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Effect of intercropping and planting methods on yield, quality and economics of sugarcane under lateritic soil condition

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Abstract
The present investigation entitled "Effect of intercropping and planting methods on growth, yield and quality of sugarcane under lateritic soil condition" was conducted at Agronomy Farm, College of Agriculture, Dapoli. during *Suru* season of 2015. The trial was laid out in a randomized block design. There were seven treatments which were replicated thrice. The treatments mainly comprised of Sole sugarcane with 90 cm spacing (T_1), Sole PRS (Paired row sugarcane) *i.e.* 60 x 60 – 120 cm (T_2), PRS + groundnut (T_3), PRS + sweet corn (T_4), PRS + cabbage (T_5), PRS + amaranthus (T_6) and PRS + green gram (T_7). Results revealed that treatment sole paired row planted sugarcane (60 x 60 –120 cm) produced higher growth, yield attributes and yield as compared to the conventional method of planting (90 cm in furrows) under study. Among the different treatments of planting methods and intercropping systems, paired row planted sugarcane intercropped with green gram recorded highest cane yield (89.03 t ha^{-1}), highest number of millable canes (78251.67), green top yield (11.66 t ha^{-1}) and trash yield (9.15 t ha^{-1}). Similarly, these treatments recorded significantly highest growth characters as well as various yield attributing characters. Under different intercropping systems, the intercrop sweet corn recorded highest yield (8277 kg ha^{-1}) and sugarcane equivalent yield (146.38 t ha^{-1}). The quality parameters of sugarcane *viz*., brix, pol, purity, CCS per cent and CCS yield (t ha^{-1}) was not influenced to the significant extent due to various methods of planting and intercropping systems. The maximum nutrient uptake recorded when paired row planted sugarcane intercropped with green gram. So far economic assessment is concerned, maximum net realization of Rs. 1,49,212 ha^{-1} recorded with treatment paired row planted sugarcane intercropped with sweet corn. Also, the highest benefit: cost ratio (1.79) was recorded when paired row planted sugarcane intercropped with sweet corn. On the basis of results obtained during study, it can be concluded that the paired row planting method of sugarcane found to be more beneficial and profitable than their conventional planting (90 cm). The combination of sugarcane intercropped with sweet corn in the paired row planted sugarcane (60 x 60 –120 cm) found to be more remunerative followed by sugarcane intercropped with cabbage.

Keywords: intercropping, sugarcane, lateritic soil, economics

Introduction
Sugarcane (*Saccharum officinarum* L.) is one of the most important commercial crops in India. In India, sugarcane is cultivated in an area of 5.04 million ha with production of 348.04 million tonnes of cane with average productivity of 69 t per ha (Anonymous, 2014) [2]. Sugarcane is one of the important crops in contributing to the country's economy and farmer's livelihood development. In India, sugar is 550 billion rupees worth industry, supporting more than 50 million farmers. There is a growing demand for sugar in India. Sugarcane is the main cash crop of Maharashtra state. The state ranks IInd, Ist, and IVth in respect of area, total production of cane and cane yield per ha respectively. The average recovery of sugar in Maharashtra is the highest *i.e.* 11.85 percent in the country which is because of favorable agro-ecological conditions, resulting in accumulation of more sugar in the cane. Intercropping is one of the sure ways of increasing production without much increase in the application of inputs. Intercropping refers to growing of two or more crops simultaneously on the same piece of land. Sugarcane requires 4 to 6 weeks for germination and initial growth is also very slow for first two months. This time required for germination and subsequent initial slow growing period can be made better use of growing short duration intercrop as a bonus crop. Dagade and Patil (1986) [3] reported that, intercropping of vegetables in sugarcane did not affect the yield and quality of sugarcane. Intercropping one or more crops with sugarcane is an appropriate approach of getting additional farm income besides the principle sugarcane crop. As sugarcane

