

ON FARM TESTING OF NATU TOBACCO LINE (L 45-90) IN UPPER NORTHERN LIGHT SOIL AREA OF ANDHRA PRADESH

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Tobacco is one of the most economically significant agricultural crops in the world. Natu tobacco is grown in West Godavari, Krishna, Guntur, Prakasam, Khammam, Kurnool, Mahaboobnagar, Nalgonda, Ananthapur, Visakhapatnam and Srikakulam districts of Andhra Pradesh for cheroot and chewing purposes. This tobacco is used in the manufacture of cheaper brands of cigarettes, cheroots, snuff, pipe mixture, cigarette blending, tobacco paste, snuff and hookah paste. It is also blended with Flue-cured Virginia tobacco (FCV) in the manufacture of several brands of cigarettes. On Farm trials were conducted on Natu line, L 45-90 for two crop seasons at two locations of upper NLS, viz., Srivarigudem and Palacherla villages in NLS zone based on purposive random sampling. At Srivarigudem, the line, L 45-90 recorded 63% bright grade out turn in two consecutive tobacco seasons, whereas the check variety, Kommugudem yielded 55% and 52.7 % bright grade out turn during two seasons. The cured leaf yield of L 45-90 was about 17 to 23% higher than Kommugudem variety. This shows that the Natu variety, L 45-90 can be recommended to farming community.

INTRODUCTION

Natu tobacco is grown in West Godavari, Krishna, Guntur, Prakasam, Khammam, Kurnool, Mahaboobnagar, Nalgonda, Ananthapur, Visakhapatnam and Srikakulam districts of Andhra Pradesh for cheroot and chewing purposes. Natu tobacco has good aroma and burning quality. Soils growing natu tobacco range from heavy black-clay soils as in Guntur district to sandy and sandy loam soils of West Godavari, East Godavari and Srikakulam districts. Natu tobacco is grown in conserved moisture conditions, mostly as un-irrigated crop in heavy clay soils of Guntur district. These soils are generally rich in lime. In East Godavari district, this crop is irrigated 5-8 times

because of the free draining nature of the soil. This tobacco is used in the manufacture of cheaper brands of cigarettes, cheroots, chewing, pipe mixtures and snuff. It is also blended with Flue-cured Virginia tobacco (FCV) in the manufacture of several brands of cigarettes. Sun Cured Natu tobacco is mainly used to manufacture cheroots, snuff, pipe tobacco and hookah tobacco paste (Tobacco Board, 2023). Important Natu varieties viz., Prabhat (1977), Natu Special (1992), Pyruvithanam (2001), Bhairavi (NG73) were the important natu varieties released by CTRI Research Stations (Prasadrao, 2005).

Objective of the Study

The objective of the on-farm testing is to test and evaluate the research results of CTRI at farmers' fields and to refine or modify the technologies if required, for better adoption by farmers.

METHODOLOGY

Natu tobacco farmers of NLS under conserved moisture conditions were identified in East Godavari District. Two key farmers from two locations viz., Srivarigudem and Palacherla villages in upper NLS zone were selected based on purposive random sampling. On Farm trials were conducted on Natu Tobacco line, L 45-90 for two crop seasons by taking Natu local variety of Kommugudem as Control. Two farmers were selected from two villages by selecting one hectare for each variety thus totally 4 ha were selected, two each from two villages. The soil selected at both the villages was found to be sandy loam with low organic content. The line 45-90 was compared with Control- Kommugudem variety in upper NLS area.

Management Practices Adopted by the Farmers

The recommended package of practices of ICAR-CTRI (Krishnamurthy, V., 2007) was scrupulously followed by slightly changing the existing farmers practices. In order to improve the soil physical properties, deep ploughing was done in summer with tractor/crow-bar, for conservation of soil moisture. During Kharif season, two ploughings and two harrowings were given. In the month of August, groundnut cake was applied and ploughed, ten days before planting for supply of nitrogen (40 kg N/ha). During the midst of October, both the Line and variety were planted at 80 cm x 80cm in one acre plot each. Farmers were supplied healthy seedlings as critical input. The recommended fertilizer dose of 40kg N/ha is applied in plough furrows as ammonium sulphate or equivalent nitrogenous fertilizer, and leveled. Gap filling was done a week after planting.

After the establishment of seedlings, inter-culture with blade harrow or tyned harrow was done for 4-6 times. i.e., basal dose (40 kg DAP & 30 kg SOP /acre), First top dressing (150 kg CAN & 30 kg SOP/acre) 25 days after planting, second top dressing (150 kg AmSo₄ & 20 kg SOP/acre) 45 days after planting, third top dressing (Urea 90 kg/acre) 60 days after planting were applied by Dollop method. A total of six irrigations were given to the crop. Topping was done at 16 leaf stage of the plant. Sucker control was done by using 'Decanol (4%)'. The crop growth and cultural practices were regularly monitored.

