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THE EFFECT OF SPACING ON YIELD AND QUALITY OF MCU 9 COTTON SEED

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Field trials were conducted in randomised block design on CV.MCU 9 during 1978-79 winter and 1980 summer seasons with the following nine spacings as treatment viz. 75 X 30 cm 75 X 45 cm, 75 X 60 cm, 75 X 75 cm 90 X 30 cm, 90 X 45 cm, 90 X 60 cm, 90 X 75 cm and 90 X 90 cm. The results revealed that a spacing of 90 X 60 cm in both the seasons was found optimum to increase the seed yield as well as seed germination and seedling vigour The increased seed yield was attributed to more number of bolls per plant, more number of seeds per boll, higher 100 seed weight and higher percentage of recovery of matured seed in plants planted at 90 X 60 cm spacing than in others.

The influence of spacing and population density play an important role in determining the seed yield and seed quality in cotton as in many other crops. Krishnaswamy (1979) reported the effect of spacing and population on plant growth and kapas yield in different cotton cultivars. But the information available on the effect of spacing and population on the quality and yield of seed in cotton is rather few in India. Hence, a study on this aspect was undertaken and the results are furnished hereunder.

MATERIAL AND METHODS :

Two field trials were conducted one in the winter season of 1978-79 and the other in the summer season of 1980 in the department of seed Technology, Tamil Nadu Agrl. University, Coimbatore.

The experiments were laid ont on a loamy soil in Randomised block design with three replications. The following were the nine treatments.

Spacing.	Population.
75 X 30 cm	(44444 plant/ha)
75 X 45 cm	(29630 plant/ha)
75 X 60 cm	(22222 plant/ha)
75 X 75 cm	(17778 plant/ha)
90 X 30 cm	(37037 plant/ha)
90 X 45 cm	(24691 plant/ha)
90 X 60 cm	(18519 plant/ha)
90 X 75 cm	(14815 plant/ha)
90 X 90 cm	(12346 plant/ha)

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The plots were given an uniform dose of 35; 35; 35 kg/ha of NPK as soil application just before sowing and 35 kg N/ha as top dressing at the time of earthing up of plants. Observations on the number of sympodia per plant, number of bolls per plant, number of seeds per boll, 100 seed weight, kapas yield, seed yield, percentage of matured seed, percentage of seed germination (Anon., 1976). percentage of oil and free fatty acid in the seed (Christinasen and Moore, 1961) were evaluated. Vigour index was calculated according to Abdul-Baki and Anderson, (1973).

RESULTS AND DISCUSSION

The number of sympodia per plant was significantly more in wider spacings (T6-T9) than in closer spacings (T1-T5). Row spacings had significantly influenced the number of sympodia than the spacing between plants in a row in both the seasons. Increased number of fruiting points in wider spaced plants may be due to less competition among plants and more availability of nutrients and sunlight Krishnaswamy, 1979).

The formation of the first sympodium was also earlier in the wider spaced plants and it occurred at the lowest possible node in a plant.

The number of bolls per plant was significantly more in T3, T4, T7, T8 and T9 than the rest in the winter crop where as there was no significant difference between the treatments in the summer crop.

Though the number of bolls was higher in T9, the kapas and seed yields from this treatment were not superior to T7, probably due to sub optimal population Chauhan and Verman, 1976)

The number of seeds per boll was significantly more in T7 than other treatments in the winter crop. white and Anderson (1974) in peas and Westerman and Crothers (1977) in beans reported seasonal vari tions in the number of seed per plant. In constrast, no significant variations between treatments were observed in the summer crop. Pandey *et al.*, (1976) reported the number of seed per pod in Bhendi did not vary significantly due to spacings.

The 100 seed weight was significantly higher in T7, T8 and T9 in both the seasons than in others. The weight increase was significatnly with increase in the intra-row than in the inter-row spacing. Pandey *et al.*, (1976) arrived at similar Conclusions in Bhendi

Kapas yield was significantly more in the medium spacing treatments like T3, T4, T7 and T8 in the winter crop and only in T7 in the summer crop whereas the seed yield was significantly higher in T3 and T7 in the winter crop and only in T7 in the summer crop. This clearly indicated that for obtaining the highest yield of both kapas and seed an optimum population is necessary

The recovery of mutured seed was significantly more in T3, T4, T7, T8 and T9 in both winter and summer seasons indicating thereby the importance of spacing for obtaining higher yields of better quality seed (Kannivan *et al.*, 1968)

Influence of spacing on different seed yield and quality paramoters in MCU 9 (Summer season of 1979-80).

