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Studies on sugarcane based intercropping system for additional return in western Uttar Pradesh

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ABSTRACT

The present investigation was carried out by Sardar Vallabhbhi University of Agriculture and Technology, Krishi Vigyan Kendra, Baghra, Muzaffarnagar (S.V.P.U.A. and T., Meerut), U.P., at the progressive farmers field of Distt. Muzaffarnagar, for two crop seasons *i.e.* 2006-07 and 2008-09 to find out the feasible remunerative intercrop in intercropping system with preseasonal sugarcane. The results indicated that the gross monitary return was higher in sugarcane + gladiolus. intercropping system in comparaison to cucumber, okra and Frenchbean. The maximum sugarcane yield (900 q/ha) was in found French bean intercropping with sugarcane and soil health also improved. Among the intercropping system sugarcane with gladiolus was more remunerative in respect of net return.

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Key words : Intercrop, Additional return, Frenchbean, Gladiolus, Sugarcane, Net return and Gross return

INTRODUCTION

Muzaffarnagar is known as sugarcane district of Uttar Pradesh. About 68 per cent area is covered by sugarcane. The cost of production of sugarcane is increasisng day by day. The incereasing cost of production was mainly on account of increase in the inputs such as fertilizer, irrigation water, plant protection and human labour charges. The increasisng cost of production of sugarcane and reducing profit has compelled scientists and farmers to think about the cropping system which are economically feasible. In Western U.P., sugarcane provides considerable scope for intercropping with short duration horticultural crops and thus productivity of sugarcane and overall profitability of the sugarcane growers. Keeping this in view, the present investigation was carried out with the suitable and profitable intercrops with sugarcane to the Western U.P.

MATERIALS AND METHODS

The field investigation was undertaken on sandy loam soil having 7.6 pH and organic carbon 0.56 per cent at the progressive farmers field of Distt. Muzaffarnagar, U.P. as autumn and spring sugarcane in 2006-07 and 2008 to 2009 with object to find out remunerative and compatible intercrop in sugarcane. The treatments of comprising of two intercrop autumn intercropping system *viz*., sugarcane + gladiolus, sugarcane + Frenchbean and two intercrop spring intercropping system *viz*., sugarcane + okra and sugarcane + cucumber along with sole crop of sugarcane. In sugarcane + cucumber intercropping the cucumber nursery of cucumber was prepared at protected place by frast and after sowing of spring sugarcane cucumber plants were transplanted at the 2x2 meter in first week of February. Irrigation, cultural operations and plant protect measures were provided as per the recommendation and need of the component crops.

The economic analysis net return, gross return and B:C ratio were carried out based on cost of cultivation, sugarcane yield and intercrop yield. The gross return (Rs./ha) accurred due to different treatments were worked out by considering market prices during the experimental year.

The net returns (NR) in Rs./ha of each treatment = Gross Return (GR) of treatment – Cost of cultivation of treatment.

$$\text{B.C. Ratio} = \frac{\text{GR of a treatment}}{\text{Cost of cultivation}}$$

RESULTS AND DISCUSSION

The findings of the present study as well as relevant

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Table 1 : Comparison of different intercropping with sugarcane

Sr. No.	Name of intercrop	Variety	Season	Yield/ha	Cost of cultivation	Gross return (Rs. in lacs /ha)			Net return (Rs. in lacs /ha)			B.C. Ratio
						2006-07	2007-08	Pooled	2007-08	2008-09	Pooled	
1.	Cucumber intercropping with sugarcane	S. cane COS 8432 COS 88230 Cucumber Swarnpurna Pusa Sanyog	Spring	S. cane 750 Q Cucumber 120 Q	0.78	2.45	2.57	2.51	1.67	1.79	1.73	3.20 :1
2.	Okra intercropping with sugarcane	S. cane COS 8432 COS 88230 Okra S-40, Versa	Spring	S. cane 800 Q. Okra 90 Q.	0.72	2.15	2.05	2.10	1.43	1.33	1.38	2.90:1
3.	Frenchbean intercropping with sugarcane	S. cane COS 8436 COS 96268 Frenchbean Pant Anupama Containder	Autumn	S. cane 900 Q. F.Bean 102 Q.	0.90	2.95	2.85	2.90	1.80	1.60	1.70	3.22:1
4.	Gladiolus intercropping with sugarcane	S. cane COS 8436 COS 96268 Gladiolus White Prosperity, Proh, Eurovision	Autumn	S. cane 850 Q Gladiolus Spike 1.50Lacs Bulb 1.50 Lacs Bulblate 8.0Q.	2.78	5.86	5.78	5.82	3.02	3.06	3.04	2.09:1
5.	Sole crop (S. cane)	COS 767	Late spring	Sugarcane 682 q.	0.54	1.03	1.05	1.04	0.51	0.53	0.50	1.92 :1

Remarks : Sugarcane @ 150/- per q., Okra and cucumber 1000/- per q., Frenchbean 1500/- per q, Gladiolus spike @ 2.00 per spike

discussion have been summarized under following heads:

Gross returns (GR):

During first year of experiment (Table 1), the maximum gross return was obtained from sugarcane + gladiolus (5.82 lacs/ha) followed by sugarcane + Frenchbean (2.90 lacs/ha) while lowest gross sreturn was observed in sole sugarcane (1.04 lacs). The intercrop have contributed to increase the returns. The sugarcane + gladiolus (5.82 lacs/ha) and sugarcane + Frenchbean (2.90 lacs/ha) recorded significantly higher gross returns than rest of the cropping system. The lowest gross return was noticed in sole sugarcane. In pooled analysis, sugarcane + gladiolus intercropping system (Rs. 5.82 lacs/ha) and sugarcane + Frenchbean intercropping system (2.90 lacs/ha) recorded significantly more gross return than sugarcane + okra (2.10 lacs/ha) and sole sugarcane (1.04 lacs/ha). However, sugarcane + cucumber (2.51 lacs/ha) gorss returns by intercropping system of sugarcane + soybean were reported by Roodagi *et al*. (2000).

Net returns (NR):

The net return obtained from sugarcane + gladiolus (3.06 lacs/ha), sugarcane + Frenchbean (1.80 lacs/ha) was at par with each other and found significantly superior over rest of the cropping system during first year of experimentation (Table 1) and during second year, sugarcane + Frenchbean (1.70 lacs/ha) recorded significantly higher net return than sole sugarcane.

The pooled analysis indicated that higher net return was obtained from sugarcane + gladiolus (3.04 lacs/ha) followed by sugarcane + frenchbean (1.70 lacs/ha) which were at par with each other and found significantly superior over sole sugarcane. The results are in confirmity with singh *et al.* (2003).

Benefit : cost ratio:

Among different intercropping systems, the maximum B.C. ratio was obtained from sugarcane + Frenchbean (3.22:1) during first year, while during second year, sugarcane + Frenchbean (3.1:1) and sugarcane + cucumber (3.20:1) and sugarcane + okra (2.9:1), sugarcane + gladiolus (2.09:1) recorded similar B.C. ratio. The B.C. ratio for sole sugarcane was 1.92:1 and 1.94:1 during first and second year of experimentation, respectively. Similar result of higher B.C. ratio due to intercropping were recorded by Nigade *et al.* (2004).

Conclusion:

Baseed on the intercropping system, result in both the years of the experimentation and pooled analysis, it can be concluded that sugarcane + Frenchbean and sugarcane + cucumber, sugarcane + okra were the highly remunerative intercropping than sole sugarcane.

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