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PRODUCTIVITY ENHANCEMENT AND COST CUTTING INTERVENTIONS FOR INCREASED FARM INCOME IN NLS TOBACCO PRODUCTION SYSTEM

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Field experiment was conducted for two consecutive years in fixed plots during 2018-19 and 2019-20 at the research farm of ICAR-Central Tobacco Research Institute research station, Jeelugumilli, West Godavari district, Andhra Pradesh, India under semi arid tropical climate under irrigated upland ecosystem. The experiment consisted of six treatments in bulk plots viz. I. Farmers practice 2. Interventions for enhancing productivity and quality 3. Cost reduction measures 4. Enhancing system productivity through crop intensification 5. Best bet technology (BBT) 6. BBT + value addition to system resources, system produce and by-products. Among all the treatments, mean FCV Tobacco green leaf yield (16196 kg/ha), cured leaf yield (2734 kg/ha), grade index (2094), green leaf / cured leaf (8.93) and grade index /cured leaf (76.6%) are higher in best bet technology followed by enhancing the system productivity through crop intensification. The best bet technology in tobacco crop including crop intensification along with value addition to system resources, system produce and by-products has high potential to enhance farmer's income and resulted in higher net returns of 2,29,014/- and B:C ratio of 1.65 than growing tobacco as sole crop.

INTRODUCTION

Past strategy for development of the agriculture sector in India has focused primarily on raising agricultural output and improving food security. The strategy did not explicitly recognize the need to raise farmers' income resulting in low income of farmers. Farmers' income also remained low in relation to income of those working in the non--farm sector. India also witnessed a sharp increase in the number of farmers' suicides due to losses from farming, shocks in farm income and low farm income. The low farm income is forcing more and more cultivators, particularly younger age group, to leave farming. This can have an adverse effect on the future of agriculture in the country, leading to food insecurity. Therefore, there is need to double farmers' income to promote farmers' welfare, reduce agrarian distress and bring parity between income of farmers and those working in non-agricultural professions. Doubling of the incomes of farmers in nominal terms has already been happening in recent periods and it is no challenge. Doubling the income in six years, in real terms, however, is a formidable challenge and needs large scale revamping, reorientation and innovation in the initiatives. Farmer's income can increase through increasing total output and their prices, reducing production costs through lowering input use and/or reducing input prices, diversifying production mix towards more remunerative enterprises and providing earning opportunities in non-farm sector. Apart from the traditionally known risks to farmers, climate change is an additional risk factor that can cause loss of farm income (Satya Sai and Sandhya Bharti. 2016). In brief the three keys to enhance farmers' income are enhancing gross income, reducing costs and stabilizing Income (https:// niti.gov.in, https:// pib.gov.in). Tobacco, one of the important commercial crops grown in Andhra Pradesh, is valued more for its potential to generate income, employment and revenue. The state of Andhra Pradesh accounts for 31% and 38% of total tobacco area (4.5 lakh ha) and production (739 M kg), respectively in the country. Keeping the above points in view the present experiment was conducted.

Key words: Doubling farmers income, Economics, FCV tobacco, Preceding maize, Relay groundnut.

