

EFFECT OF PLANTING DATE AND TOPPING LEVEL ON OCCURRENCE OF DISEASES IN BIDI TOBACCO CV. GABT 11

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An experiment was laid out to study the effect of planting date and topping level on occurrence of diseases in bidi tobacco cv. GABT 11 in split plot design with three planting dates as main plot and three topping levels as sub plot at Bidi Tobacco Research Station, Anand Agricultural University, Anand for 3 years (2014-15 to 2016-17). Pooled results revealed that planting of GABT 11 before 3rd week of September recorded higher yield in comparison to planting 3rd week of October. Significantly low root-knot disease was recorded in September planting in comparison to August planting. Although mosaic and leaf curl significantly increased in September planting. Among topping levels, 26 leaves per plant significantly recorded the highest cured leaf yield. Planting before 3rd week of September and adjusting higher topping level (26 leaves) could be followed for minimizing development of mosaic & leaf curl incidence and for obtaining higher cured leaf yield.

INTRODUCTION

Bidi tobacco (*Nicotiana tabacum* L.) cultivation is constrained by a number of diseases. In field, root-knot disease caused by *Meloidogyne incognita* and *M. javanica* occurs as endemic disease every year while, moderate to severe losses due to tobacco mosaic virus (TMV) and leaf curl caused by whitefly transmitted tobacco leaf curl virus (TLCV) occur seasonally. Individual management measures are recommended against these problems (Anonymous, 2018; Patel *et al.*, 2001). Bidi tobacco cultivar Gujarat Anand Bidi Tobacco 11 (GABT 11) released in 2013 and preferred by most farmers. GABT 11 has profuse vegetative growth and takes long duration for maturity. Dwarfing was more prone to manage diseases under favourable weather conditions. With a view to see the effect of topping levels and planting dates on diseases prevalent in the region the present investigation

was planned to understand the development of mosaic, leaf curl and root-knot nematode problems.

MATERIALS AND METHODS

An experiment was conducted for three years (2014-15 to 2016-17) in split plot design at Bidi Tobacco Research Station, Anand Agricultural University, Anand. Three different dates of planting i.e. 3rd week of August (33rd Std. week) (D₁), 3rd week of September (38th Std. week) (D₂) and 3rd week of October (42nd Std. week) (D₃) as main-plot treatment, with three sub-plot treatments consisting of three topping levels i.e. 18 leaves (T₁), 22 leaves (T₂) and 26 leaves (T₃). All the treatments were replicated four times with a plot size of 6.3 x 4.5 m. Gujarat Anand Bidi Tobacco 11 (GABT 11) was planted in each plot at a spacing of 90 x 90 cm. All the recommended agronomic practices in were followed. Observations on the intensity of various diseases and yield parameters were recorded at appropriate time and data were analyzed.

RESULTS AND DISCUSSION

The influence of date of planting and topping levels on the development of three major problems (mosaic, leaf curl and root-knot nematode) of bidi tobacco cv. GABT 11 was studied during 2014-17. It was observed that planting during August 3rd week resulted in significantly lower mosaic (57.38 %) and leaf curl disease (4.12 %) in August to sever mosaic (81.59%) recorded in September planting and 7.5 % leaf curl was observed higher in October planting, respectively. Alteration in time of sowing or planting have been found useful in the management of diseases in various crops including bidi tobacco (Patel *et al.*, 2003; Gaur *et al.*, 1979;

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Table 1: Influence of dates of planting and topping level on diseases and yield**(Pooled 2014-15 to 2016-17)**

No	Treatment	Mosaic (%)	Leaf curl (%)		RKI (0-5)		Cured leaf Yield (kg/ha)
			x	Retra	x	Retra	
(A) Date of transplanting							
1	3 rd week of August (D ₁)33 rd Std. week	57.38	2.03	4.12	2.11	3.45	3782
2	3 rd week of September (D ₂) 38 th Std. week	81.59	2.59	6.71	1.45	1.10	3834
3	3 rd week of October (D ₃)42 th Std. week	75.95	2.74	7.50	1.25	0.56	2857
	S. Em	3.03	0.087	-	0.092	-	102.05
	C. D. 0.05	10.47	0.302	-	0.318	-	353.16
	C.V. %	25.34	21.35		34.34		17.54
(B) Topping level							
1	18 leaves (T ₁)	71.27	2.30	5.29	1.62	1.62	3111
2	22 leaves (T ₂)	70.95	2.49	6.20	1.59	1.53	3379
3	26 leaves (T ₃)	72.70	2.56	6.55	1.60	1.56	3983
	S Em	2.18	0.114	-	0.036	-	101.57
	C. D. 0.05	NS	0.340	-	NS	-	301.80
	C.V. %	10.54	16.17	-	7.82	-	10.08
Interaction (A) x (B)							
1	D ₁ T ₁	56.19	1.97	3.88	2.14	3.58	3389
2	D ₁ T ₂	56.91	2.20	4.84	2.09	3.37	3693
3	D ₁ T ₃	59.05	1.91	3.65	2.11	3.45	4264
4	D ₂ T ₁	80.95	2.57	6.60	1.47	1.16	3330
5	D ₂ T ₂	82.62	2.47	6.10	1.44	1.07	3583
6	D ₂ T ₃	81.19	2.71	7.34	1.45	1.10	4588
7	D ₃ T ₁	76.67	2.35	5.52	1.27	0.61	2614
8	D ₃ T ₂	73.33	2.79	7.78	1.24	0.54	2860
9	D ₃ T ₃	77.86	3.07	9.42	1.24	0.54	3098
	S.Em.	4.41	0.223	-	0.092	-	192.57
	C. D.0.05	NS	0.631	-	NS	-	NS
	C.V. %	12.32	18.20	-	11.52	-	11.03

Gaur and Sharma, 2000; Jeffers and Roberts, 1993; Nath and Saika, 1995; Saklani and Mathai, 1977). However, root-knot index of 3.45 was recorded in August planting in ensuing to other planting dates. Decrease in root-knot nematode index with delayed planting dates has been observed in our study (Table 1), which can be attributed to inhibiting of infection, development and reproduction of root-knot nematode at low temperature (Gaur *et al.*, 1979).

Data on the effect of topping level for disease development indicated that topping level has no effect on the development of mosaic, leaf curl and

root knot development. However, significantly higher yield were observed in topping level (26 leaves) followed to topping level 18 and 22 leaves. Data also analyze that (Table 1), topping level has marked influence on cured leaf yield. Higher yield were obtained at 26 leaves topping level followed by stealing decline in yield in topping leaves of 22 and 18 leaves.

Finally, it can be concluded that planting before 3rd week of September and adjusting higher topping level (26 leaves) could be followed for inhibiting the development of mosaic, leaf curl and for realizing higher cured leaf yield in bidi tobacco.

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