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Studies on Groundnut in the Lower Bhavani Project Area *

by

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Synopsis: The results of an investigation undertaken during 1957–'58 to 1959–'60 with a view to determine the variety, time of sowing and spacing for groundnut in the Lower Bhavani project area are presented in this paper.

Investigations were taken up in the Agricultural Research Station, Bhavanisagar with a view to assess the suitable variety, time of sowing and spacing for groundnut under irrigated conditions in the Lower Bhavani project area. The prevailing season in the project area is influenced by a continuous availability of water from the dam. The first season extends from August to December and the second from December to March. During the pre-project days there was no specific season like this, a majority of land being cultivated under dryland conditions and the rest on garden land conditions. The climate is rather dry and hot and aridness being attributed to capricious annual rainfall amounting to 28″ distributed over a few rainy days. The soil in this tract is marked by its low fertility; it is coarse in texture, loose and porous in structure due to the inherent deficiency of natural organic matter. It is very shallow in thickness. The soil analysis indicates 85% of gravel, 9% of silt and 4·5% of clay. Soil has very low capacity to retain moisture. Enriching the soil with green manure in order to enhance the organic contents is indispensable.

The object of the present study was to determine the most suitable and high yielding strains of spreading and bunch groundnut for cultivation in the project area, the optimum time of sowing of TMV_2 groundnut and the optimum spacing for the plants between rows and in the row.

Methods and materials: The experiments were conducted during the three years 1957–'58, 1958–'59 and 1959–'60. The layouts were all randomised and replicated and the data were statistically analysed. Uniform application of 10 cart loads of compost per acre and 100 lb. of Ammonium sulphate per acre was resorted to in the form of basal and top dressings respectively. Timely plant protection measures and cultural operations were taken up.

Results: (i) *Varietal trials:* In the case of the spreading varieties tried during the first season the results obtained indicated that it is uneconomical to grow spreading groundnut. But of the five varieties of

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bunch groundnut viz., TMV. 2, AH. 3490, AH. 4111, AH. 4515 and AH. 6279 tried with the local strain during the second season, the results were significant. The results are tabulated below :

S. No.	Variety	1957—'58		1958—'59		1959—'60		Average for 3 years	
		Acre yield in lb.	% over control	Acre yield in lb.	% over control	Acre yield in lb.	% over control	Acre yield in lb.	% over control
1.	TMV.2	711	1129	1362	293·3	1194	123·2	1083	164·3
2.	AH.3490	441	81	1348	290·9	520	53·6	772	116·6
3.	AH.4111	404	73	1390	300·0	506	52·2	767	115·8
4.	AH.4515	723	131	1278	275·5	478	49·3	843	127·4
5.	AH.6279	545	99	1531	330·3	337	34·8	804	121·5
6.	Local	553	100	463	100·0	970	100·0	662	100·0
Significant or not (P=0.05)		Not analysed		Yes		Yes			
Standard error				56·7		71·5			
Critical difference				164·4		207·9			

Conclusions :

1958 : Not analysed

1959 : AH 6279, AH 4111, TMV 2, AH 3490, AH 4515, LOCAL

1960 : TMV 2, LOCAL, AH 3490, AH 4111, AH 4515, AH 6279

(ii) *Time of sowing trials :* Three different times of sowing viz., 15th December, 1st and 15th January were adopted for the TMV_2 groundnut during the second season of this project area. The results obtained are tabulated below :—

S. No.	Time of sowing	1957—'58		1958—'59		1959—'60		Average of three years	
		Acre yield in lb.	% over general mean	Acre yield in lb.	% over general mean	Acre yield in lb.	% over general mean	Acre yield in lb.	% over general mean
1.	Early sowing (15th December)	1681	108	536	91·63	863	87·9	1027	101·5
2.	Mid sowing (1st January)	1718	110	482	82·54	1077	109·4	1113	110·1
3.	Late sowing (15th January)	1412	91	736	125·66	1066	101·8	1071	105·8
General mean :		1556	100	585	100	892	100	1011	100
Standard error :		29·5		39·02		53·4			
Significant or not (P=0·05)		Yes		Yes		Yes			
Critical difference		90·2		117·27		154·3			

Conclusions :

1958 : 1—1—58, 15—12—57, 15—1—58

1959 : 15—1—59, 15—12—58, 1—1—59

1960 : 1—1—60, 15—1—60, 15—12—59

(iii) *Spacing trials:* During the years 1957–'58 to 1959–'60 trials were conducted with TMV. 2 groundnut (bunch variety) in the second season. 6″×6″, 6″×9″, 9″×9″, 9″×12″ and 12″×12″ were the different spacings adopted. The results obtained are tabulated below:—

