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Increasing productivity and income through intercropping of sugarcane with pulses and mustard

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Abstract

The present study Sugarcane Intercropping with Pulses and Mustard undertaken for the purpose of increasing Income and Productivity on same land area. Pulses are the source of Proteinaceous diet and Mustard for oil content. In this study Sugarcane Intercropping with Urdbean, Moongbean, Lentil and Mustard in Autumn and Spring season. Highest Net Income from Sugarcane+Lentil Rs. 254250/ha achieved followed by Sugarcane+Mustard Rs. 205000/ha, Sugarcane+Urdbean Rs. 197300/ha and Sugarcane+Moonbean Rs. 184000/ha.

Keywords: Productivity, income. intercropping, sugarcane

Introduction

The idea of doubling the farmers' income up to 2022 has been slated by the Government of India. The specific target of increasing sugarcane farmers' income could be achieved by developing cost-effective technologies, transferring them from laboratory to land, educating the farmers and creating a linkage between all stakeholders. Consistent efforts shall be required to harness all possible sources for increasing farmer's income in and outside the agriculture sector with respect to improvement in sugarcane and sugar productivity, enhancement in resource use efficiency and adopting various other ways and means including intercropping, management of pests and diseases etc.

The most common advantage of intercropping is the production of greater yield on given piece piece of land by making more efficient use of available growth resource. Sugarcane is the long duration crop and takes about 90-120 days for canopy development which allows growing intercrop during early days. Taking advantage of this sugarcane cultivators grow various short duration crops like pulses, vegetables etc. as intercrop to get interim return since small sugarcane growers cant wait for long time to get financial return from sole sugarcane crop. Since sugarcane is a important commercial crop all over the world and is most suitable for intercrop.

Muzaffarnagar is one of the Sugarcane based district of the Western Uttar Pradesh. About more than 70% area covered by sugarcane so it is known as Sugar bowl of UP. The main cropping system of district is Sugarcane-Wheat-Sugarcane. Due to this improper cropping system the yield of sugarcane and net income decreasing is day by day and crop vulnerable to different types of biotic agencies like fungal, bacterial and insects etc.

Keeping above constraints in mind the above problem this study carried out pulses (Urd bean, Moong bean, Lentil and Mustard) intercropping with sugarcane. Pulses and Mustard provides the additional income, proteinaceous nutritional security, maintenance of soil fertility and increase the sugarcane productivity.

Methodology

Krishi Vigyan Kendra, Muzaffarnagar conducted Frontline Demonstrations in different villages of different blocks of district Muzaffarnagar in 2017-2020. Study area under Indo-Gangetic Plains of North India. The climate of the area is semi arid, subtropical with dry hot summers and cold winters, average rainfall of the area is about 800 mm of which 75% received during monsoon season in July to September. Different no. of farmers were selected for the study after the training programmes organised by KVK, Muzaffarnagar to promote the diversification and the increasing the income through spring and autumn sugarcane planting. FLD on Urdbean and Moongbean cultivated during spring season and Lentil and Mustard cultivated during autumn season. Main crop of sugarcane was planted at 90 to 120 cm row spacing and intercrops were sowed in between two rows of sugarcane.

A common dose of N:P:K @180:80:60 applied to main crop and supplement dose of fertilizers supplied to intercrop based on their needs. The participating farmers were provided with all advance technical know how about advanced cultivation of sugarcane intercropping.

KVK scientists also visited regularly to the demonstrated fields and continuously guided to farmers. These intercrops were also utilised for collection of data and feedbacks information for more improvement in technology transfer programmes. Field days and group meeting also organised at the demonstration sites to provide the opportunities for other farmers to witness the benefits of demonstrated technology. The data on sugarcane and intercrop productivity (q/ha) were collected from demonstrated and check plots (Farmers Practice) for further analysis. The critical inputs were duly supplied to the farmers by KVK. Data were collected from the field of FLDs farmers and analysed to compare the yield

FLD fields and farmers fields.

Result and Discussion

To know the need of the technological intervention the knowledge level of the farmers in ten villages and 20 farmers from each villages and total 200 farmers were selected. For the increasing income of farmers in ten villages FLD is the good extension medium to demonstrated impact of new agro technique to farmers. Lentil as intercrop highest net return Rs. 48250/ha followed by Moong bean, Urd bean and Mustard Rs. 33400, 33300 and 32000 /ha respectively. Yield of Sugarcane with Lentil found highest 1020 q/ha and lowest yield with Moong bean 850 q/ha intercrop.

Highest net income from intercrop and sugarcane achieved by Lentil+Sugarcane Rs. 254250/ha followed by Sugarcane+Mustard Rs. 205000/ha, Sugarcane+Urdbean Rs. 197300/ha and Sugarcane+Moongbean Rs. 184000 /ha.

Table 1: Yields and income of sugarcane and intercrop

S.N	Intercrop	Rows of IC	Av. Yield of IC (Q/ha)	Net Income of IC	Sugarcane Yield with IC (Q/ha)	Sugarcane Yield without IC(Q/ha)	Sugarcane Net Income with IC(Rs.)	Sugarcane Net Income without IC(Rs.)	Sugarcane Net Income including IC(Rs.)
1.	Urdbean	03	10.5	33300	880	610	164000	98250	197300
2.	Moongbean	02	8.8	33400	850	610	155000	98250	184000
3.	Mustard	02	8.5	32000	910	650	173000	110000	205000
4.	Lentil	03	11.5	48250	1020	650	206000	110000	254250

Conclusion

From the Frontline Demonstrations it concluded that Sugarcane+Lentil and Sugarcane+Mustard gave higher net return in autumn and Sugarcane+Urdbean and Sugarcane+Moongbean in Spring season planting sugarcane.

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