Performance of Some Kenaf Varieties Under Jammu Conditions

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SUMMARY

Varietal trials of some exotic and indigenous varieties of Kenaf were conducted in the Field Research Station of the Regional Research Laboratory, Jammu during the years 1974–76. Results indicated that the dry yield and basal diameter of the stalk, plant height, number of fruits and quantity of seeds per plant of Kenaf varieties, HC–583 and AMC–108 were highly significant over rest of the varieties. Between themselves, HC–583 gave highly significant results over AMC–108 in some of the parameters and only significant results in the remaining parameters.

INTRODUCTION

Kenaf (*Hibiscus cannabinus* Linn.) has traditionally been grown as a fibre crop, substitute to Jute, for the manufacture of ropes, nets, carpets, mats, sacks and hessian cloth. For this purpose, only the bast fibre of about 20% of the total weight of the dry stalk has been used, the remaining portions of the stalk, consisting of the short fibred woody and pithy materials, have been discarded. However, in recent years, lot of work has been done in U.S.A. in utilising the whole Kenaf stalk and the investigations carried out in the Northern Regional Research Laboratory, Peoria, Illinois have demonstrated that the entire Kenaf stalk has potential as a fibrous raw material for the pulp and paper industry(1). Great deal of work has also been done in U.S.A. in evolving improved varieties of Kenaf and studying their agronomic characteristics (3,4). Some work has also been done in various parts of India in studying the agronomic suitability of some of the improved Kenaf varieties, but for an introduction trial (2), practically nothing has been done in this region in studying the agronomic suitability of these varieties.

The present authors, therefore, undertook varietal trials of some of the indigenous and exotic Kenaf varieties under the climatic conditions prevailing in Jammu.

METHODS AND MATERIALS

Jammu is situated at an elevation of 300 m in the subtropical zone of J & K State between 32° 30′ to 33° North Latitude and 74°45′ to 75° East Longitude. The area has a typical monsoon climate with heavy rains from June to August. Summers are quite hot with mercury shooting upto 45°C but the winters are moderate with many forsty nights. The soil in the Field Research Station, where the experiment was carried out during the years 1974–76 was sandy loam (sand 50%; silt 30%; clay 14%) and poor in organic matter as well as available nutrients (organic carbon, 0.32%; available P_2O_5, 15.0 kg/ha, available K_2O, 118 kg/ha) and pH 7.8.

During 1974, a replicated randomised block design with 3 treatments and 6 replications was laid out. The treatments consisted of the local Indian variety, Poona Local; the improved Indian variety, GCD-98–13, and the improved American variety, EV-71.

During 1975, the Poona Local variety was dropped from the experiment because of its poor performance, but the GCD-98-13 and EV-71 varieties were retained. In addition to these 2 varieties, 4 more varieties, viz., HC–583, AMC–108 (improved Indian), EV-41 (improved American) and C-2032 (improved Cuban) were added to the experiment and a replicated randomized block design with 6 treatments and 6 replications was laid.

During 1976, the 2 superior most varieties viz., HC-583 and AMC–108 (as demonstrated in the previous year's experiment) were further subjected to experimentation for confirmation of results of 1975 by laying out a replicated randomized block design with 14 replication.

In all the years, sowing was done in the Ist week of May and the seed rate was maintained @ 15 kg/ha. A basal dose of Nitrogen @ 60 kg/ha in the form of urea, Phosphorus @ 40 kg/ha as single superphosphate and Potassium @ 40 kg/ha in the form of muriate of potash were applied to the experimental plots at the time of sowing. Seeds were sown in rows, 40 cm

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apart. Thinning was done after a fortnight to maintain the plant to plant distance to about 20 cm. Other cultural operations were attended to as and when needed. The crop was harvested in mid November, when the plants were in bloom.

RESULT AND DISCUSSION

DRY YIELD OF STALK

As seen in Table—I, the differences in the performance of EV-71, GCD-98–13 and Poona Local varieties during 1974 were highly significant. EV-71 with 115.39 Q/ha gave the highest yield; GCD–98–13 with 110.32 Q/ha was next in order; and Poona Local with 83.83 Q/ha gave the lowest yield. The increase in yield over the Poona Local variety was 37.46% in EV-71 and 19.90% in GCD–98–13.