Topping is done by removing the flower-head, keeping 14-16 leaves on the plant. Matured leaves were harvested in 4-5 primings. Natu tobacco is

harvested by cutting each leaf with a small piece of stalk and strung on a jute thread with the help of a needle and cured for a period of one-and-half to two months. The leaves were strung on a jute twine with the help of long iron needles at the rate of 100-150 leaves on each string of 1.5 m to 2.5 m length. These strings were tied on bamboo poles in the open field and sun-cured. Sun-curing was completed the months of March to April in 6 weeks. All the recommended package of practices were scrupulously followed by the farmers. After curing, the leaf is taken out, and heaped in bulks in a closed room. The bulks are turned for getting uniform texture, colour and aroma. The leaf was graded into brights, browns, darks, greens and perished leaf grades. The performance of new line, L 45-90 vs. Kommugudem was given below.

Results and Discussion on Performance of Natu Tobacco

Observations were recorded on the incidence of pests and diseases. The incidence of ground beetle and stem borer were found to be negligible in both the plots at both the locations. The incidence of Aphids was found to be 4-6% in experimental as well as control plots at Sirivarigudem and Palacherla villages. Incidence of black shank was also noticed in both, trial and control plots. The recommended pest management practices for management of black shank were advocated for adoption by the farmers.

The results show that at Sirivarigudem, the line, L 45-90 recorded 2150 kg/ha cured leaf, 1350 kg/ha bright leaf with 63% bright grades in 2010-11 and in 2011-12 the cured leaf yield was 2200kg/ha, bright leaf yield was 1390kg/ha with 63%

Table 1: Performance of L 45-90 under On-Farm trial at Upper Northern Light Soil (NLS) Region

Location	Season	L 45-90			Kommugudem		
		Cured leaf (kg/ha)	Bright Leaf (kg/ha)	Bright Grade (%)	Cured leaf (kg/ha)	Bright Leaf (kg/ha)	Bright grade (%)
Sirivarigudem	2010-11	2150	1350	62.7	1780	980	55.0
Palacharla	2010-11	2300	1825	79.3	1800	1075	59.7
Sirivarigudem	2011-12	2200	1390	63.0	1800	950	52.7
Palacharla	2011-12	2350	1850	78.7	1850	1050	56.7

bright grade out turn. The check variety, Kommugudem yielded 1780 kg/ha cured leaf, 980 kg/ha bright leaf with 55% bright grades in 2010-11 and in 2011-12, the cured leaf yield was 1800 kg/ha, 950 kg/ha bright leaf yield with 52.7 % bright grade out turn.

At Palacherla, another Upper NLS area, the variety L 45-90 yielded 2300 kg/ha cured leaf, 1825 kg/ha bright leaf with 79% bright grades in 2010-11 and in 2011-12, the cured leaf yield was 2350 kg/ha, 1850 kg/ha bright leaf with 78.7% bright grades. The check variety, Kommugudem yielded 1800 kg/ha cured leaf, 1075 kg/ha bright leaf with 59% bright grades in and in 2010-11, and in 2011-12, the cured leaf yield was 1850 kg/ha with 1050 kg/ha bright leaf and with 57% bright grade out turn.

The results depict that at Sirivarigudem, the line L 45-90 showed 17% (10-11) to 18 % (11-12) increase in cured leaf yield over control - Kommugudem. The line L 45-90 showed 22.7% increase in cured leaf during 2010-11 and 21.3% during 2011-12 over control, Kommugudem at Palacharla village in Upper NLS region.

Quality Analysis was also carried out for the two varieties. Quality parameters viz., nicotine, reducing sugars and chlorides in cured leaf were analyzed and found to be well within the desirable limits in both L 45-90 and check, Kommugudem. The two Natu varieties viz., Kommugudem and L 45-90 have higher Nicotine content and hence have high marketability due to buyers' preference in the global market.

It is concluded that small farmers are still practicing the indigenous practices in case Natu tobacco varieties with the available low quantity of inputs and fertilizers in interior areas. The income from tobacco forms a major part of their family income. The yields and bright grade Index of L45-90 were found to be high in comparison with Kommugudem variety at both locations. However, the yields can be still improved by adding organic content to the soil by means of green manuring farmyard manure or compost. The farmers were impressed with the performance of the line, L 45-90 because of its vigorous growth, more number of curable leaves and high yielding capacity than the check variety, Kommugudem. Farmers opined that L 45-90 needs more Nitrogen due to its high yielding character. The results are useful for wider adaptability of natu tobacco line, L 45-90 in NLS region of Andhra Pradesh for improving the yield and productivity of non-FCV tobacco farmers.

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Table 2: Quality parameters of L 45-90 under On-Farm trial at different locations in NLS Zone

Irrigated Natu variety	Nicotine (%)	Reducing Sugars (%)	Chlorides (%)
Kommugudem (check)	4.73	1.35	0.84
L 45-90 (Sirivarigudem)	4.82	1.60	0.91
L 45-90 (Palacharla)	4.82	1.45	0.91