

EVALUATION OF FOLIAR DISEASES RESISTANT ICRISAT GROUNDNUT VARIETIES IN MPUMALANGA 1997-99

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1. Introduction. The groundnut yields under the smallholder cropping systems in the Mpumalanga are low due to the lack of good quality seeds, foliar diseases, poor agronomic practices and drought at pod filling (Mathews and Beck, 1994). Studies initiated by the Lowveld Research Unit in the past have led to the release of the varieties *Kangwane Red* with tolerance to *Alectra* parasite, and *Anel* with high and stable yields in this region. However, both these varieties are susceptible to the foliar disease complex of early leaf spot (*Cercospora arachidicola*), late leaf spot (*Phaeosariopsis personata*) and rust (*Puccinia arachidis*). The Lowveld Research unit has been evaluating the replicates of the International foliar diseases resistant groundnut varieties (IV-IFDRGVT) from ICRISAT since 1991. Varieties with resistance to these foliar diseases, coupled with the potential for high and stable yields have not been identified so far. The evaluation of improved lines from ICRISAT is an ongoing programme of the Lowveld research Unit.

2. Methods and materials. Sixteen groundnut varieties in the Seventh International Foliar Diseases Resistant Groundnut Variety trial (VII-IFDRGVT-1997) were compared with the local cultivar *Anel* in a 3 x 3 triple lattice design with three replications during 1997-99 at Malekutu in Mpumalanga. The main objective of the study was to evaluate the performance of foliar disease resistant groundnut selections developed at ICRISAT, and to select lines with better adaptability and stability for multi-location trials in Mpumalanga. The visual scoring of foliar diseases was done on a 1-9 scale (1= no disease to 9=50-100% defoliation).

3. Results and discussion. The yields, in general, were lower in 1998 than in the 1999 season due to the lack of adequate rain at pod filling. Five ICRISAT selections gave higher pod and seed yields than *Anel* during both the seasons. ICGV92088 was the most out standing variety based on a joint analysis of the data for the two seasons (Table 1). This selection gave 37 % more seed yield than *Anel* in 1998 and 22 % across the two seasons. However, the increases were not large enough to be significant. The early leaf spot scores were significantly lower in all the ICRISAT varieties except ICGVs 92097, 87160 and 93222. Although the late leaf scores and rust scores were lower than in *Anel* in all the ICRISAT varieties, the differences were not large enough to be significant. Unlike the ICRISAT foliar diseases resistant varieties evaluated in the past, only one of these ICRISAT varieties had significantly lower shelling percentages than *Anel*.

4. Conclusions. Based on the trials carried out during the two seasons, the varieties, ICGVs 92088, 93197, 93222, 92097 and 93187 were selected for further evaluation across the Province in on farm trials.

5. References.

Mathews, C., and Beck, B. D. A. 1994. Evaluation of foliar diseases resistant ICRISAT groundnut varieties in KaNgwane, South Africa. pages 73-78. *in* Sustainable groundnut production in southern and eastern Africa: proceedings of a Workshop, 5-7 Jul 1994, Mbabane. Swaziland (Ndunguru, B. J., Hilderbrand, G. L., and Subrahmanyam, P., eds.). Patancheru 502 324, Andhra Pradesh, India, ICRISAT.

Table 1: Performance of ICRISAT Foliar Diseases Resistant Groundnut Varieties Malekutu, South Africa (A Joint analysis-1997-99)

SNo	ENTRIES	PYH Kg ha ⁻¹	SHP %	SYH Kg ha ⁻¹	HSM	ELS	LLS	RS	DTH
1	ICGV 92088	2479	68.0	1790	48.4	3.31	4.00	1.69	139
2	ICGV 93197	2617	64.1	1750	48.9	3.32	4.99	2.00	135
3	ICGV 93222	2282	73.1	1715	36.5	3.84	4.32	1.49	139
4	ICGV 92097	2481	66.3	1671	48.6	4.32	4.17	3.00	141
5	ICGV 93187	2395	64.3	1573	36.8	3.17	3.65	1.85	135
6	ANEL	2052	67.6	1467	36.8	5.00	5.34	3.02	137
7	ICGV 92093	2061	56.9	1307	37.2	2.85	3.65	1.34	140
8	ICGV 87160	1874	65.6	1194	33.9	4.15	5.00	2.69	136
9	ICGV 93218	1809	64.9	1180	32.5	3.31	4.19	2.00	139
10	ICGV 93229	1648	61.7	1066	35.7	3.00	3.65	1.34	142
11	ICGV 92080	1657	57.1	1051	32.1	3.33	3.82	1.49	139
12	ICGV 92106	1670	60.2	1029	34.7	3.32	4.49	1.17	137
13	ICGV 92098	1833	50.0	947	32.3	3.01	3.17	1.34	146
14	ICGV 92102	1553	58.0	926	44.1	3.01	3.82	1.34	144
15	ICGV 92083	1559	53.7	886	32.3	3.34	4.20	1.54	144
16	ICGV 92086	1181	51.4	628	33.5	3.18	3.85	1.32	142
Mean		1953	61.41	1261	37.7	3.46	4.20	1.79	139
CV %		14.85	7.55	18.83	11.18	18.8	20.02	45.91	2.12
LSD (P=0.05)		618	9.89	506	8.99	1.39	1.79	1.75	6.29

PYH: Pod yield kg/ha; SHP: Shelling Per cent SYH: Seed yield kg/ha; HSM: Hundred Seed Mass;
 ELS: Early Leaf Spot Score; LLS: Late Leaf Spot Score; RS: Rust Score DTH: Days to Harvest

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