is planted at adequate row spacing and this inter-rows space practically remains vacant in early growth stage which extends nearly four months where suitable short duration winter crops may be grown as intercrop that increase total yield, higher monitory return, greater resource utilization and fulfils the diversified needs of the farmers. Intercropping in sugarcane with various short duration crops like cabbage, potato, mung bean etc. has been proven profitable in comparison to growing sugarcane as sole crop (Alam *et al.*, 2000) [1]. Sugarcane is a perennial crop and put forth dense canopy cover throughout the life period. This causes problems in aeration of the crop, which indirectly reduce the crop yield. The techniques like spaced planting with various row spacing have brought out promising results in this respect with very low additional cost in preparation of layouts. The population per unit area and distance between cane rows play a significant role in influencing the yield. Wide row sugarcane planting technology is spreading fast particularly in tropical states of India. Paired row planting (60–120) cm was found more beneficial in Karnataka helping adoption of drip irrigation and intercrops like onion. Gill (1995) [4] reported that the wider row planting is conceived to facilitate and introduce mechanization in sugarcane to reduce cost of production in contrast to conventional method of planting. Therefore, increasing the row spacing of sugarcane from the present recommended spacing of 120 cm would greatly facilitate not only easy management of intercropping without any competition efforts, but also provide enough space for intercrops to get higher productivity. Sugarcane crop remains in the field for a year or more and the space between sugarcane rows range from 70 to 90 cm providing ample chance for profuse weed growth which draws huge amount of nutrients and moisture from the soil. Hence, besides suppressing weeds in the inter-row spaces, additional production could be taken by growing suitable intercrops in between the cane rows.

Konkan region is high rainfall zone having paddy as a principal traditional crop. After harvest of paddy and other hill millets, it is difficult to prepare land for plantation of pre-seasonal sugarcane. *Konkan* region is bestowed with assured rainfall with annual average 3500 mm. In spite of such huge rainfall, the region faces scarcity of water after monsoon. Thus, efficient use of water plays an important role for agricultural production in this region. This region has gained momentum in agro-tourism during last decade. Considering the commercial demand of sugarcane in this region, its productivity needs to be increase. Being a C_4 plant, physiologically it is one of the most efficient converters of solar energy into sugar among the cultivated plants. Now a day's area under sugarcane is increasing in Sindhudurg district where irrigation potential during winter and summer seasons is relatively better than Ratnagiri district. Moreover, irrigation requirement of sugarcane is comparatively less in *Konkan* than other parts of Maharashtra. Sugarcane being a non-conventional crop for farmers in *Konkan*, most of them go for a traditional method of planting of sugarcane. So it has great scope in checking the modern methods of sugarcane planting in *Konkan* region with additional inputs.

Material and Methods

The present investigation "Effect of intercropping and planting methods on growth, yield and quality of sugarcane under lateritic soil condition" was conducted at Agronomy farm, Department of Agronomy, College of Agriculture, Dapoli, Dist. Ratnagiri (M.S.) during *Suru* season of 2015. The experiment was laid out in Randomized Block Design with three replications. The gross plot size is 6.3 m x 5.4 m and net plot size is 5.7 m x 4.8 m. The variety of Sugarcane - Co 8014 and intercrops Groundnut – TKG bold, Sweet corn – Sugar-75, Cabbage – Sent, Amaranthus – Konkan durangi, Green gram – Taiwan.

Treatment details: Treatments

T_1 – Sole sugarcane with 90 cm row spacing
T_2 – Sole paired row sugarcane (60 x 60 cm – 120cm)
T_3 – Paired row sugarcane (PRS) + Groundnut
T_4 – Paired row sugarcane (PRS) + Sweet corn
T_5– Paired row sugarcane (PRS) + Cabbage
T_6 – Paired row sugarcane (PRS) + Amaranthus
T_7 – Paired row sugarcane (PRS) + Green gram

