

Spacing Trials on Irrigated Groundnut

by

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Introduction: The characters of groundnut like yield of pods, size of kernels and shelling out-turn are greatly influenced by the spacings adopted. The effect of various spacings on the irrigated groundnut are discussed in this paper. John *et al* (1955) have reported that the yield of pods, size of kernels and shelling percentage are influenced by the seasonal conditions and other environmental factors. Nagi and Dalal (1957) have observed that in the spacing and manurial trials in Punjab, a spacing of 12"×9" registered 5.24% higher yield over the commonly adopted spacing of 12"×24". In the spacing trials conducted at the State Agricultural Farm, Bhuvaneshwar a spacing of 24"×9" was found to be the best for spreading groundnut (Anon, 1962). In the trials conducted at the Agricultural Research Station, Annigiri, Mysore State with three spacings and three seed rates viz , 12", 15" and 18" and 80 lb, 100 lb and 120 lb seed rate / acre, the spacing of 12" with a seed rate of 80 lb acre is reported to have recorded 4.2% higher yield over the general mean. (Anon, 1962b). In the spacing trials conducted on the spreading groundnut at the Botanical sub-station, Purnea, Bihar, the results revealed that a spacing of 6"×12" recorded the maximum yield of 6.4% over the general mean. (Anon, 1962c). In the spacing trials conducted at the Agricultural Research Station, Tindivanam during 1953-1955 on summer irrigated groundnut, a spacing of 9"×9" was found to be optimum for spreading groundnut (Anon. 1953, 1954 and 1955).

In order to find out the influence of spacing on the various economic characters of irrigated spreading groundnut, trials were conducted at the Regional Research Station, Tindivanam, during three consecutive seasons from 1962 to 1964. During 1962 and 1964 seasons, enough irrigations could not be given due to inadequate water position in the wells. The results of the trial are presented in this paper.

Material and Methods: The trial was conducted in red-sandy loam soil with the spreading groundnut strain TMV4, in a single randomised design with four spacings of 9"×9" (control), 12"×6", 15"×4" and 18"×3" replicated

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four times. All the treatments received a basal application of farm yard manure at 5 tons / acre. Five plants were marked at random for recording flower production.

Results: Flower production was recorded for all the three years and the data are given below in Table 1.

TABLE 1. *Data on flower production*

	No. of flowers produced				
	1964	1963	1962	Mean of three years	% on control
9"×9" (Standard)	494	455	470	466	100.0
12"×6"	527	465	418	470	100.9
15"×4"	449	463	491	468	102.8
18"×3"	600	621	498	506	108.6

Yield: The yield recorded from a net plot of 24' × 15' is presented in table 2.

TABLE 2. *Yield data*

Treatments	Yield of pods in kg/ha				
	1964	1963	1962	Mean of three years	% on control
9"×9" (standard)	505	1396	632	844	100.0
12"×6"	590	1576	731	966	114.5
15"×4"	595	1679	949	1074	127.3
18"×3"	429	1474	1410	1104	130.8
Whether significant for 'F' Test P=0.05	No	No	Yes		
Standard error	68.9	127.7	43.7		
Critical difference	—	—	139.2		

Conclusion (1962): 18"×3", 15"×4", 12"×6", 9"×9"

Qualitative Studies: Shelling percentage, natural test weight of pods and kernels per unit weight were determined for all the three years and are presented in tables 3-(a), (b), (c) and (d).

TABLE 3-(a). *Shelling percentage*

Treatments	1964	1963	1962	Mean of three years
9"×9" (standard)	72.5	70.4	72.2	71.7
12"×6"	72.2	70.8	72.5	71.8
15"×4"	73.0	73.0	74.0	73.7
18"×3"	76.5	75.0	76.5	75.8

TABLE 3-(b). Natural test weight

Treatments	Weight of 2 litres of pods and kernels						Mean of three years	
	A	B	A	B	A	B	A	B
9"×9" (standard)	725	1262	737	1292	721	1286	728	1280
12"×6"	721	1286	750	1298	720	1256	730	1280
15"×4"	715	1264	748	1280	715	1264	726	1269
18"×3"	720	1274	744	1300	720	1274	728	1283

Note: A weight of 2 litres of pods in kg. B weight of 2 litres of kernels in kg.

TABLE 3-(c). Number of kernels for 500 grams

Treatments	1964	1963	1962	Mean of three years
9"×9" (standard)	1240	1225	1350	1272
12"×6"	1350	1184	1335	1290
15"×4"	1310	1336	1310	1319
18"×3"	1325	1253	1325	1301

Economic of treatments: Economics of each treatment were worked out to assess the relative profit or loss taking into account the average cost of cultivation and gross receipts of the three years. The data are furnished in table 4.

TABLE 4. Economics of treatments

Treatments	Seed rate per (kg/ha)	Cost of cultivation (Rs.)	Gross receipts (Rs.)	Net income (Rs./ha)
9"×9" (standard)	84	546	867	321
12"×6"	94	571	994	423
15"×4"	113	590	1112	522
18"×3"	126	609	1153	544

Discussion: From the three years' data, it is seen, that the spacings of 18"×3" and 15"×4" have registered 27.3 and 30.8% higher yield over control (9"×9"). With respect of flower production 18"×3" has recorded maximum flower production upto 8.6% over standard. The shelling out-turn is also found to be better in all the three years in 18"×3" spacing, the increases ranging from 2.1 to 4.1% (Table 3-a). In the natural test weight of produce, there is not much of difference among the treatments (Table 3-b). Spacings of 18"×3" and 15"×4" have registered more number of kernels per unit weight (Table-3-c). Maximum monetary return is obtained with respect of 18"×3" spacing, over the other spacing (Table 4).

Conclusion: To assess the economic spacings for the spreading groundnut raised under irrigation in the summer season, trials were conducted at the Regional Research Station, Tindivanam for three years, from 1962 to 1964 with spreading strain TMV4. Besides the yield data, flower counts, shelling percentage, natural test weight of pods and kernels per unit weight and the economics of various treatments were recorded. From the data thus collected it was concluded that (i) Maximum flower production was registered with respect of 18"×3" spacing upto 8.6% over standard (9"×9"), (ii) Broader spacings of 18"×3" and 15"×4" have registered 27.3 and 33.8% higher yield over the normal spacing of 9"×9" (iii) Shelling out-turn was found to be better ranging from 2.1 to 4.1% with 18"×3" spacing over the other spacings viz, 9"×9", 12"×6" and 15"×4", (iv) In the natural test weight of pods the differences between the treatments were not appreciable, (v) Broader spacings of 18"×3" and 15"×4" resulted in more number of kernels per unit weight than the other treatments and (vi) Maximum monetary return was obtained with respect of 18"×3" spacing.

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