)	(2)	(3)
7406	60.0	17
7433	60.0	18
7114	60.6	21
7081	60.8	20
817	60.9	15
6947	60.9	19
<b>iv. Highly susceptible (61-100%)</b>		
Ah. 4226	61.1	18
7270	61.9	21
6907	62.5	22
7145	63.6	19
6911	64.0	19
7290	64.0	19
7088	64.7	18
1718	65.2	21
6511	65.2	18
7267	65.2	21
7254	66.7	18
7044	68.0	20
7271	68.0	20
7102	68.2	15
6658	70.1	19
7273	70.8	19
7340	70.8	21
7047	71.4	17
6642	72.7	18
6739	72.7	20
6909	73.7	18
6572	73.9	18
6724	75.0	19
7268	75.0	21
7436	76.0	21
816	77.3	19
6755	77.3	18
7084	77.3	21
6662	78.3	18
3648	79.2	20
7335	79.2	20
7462	79.2	20
4515	80.0	18
7275	80.0	15
7151	80.9	20
7158	81.8	17
7279	81.8	20
41	82.6	21
4111	83.3	21
7144	83.3	18

[Contd.]

(1)	(2)	(3)	(1)	(2)	(3)
7094	85.0	20	Ah. 6974	41.7	17
814	85.7	18	7652	44.4	20
7327	85.7	20	6933	51.7	19
3490	87.6	16	7014	55.6	15
7206	87.5	19	IV. Highly susceptible (61-100%)		
6674	88.0	18	Ah. 6789	62.5	20
7110	88.3	18	6262	66.7	19
6678	90.0	20	6938	69.1	21
7122	90.9	19	731	69.6	18
7274	90.9	20	6917	73.9	18
7073	91.7	18	6972	75.0	21
7208	92.3	20	7577	75.0	17
7107	95.0	18	7023	76.9	18
7153	96.2	16	Kaliyah Hills		
7065	100.0	20	Ah. 6928	80.0	17
7336	100.0	17	Ah. 7117	80.0	15
<b>B. Semispreading types</b>			7661	80.0	14
I. Resistant - Nil			6935	80.6	19
II. Tolerant - Nil			718	81.0	21
III. Susceptible (31-60%)			6904	81.0	20
Ah. 7287	46.1	18	7655	81.0	21
7456	54.2	19	6943	85.0	18
IV. Highly susceptible (61-100%)			6950	85.0	17
Ah. 7339	63.6	19	6930	89.5	20
685	72.7	19	6927	93.3	17
113	79.2	19	6942	94.1	21
62	80.0	15	261	95.7	17
7009	80.0	18			
7333	80.0	15			
7050	80.7	17			
6916	81.0	16			
7453	83.3	12			
7048	85.0	17			
6866	88.4	15			
6834	88.9	18			
7334	88.9	19			
678	90.0	15			
6997	93.3	12			
7494	95.0	15			
7569	100.0	19			
<b>C. Spreading types</b>					
I. Resistant - Nil					
II. Tolerant - Nil					
III. Susceptible (31-60%)					

None of the types screened was found to be immune or resistant to ring mosaic disease. Four germplasm types Ah. 35, Ah. 6677, Ah. 7043 and Ah. 7284 showed tolerance. In general the virus had a longer incubation period in the tolerant types while the incubation period in the susceptible and high susceptible varieties as short and maximum number of plants showed symptoms in first few days after the commencement of symptom expression. In the absence of any resistant materials, the above mentioned types showing tolerance to ring mosaic may be used as parents in breeding

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programmes to reduce the susceptibility of available cultivars.

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