Fertilizers, seed rate and spacing

Table 1

Crop	N, P, K kg ha^{-1}	Seed rate ha^{-1}	Spacing
Sugarcane	250:115:115	30,000 setts	As per treatments
Groundnut	25:50:00	100 kg	30 x 15 cm
Sweet corn	200:60:60	20 kg	45 x 30 cm
Cabbage	120:60:60	50,000seedlings	45 x 45 cm
Amaranths	60:30:30	2.5 kg	20cmline sowing
Green gram	25:50:00	20 kg	30 x 10 cm

Planting of sugarcane was done in paired row with 60 x 60 – 120 cm in dry soil in which 3 eye bud setts were placed in row and buried in soil at 5 cm depth. Planting of sugarcane in conventional method with 90 cm spacing was done by digging furrows at 15 cm depth and setts were planted in it. The six lines of sugarcane were maintained both in paired row as well as conventional planting. Intercrops were sown in 120 cm gap in between paired row and both sides of plots of sugarcane. The dibbling of groundnut and green gram seeds was done at 30 cm row spacing, where three rows were maintained in between gap of 120 cm and one row sown at both sides of plot, total eight numbers of rows in plot were maintained. In case of sweet corn, the seeds were dibbled at 45 x 30 cm spacing. Thus two rows were maintained between gaps of paired row and one row at both sides of each plot. Total number of six rows was accommodated in the plot. The cabbage seedlings were transplanted at 45 x 45 cm spacing in which two rows were maintained in between gaps of paired row and one row at both sides, thus total number of six rows was maintained. The amaranths seeds were sown in line sowing at 20 cm row spacing where four lines were maintained in gap of paired rows and two rows at both the sides, the total lines being twelve per plot.

Fertilizer application

The recommended dose of fertilizer of sugarcane *viz.*, 250 kg per ha N, 115 kg per ha $P_2O_5$and 115 kg per ha K_2O was used for field experiment. At the time of planting 10 per cent dose of N and entire dose of P_2O_5 and K_2O were applied by placement method just before planting of sugarcane crop. Remaining N were applied in three split doses @ 40, 10 and 40 per cent at an interval of six weeks from each preceding dose. In case of intercrops groundnut and green gram were fertilized with recommended dose of 25:50:00 kg per ha at the time of sowing whereas, sweet corn fertilized with 50 per cent recommended dose of N, 100 per cent P_2O_5 and K_2O as a basal application just before sowing of crop and 50 per cent N as top dressing at 30 and 60 DAS. In case of cabbage the

recommended dose split into 100 per cent P_2O_5 and K_2O as a basal application and N split into three doses such as at the time of transplanting and remaining at20 and 40 DAP. Amaranths were fertilized with recommended fertilizer dose 100 per cent at the time of sowing.

Results and Discussion

Growth parameters

Spacing treatments remarkably influenced the growth parameters at both the stages as it altered the crop geometry. Numerically highest plant height and girth of sugarcane was recorded under paired row spacing (60 x 60 – 120 cm) as compared to conventional planting (90 cm in furrows). The paired row plant grows rapidly due to availability of light, space and moisture. Similar finding were also reported by More (2003) [7] and Singh *et al*., (2010) [12]. There were non significant differences observed for the number of tillers per clump due to planting patterns. The finding is in conformity with the result of Ombase *et al*., (2009) [10].

Among the various intercropping systems, the differences in plant height were significant during all the stages of growth. The maximum plant height recorded when sugarcane intercropped with different intercrops except sweet corn than sole paired row planted sugarcane. At 240 DAP, the girth of sugarcane found to be non-significant, but it was significant at 300 DAP and at harvest. The maximum girth was recorded when sugarcane intercropped with green gram followed by groundnut and lowest cane girth observed when sugarcane intercropped with sweet corn. The mean numbers of tillers per clump was observed non-significant during all the stages of growth. Among the different combinations, sugarcane intercropped with green gram recorded maximum plant height, cane girth and number of tillers per clump during all stages of observation. Also, intercrops groundnut, cabbage and amaranths did not have any adverse effect on sugarcane growth. It is clearly indicated from study that, sugarcane intercropped with sweet corn has competition for nutrients, space as well as sunlight which affect the cane height, girth and number of tillers. Similar result was also observed by Nevase *et al*., (2003) [9].

