Tobacco Research 38 (2) : 55-57, 2012

AGRO TECHNIQUES FOR PRODUCTIVITY ENHANCEMENT OF FCV TOBACCO UNDER SOUTHERN LIGHT SOILS OF ANDHRA PRADESH

R. SRINIVASULU, L.K. PRASAD, A.R. PANDA, K.C. CHENCHAIAH AND JAGDISH CHANDRA

Central Tobacco Research Institute Research Station, Kandukur- 523 105

(Received on 30th November, 2011)

An experiment was conducted (2007-2010) with three varieties (Siri, N-98 and Hema), three dates of planting (Sept 4th, October 2nd and Oct 3rd week) and three fertilizer levels (60-60-60; 80-60-70 and 100-60-80 NPK kg/ha) to find out best agro-techniques for improving productivity and quality of FCV tobacco. The results showed that yields were maximum with the variety Siri followed by N-98 and Hema. Variety Hema was out yielded by Siri and N-98 by 19.5 and 16.0% in Sept 4th planting, by 16.5 and 12.3% in October 2nd and by 8.5 and 7.0 % in October 3rd i.e., late planting, indicating early planting is one of the major requirements for Siri and N-98 under SLS of Prakasam and Nellore districts. The mean bright grade outturn was 57.0% in early plating, 56.1 % in middle planting and 52.2% in late planting. Yield differences due to treatments were significant in green leaf, cured leaf, bright leaf and grade index. Variety Siri and line N-98 were on a par and superior to Hema. Yields increased with increase in fertilizer levels, however differences between 80-60-70 and 100-60-80 NPK kg/ha were non-significant. Therefore, improvement in cured leaf yield can be achieved by adopting high yielding variety Siri or line N-98, early planting and with increase in fertilizer dose from the 60-60-60 kg NPK/ha to 80-60-70 kg NPK/ha.

INTRODUCTION

The productivity levels of FCV tobacco were almost stagnant under Southern Light Soil (SLS) conditions of Andhra Pradesh due to various reasons. Due to everincreasing cost of production, the tobacco crop at yield levels of 850 to 1000 kg/ha is becoming less remunerative. As there is no other suitable alternative crop under rainfed SLS conditions there is an urgent need to improve the productivity level. There is a shift in market preference and requirement of medium and low grades is more instead of high grades. Under these circumstances instead of aiming for higher bright grade outturn we may aim for improved productivity by changing the fertilizer dose and the time of planting with a suitable variety. These technologies may make FCV tobacco more remunerative and improve productivity in this backward area. Therefore, an experiment was undertaken at CTRI Research Station, Kandukur in order to develop suitable technology for FCV tobacco under SLS conditions. A few studies were done in different tobacco types for improvement of productivity (Arya *et al.*, 2009; Anuradha *et al.*, 2010; Dinesh Kumar *et al.*, 2010).

MATERIALS AND METHODS

An experiment was conducted at Central Tobacco Research Institute Research Station, Kandukur with three varieties (Siri, N-98 and Hema), three dates of planting (Sept 3rd, Oct 2nd and Oct 3rd week) as main plot treatments and three fertilizer levels (60-60-60; 80-60-70 and 100-60-80 NPK kg/ha) as sub-plot treatments in a split plot design with three replications. The size of net plot was 2.60 x 5.85 m. Fertilizers were applied in two splits: 75% of N and K and whole of P as basal + N and K as top dressing after two weeks of planting. Growth parameters recorded *viz.*, plant height, total number of leaves, number of curable leaves per plant and leaf size were recorded. Rain fall, weather parameters, incidence of pests and diseases and yield observations *i.e.* green leaf, cured leaf, bright leaf and grade index were recorded. Cured leaf was analysed for chemical quality parameters *viz.*, nicotine, reducing sugars, and chlorides. Pooled data of different yield parameters were analysed statistically.

RESULTS AND DISCUSSION

Pooled analysis of yield data showed that yields were maximum in variety Siri followed by N-98 and Hema. Variety Hema was outyielded by

Siri and N-98 by 19.5 and 16.0% in first date of planting, by 16.5 and 12.3% in second date and by 8.5 and 7.0% in third date i.e., late planting, indicating early planting is one of the major requirements for Siri and N-98 under SLS conditions. The mean bright grade outturn was 57.0% in early planting, 56.1% in middle planting and 52.2% in late planting. Yield differences due to treatments were significant in green leaf, cured leaf, bright leaf and grade index. Variety Siri and line N-98 were on a par and were superior to Hema (Table 1). Variations in yield due to fertilizer levels were significant in green leaf, cured leaf and grade index. Cured leaf and grade index increased with increased levels of applied nitrogen (Arya *et al.*, 2009; Anuradha *et al.*, 2010).

