

SHORT COMMUNICATION

ASSESSMENT OF PREKHARIF GREEN GRAM IN RICE BASED CROPPING SYSTEM IN SRIKAKULAM DISTRICT OF ANDHRA PRADESH

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Abstract: On an average Srikakulam district received 105mm rainfall in summer showers and pre-kharif rains. Most of the farmers in the Srikakulam district were not utilising the pre and early monsoon rains for sowing of any crop and kept the ploughed land fallow up July 3rd week in the areas suitable to transplanting of rice. This results into high weed menace due to intermittent rains and no coverage, further it causes depletion of nutrients, evaporation of water and soil erosion. To create awareness on utilisation of land and improvement of net sown area, an On Farm Trial(OFT) was conducted for three years i.e 2020-21 to 2022-23 with the treatments of T1: Pre kharif Greengram – kharif paddy- Rabi Blackgram, T₂: Green manure - Paddy– Black gram and T3: Fallow-Paddy-Black gram (Farmer practice) in three locations in the district. Due to growing of green gram during Pre-Kharif prior to paddy given average yield of 598 kg/ha. Also it added manure to the soil which increased 14.07% in paddy yield (5983 kg/ha) and 13.65 % in black gram yield (673kg/ha). Average of three years results of OFT on assessment of rice based cropping system shows that the treatment 1(T1) pre kharif green gram –kharif paddy -rabi rice fallow black gram gave higher additional net income of Rs 39,355/ha with B.C ratio of 1:2.08 followed by treatment2 (T2) i.e Green manure-Paddy-black gram Rs20,459 with BC ratio of 1:2.02 when compared to treatment 3 (T3) Fallow-paddy-black gram gave BC ratio 1:1.79.

Keywords: Farmers, Green gram, Rice, Srikakulam district

INTRODUCTION

On an average Srikakulam district received 105mm rainfall in summer showers and pre-kharif rains. Most of the farmers in the Srikakulam district were not utilising the pre and early monsoon rains for sowing of any crop and kept the ploughed land fallow up July 3rd week in the areas suitable to transplanting of rice. This results into high weed menace due to intermittent rains and no coverage, further it causes depletion of nutrients, evaporation of water and soil erosion. To address this problem, it is better to grow either green manure or pulses. If the farmer go for green manure, sometimes it is not possible to trample the green manure due to lack of sufficient water at the 50 per cent flowering. Lack of water due to either not release of canals or lack of rains. If the farmers go for growing of green gram or black gram, it will be easy to trample or incorporate into soil even with little rain or with low water availability. Keep this in view an On Farm Trial (OFT) was conducted on assessment of suitable rice based cropping system in Srikakulam district of Andhra Pradesh with an objective to create

awareness on utilisation of land and improvement of net sown area

MATERIALS AND METHODS

On Farm Trial(OFT) was conducted for three years i.e 2020-21 to 2022-23 with the treatments of T1: Pre kharif Green gram – kharif paddy- Rabi Black gram, T₂: Green manure - Paddy– Black gram and T3: Fallow-Paddy-Black gram (Farmer practice) in three locations in the district. Green gram seed was supplied as Critical Input. Observed Parameters were Yield attributes and Cost Benefit Ratio of the cropping system. Suitable statistical tools used for the data analysis.

RESULTS AND DISCUSSION

It can be perused from the table 1 results of first year 2020-21 that the treatment 1(T1) pre kharif green gram –kharif paddy -rabi rice fallow black gram gave higher additional net income of Rs 38,340/ha with B.C ratio of 1:2.13, followed by treatment 2 (T2) i.e Green manure-Paddy-black gram Rs18,290 with BC

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ratio of 1:2.06 when compared to treatment 3 (T3) Fallow-paddy-black gram gave BC ratio 1:1.85. Further it can be derived from the table1 that paddy yield (6325kg/ha) and black gram yield (680kg) of T2 was high followed by T1 (6250 and 620) and T3

(5570 and 560 kg/ha respectively). It might be due to incorporation of high green matter in T2 followed by T1. Additional income due the yield of pre kharif green gram 550kg/ha.

Table 1. Results of the On Farm Trial for the first year 2020-2021

Farmer Name, Village, Mandal	T1:Pre kharif Greengram – kharif paddy- Rabi Blackgram			T2: Green manure + paddy –Black gram		T3:Fallow-Paddy-Black gram (Farmer practice)	
	Pre kharif Green gram	Paddy	Black gram	Green manure + paddy	Rice fallow Black gram	Paddy	Black gram
Yield (Kg/Ha)	550	6250	620	6325	680	5570	560
% increase		12.21	10.32	13.55	21.42	-	-
Cost of cultivation	16,000	57,500	15,000	60,000	15,000	57,500	15000
Gross income	38,500	1,12,500	37,200	113850	40800	1,00,260	33,600
Total Gross incomeRs	1,88,200			154650		1,33,860	
Total Cost of cultivation	88500			75000		72500	
Net income Rs	99,700			79,650		61,360	
BC Ratio	1:2.13			1:2.06		1:1.85	
Additional net Income	38,340			18,290		-	

The table 2results of second year2021-22 depicted that the treatment 1(T1) pre kharif green gram – kharif paddy -rabi rice fallow black gram gave higher additional net income of Rs 39,735/ha with B.C ratio of 1:1.96, followed by treatment2(T2) i.e Green manure-Paddy-black gram Rs22,610 with BC ratio of 1:1.91 when compared to treatment 3 (T3)Fallow-paddy-black gram gave BC ratio 1:1.63. Further it

can be derived from the table2 that paddy yield(5425kg/ha) and black gram yield(760kg) of T2 was high followed by T1(5350 and 720) and T3(4530 and 610 kg/ha respectively). It might be due to incorporation of high green matter in T2 followed by T1. Additional income due the yield of pre kharif green gram 625kg/ha.