Yield attributes

Planting methods significantly influenced the yield attributes of sugarcane. The maximum number of internodes per cane, weight per millable cane, green top weight per cane, and trash weight per cane recorded when sugarcane planted as a paired row planting than closer spacing of 90 cm in furrows. The increase in yield attributes under wider spacing lead to better nutrition of individual plants which enhanced the crop growth and development through photosynthetic activity that ultimately lead to increased translocation of stored food for sink development.

Different intercropping systems significantly affected on the yield attributes of sugarcane. Also, the maximum number of internodes and weight of millable canes, green top weight and trash weight per cane observed with intercrop green gram. With the different intercropping systems sugarcane + green gram, sugarcane + groundnut found to be beneficial effect on sugarcane growth. Similar type of results was also reported by Jayabal (1992) [6]. However, sugarcane + sweet corn intercropping system recorded lowest values of yield attributes of cane which found to be adverse effect on sugarcane growth. Out of various intercrops tested with sugarcane, green gram and groundnut crops having capacity to fix the atmospheric nitrogen which might have been further available to the crop itself and the neighboring crops. However, rest of the intercrops tested with paired row planted sugarcane did not fix the atmospheric nitrogen.

Effect of treatments on yield of sugarcane

Planting methods significantly influenced the sugarcane yield. The characters *viz*., number of millable canes, cane yield, top yield, trash yield and sugarcane equivalent yield per hectare was maximum when sugarcane planted as a paired row planting (60 x 60 -120 cm) than conventional planting of 90 cm spacing in furrows. The wider spacing recorded higher yield which is the ultimate result of increased accumulation of photosynthesis due to resource availability like sunlight, water and nutrients etc. Similar results were also reported by Singh *et al*., (2010) [12].

With the different intercropping systems, the highest number of millable canes per hectare were recorded when sugarcane intercropped with green gram followed by groundnut. The highest cane yield recorded with the intercrop green gram (T_7) which was statistically similar with groundnut (T_3), cabbage (T_5) and amaranths (T_6). The green top yield and trash yield also maximum with the intercrops green gram, groundnut and cabbage respectively. Sweet corn intercrop with its dense canopy and voracious feeder of nutrients and water which affect adversely during initial growth period of sugarcane which resulted into obtaining low cane yield. Significantly higher sugarcane equivalent yields were obtained from all the intercropping treatments indicating yield advantage from the intercropping as compared to sole sugarcane. Significantly higher sugarcane equivalent yield was recorded with sugarcane + sweet corn intercropping as compared to all other treatments. The highest sugarcane equivalent yield obtained with this treatment might be due to higher intercrop yield obtained with little reduction in the main crop yield and higher additional gross gains from intercrop produce. The results are in conformity with the findings of Islam *et al*., (2007) [5] in case of sugarcane intercropping with potato-mungbean combination.

Effect of treatments on yield of intercrops

The intercrops were taking in between paired row gaps of sugarcane (60 x 60 – 120 cm). Among different intercropping system, sweet corn produce maximum yield but has adverse effect on growth of sugarcane. Then, cabbage intercrop produce second highest yield, followed by amaranths. However, the leguminous type of intercrops green gram and groundnut which may prove beneficial for sugarcane growth and gives maximum yield of cane but, produced lower yield as compare to other intercrops. It may be concluded from result that, the vegetable type of intercrops has economically more viable and gave maximum additional benefit as compare to seed type of intercrops. While, the intercrops like green gram and groundnut play a complementary role and helpful for maximum yield of main crop. All the intercropping systems give the additional income without much affecting the growth of main crop. Mono cropping is less economical to meet the farmers need. The most common advantage of intercropping is the efficient use of available resources by mixture of crops having different rooting availability, height, canopy structure and nutrient requirements.

