Tobacco Research 37 (1) : 46-47, 2011

PRODUCTION POTENTIAL OF ADVANCED BREEDING LINES OF CHEWING TOBACCO UNDER DIFFERENT AGRONOMIC PRACTICES

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(Received on 30th October, 2009)

Chewing tobacco is one of the important cash crops grown in Tamil Nadu during *rabi* season occupying an area of 15,000 to 20,000 ha. The advanced breeding lines of chewing tobacco vary in their yield potential. To exploit the full yield potential of advanced breeding lines, it is essential to test under different agronomic practices. As nitrogen significantly influences the yield of chewing tobacco (Sinha *et al.,* 1984). The present study was conducted to evaluate the advanced breeding lines under different spacing and nitrogen levels.

Field experiments were conducted at Central tobacco Research Institute- Research station farm, Vedasandur, Tamil Nadu during the *rabi* 2003-04 and 2005-06 for assessing the performance of two advanced breeding lines viz., HV 94-19 and HV 94-21 in comparison check variety, Meenakshi, under two spacings, 75 x 75 cm and 90 x 75 cm and two nitrogen levels, 75 and 100 kg/ha. The experiment was conduced in a split-split plot design with three replications. The soil of the experimental site was gravelly alkaline (pH: 8.1), low in available N (205 kg/ha), available P (5.9 kg/ha) and medium in available K (226 kg/ha). Phosphorus @ 100 kg/ha in the form of super phosphate (625 kg/ha) mixed with 2.5 t/ha of sieved farm yard manure was spot-applied. Nitrogen was top-dressed as per the treatments in two equal splits as ammonium sulphate and urea at 45 and 60 days after planting, respectively. The crop was topped at 60 days after planting and the suckericide, decanol was applied at 6 % concentration. Crop was harvested by stalk-cut method at 120 days and subjected to sun-curing. The dried plants were kept under bulking for four weeks and the leaves were stripped and graded. First grade leaf yield (FGLY) of advanced breeding lines HV 94-19 and HV 94-21 were comparable with the check variety Meenakshi during the year 2003-04, 2005-06 and in pooled data. Similar trend was noticed with the total cured leaf yield (TCLY) also. Spacing significantly increased the FGLY and TCLY. The spacing 75 x 75 cm recorded significantly higher FGLY of 2731 and 2755 kg/ha during 2003-04 and 2005-06, respectively over 90 x 75 cm spacing. The pooled data also showed an increase in FGLY with 75 x 75 cm spacing. The yield increase with 75 x 75 cm spacing was 19% over the wider spacing of 90 x 75 cm. The spacing 75 x 75 cm significantly increased the TCLY. Similar results were reported by Patel *et al.* (2002). The TCLY recorded with 75 cm x 75 cm spacing during 2003-04, 2005-06 and in pooled data were 3165, 3507, and 3336 kg/ha respectively (Table 1). The TCLY increase with 75 x 75 cm spacing during 2003-04, 2005-06 and in pooled data were 17, 20 and 19%, respectively over 90 cm x 75 cm spacing.

Nitrogen did not significantly increase the FGLY during 2003-04 and 2005-06, whereas, across years, nitrogen significantly influenced the FGLY. Nitrogen at 75 kg/ha significantly increased the FGLY (2594 kg/ha) over 100 kg/ha. The FGLY increase with 75 kg N/ha was about 5 % over 100 kg N/ha. Nitrogen levels did not influence the TCLY during 2003-04, 2005-06 and in pooled data. However, 100 kg N/ha is essential for increased TCLY. Nitrogen levels did not influence the cured leaf yield of chewing tobacco under Vedaranyam conditions (Kumaresan *et al.,* 2001) and at Vedasandur conditions (Kumaresan and Palanichamy, 2002). The interaction effect between advanced breeding lines, spacing , nitrogen with respect to FGLY was significant (Table 2).The spacing of 75 x 75 cm significantly increased the FGLY of the advanced breeding lines over 90 x 75 cm spacing.

Higher net returns and B:C ratio was recorded with the advanced breeding line HV 94-19 under

Table 1: First grade leaf yield and total cured leaf yield of advance breeding lines as affected by levels of spacing and nitrogen

Treatments	First Grade Leaf Yield (kg/ha)			Total Cured Leaf Yield (kg/ha)			Net return (₹/ha)	B:C ratio
	2003-04	2005-06	Pooled	2003-04	2005-06	Pooled		
Advance breeding lines								
HV 94-19	2489	2514	25.02	2986	3206	3096	28063	0.76
HV 94-21	2516	2522	2519	2892	3175	3033	27619	0.75
Meenakshi	2591	2538	2565	2916	3257	3087	27989	0.76
SEm ±	**69.8**	**130.3**	**73.9**	**99.1**	**79.8**	**63.6**	-	-
CD (P=0.05)	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	-	-
CV %	**9.55**	**17.9**	**12.2**	**11.7**	**8.61**	**11.2**	-	-
Spacings (cm)								
75 x 75	2731	2755	2743	3165	3507	3336	29760	0.81
90 x 75	2334	2294	2314	2698	2918	2808	26021	0.71
SEm ±	**22.6**	**71.4**	**21.6**	**67.5**	**93.4**	**33.3**	-	-
CD (P=0.05)	**78.4**	**247.1**	**59.9**	**233.5**	**323.1**	**92.2**	-	-
CV %	**3.79**	**12.0**	**14.3**	**9.8**	**12.3**	**10.2**	-	-
Nitrogen levels (kg/ha)								
75	2577	2612	2594	3014	3195	3104	28202	0.77
100	2488	2437	2463	2849	3230	3040	27579	0.75
SEm ±	**61.1**	**81.3**	**21.6**	**75.7**	**91.2**	**33.3**	-	-
CD (P=0.05)	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	-	-
CV (%)	**10.2**	**13.7**	**5.13**	**11.0**	**12.0**	**6.5**	-	-

Table 2: Interaction effect of advance breeding lines, spacing and nitrogen levels on first grade leaf yield (kg/ha)

Treatments	Spacing		Nitrogen	
	75 x 75cm	90 x 90cm	75kg N/ha	100 kg N/ha
HV 94-19	2778	2225	2537	2466
HV 94-21	2696	2341	2559	2478
Meenakshi	2754	2375	2686	2443
SEm ±	**37.5**		**37.5**	
CD (P=0.05)	**103.8**		**103.8**	

the spacing 75 cm x 75 cm and 75 kg N/ha as compared to HV 94-21 and the check variety Meenakshi under different agronomic practices. The increase in yields in these treatments resulted in higher net returns and B:C ratio.

It was concluded from the study that higher yield and net returns could be obtained with the advanced breeding line HV 94-19 under 75 x 75 cm spacing and 75 kg N/ha.

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