S. No.	Spacings	1957—'58 Acre yield in lb.	1957—'58 % over general mean	1958—'59 Acre yield in lb.	1958—'59 % over general mean	1959—'60 Acre yield in lb.	1959—'60 % over general mean	Average of 3 years Acre yield in lb.	Average of 3 years % over general mean
1.	6″×6″	2658	119	1378	109·7	871	97·6	1633	112·1
2.	6″×9″	2485	112	1381	110·0	1082	121·3	1649	113·2
3.	9″×9″	2331	105	1181	94·0	941	105·5	1484	101·8
4.	9″×12″	1958	89	1181	94·0	857	96·0	1332	91·6
5.	12″×12″	1677	76	1160	92·0	717	80·3	1184	81·2
General mean:		2222	100	1257·66	100	892	100	1257·22	100
Standard error:		88·9		64·6		56·9			
Significant or not (P=0·05)		Yes		Yes		Yes			
Critical difference		262		191·1		171·4			

Conclusions:

1958 6″×6″, 6″×9″, 9″×9″, 9″×12″, 12″×12″

1959 6″×9″, 6″×6″, 9″×9″, 9″×12″, 12″×12″

1960 6″×9″, 9″×9″, 6″×6″, 9″×12″, 12″×12″

Spacing trials in Groundnut TMV 2. Economics of Cultivation.

S. No.	Treatments	Seed rate in lb.	Cost of Cultivation in Rs.	Acre yield in lb.	Gross receipt in Rs.	Profit or loss in Rs.
			1957—'58 II Season.			
1.	6″×6″	130	353	2652	556	203
2.	6″×9″	100	296	2485	546	250
3.	9″×9″	65	270	2331	502	232
4.	9″×12″	50	211	1958	430	219
5.	12″×12″	32	182	1677	368	186
			1958—'59 II Season.			
1.	6″×6″	130	317	1378	385	68
2.	6″×9″	100	269	1381	386	117
3.	9″×9″	65	250	1181	330	80
4.	9″×12″	50	239	1181	330	91
5.	12″×12″	32	222	1160	324	102

Spacing trials in Groundnut TMV 2. Economics of Cultivation (Contd.)

Sl. No.	Treatments	Seed rate in lb.	Cost of Cultivation in Rs.	Acre yield in lb.	Gross receipt in Rs.	Profit or loss in Rs.
			1959—'60 II Season.			
1.	6″×6″	130	375	871	251	—124
2.	6″×9″	100	280	1082	324	44
3.	9″×9″	65	254	941	282	28
4.	9″×12″	50	223	857	257	34
5.	12″×12″	32	194	717	215	21
			Average for 3 years.			
1.	6″×6″	130	348	1633	397	49
2.	6″×9″	100	282	1649	418	136
3.	9″×9″	65	258	1484	371	113
4.	9″×12″	50	224	1332	339	115
5.	12″×12″	32	199	1184	302	103

Discussion: (i) *Varietal trials:* A perusal of the results of the trials conducted during the last three years indicates that though in certain cases the results of the trials are vitiated due to the vagaries of the season, one cannot overlook the opulent fact that in all the trials the strain TMV 2 grouudnut has presented itself superior in performance to all other strains during the second season. There is a notable increase in acre yield from the first to the third year as revealed by the result of the trials. This can be correlated with the increase in fertility of the reclaimed soil of the station due to gradual incorporation of organic manure every year.

(ii) *Time of sowing trials:* Since the distribution of rainfall is rather dubious in this tract, cultivation is more dependent on the irrigation water from the dam. Time of sowing trials conducted during the three years in relation to the prevailing project seasons indicated that mid-sowing (1st January) appears to be more beneficial for TMV. 2 groundnut during the second season.

(iii) *Spacing trials:* As to the optimum spacing for the TMV. 2 groundnut the results obtained during the three years reveal that the spacing of 6″ x 9″ is more remunerative than other spacings when the cost of cultivation is taken into account. Though the spacing of 6″ x 6″ has resulted in high yield during the first year of the trial, in the subsequent years it has recorded a decreased yield and is on a par with 6″ x 9″ as far as

the average acre yield is concerned. This can be attributed to the very late sowing of the crop in the experimental plots in February. However, the treatmemt 6″ x 9″ has consistently fared well and proved remunerative in conformity with the findings of the trials conducted at the Agricultural Research Station, Tindivanam by Bhavanishanker Rao and Srinivasalu (1957).

Summary and conclusions: The investigation was undertaken during 1957—'58 to 1959—'60 with a view to determine the most suitable variety, the best time of sowing in the second season and the optimum spacing for groundnut in the Lower Bhavani Project area. In the varietal trials five varieties of bunch groundnut were tried with the local strain during the second season. In the time of sowing trials three different times of sowing were adopted. In the spacing trials five different spacings were adopted. Summarising the results of the research work done at the Agricultural Research Station, Bhavanisagar on groundnut the following conclusions can be arrived at: (i) The bunch variety TMV. 2 groundnut is more suited and remunerative for this tract during the second season i. e., December to March, (ii) mid-sowing (1st January) appears to be more remunerative for TMV. 2 groundnut during the second season and (iii) the spacing of 6″ x 9″ is found to be optimum and better yielding for the bunch variety of TMV. 2 groundnut.

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