Spacing	No. of sympodia per plant.	No. of bolls/per plant.	No. of seeds per boll.	100 seed weight (g)	Yield of kapas (Kg/ha)	Seed yield (kg/ha)	% matured seed.	Germination %	Vigour index.	% of shedding.	Oil (%)	FFA (%)
	1.	2.	3	4.	5.	6.	7.	8.	9.	10.	11.	12
75×30 (T1)	15.8	18.1	23:1	7.8	1177	755	69	63	1575	73	16.2	3.41
75×45 (T2)	16.7	16.0	22.9	7.9	1287	828	72	64	1664	69	16.3	3 33
75×60 (T3)	18.6	25:5	23.8	10.9	1576	954	90	76	2052	63	17.1	1 81
75×75 (T4)	18.8	22.1	23.6	10.5	1221	710	88	75	2025	61	17.2	1.72
90×30 (T5)	20 1	20.5	24.2	8.9	1121	535	73	64	1795	65	17.2	3.12
90×45 (T6)	22.9	25.7	23.8	8.6	888	577	77	65	1820	59	17 1	2.00
90×60 (T7)	28.9	24.5	25.7	11.5	1687	1088	91	80	2400	56	16.7	1.0
90×75 (T8)	24.1	29.0	23.1	11.0	1253	777	92	77	2300	49	17.2	0.72
90×90 (T9)	27.5	32.7	22,2	11,1	1287	755	92	75	2250	44	17.3	0,63
SEd	1.7	2.4		0.4	196	144	7.	3	95	7		0.24
CD (P. 0.05)	3.5	5.07		0.7	416	305	15	6	201	16	NS	0.55

Influence of spacing on different seed yield and quality in MCU 9 (winter) season of 1978-'79).

Spacing.	No. of sympodia per plant.	No. of bolls/per plant.	No. of seeds per boll.	100 seed weight.	Yield of kapas (kg/ha)	Seed yield (kg/ha)	% of matured seed	Germination %	Vigour index	% sheding	Oil (%)	FFA (%
Spacing.	1.	2.	3.	4.	5.	6	7.	8.	9.	10.	11,	12
75×30 (T1)	17.9	21.2	24 2	7.1	1208	792	65.2	69.2	1805	68	17.2	2 82
75×45 (T2)	18.5	25.3	24.3	7.3	1372	902	68.0	76.5	1999	66	17.0	2.78
75×60 (T3)	19.3	36.4	23 3	9.6	1689	1007	85.1	85.3	2500	50	16.8	1.75
75×75 (T4)	19.9	35.5	25.5	9.7	1592	905	86.2	84.9	2489	57	18.2	1 62
90×30 (T5)	21.7	24.2	24.7	8.4	1180	680	70.5	73.2	2001	60	17.3	2 72
90×45 (T6)	23.7	27.1	25.3	7.3	1280	720	75 1	78.2	2250	52	18.3	1.55
90×60 (T7)	25.1	39.9	26.8	11.1	1807	1170	86.9	86.9	2600	42	17.9	0.33
90×75 (T8)	25.7	38 2	24.2	10.8	1520	910	87 8	87.2	2580	40	18.2	0.31
90×90 (T9)	28.2	42.5	23.7	10.7	1390	823	88.2	87.9	2602	39	19 8	0.28
SEd	1.8	3.2	1,1	0.3	180	98	6.2	2.0	122	8	0.5	0.34
CD (P.0.05)	3.8	6.8	1.3	0.5	381	208	13.2	4.2	260	16	NS	0.73

The germination and seedling vigour were significantly higher in seeds collected from wider spacings such as T3, T4, T7, T8 and T9 than from narrow spacings. Prevalence of high humidity inside the dense canopy of the close spaced plants during the seed maturation period may be responsible for lowering the seed quality (Sankaran, 1975). The percentage free fatty acids was singnificantly higher in seed from closer spacings (T1, T2, and T5) than from wider spacings in both the seasons.

The percentage of shedding of boll was significantly more in closely spacend plants than in widely spaced plants in both the seasons

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