

Bunch Groundnut Strain - Pol. 1 - History and Performance

by

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Introduction: The low level of production per hectare of different oilseed crops in the country and the wide fluctuation in the total production has been engaging the attention of the research and the development workers alike and intense efforts are being made in all the oilseed research centres to evolve suitable high yielding strains. Based on the work in progress at the Groundnut Research Station, Pollachi, the oilseeds research workers of the Agricultural Department of Tamil Nadu succeeded in evolving the bunch groundnut strain POL. 1 which has been found to be superior to the strain TMV. 2. This paper deals with the development of the new strain and its performance in different trials.

Materials and Methods: At the Groundnut Research Station, Pollachi established with the help of the erstwhile Indian Central Oilseeds Committee, crop improvement work on bunch groundnut is in progress from the year 1956. The object of this station was to evolve high yielding bunch groundnut strains suitable for the special Pollachi tract where bunch groundnut is being cultivated between April and September under rainfed conditions annually in nearly 40,000 hectares. The station has since been merged with the All India Co-ordinated Research Project on Oilseeds and is functioning as a sub-centre for groundnut. The POL. 1 groundnut strain is the pureline selection A.h. 7953 isolated at the Groundnut Research Station, Pollachi from the Malaysian variety A.h. 7774 in 1959. Initial trials conducted between 1960 and 1963 gave indication that the selection is superior to the Malaysian variety A.h. 7774 which was not found to do well under local conditions. Preliminary yield trials and comparative yield trials conducted between 1965 and 1967 revealed that the selection is definitely superior to the strain TMV. 2 which is at present, widely cultivated in the Pollachi tract. Subsequently the results of scattered block trials laid out in the holdings of progressive farmers confirmed the findings at the Groundnut Research Station, Pollachi. The selection was therefore, released as strain POL. 1 in October 1968 by the State Strain Release Committee. In multiplication plots organized in the holdings of enlightened cultivators both under rainfed conditions and irrigated conditions, the strain continued to maintain its superiority and was found to respond well to irrigation and high dose of fertilizer application. Laying out of National Demonstration Plots for rainfed crops was approved for the first

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time in the Indian Union in 1969 and a National Demonstration Plot with POL. 1 strain adopting all the package of practices recommended was also laid out under rainfed conditions in Sethumadai village in Pollachi Taluk in the holding of the progressive farmer Thiru V. R. Thirumalaisamy Gounder.

Results: The new strain displayed a considerable advance in the size of pods, kernels, weight of pods and kernels and yield over strain TMV. 2. It has been found to be equally superior to the strain TMV. 7 in the Pollachi tract. The Madras Oils and Seeds Association who examined the sample of this selection have stated that the strain is suitable for export purposes as hand picked seeds. The strain has also responded well to irrigation and high dose of fertilizer application and has been found suitable for cultivation in all the seasons. The performance of the strain in three years in comparative yield trials at the Groundnut Research Station, Pollachi and in scattered block trials in the cultivator's holdings is abstracted in Table I.

TABLE I. Performance of strain POL. 1 (A.h. 7953) in different seasons
Data on yield in kg per hectare

	A h 7953	TMV. 7	TMV. 2	Pollachi red	Percentage on		
					TMV. 2	TMV. 7	Pollachi red
i) Comparative yield trial - 1966 and 1967 rainfed season:							
Yield of pods	1448		1299	1126	113	....	130
Yield of kernels	1125		995	901	113	....	125
Yield of oil	562	....	483	459	116	....	123
ii) Scattered block trial - 1967 rainfed season:							
Yield of pods	1820	1550	1630	1188	112	117	153
Yield of kernels	1400	1192	1272	962	110	117	146
Yield of oil	700	577	618	490	113	121	143
iii) Scattered block trial - 1968 rainfed season:							
Yield of pods	1030	881	817	616	126	117	167
Yield of kernels	753	664	614	482	123	113	156
iv) Scattered block trial - 1967 irrigated season:							
Under application of NPK @ 16:33:50 kg/ha	1950	1700	1682	1327	117	115	147
Under application of NPK @ 22:44:67 kg/ha	2195	1817	1787	1640	123	121	134

The mean yields obtained in the trials at the Groundnut Research Station, Pollachi and in the cultivator's holding reveal the superiority of the strain POL. 1 over the strains TMV. 7 and TMV. 2. The strain yielded 112 to 126 per cent over TMV. 2 and 113 to 121 per cent over TMV. 7 in the trials.

The important quality characters of the strain compared to those of strain TMV. 2, TMV. 7 and the variety Pollachi red are given in Table 2.