MATERIALS AND METHODS

The field experiment was conducted for two consecutive years in fixed plots during 2018-19 and 2019-20 at the research farm of ICAR-Central Tobacco Research Institute research station, Jeelugumilli, (17 11' 30" N and 81 07' 50" E at 150 m above mean sea-level, average annual rainfall 1100 mm), West Godavari district, Andhra Pradesh, India under semi arid tropical climate. The soil of the experiment was Typic Haplustalfs with sandy loam surface (0-22.5 cm) and sandy clay sub surface (22.5 -45.0 cm) with slightly acidic pH (1:2.5) 6.25. The experiment was conducted in RBD with single replication in bulk plots viz. I. Farmers practice (Higher doses of nitrogen and phosphorus in furrows (without Organic manures), Improved variety Kanchan, Use of traditional seedbed seed lings, Furrow irrigation, Improper sucker control), 2. Interventions for enhancing productivity and quality (Sunnhemp *in situ* green manuring with Rec. NPK, Improved variety Kanchan, Healthy tray seedling use and timely gap filling, Drip Irrigation and fertigation, Timely topping and sucker management, Right time of harvesting, Monitoring of barn temperature and RH based on curometer, Removal of NTRM and Product Hygiene, Reducing the post harvest handling losses in transport). 3. Cost reduction measures {Soil test based fertilizer recommendations, Increasing fuel efficiency in curing by barn insulation (Roof insulation with glass wool), Need based use of CPA's, Harvesting on scientific principles. (Removal of sand leaves and collection of tip leaves),Direct removal of leaf from sticks after bringing to conditioning, Rationalization of no of main grades to minimum required in each position, Reducing the post harvest handling cost by rationalization of bulking and rebulking) 4. Enhancing system productivity through crop intensification (Treatment II + Kharif crops + Summer crops) 5. Best bet technology (Sunnhemp i*n situ* green manuring (INM), Improved variety Kanchan, Healthy tray seedling use and timely gap filling, Drip Irrigation and fertigation, Timely topping and sucker management, Removal of NTRM and Product Hygiene, Soil test based fertilizer recommendations, Increasing fuel efficiency in curing by barn insulation (Roof insulation with glass wool) need based use of CPA's, Rationalising the grading operations, growing short duration *kharif* crops summer vegetable relay crops) 6. BBT (Treatment V) + value addition to system resources, system produce and by-products (System resources hiring out eg, Hiring out tractor for field operations, Transport of bales of other farmers to auction platform). The experiment was conducted as per the interventions specified. *Kharif* maize for cobs and summer groundnut for dried pods in addition to *Rab*i tobacco were grown in system intensification, best bet technology and value addition to the system plots. After harvest of maize for cobs and groundnut for dry pods, yields were calculated. The data on tobacco green leaf and cured leaf were recorded and grade index was calculated. (Gopalachari, 1984). Tobacco leaf samples were collected for leaf chemical quality analysis. Maize, tobacco and groundnut cost of cultivation, gross returns, net returns and benefit: cost ratio were calculated.

RESULTS AND DISCUSSION

Yield

The details of yield, cost of cultivation, gross returns, net returns and benefit: cost ratio of different interventions are presented in Table1. Among all the treatments, mean FCV Tobacco green leaf yield (16,196 kg/ha), cured leaf yield (2,734 kg/ha), grade index (2,094), green leaf/ cured leaf (8.93) and grade index/cured leaf (76.6%) are higher in best bet technology followed by enhancing the system productivity through crop intensification. Farmers practice treatment recorded comparatively lower yields than rest of the treatments. Maize green cobs were harvested and groundnut dry pod yield ranged between 900 and 1000 kg/ha.

Tobacco leaf chemical quality

In general nicotine and reducing sugars (RS) contents in tobacco leaf increased from X to L position (Table 2). Higher Nicotine and RS contents in X and L Positions were recorded in Enhancing the system productivity through crop intensification closely followed by Best bet technology, and BBT+ Value addition to system resources, system produce and by-products. Lowest nicotine and RS contents were recorded in T_3-{cost reduction measures} and this was preceded

Table 1: Yield, cost of cultivation, gross and net returns and benefit: cost ratio of different productivity enhancement and cost cutting interventions (Mean of two years)