Effect of treatments on quality parameters of sugarcane

Brix per cent in sugarcane failed to reach the level of significance due to different planting methods and intercropping systems. However, higher brix per cent was

recorded under treatment T_7 (PRS + green gram). Pol per cent was not influenced to the significant extent due to various treatments of planting methods and intercropping systems. While, the maximum pol per cent recorded with treatment T_7 (PRS + green gram) and lowest pol per cent with treatment T_4 (PRS + sweet corn). In case of purity per cent of juice, the different treatments of planting methods and intercrops failed to exert any significant difference. However, the maximum purity per cent were recorded with treatment T_7 (PRS + green gram) followed by treatments T_3, T_6, T_1, T_2, T_4 and T_5. CCS per cent in cane juice not significantly influenced by various treatments of planting and intercrops. The highest CCS per cent was recorded with treatment T_4 (PRS + sweet corn) followed by treatments T_6, T_2, T_3, T_7, T_5 and T_1 in descending order. In respect of CCS yield (t ha^{-1}) does not showed any significant influence due to various treatments of planting methods and intercrops. However, the maximum CCS yield were recorded with treatment T_7 (PRS + green gram) and the lowest CCS yield were recorded with treatment T_4 (PRS + sweet corn).

Various planting systems and intercrops did not influenced significantly on quality parameters of sugarcane. However, the numerically higher values in respect of quality parameters of sugarcane was observed with paired row planted sugarcane intercropped with green gram followed by groundnut. While, the lowest values observed when paired row planted sugarcane intercropped with sweet corn. In general, several reports indicated that, the juice quality characters were not affected by growing of intercrops in sugarcane. Even though, intercrops did not affect the juice quality of the associated sugarcane, the yield of base crop was found to be reduced in conventional planting of sugarcane *i.e.* 90 cm in furrows. Therefore increased inter row spacing by paired row planting of sugarcane will not only minimize adverse effects of intercrops on cane but also increase the intercrop yield leading to higher productivity of system. Similar results reported by Nazir *et al*., (1991) [8] and Rahman *et al*., (2008) [11].

Economics of different treatments

It is revealed from the data that, the maximum net realization was obtained due to paired row planting sugarcane with intercrops than sole sugarcane. Sugarcane + sweet corn treatment combination gives higher values of net realization of Rs. 1,49,212 ha^{-1} followed by sugarcane + cabbage, sugarcane + groundnut, sugarcane + green gram and sugarcane + amaranths. The increase in the net profit was attributed due to differences in cane yield. In respect of B:C ratio, the higher value was recorded by sugarcane + sweet corn intercropping (1.79) followed by sugarcane + cabbage, sugarcane + ground nut, sugarcane + green gram and sugarcane + amaranths in descending order. There was increase in the net realization due to paired row planting (60 x 60 – 120 cm) and intercrops over sole sugarcane with conventional planting (90 cm in furrows). Among the different intercrops, sweet corn was found superior in terms of B:C ratio and net realization than other four intercrops which might be due to its higher market price during the experiment.

Table 2: Plant height of sugarcane (cm) as influenced periodically by various treatments of planting methods and intercrops.

Treatments		60 DAP	90 DAP	120 DAP	240 DAP	At harvest
T_1	Sole sugarcane - 90 cm	21.82	30.09	98.24	178.31	250.33
T_2	Sole PRS (60 x 60 – 120 cm)	23.07	28.16	101.3	179.03	262.69
T_3	PRS + Groundnut	24.23	36.3	104.25	184.12	264.85
T_4	PRS + Sweet corn	19.58	26.8	83.92	169.02	247.81
T_5	PRS + Cabbage	23.13	32	102.3	175.62	263.52
T_6	PRS + Amaranthus	24.11	35.25	103.49	181.31	260.49
T_7	PRS + Green gram	25.51	36.32	105.89	187.09	265.98
	S.E.+	0.92	1.44	2.62	2.53	3.73
	C.D. at 5%	2.83	4.42	8.07	7.79	11.5
	General mean	23.06	32.13	99.91	179.21	259.38

Table 3: Girth of sugarcane (cm) as influenced periodically by various treatments of planting methods and intercrops.