Of the 6 varieties (HC–583, AMC–108, EV–71, EV-41, C–2032 and GCD–98–13) tried in 1975, HC–583 and AMC-108 with a yield of 154.98 Q/ha 136.28 Q/ha respectively gave highly significant result over rest of the varieties. Between themselves, HC–583 was significantly higher over AMC–108; the increase in yield being 13.72% more in HC–583.

During 1976, the differences in yield between HC-583 and AMC–108 were highly significant and the increase in yield being 16.58% more in HC–583. Fig. 1 shows the differences in dry yield of stalk in Q/ha of different varieties in the 3 years of experimentation.

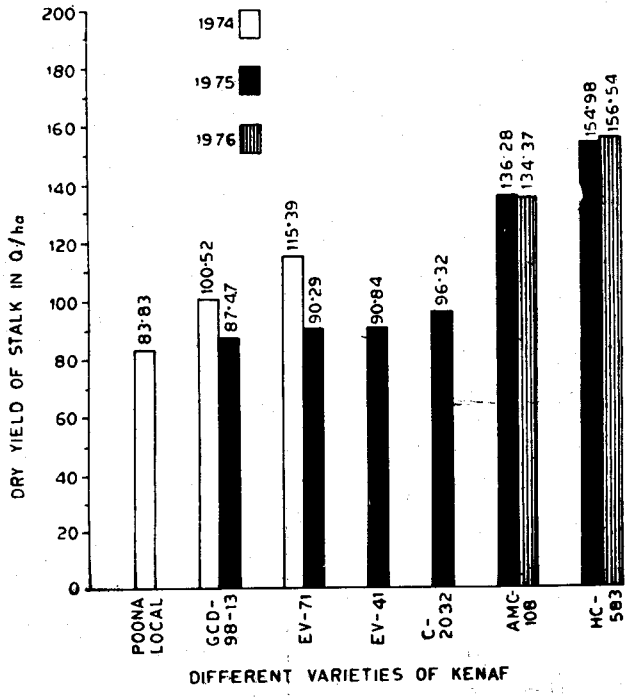

Fig. 1. Bar diagram showing the difference in dry yield of stalk in Q/ha of different varieties of Kenaf in the 3 years of experimentation.

PLANT HEIGHT

As in dry yield of stalk, so also in plant height, HC-583 and AMC-108 gave highly significant results over rest of the varieties during 1975. Between themselves, HC-583 differed significantly over AMC-108; the difference in plant height being 44.70 cm. Fig. 2 shows the monthly increment in plant height during the year 1975.

However, during 1976, HC–583 differed highly significantly over AMC-108; the difference in plant height being 33.17 cm.