Treatments	Tobacco Yield Characters (kg/ha)			GL/CL	GI/CL (%)	(Yield/ kg/ha)	Tobacco COC (/kg)	COC/ha	Total GR ( )	NR ( )	B:C
	GLY	CLY	GI								
T_1: Farmers practice (Rabi- Tobacco)	13746.5	2368	1669	5.81	70.50	2368	98.84/kg	**234053**	**319680**	**85627**	**1.37**
T_2: Interventions for enhancing productivity and quality, (Rabi-Tobacco)	16035	2734	2077	5.87	75.95	2734	90.74/kg	**248001**	**369090**	**121089**	**1.49**
T_3: Cost reduction measures (Rabi –Tobacco)	14165	2402.5	1694	5.90	70.45	2403	95.98kg	**230640**	**324405**	**93765**	**1.41**
T_4:Enhancing the system productivity through crop intensification, i.e T2 + cropping systems,											
Kharif -Maize (cobs)						Maize (cobs)		45000	105000		
Rabi -Tobacco	15590.5	2665	1935	5.85	75.50	2665	92.94/kg	**247685**	359775		
Summer-Groundnut						900		37500	54000		
Total								**330185**	**518775**	**188590**	**1.57**
T_5:Best bet technology (BBT)											
Kharif -Maize (cobs)						Maize (cobs)		45000	105000		
Rabi -Tobacco	16195.5	2734	2094	5.93	76.60		2734	89.88	**245731**	369090	
Summer-Groundnut							1000	37500	60000		
Total								**328231**	**534090**	**205859**	**1.63**
T_6: i.e., T 5 (BBT) + value addition to system resources, system produce and bye products.	16024.5	2716	2058	5.9	75.75						
Kharif -Maize (cobs)						Maize (cobs)		45000	105000		
Rabi -Tobacco	16024.5	2716	2058	5.9	75.75	2716	90.26	**245146**	366660		
Summer-Groundnut						1000		37500	60000		
Tractor						25000/-		25000	50000		
Total								**352646**	**581660**	**229014**	**1.65**

Table 2: Tobacco leaf chemical quality as influenced by different treatments

Treatment	Nicotine		Reducing Sugars		Chlorides	
	X	L	X	L	X	L
Farmers practice	1.41	1.90	23.26	19.77	0.76	0.65
Interventions for enhancing productivity and quality,	1.66	2.09	21.54	19.05	0.41	0.59
Cost reduction measures	1.45	2.00	23.50	19.35	0.45	0.62
Enhancing the system productivity through crop intensification, i.e T2 + cropping systems,	1.53	2.08	23.26	19.82	0.46	0.61
Best bet technology	1.385	2.22	19.40	18.24	0.39	0.48
BBT) + value addition to system resources, system produce and bye products	1.74	2.15	21.45	18.40	0.41	0.54

by T_1-farmers practice. Chlorides were well within the acceptable limits in all the treatments

Economic analysis

Economics of different Productivity enhancement and cost cutting interventions worked out on the basis of input, output and prevailing market prices reveal wide variation in net monetary return as well as benefit: cost ratio (Table 1). Among all the interventions T_6 i.e T_5 (BBT) + Value addition to the system resources, system produce and bye products resulted in higher net returns and benefit: cost ratio of 2,29,014/- : 1.65 followed by T_5 (Best bet technology) 2,05,859/- : 1.63 and T4 (Enhancing the system productivity through crop intensification i.e. T_2 + cropping systems) with 1,88,590/-.:1.57, Interventions for enhancing system productivity (T_2) recorded 1,21,089/-: 1.49 followed by cost reduction measures (T_3) 93,765/- : 1.41 and farmers practice (T_1) 85,627/-.1.37, respectively. Farmers Practice recorded the lowest returns.

Based on the above two years mean data it is concluded that among all the interventions T_6 i.e. T_5 (BBT) + Value addition to the system resources, system produce and bye products has high potential to enhance farmer's income and resulted in higher net returns of 2,29,014/- and B:C ratio of 1.65 than growing tobacco as sole crop.

REFERENCES

Gopalachari, N.C. 1984. *Tobacco*, 96 pp. Indian Council of Agricultural Research, New Delhi.

https:// niti.gov.in >files >document _ publication. PDF. Doubling farmers' income – Niti Aayog

https:// pib.gov.in > Press release page. Steps for doubling farmers' income.

Satya Sai K. J. S. and Sandhya Bharti. 2016..Doubling Farmers' Income : Way Forward Rural Pulse (NABARD) issue XIV march- April 2016