TABLE 2. *Data on quality characters*

Selection	Natural test weight in gm per litre of		Shelling %	No. of kernels per kg	Weight in gm per 100	
	Pods	Kernels			Pods	Kernels
i) <i>Comparative yield trial - 1966 and 1967 :</i>						
POL. 1	280	634	76.6	2360	90	43
TMV. 2	296	629	78.0	3114	66	34
Pollachi red	306	636	80.0	2932	70	34
ii) <i>Scattered block trial - 1967 rainfed season :</i>						
POL. 1	279	648	76.9	2351	97	43
TMV. 7	286	661	76.9	2641	85	38
TMV. 2	283	653	78.0	2955	70	35
Pollachi red	294	653	81.0	2969	71	35
iii) <i>Scattered block trial - 1968 rainfed season :</i>						
POL. 1	260	649	72.4	2637	76	38
TMV. 7	258	661	74.2	3196	64	31
TMV. 2	263	651	75.6	3338	58	28
Pollachi red	265	664	77.2	3415	57	29
iv) <i>Scattered block trial - 1967 irrigated season :</i>						
POL. 1	269	657	73.0	2240	102	44
TMV. 2	277	652	78.0	2820	70	35
Pollachi red	288	660	79.4	3400	64	30
v) <i>Scattered block trial - 1968 irrigated season : NPK @ 16:33:50 kg/ha</i>						
POL. 1	293	631	73.1	2290	105	45
TMV. 7	305	635	73.6	2432	88	37
TMV. 2	302	631	74.6	2689	78	34
Pollachi red	302	637	77.1	2634	79	35
vi) <i>Scattered block trial - 1968 irrigated season : NPK @ 22:44:67 kg/ha</i>						
POL. 1	287	629	73.4	2222	98	43
TMV. 7	301	634	74.0	2424	86	39
TMV. 2	319	632	75.2	2697	78	35
Pollachi red	304	638	78.3	2598	82	35

The strain POL. 1 possesses less number of kernels per kg than TMV. 2 and TMV. 7. In the weight of 100 pods and kernels also it has high values indicative of the big-sized pods and kernels.

The oil content of the strain POL. 1 as determined in the produce of the comparative yield trials was 49.98 compared to 48.55 of TMV. 2 and 50.91 of Pollachi red. The overall yield of oil per ha worked out to 562 kg.

in case of the strain POL. 1, compared with 483 kg for TMV. 2 and 459 kg for Pollachi red in these trials. This was 16.3 per cent over that of strain TMV. 2 and 22.5 per cent over that of the variety Pollachi red.

In the National Demonstration Plot at Sethumadai, which was harvested by the end of August, 1969 in the presence of enlightened farmers and officials the strain recorded an acre yield of 1415 kg of pods (dried and cleaned produce) under rainfed conditions. The yield thus recorded was 44 per cent over the acre yield of 980 kg of dry pods assessed in an adjoining plot sown with TMV. 2.

Discussion: Bunch groundnut is cultivated in nearly 40,000 hectares in the Pollachi tract between April to September under rainfed conditions. The Departmental strain TMV. 2 is at present under cultivation in this area. The new strain is superior to TMV. 2 in yield, size of pods, kernels, weight of pods and kernels. It is also superior to the strain TMV. 7 which has not been found to do better than strain TMV. 2 in the Pollachi tract and the local variety Pollachi red which is not under cultivation at present. It responds to irrigation and high level of manuring. Based on the yield, oil content and size of pods and kernels, the new strain POL. 1 is therefore highly suitable for replacing the strain TMV. 2 in the Pollachi tract. The acre yield of 1415 kg of dry and cleaned pods recorded by the strain in the National Demonstration Plot laid out at Sethumadai in 1969 rainfed season has confirmed this beyond any doubt. The local traders and the Madras Oils and Seeds Association have expressed favourable opinion for the popularisation of the strain. Assuming that the farmers in the area obtain an additional production of five bags per hectare by the cultivation of this strain instead of TMV. 2, the replacement of strain TMV. 2 in the 40,000 hectares in which it is being at present cultivated would result in an annual additional production of 7000 tonnes valued at Rs. 80 to 90 lakhs.

Summary: An account of the development of the high yielding bunch groundnut strain POL. 1 has been given. The big seeded bunch strain which is of the same duration as TMV. 2 has been found highly suitable for replacing the Departmental strain at present widely cultivated in the Pollachi tract. The extent to which the cultivators of the tract stand to benefit by the strain is also discussed.

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