Table 2. Results of 2nd year OFT

	T1:Pre kharifGreengram – kharif paddy- Rabi Blackgram			T2: Green manure + paddy –Black gram		T3:Fallow-Paddy-Black gram (Farmer practice)	
	Pre kharifGr eengram	kharif paddy	Rabi rice fallow Blackgram LBG752	Green manure + paddy	Rice fallow Black gram	Kharif Paddy	Rice fallow Black gram
Average yield (kg/ha)	625	5350	720	5425	760	4530	610
% Increase over check		18.10	18.03	19.75	24.59	-	-
Cultivation cost (Rs)	16,000	57,500	15,000	60,000	15,000	57,500	15000
Returns	34375	96300	43,200	97650	45,600	81540	36,600
Grass returns	1, 73,875			1,43,250		1,18,140	
Cost of cultivation	88,500			75,000		72,500	
Net Income	85,375			68,250		45640	
B:C	1:1.96			1:1.91		1:1.63	
Additional net income	39,735			22,610			

It can be gleaned from the table 3results of third year2022-23 that the treatment 1(T1) pre kharif green

gram –kharif paddy -rabi rice fallow black gram gave higher additional net income of Rs 39,732/ha with

B.C ratio of 1:2.1 followed by treatment2 (T2) i.e Green manure-Paddy-black gram Rs20,218 with BC ratio of 1:2.11 when compared to treatment 3 (T3)Fallow-paddy-black gram gave BC ratio 1:1.90. Further it can be derived from the table 3 that paddy yield (6420kg/ha) and black gram yield (760kg) of T2 was high followed by T1 (6350 and 679) and T3 (5635 and 606.5 kg/ha respectively). It might be due to incorporation of high green matter in T2 followed by T1. Additional income due the yield of pre kharif green gram 620kg/ha. The table 4 average of three years results of OFT on assessment of rice based cropping system showed thatDue to growing of green gram during Pre-Kharif

prior to paddy given average yield of 598 kg/ha. Also it added manure to the soil which increased 14.07% in paddy yield (5983 kg/ha) and 13.65 % in black gram yield (673kg/ha). Further the treatment 1(T1) pre kharif green gram –kharif paddy –rabi rice fallow black gram gave higher additional net income of Rs 39,355/ha with B.C ratio of 1:2.08 followed by treatment2(T2) i.e Green manure-Paddy-black gram Rs.20,459 with BC ratio of 1:2.02 when compared to treatment 3 (T3)Fallow-paddy-black gram gave BC ratio 1:1.79. These finding in line with the findings of Sumui *et al.* (2004); Biradar *et al.* (2020) and Swain *et al.* (2020).

Table 3. Results of OFT for 3rd year 2022-23

	T1:Pre kharifGreengram – kharif paddy- Rabi Blackgram			T2: Green manure + paddy –Black gram		T3:Fallow-Paddy-Black gram (Farmer practice)	
	Pre kharifGr eengram	kharif paddy	Rabi rice fallow Blackgram LBG752	Green manure + paddy	Rice fallow Black gram	Kharif Paddy	Rice fallow Black gram
Average yield (kg/ha)	620	6350	679	6420	760	5635	606.5
% Increase over check		11.90	18.03	13.20	24.59	-	-
Cultivation cost (Rs)	16500	58750	16250	62500	16250	58750	16250
Returns	38440	119380	40740	1,20,696	45600	1,05,938	36390
Grass returns	1,98,560			1,66,296		1,42,328	
Cost of cultivation	91,500			78,750		75,000	
Net income	1,07,060			87,546		67,328	
B:C	1:2.17			1:2.11		1:1.90	
Additional net income	39,732			20,218			

Table 4. Results of 3 years of the OFT

S.No	Particulars	T1	T2	T3
1	Average yields -pre kharif green gram(kg/ha)	598	-Green manure	-
2	Kharif paddy yield (kg/ha)	5983	6057	5635
3	Rabi black gram yield (kg/ha)	673	740	606.5
4	Average Grass returns	186878	1,54,732	1,31,356
5	Average Cost of cultivation	89500	76250	73,333
6	Net Income	97378	78482	58023
7	B:C Ratio	2.08	2.02	1.79
8	Additional net Income	39355	20,459	-

CONCLUSIONS

The results of the OFT, the cropping system of pre kharif green gram –kharif paddy –rabi black gram showed that it will improve the soil health, reduce the weed population and give additional income to the farmers. Farmers of Srikakulam district used to practice of broadcasting of dry direct sown of rice and faced the problem of severe weed infestation and deterioration of soil health due to the changing

pattern of rain fall (dry spell and low rains during June and July months) and no scope for green manuring respectively. As a resilient technology it will be mitigate changing climate, efficient utilisation of land and give sustainable yields and additional net income. With the efforts of extension personnel of the University and Department, if we bring at least 50 per cent of the paddy cultivated areainto this cropping system we can improve the farmers income in a big leap and improve the soil health. Hence there

is a need to popularize the technology among the farmers by conducting Front Line Demonstrations, trainings, Group Discussions and through Social media.

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