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RESEARCH ARTICLE

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Performance of mesta genotypes in Northern Transitional zone of Karnataka

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ABSTRACT

Eleven genotypes of mesta were evaluated for yield and yield attributes during *Kharif* 2002 at Main Agricultural Research Station, Dharwad. Significant differences were observed among the genotypes with respect to plant height, basal stem diameter, total dry matter production, days to 50 per cent flowering, 1000-seed weight, seed yield, stalk yield and fibre yield. Among the genotypes, AS-73 CP-560, HS-2, AMV-4 and AMV-3 recorded significantly higher fibre yield as well as fibre related parameters plant height, basal stem diameter, total dry matter production and stalk yield. The seed yield was significantly higher in HC-583 and AMC-108 and these genotypes had significantly lower fibre yield. Thus, these genotypes may be classified as fibre yielding and seed yielding types and may be used as per the need basis for cultivation or for further improvement programme.

KEY WORDS :

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INTRODUCTION

Mesta (*Hibiscus* spp.) is one of the important fibre crops and stand next to jute in production. Mesta cultivation is widely scattered in eastern, northeast and southeastern states of India. It is the nearest alley of jute and plays an effective role in supplementing the short supply of row material in jute industry. It is also used as a raw material in the paper industry as a substitute of bamboo and eucalyptus (Sheshadri *et al.*, 1987). Though, this crop is well suited and adopted to northeastern parts of the country. It is capable of growing luxuriantly even under adverse and wide range of soil and climatic conditions (Sinha and Saha, 1980). Hence, there is a scope to extent its cultivation in the non-traditional areas.

The available information on adaptability, growth behavior and yield performance of mesta genotypes under the transitional parts of North Karnataka. Hence, the present investigation was undertaken to know the performance of mesta genotypes in Northern Transitional Zone.

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MATERIALS AND METHODS

The field experiment was conducted at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad during *Kharif* 2002 under rainfed condition.

The soil was medium deep black with pH 7.1 and EC 0.21 dS m^{-1}. The experiment was laidout in a Randomized Block Design with eleven mesta genotypes (AMV-1, AMV-2, AMV-3, AMV-4, AS-73 CP-560, HS-1, HS-2, HS-4288, HS-7910, AMC-108 and HC-583) replicated thrice. The seeds were sown in the spacing of 30 x 10 cm and fertilizer applied 40:20:20 kg NPK per ha. Routine cultural operations were attended to keep the plot free from weeds.

The observations on yield and yield parameters were recorded at harvest. The data were subjected to statistical analysis.

RESULTS AND DISCUSSION

The data on yield and yield parameters recorded in mesta genotypes are presented in Table 1. There were significant differences among the genotypes with respect to all the yield and yield parameters. The genotype AS-73 CP-560 recorded significantly higher plant height (211.23) followed by all other genotypes except AMC-108 and HC-583, whereas, significantly lower plant height was recorded in AMC-108 and HC-583. Such genotypic differences in

Table 1 : Yield and yield components in mesta genotypes

Treatments	Plant height (cm)	Basal stem diameter (cm)	Total dry matter production (g plant^{-1})	Days to 50% flowering	1000-seed weight (g)	Seed yield (q ha^{-1})	Stalk yield (t ha^{-1})	Fibre yield (q ha^{-1})
AMV-1	198.90a	1.30cd	28.14cde	117a	29.50b	7.08b	5.37cd	9.53cd
AMV-2	205.50a	1.32bcd	30.12a-c	115a	30.80b	7.27ab	5.83bcd	9.82bcd
AMV-3	205.83a	1.41ab	32.30a-d	107a	22.20d	6.65c	6.67ab	12.39ab
AMV-4	208.50a	1.41ab	33.32abc	107b	23.60d	6.56c	6.74ab	12.90ab
AS-73 CP-560	211.23a	1.43a	35.20a	120a	22.50d	6.32c	7.15a	13.67a
HS-1	202.90a	1.31cd	29.86b-e	109b	27.93c	7.12b	5.56bcd	9.64cd
HS-2	209.90a	1.42a	33.80ab	107b	22.40d	6.48c	7.03a	13.34ab
HS-4288	205.63a	1.37abc	31.37a-d	109b	26.80c	6.40c	6.62ab	11.89b
HS-7910	205.53a	1.36abc	30.93a-d	105b	26.53c	6.68c	6.46abc	11.67b
HC-583	169.53	1.26d	27.34de	85c	35.17a	7.55a	5.23d	8.09de
AMC-108	161.50b	1.25d	25.64c	89c	34.83a	7.23ab	5.05d	7.28e
Mean	198.52	1.35	30.73	106.36	27.45	6.85	6.16	10.93
S.E.$\pm$	5.94	0.085	3.31	1.67	1.09	0.12	0.36	0.51
C.D. (P=0.05)	17.52	0.029	3.86	4.95	2.78	0.34	1.06	1.51

mesta crop have also been reported by Iruthayaraj *et al.* (1974) and Sarma (1999). The basal stem diameter varied significantly among the genotypes.

The genotypes AS-73 CP-560 (1.43) and HS-2 (1.42) recorded significantly higher basal stem diameter, which were closely followed by AMV-4, AMV-3, HS-4288 and HS-7910. The significant differences in basal stem diameter possibly because of difference in radial cambium development and also dry matter accumulation in stem. The genotypes AS-73 CP-560, HS-2 and AMV-4 also showed significantly higher total dry matter production, while genotypes AMC-108 and HC-583 recorded significantly lower total dry matter production. Total dry matter production and its greater partitioning into stem depends upon photosynthetic ability of the plant during vegetative period and translocation of photosynthesis from source (leaf) to ultimate sink (stem). HC-mesta varieties were superior in dry matter accumulation in leaf during initial period, it seems they are inefficient for translocation of photosynthates from leaf to stem, resulting in poor total dry matter accumulation in these genotypes.

The genotypes HC-583 (85) and AMC-108 (89) were early type having a lesser days to 50 per cent flowering. Among all the genotypes AS-73 CP-560 (120), AMV-1 (117) and AMV-2 (115) took more days to 50 per cent flowering. The genotypes HC-583 and AMC-108 recorded significantly higher 1000-seed weight and seed yield, whereas genotypes AS-73 CP-560, HS-2, AMV-4 and AMV-3 recorded significantly lower seed yield but had higher fibre yield, it is possibly because of higher seed yield with bold seeds and higher seed weight. Longer variation in fibre yield ranging from 7.8 to 13.67 q per ha was recorded. These yield levels are rather low as compared to normal yield even under rainfed condition, as the crop suffered from moisture stress. The crop receives only 180 mm rainfall in *Kharif* as against normal precipitation of 525 mm. Among the genotypes, AS-73 CP-560, HS-2, AMV-4 ad AMV-3 recorded significantly higher fibre yield, while the genotypes AMC-108 and HC-583 had significantly lower fibre yield. These differences may largely attributed to the genotypic difference in their duration, dry matter production and partitioning of dry matter. The high fibre yield was obtained in the genotypes with greater plant height, basal stem diameter, stem dry matter. Such genotypic differences in mesta have also been reported by Sardan *et al.* (1993), Naidu *et al.* (1996), Krishnamurthy *et al.* (1994) and Anuradha and Rao (1999). Based on present investigation, it is concluded that the mesta genotypes AS-73 CP-560, HS-2, AMV-4 and AMV-3 exhibited better yield performance with respect to yield and yield attributes.

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