

Effect of Staggered Planting of Male Parent on Seed Yield and Quality of Forage Sorghum Hybrid PCH-106

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In India, hybrid seed of sorghum is extensively produced on commercial scale. Non-synchrony of flowering in the male and female lines is one of the most important problems encountered in the hybrid seed production. The difference in the duration of flowering among the parental lines of different hybrids of sorghum can be overcome by staggered sowing in the male parent [1]. However, information on flowering behaviour, stigma receptivity and pollen viability period are the pre-requisite in decision making to achieve perfect nicking and enhanced seed yield. Therefore, the present investigation was carried out to know the effect of staggered planting of male parent on seed yield and quality of forage sorghum hybrid, PCH-106.

The present experiment was conducted during *Kharif* season of 1998 and 1999 at the livestock research center, G.B. Pant University of Agriculture & Technology, Pantnagar, Udham Singh Nagar (Uttaranchal), India. Parental lines of forage sorghum hybrid PCH-106 viz. PC-23 (R line) and 2219A (CMS line) were taken to study the same effect. The seeds of 2219A (CMS line) were sown in the field on a single day while the seeds of PC-23 (R line) were sown on three different dates i.e. each successive planting after 7 days during *Kharif* 1998 and 1999 as per treatment. The planting ratio of pollen parent and seed parent was 2:4 in all the three treatments during both the experimental years. The row length was 6m with row to row spacing of 50 cm and plant to plant spacing of 20cm. The experimental plots were isolated from foreign pollen through physical barrier providing 2m *Dhaincha* crop around the experimental field.

The effects of staggered planting of male parent on seed yield, yield attributing characters and quality on female parent are presented in Table 1. Seed setting per cent was found to be greatly affected by staggered planting of male parent and it increased with the delay in planting of male parent upto 14 days.

The significant higher seed setting to the extent of 30.15 and 34.57 per cent was observed in T_3 (male planted 14 days after female) during *Kharif* 1998 and 1999 respectively, while the significantly lowest seed setting to the extent 22.27 and 25.15 per cent was observed in T_1 (male and female planted the same day) during both the years. The result of T_2 (male planted 7 days after female) with respect to the seed setting per cent was 27.41 and 31.24, which was significantly higher than T_1 and significantly lower than T_3 . These results are in close confirmation with the results obtained by Patil and Kulkarni [2] in CSH-10 and Umashankar and Gowada [3] in CSH-5.

Seed yield per panicle, seed yield per row and ultimately seed yield ha^{-1} were also highly associated with seed setting per cent. The significantly higher seed yield per panicle, seed yield per row and seed yield ha^{-1} were observed in T_3 (male planted 14 days after female) and lowest results were observed in T_1 (male and female planted at same day). The results with respect to above yield and yield attributing characters for T_2 (male planted 7 days after female) found to be significantly higher than the T_1 (male planted 14 days after female) during the years. These findings are also in confirmation with the results of many scientists [4, 5, 6, 7, 8] in hybrid sorghum.

Seed quality factor i.e. 1000-seed weight and germination per cent were not affected by the

Table 1. Effect of staggered planting of R line PC-23 on different characters of MS line 2219A in a planting ratio of 4:2 during Kharif 1998 and 1999

Treatment Time of planting	Seed setting(%)		Seed yield/ panicle (g)		Seed yield per row (g)		1000-seed weight (g)		Germination (%)		Seed yield/ ha (q)		% yield increase over T ₁	
	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
T ₁ (male & female planted the same day)	22.27	25.15	11.34	12.57	340.42	377.20	27.04	26.77	85.33	88.41	7.56	8.38	0.00	0.00
T ₂ (male planted 7 days after female)	27.41	31.24	13.85	15.60	413.97	468.15	26.90	26.75	84.41	86.91	9.23	10.40	22.09	24.11
T ₃ (male planted 14 days after female)	30.15	34.57	15.07	17.16	452.25	514.97	26.68	26.49	86.66	85.66	10.05	11.44	32.94	36.52
SE(m) ±	0.47	0.58	0.24	0.28	8.25	8.56	0.15	0.15	0.69	0.75	0.16	0.19		
C.V. (%)	3.12	3.32	3.21	3.27	3.55	3.27	1.00	1.00	1.41	1.50	3.24	3.30		

staggered planting of male parent PC-23 in forage sorghum hybrid, PCH-106. Thousand seed weight varied from 26.88 to 27.04 g during Kharif 1998 and 26.49 g to 26.77g during Kharif 1999. Germination per cent was not statistically affected by the staggered planting in both the years.

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