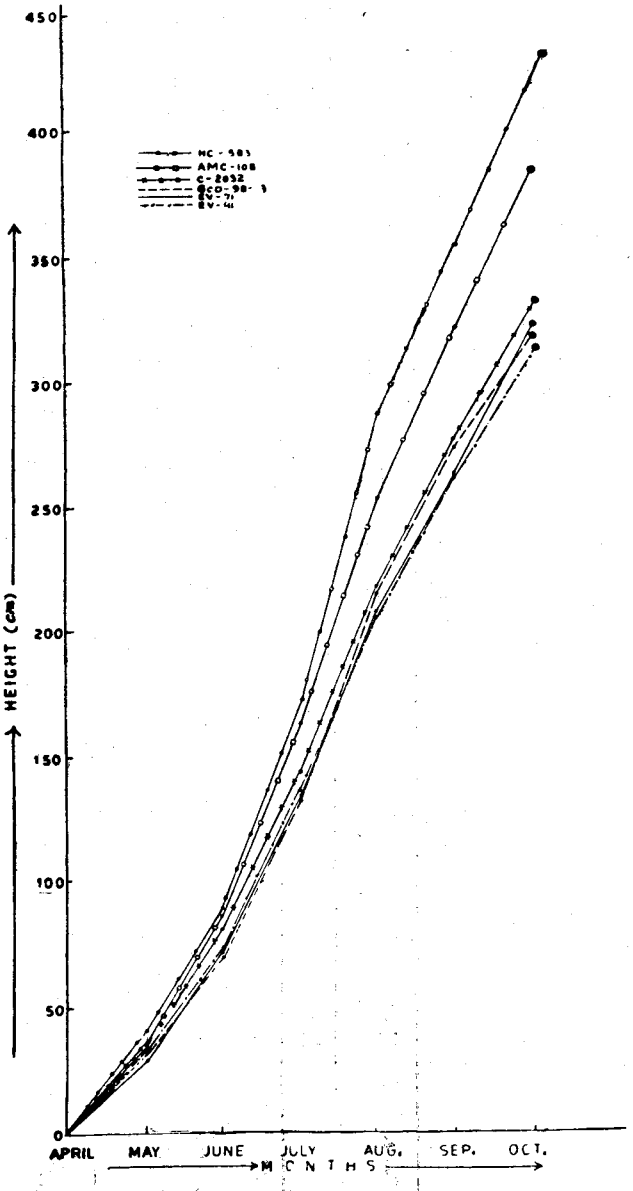

Fig. 2. Graph showing the monthly increment in plant height of different Kenaf varieties during the year 1975.

TABLE–I

SHOWING THE YIELD AND OTHER YIELD ATTRIBUTES OF DIFFERENT KENAF VARIETIES DURING THE YEARS 1974–76.

Varieties	Dry yield of stalk in Q/ha			Plant height in cm.		Basal diameter of stalk in cm.		No. of fruits per plant		Qty. of seeds per plant	
	1974	1975	1976	1975	1976	1975	1976	1975	1976	1975	1976
HC–583	—	154.98 **	156.54**	429.46**	454.89**	2.03 **	2.20 *	43.7 **	25.35	13.57 **	7.91
AMC–108	—	136.28 **	134.37	384.76 **	421.72	1.89 **	2.10	34.0 *	25.16	10.45 **	6.88
C–2032	—	96.32	—	330.48	—	1.59	—	17.5	—	5.05	—
EV–41	—	90.84	—	313.45	—	1.56	—	18.5	—	4.76	—
EV–71	115.39 **	90.29	—	321.41	—	1.72	—	17.4	—	5.37	—
GCD–98–13	100.52 **	87.47	—	319.83	—	1.68	—	15.3	—	5.39	—
Poona Local	83.83	—	—	—	—	—	—	—	—	—	—
S.Em ±	3.55	6.30	4.83	13.95	5.90	0.06	0.03	4.80	0.70	0.85	0.42
C.D.at 5%	11.20	18.34	14.75	40.63	18.00	0.19	0.08	13.96	2.14	2.40	1.28
C.D.at 1%	15.93	24.82	20.55	54.86	25.10	0.26	0.12	18.83	2.98	3.30	1.78

* Significant
** Highly significant

BASAL DIAMETER OF STALK

Basal diameters of HC–583 and AMC-108 also gave highly significant results over rest of the varieties during 1975. But contrary to dry yield of stalk and plant heights, the difference in the basal diameter between HC–583 and AMC–108 was not significant.

However, during 1976, the basal diameters in HC-583 and AMC-108 differed significantly.

NUMBER OF FRUITS PER PLANT

The differences in the number of fruits per plant of HC–583 and AMC-108 over rest of the varieties was highly significant during 1975, but between themselves HC-583 differed only significantly over AMC-108.

However, during 1976, the differences in the number of fruits per plant between HC-583 and AMC-108 was not significant.

QUANTITY OF SEEDS PER PLANT

The differences in the quantity of seeds per plant were again highly significant in HC-583 and AMC-108 over rest of the varieties in 1975, but between themselves, HC-583 differed only significantly over AMC-108; the increase in the quantity of seeds per plant was 29.85% more in HC-583.

However, during 1976, the differences in the quantity of seeds per plant between HC-583 and AMC-108 was not significant but the increase was 16.03% more in HC-583.

CONCLUSION

Of the 3 varieties tried in the first year, EV-71 proved to be the superiormost variety. But with the inclusion of 4 more varieties in the secondyear of experimentation, HC-583 and AMC-108 far out weighed EV-71 in all growth characters. Findings of the third year proved the overall superiority of HC-583 over AMC-108. HC–583 thus emerged to be the superiormost variety for the climatic conditions prevailing in Jammu.

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