

Kenaf Varietal Comparisons at the Safford Agricultural Center, 1998

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Abstract

Cool spring weather delayed planting into mid May reducing the number of heat units available for plant development. A new variety to our testing program produced the highest yield, DRC 96-1 produced 4.58 tons per acre.

Introduction

The USDA Kenaf breeding program in Weslaco, Texas was terminated along with the varieties that had been producing the best in our area. Three older varieties, two of which had been in all of our testing, along with a variety that we had not tested before were acquired from Brian Baldwin of Mississippi State University for this varietal evaluation.

Materials and Methods

This trial was designed as a replicated small plot trial with four replications. The plots were planted with a cone-type planter which distributes a given weight of seed uniformly over the length of the plot. Six pounds of seed were planted per acre for each variety and the seed was placed approximately one and a half inches below the surface of the soil, the plots were then irrigated to sprout the seed. The plots were planted on 36" row spacings. The following crop history provides the information on how the crop was managed:

Crop Histories

Date of Planting	May 18, 1998
Pre-pl Herbicides	Triflurilin, pre-plant incorporated
Fertilizer	200 lbs/ac Urea
Irrigation	Watered up + 10 furrow irrigations (ca. 42 acre inches)
First Frost Date	November 4 th (hard frost 11-10)
Date of Harvest	January 4, 1999
Heat Units (86/55°F) Planting to frost	3304

Irrigation was terminated in early September after peak growth had occurred to promote drying down of the plants. The frosts in November started the defoliation process. Harvests were not performed until January as a convenience to the experiment station operations, this was probably detrimental to maximum yields. Twenty-four square foot sub-plots were harvested for yield. Eight one-foot samples were collected from each plot at both the ground level and between four and five feet up on the stalk. Diameters of these samples were measured with a dial micrometer to determine the total diameter of the stalk with and without the bark. Bast and core fiber percentages were then calculated using these diameters.

Results and Discussion

Table 1 contains yield and other agronomic data comparing the four kenaf varieties tested in this study. A variety not tested in the area before, DRC 96-1, produced the most tons per acre of fiber. This variety had the least number of plants per acre and tied with Everglades 71 for the thickest stems. Tainung 2, the third ranked yielder, had the tallest plants. Everglades 41 had the lowest yield, the shortest, thinnest plants and the highest plant population. Compared to 1997 (1) the yields were a bit lower, principally because the stems were thinner in 1998.

Bark and fiber characteristics are shown in Table 2. In every case the bark thickness declined from the base of the plant to a level 4 to 5 feet up the stem, and the percent cross section of the bast fiber (from the bark) on most of the varieties slightly decreased. This trend was just the opposite to what was seen in 1997. The biggest difference between the two years was that the percent bast fiber was much higher in 1998.

The fiber yields have not been particularly good the past couple of years, principally because adverse spring weather has delayed the planting. But, this is something that must be dealt with in the high desert country with warm season crops. Several farmers in the lower desert region planted fields of kenaf in 1998 only to find that the infrastructure needed to process the crop did not materialize. This coupled with the loss of the USDA kenaf breeding program has lead us to believe that the timing is not right for this crop in the desert southwest. Our testing program will end with this trial.

References

1. Clark, L.J. and E.W. Carpenter. 1998. Kenaf varietal comparisons at the Safford Agricultural Center, 1996-1997. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-114, pp. 142-145.

Table 1. Kenaf variety yields and other agronomic data, Safford Agricultural Center, 1998.

Variety	1996				
	Air Dry Yield (T/ac)	Plants/Acre	Plant Height (inches)	Stem Diameter at 1' (in)	Stem Diameter 4-5' (in)
DRC 96-1	4.58 a	26499 b	113.6 a	0.79 a	0.58 a
Everglades 71	4.06 a	30129 b	109.8 b	0.80 a	0.57 a
Tainung 2	3.89 a	36663 ab	115.2 b	0.77 a	0.50 ab
Everglades 41	3.66 a	45738 a	106.2 b	0.58 b	0.42 b
Average	4.05	34757.3	116.2	0.74	0.52
LSD (05)	1.16	10253.9	9.44	0.12	0.08
CV (%)	20.73	21.41	5.9	11.4	11.91

Table 2. Kenaf variety bark and fiber characteristics, Safford Agricultural Center, 1998.

Variety	Bark thickness		Calculated			
	Basal 1' of plant	4 - 5' segment of plant	Percent Bast Fiber		Percent Core Fiber	
			Basal 1'	4 - 5'	Basal 1'	4 - 5'
DRC 96-1	0.04 b	0.03 b	24.64 a	21.45 a	75.36	78.55
Everglades 71	0.06 a	0.04 a	37.04 a	30.46 a	62.96	69.54
Tainung 2	0.05 ab	0.03 ab	30.16 a	29.27 a	69.84	70.73
Everglades 41	0.03 b	0.03 b	26.57 a	31.30 a	73.43	68.7
Average	0.045	0.029	29.6	28.12	70.4	71.9
LSD (05)	0.015	0.007	12.27	10.06	--	--
CV (%)	25.100	18.700	30.08	25.95	--	--