

MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT
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Zambia

1) Summary of National Soybean Variety Test (1982/83).

Results of the National Soybean Variety Trial are reported in Tables 1 and 2. Sixteen entries, comprising seven recommended varieties and nine new promising cultivars, were tested at seven different locations.

Though the season started favorably, rains in December, 1982, were inadequate in the southern half of the country for good stand establishment. Long drought spell towards the end of the season occurred in most parts of the country, which affected soybean yield with the exception of Magoye where only about 500 mm of rain fell from December, 1982, to April, 1983. Distribution of rain was more of a problem than the total rainfall. The experiments suffered as no supplemental irrigation was available at any location except Mpongwe where the highest yield was obtained.

Recommended cultural practices using conventional tillage operations were used in establishing the tests at each location. The inter-row spacing was 50 cm and 200 seeds/5 m row were planted at a depth of about 3 cm. Herbicides such as Dual, Lasso, or Treflan and in some cases Sencor, were used at recommended rates. No disease control was necessary. Yield data were determined by harvesting two central 5-meter rows of each entry.

Mean yield data for seven locations are given in Table 1. The highest soybean yields were produced at Mpongwe followed by Mufulira. The lowest soybean yield was obtained at Luapula.

Cultivar 'Santa Rosa' gave the highest yield, followed by 'Kaleya', 277/6/10 ('Duiker') and 'Tunia' (Table 2).

At Magoye (Southern Province), the yield response of different cultivars was significant at 1% level. Though the highest yielding cultivar was Kaleya, there were no significant differences in yield between Kaleya, Santa Rosa, 278/5/5, 277/6/10 (Duiker), 'Sable', 'Hale 3', 'Magoye', and Tunia (Table 1). The yield was generally depressed due to low rainfall and two long dry spells from February 15, 1983 to March 4, 1983 and March 26, 1983 to April 25, 1983.

At Golden Valley (Central Province), the yield response of cultivars was significantly different at 5% level. The highest yield was obtained from Kaleya but this was not significantly different from 'Geduld', Tunia, Magoye, 'Kudu', Santa Rosa and Hale 3 (Table 1).

At Kabwe (Central Province), there was no significant difference in the yield response of different cultivars; however, the top three varieties were Santa Rosa, Tunia and Kaleya.

At Mufulira (Copperbelt Province), the yield response of cultivars was highly significant (0.1% level). Kudu gave the highest yield but there was no significant difference in the yield between Kudu, 'Jupiter', Santa Rosa, 278/5/5, 277/5/6, 277/6/10 (Duiker) and 'Hernon 147' at 5% level.

At Mpongwe (Copperbelt Province), highest yield was obtained from 277/6/10 (Duiker) which produced 3940 kg/ha; however, the difference in yield was not statistically significant between 277/6/10 (Duiker), Sable, and 199/6/40 at 5% level.

Table 1. Yield of soybean varieties at different locations

Cultivar	Locations						
	Magoye	Golden Valley	Kabwe	Mufulira	Mpongwe	Msekera	Luapula
	kg/ha						
Geduld	1144	1764	1814	1850	2600	1202	1276
Hernon 147	966	1398	2018	2316	2910	910	610
Hale 3	1352	1524	1704	1910	3080	1322	1228
Magoye	1280	1752	1616	2176	2390	1198	1052
Kaleya	1704	1850	2182	2836	3390	998	700
Santa Rosa	1476	1692	3128	2646	2800	1018	1558
Jupiter	1042	1172	1232	2676	2590	672	908
Tunia	1256	1756	2412	2280	3270	932	872
278/5/5	1458	1048	1474	2370	3010	1136	942
Kudu	890	1736	1342	2856	3310	1196	910
Sable	1410	950	1988	2256	3430	1090	370
199/6/40	812	1228	926	1246	3430	1232	1330
P221/6/28	992	828	1994	1496	2800	1556	1220
277/6/10 (Duiker)	1430	1216	2090	2320	3940	1502	806
P277/5/6	894	1100	1710	2356	3210	1256	566
P221/7/10	1198	1154	1482	2170	3350	1158	920
Mean	1207	1385	1820	2235	3076	1149	954
Soil type	Sandy loam	Sandy clay loam	Sandy loam	Sandy loam	Sandy clay loam	Sandy clay loam	Sandy loam
LSD 5%*	456.9	721.0	N.S.	559.4	524.4	388.2	N.S.

Table 2. Mean yield and percent control of different varieties

Rank	Cultivar	Yield/ha	% control ^a 82/83	% control 81/82	% control 80/81
		kg			
1	Santa Rosa	2045	112	107	114
2	Kaleya	1950	107	109	118
3	277/6/10 (Duiker)	1901	104	-	-
4	Tunia	1825	100	105	106
5	Kudu	1749	96	94	-
6	Hale 3	1731	95	81	104
7	P211/7/10	1713	94	-	-
8	Geduld	1664	91	96	99
9	Sable	1642	90	98	-
10	Magoye	1638	90	92	111
11	278/5/5	1634	90	-	-
12	Hernon 147	1590	87	96	115
13	P277/5/6	1585	87	-	-
14	P221/6/28	1555	85	82	-
15	Jupiter	1470	81	84	69
16	199/6/40	1458	80	90	-

^aControl = Mean of Santa Rosa + Kaleya + Jupiter = 1822 kg/ha.

At Msekera (Eastern Province), the yield response of cultivars was significant at 1% level. The highest yield was obtained from P221/6/28 but this yield was not significantly different at 5% level from 277/6/10 (Duiker), Hale 3, P277/5/6, 199/6/40, Geduld, Magoye, and Kudu. Msekera received 1000.9 mm rainfall which was 33.1 mm less than the normal. There was also a dry spell from February 17, 1983, to March 1, 1983.

At Mansa (Luapula Province), differences in yield response of cultivars were not statistically significant. However, Santa Rosa gave the highest yield, followed by 199/6/40 and Geduld (Table 1).

Yield response of 16 cultivars, percent control 82/83, 81/82, 80/81 and mean percent control are given in Table 2 (\bar{x} of 7 locations). Santa Rosa, Kaleya, and Tunia have done well consistently for three years as compared to control. Control is the average yield of Santa Rosa, Kaleya, and Jupiter. Cultivar 277/6/10 (Duiker) was not tested in previous years but during 82/83 it gave 4% more yield than the control and was third in the overall position (Table 2).

Based on the performance in this and the past years, the following varieties are recommended: Santa Rosa, Hernon 147, Kaleya, Magoye, and Jupiter.

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