

## EFFECT OF SPRAYING GROWTH REGULATORS AND UREA ON THE FLOWERING IN THE PARENTAL LINES OF CSH-5 SORGHUM

K. K. VADIVELU, V. KRISHNASAMY, and K. R. RAMASAMY

Studies on spraying gibberellic acid and urea on ms 2077A and of cycocel and maleic hydrazide on CS 3541 indicated that spraying GA at 200 ppm or urea at 2 per cent resulted in the early flowering of ms 2077A by 3 to 7 days and of CCC at 300 ppm or MH at 500 ppm delayed the flowering of CS 3541 by 5 days over the untreated control plants.

With the introduction of number of hybrid strains in sorghum, seed production has become a necessity. Many a time, the seed yields were very low mainly due to non-synchronised flowering of the parental lines. To achieve synchronised flowering, (i) staggered sowing (Krishnasamy, 1982), (ii) application of nitrogen (Narayan, 1967), (iii) withholding irrigation (Cavor *et al.*, 1964), (iv) flaming (Vanderlip *et al.*, 1977), (v) spraying growth regulators and (vi) cutting off of the stem (Cavor *et al.*, 1964) have been suggested. In Tamil Nadu, production of CSH 5 hybrid sorghum seed is being carried out by a number of seed producers in the districts of Coimbatore, Trichy and Madurai. The seed producers often face the problem of non-synchronised flowering between the male and female parental lines. Hence, studies were initiated with the parental lines of this hybrid to estimate the influence of spraying GA, urea,

MH and CCC on the duration to flowering of the lines.

### MATERIALS AND METHODS

A field experiment was initiated in the year 1981, adopting Randomized Block Design with ms 2077A and CS 3541. The inbreds were sown every month on the fixed date in plots of size 4.0 X 2.5 M adopting recommended package of practices. The experiment was conducted for a period of 12 months. When the inbred plants have reached primordial initiation stage, GA at 50, 100, 150, 200 and 250 ppm, CCC at 100, 200, 300, 400 and 500 ppm, urea at 0.5, 1.0, 1.5, 2.0 and 2.5 per cent and MH at 200, 300, 500, 700 and 1000 ppm were sprayed. GA and urea were sprayed on the male sterile line while the others on CS 3541. The treated plants were compared with untreated

check for the time to 50 per cent flowering (Vanderlip and Reeves, 1972).

## RESULTS AND DISCUSSION

Spraying of GA at a concentration of 200 ppm, resulted in early flowering which varied from one day (February) to seven days (January, August). Inducement of earliness by gibberellic acid has been reported by Morgon *et al.* (1977) in sorghum. Spraying of urea at 2.0 or 2.5 per cent also resulted in earliness. Spraying at 2.0 per cent concentration resulted in 7, 1, 5, 6, 5, 3, 8, 7, 5, 2, 5, and 6 days earliness in the months from January to December respectively. Reddy and Husain (1968) reported that application of high doses of nitrogen hastened the flowering of plants. Choudhari *et al.* (1977) reported the positive influence of spraying urea at 2.0 per cent in enhancing the flowering in different parental lines of sorghum. Spraying of CCC at 200, 300 and 400 ppm was effective in delaying the flowering in CS 3541. Spraying of CCC increased the days to flowering in wheat (Rao, 1977).

Delay in the days to flowering due to spraying MH at 300 or 500 ppm was observed in all the months. The delay varied from one to five days. Reducing the concentrations to 200 ppm or increasing it to 700 or 1000 ppm were not as effective as the intermediary doses. Josephson (1951) in maize, have indicated the usefulness of this chemical as a potential tool for delaying the flowering of the plants. Therefore, it has become apparent, that based on the behaviour of the parental lines at the

panicle initiation stage, synchrony in flowering can be achieved by spraying any one of the chemicals in any of the misbehaving parental lines

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Table 1. Effect of spraying GA and urea on number of days to 50% flowering in ms 2077A plants

Treatments	Jan. 1981	March 1981	April 1981	May 1981	June 1981	July 1981	Aug. 1981	Sept. 1981	Oct. 1981	Nov. 1981	Dece. 1981	Feb. 1982
Control	67	69	77	71	63	61	70	68	69	65	72	83
GA 50 ppm	66	68	76	70	64	61	68	66	69	63	72	84
GA 100 ppm	67	69	76	69	65	60	68	66	68	63	69	82
GA 150 ppm	65	65	77	69	63	60	65	64	66	62	69	81
GA 200 ppm	64	64	72	66	60	58	63	63	66	60	66	82
GA 250 ppm	60	64	72	67	60	58	63	63	69	60	66	82
Urea 0.5%	66	70	78	70	64	61	69	67	69	65	72	84
Urea 1%	66	69	77	71	63	60	69	67	70	64	72	82
Urea 1.5%	65	69	76	72	65	60	67	68	66	64	69	83
Urea 2.0%	60	64	71	66	60	59	63	63	67	60	66	82
Urea 2.5%	65	64	72	67	60	58	68	64	72	61	69	82

C D (P = 0.05) T = 0.2, M = 0.2, TXM = 0.7

Table 2. Effect of spraying of CCC and MH on days to 50% flowering in CS 3541 plants

Treatments	Jan. 1981	March 1981	April 1981	May 1981	June 1981	July 1981	Aug. 1981	Sept. 1981	Oct. 1981	Nov. 1981	Dece. 1981	Feb. 1982
Control	53	59	71	65	60	63	60	57	60	60	62	60
CCC 100 ppm	54	60	73	67	61	64	63	60	61	62	62	62
CCC 200 ppm	58	64	73	66	63	63	62	61	60	64	64	63
CCC 300 ppm	58	64	77	71	64	66	65	62	65	65	64	61
CCC 400 ppm	54	61	77	68	64	65	65	62	66	65	66	61
CCC 500 ppm	54	56	72	66	60	62	63	61	62	61	62	61
MH 200 ppm	54	60	70	66	61	64	62	62	69	59	62	63
MH 300 ppm	58	60	72	67	63	66	61	62	66	65	64	63
MH 500 ppm	58	63	76	69	64	63	65	58	62	64	66	61
MH 700 ppm	53	59	74	64	60	63	65	57	67	62	62	63
MH 1000 ppm	54	58	72	65	60	62	65	57	60	62	62	62

C D (P = 0.05) T = 0.2, M = 0.2, TXM = 0.7