

INFLUENCE OF FOLIAR APPLICATION OF NUTRIENTS AND GROWTH REGULATORS ON YIELD AND QUALITY OF SEEDS IN COTTON CV MCU 9 (*Gossypium hirsutum*)

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Field trials were laid out during summer 1981 and winter 1981-82 with Cotton CV MCU 9 to study the influence of foliar application of urea, diammonium phosphate, urea + diammonium phosphate, naphthalene acetic acid and cycocel on the yield and quality of seeds. The results indicated that foliar application of diammonium phosphate at 1% concentration on 70th, 80th and 90th day after sowing increased the seed yield by about 53%. The resultant seed recorded better germination and seedling vigour than those obtained from other treatments.

In many seed crops, foliar application of nutrients and hormones has increased the yield and improved the quality of seeds. In Cotton, Shanmugam (1980) and Chandrasekaran and Sankaran (1980) reported increased boll number and kapas yield due to foliar application of N and P. Venkataswamy and Iruthyaraj (1980) reported increased yield of seed cotton by foliar application of diammonium phosphate and Ramachandra Boopathi *et al* (1980) reported increased yield of seed when sprayed with naphthalene acetic acid. The effect of naphthalene acetic acid on seed yield in cotton was discussed by Bhatt (1972) and Padaki *et al* (1974). The present investigation was carried out to study the effect of foliar application of nutrients and growth regulators on the seed crop of MCU 9.

MATERIALS AND METHODS

Field trials were conducted with CV MCU 9 in summer 1981 and

winter 1981-82 in the Department of Seed Technology, Tamil Nadu Agricultural University, Coimbatore with the following treatments :

1. Control (water spray)
2. Naphthaleneaceticacid(NAA) 20 ppm single spray on 70th day.
3. Urea @ 1% three sprays at 70th, 80th and 90th day after sowing.
4. Diammoniumphosphate(DAP) @ 1% three sprays at 70th, 80th, and 90th day after sowing.
5. Urea @ 1% + DAP @ 1% two sprays on 70th and 90th day after sowing.
6. CCC (Cycocel) 20 ppm single spray on 70th day.

The design adopted was Randomised Blocks Design with four replications.

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The crop was sown with uniform spacing of 90 x 60 cm and given a basal application of 35:35:35 kg/ha of NPK and 35 kg N/ha as top dressing between 45-50th day at the time of earthing up in both the seasons.

Observations on the number of bolls per plant, number of seeds per boll, 100 seed weight, yield of kapas, seed yield, percentage of recovery of matured seed, extent of seed dormancy, percentage of germination and vigour index were recorded and the values are statistically analysed.

RESULTS AND DISCUSSION

Number of bolls did not differ significantly among the treatments in both the seasons. According to Subbiah (1980), no significant increase in the number of bolls per plant was observed due to foliar application of NAA.

There was a significant increase in the number of seed per boll in urea and NAA treated plots over the control in summer. In winter there was no significant increase in the number of seeds between treatments.

100 seed weight was significantly higher in urea, DAP and UREA+DAP sprayed plots over the control and the rest of the treatments in winter whereas there was no significant difference in summer between treatments.

Shedding of boll was significantly lower in DAP, CCC, Urea, Urea+DAP and NAA sprayed plots than the control in both the seasons. Shanmugam (1980) observed similar

results by foliar application of urea on cotton Suvin.

Significant increase in yield of kapas and seed was observed in plots sprayed with NAA, Urea, DAP, CCC in both the seasons.

In winter crop, the seed cotton yield was 48, 114, 93, 89 and 27 per cent more in NAA, Urea, DAP, DAP + Urea and CCC sprayed plots, respectively over the control whereas in Summer, NAA Sprayed plots alone has registered 22 per cent more yield over the control. Venkataswamy and Iruthayaraj (1980) reported increased seed cotton yield due to CCC application on MCU 9 cotton. Bhatt (1972) and Palmer and Goldsworthy (1971) reported increased yield of kapas due to DAP spray. Shanmugam (1980) obtained increased kapas yield in MCU 5 and Suvin due to DAP application. Subbiah (1980), reported increased yield of seed cotton due to NAA foliar application.

There was significant increase in seed yield to an extent of 24, 13 and 11 per cent due to foliar application of NAA, DAP and CCC respectively in summer and 30, 72, 65, 54 and 49 per cent due to NAA, Urea, DAP, Urea + DAP & CCC respectively during winter.

Application of urea recorded increased seed yield in winter and was on par with control in summer. Similarly CCC recorded increased seed yield only in winter while NAA and DAP in both the seasons.

All the treatments increased significantly the percentage of matured seed in both the seasons except the

Table - 1 Effect of Foliar Application of Nutrients and Growth Regulators on Seed Yield and other Quality Parameters in both Winter and Summer Seasons in Cotton.

Treatments	No. of bolls/plant	No. of seed/boll	100 seed weight	Kapas yield kg/ha	Seed yield kg/ha	Percentage of seed recovery	% of matured seeds	% of Dormancy	Germination %	Vigour Index	% of shedding of bolls
Control (water spray)	W	9.8	7.6	693	443	63.9	65	35	75	2062	48
	S	26.9	8.9	1417	876	62.0	69	42	70	1750	55
NAA (20 ppm)	W	10.5	9.2	1025	656	64.0	79	45	78	2184	37
	S	27.1	8.6	1733	1091	63.0	80	63	70	1680	44
Urea (1%)	W	11.0	11.9	1481	948	64.6	89	38	87	2743	35
	S	26.3	9.0	1485	917	62.6	91	62	75	2128	38
DAP (1%)	W	11.0	11.5	1337	897	64.6	92	40	86	2752	32
	S	23.4	9.7	1568	992	63.6	93	63	75	2100	40
Urea + DAP (1%)	W	12.5	11.5	1289	826	64.6	88	39	86	2772	37
	S	26.4	9.0	1548	972	63.6	90	63	78	2106	42
CCC (20 ppm)	W	10.0	9.4	902	575	63.6	81	37	89	2848	33
	S	28.4	9.2	1499	947	63.6	85	63	80	2240	39
SE ^d	—	—	0.9	101.4	85	—	5	—	3	146	4.0
Winter C.D. (P = 0.05)	NS	NS	2.1	216.0	182	NS	10	NS	6	312	8.0
	SE ^d	0.8	—	76	44	—	5	—	3	142	4.0
Summer C. D. (P = 0.05)	1.7	1.7	NS	162	93	NS	11	NS	6	302	8.0

NAA treatment in summer over control. Among the treatments, DAP recorded significantly higher percentage of matured seed than all other treatments in both the seasons.

Though NAA increased the kapas and seed yield over the rest of the treatments in both the season it failed to increase the quality of the seed. Moreover, NAA increased the occurrence of motes which is not a desirable factor. There was no significant difference between treatments as far as dormancy was concerned.

Though urea when sprayed as above increased both kapas and seed yield in winter, it failed to increase the same in summer, whereas DAP increased the seed yield in both winter and summer in MCU 9.

Three sprays of Diammonium phosphate at one per cent concentration at 70th and 80th and 90th day after sowing can be recommended to increase the yield of quality seeds in a seed crop of MCU 9 in both winter and summer seasons and urea at the same level can be recommended for a seed crop of MCU 9 only during winter season to increase the yield of quality seeds.

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