Yields increased with increase in fertilizer level up to 100-60-80 NPK kg/ha. Nitrogen and potassium have crucial role in expression of the genotypic potential and has profound effect on quality parameters (Dinesh Kumar *et al.*, 2010). Significant improvement in green leaf and cured leaf yields were observed with increase in nitrogen level from 30 to 60 kg/ha and timely planting in FCV variety Rathna (Srinivasulu, 2006). The interaction effect was observed between higher level of fertilizer in early and medium dates of planting in variety Siri and promising line N-98. In first and second date of planting nicotine was higher and reducing sugars were low in line N-98. However, the interaction effects were non-significant. Increase in fertiliser levels increased the nicotine and reducing sugars(Table 2). It is also shown that significant improvement in cured leaf yield can be achieved by adopting the high yielding variety Siri or line N-98, early planting and increase in fertilizer dose from the 60-60-60 to 80-60-70 kg NPK/ha under SLS conditions. The variety Siri is suitable for SLS area and line N-98 proved promising. The above results will help in updating/modifying the present package of practices to get better yields in specific areas with varying fertility and also to get the required

Table 1: Effect of dates of planting, varieties and fartilizer levels on yield parameter of FCV tobacco

Treatments		Green leaf (kg/ha)	Cured leaf (kg/ha)	Bright leaf (kg/ha)	Bright leaf (%)	Grade index
Time of planting x varieties						
Sept 3rd week-Siri 10802		1517	860	57.1	1244	
Sept 3rd week-N-98		10341	1477	828	56.8	1220
Sept 3rd week-Hema		8693	1257	713	56.8	1025
Oct 2nd week- Siri		10116	1467	836	56.9	1213
Oct 2nd week- N-98		9636	1431	804	56.0	1168
Oct 2nd week- Hema		8448	1241	687	55.3	1021
Oct 4th week- Siri		6590	972	500	50.9	783
Oct 4th week- N-98		6478	967	505	52.1	774
Oct 4th week- Hema		6027	894	483	53.6	720
Fertilizer levels						
N-P_2O_5-K_2O (kg/ha)						
60-60-60		7659	1115	636	56.9	918
80-60-70		8825	1284	714	55.6	1053
100-60-80		9227	1342	717	53.2	1085
SEm±	**Main plots**	**351.6**	**47.5**	**39.6**		**39.2**
	Sub plots	**197.3**	**24.5**	**20.3**		**20.6**
CD (P=0.05)	**Main plots**	**1040**	**135.6**	**115.2**		**111.9**
	Sub plots	**540.8**	**65.9**	**60.0**		**55.1**
CV (%)	**Main plots**	**12.44**	**11.5**	**16.9**		**11.7**
	Sub Plots	**11.88**	**10.2**	**15.1**		**10.6**

Table 2: Effect of dates of planting, varieties and fartilizer levels on chemical quality charecters of FCV tobacco (Pooled data)

Treatments	Nicotine (%)	Reducing sugars (%)	Reducing sugars/ Nicotine	Chlorides (%)
Time of planting x varieties				
Sept 3rd week-Siri 2.60	11.86	4.61	0.51	
Sept 3rd week-N-98	2.84	8.45	4.11	0.61
Sept 3rd week-Hema	2.75	11.43	4.18	0.48
Oct 2nd week- Siri	2.48	12.94	5.49	0.49
Oct 2nd week- N-98	2.83	12.50	4.57	0.39
Oct 2nd week- Hema	2.83	13.32	4.83	0.43
Oct 4th week- Siri	2.68	13.28	4.97	0.37
Oct 4th week- N-98	2.61	13.15	5.03	0.39
Oct 4th week- Hema	2.49	13.81	5.56	0.45
Fertilizer levels (kg/ha)				
N- P_2O_5- K_2O				
60-60-60	2.58	13.08	5.20	0.46
80-60-70	2.77	12.40	4.55	0.46
100-60-80	2.79	12.39	4.29	0.46
Dates of planting				
Sept 3rd week	2.75	12.03	4.40	0.42
Oct 2nd week	2.42	12.97	5.40	0.30
Oct4th week	2.64	13.56	5.15	0.29
Varieties				
Siri	2.59	11.84	4.93	0.45
N-98	2.76	11.42	4.54	0.46
Hema	2.69	13.58	4.77	0.45
General Mean	**2.68**	**12.27**	**4.84**	**0.46**

yield potential of newly developed varieties like N-98 and Siri to produce higher yields.

ACKNOWLEDGEMENTS

Authors gratefully acknowledge the facilities extended by Director, Central Tobacco Research Institute, Rajahmundry to conduct this study.

REFERENCES

Anuradha, M., K. Nageswara Rao, C. Chandra sekhararao and V. Krishnamurthy. 2010. Effect of nitrogen levels on growth, yield and quality of flue-cured tobacco. **Tob. Res.** 36: 56-8.

Arya, R.L., K.D. Singh, V. Krishnamurthy, S. Roy, C. Chandrasekhararao, S. Amaranath and S. Chanda. 2009. Effect of different sources, levels and time of nitrogen application on productivity and quality of *Jati* tobacco (*Nicotiana tabacum*) under *Terai* region of West Bengal. **Tob. Res**. 35: 6-9.

Dinesh Kumar, M. T.S., Sridhara, G.K.Vageesh, Girijesh, S.P. Nataraju and Rangaiah. 2010. Effect of nitrogen and potassium levels on yield and quality of promising FCV tobacco genotype (KST-27) in Karnataka. **Tob. Res.** 36: 65-9.

Srinivasulu, R. 2006. Response of FCV tobacco variety Rathna to time of planting, planting density and nitrogen levels under SLS conditions. **Tob. Res.** 35: 43-7.