Treatments		240 DAP	300 DAP	At harvest
T_1	Sole sugarcane - 90 cm	6.60	7.20	8.53
T_2	Sole PRS (60 x 60 – 120 cm)	6.70	7.41	8.62
T_3	PRS + Groundnut	7.47	8.30	10.40
T_4	PRS + Sweet corn	6.37	6.43	7.92
T_5	PRS + Cabbage	6.73	7.46	8.64
T_6	PRS + Amaranthus	6.63	7.33	8.57
T_7	PRS + Green gram	7.53	8.60	10.64
	S.E.+	0.33	0.34	0.58
	C.D. at 5%	N.S.	1.06	1.78
	General mean	6.86	7.53	9.04

Table 4: Mean number of tillers $clump^{-1}$ of sugarcane as influenced periodically by various treatments of planting methods and intercrops.

Treatments		60 DAP	120 DAP	180 DAP
T_1	Sole sugarcane - 90 cm	8.67	8.33	7.40
T_2	Sole PRS (60 x 60 – 120 cm)	8.33	7.00	6.10
T_3	PRS + Groundnut	9.33	8.00	7.13
T_4	PRS + Sweet corn	7.00	6.33	5.57
T_5	PRS + Cabbage	8.33	7.33	6.47
T_6	PRS + Amaranthus	9.00	7.67	6.70
T_7	PRS + Green gram	9.67	8.33	7.57
	S.E.+	0.81	0.63	0.58
	C.D. at 5%	N.S.	N.S.	N.S.
	General mean	8.61	7.57	6.70

Table 5: Yield parametersat harvest as influenced by various treatments of planting methods and intercrops.

Treatments		No. of millable canes ha^{-1}	No. of internodes cane^{-1}	No. of internodes cane^{-1}	Weight millable cane^{-1}	Green top weight cane^{-1} (g)	Trash weight cane^{-1} (g)
T_1	Sole sugarcane - 90 cm	23.67	23.67	1.58	188.00	45.67	67100
T_2	Sole PRS (60 x 60 – 120 cm)	23.33	23.33	1.63	206.67	49.67	73328.67
T_3	PRS + Groundnut	25.00	25.00	1.71	225.33	59.67	74671.33
T_4	PRS + Sweet corn	21.00	21.00	1.50	172.33	42.33	66954.67
T_5	PRS + Cabbage	26.67	26.67	1.67	194.00	50.00	67503.67
T_6	PRS + Amaranths	24.00	24.00	1.64	191.67	57.00	67755.33
T_7	PRS + Green gram	26.00	26.00	1.73	227.33	58.00	78251.67
	S.E.±	1.08	1.08	0.04	13.15	3.37	2580.95
	C.D. at 5%	3.34	3.34	0.13	N.S.	10.37	7952.68
	General mean	24.23	24.23	1.63	200.76	51.76	70795.04

Table 6: Yield (t ha^{-1}) of sugarcane as influenced by various treatments of planting methods and intercrops

Treatments		Cane yield (t ha^{-1})	Intercrop Yield (kg ha^{-1})	Trash yield (t ha^{-1})
T_1	Sole sugarcane - 90 cm	---	79.87	9.44
T_2	Sole PRS (60 x 60 – 120 cm)	---	83.62	10.35
T_3	PRS + Groundnut	844.00	86.66	10.76
T_4	PRS + Sweet corn	8277.00	75.96	8.99
T_5	PRS + Cabbage	7715.33	85.76	10.52
T_6	PRS + Amaranths	1826.33	82.51	10.14
T_7	PRS + Green gram	265.00	89.03	11.66
	S.E.±	50	2.07	0.42
	C.D. at 5%	154.07	6.38	1.30
	General mean	3785.53	83.34	10.26

Table 7: Quality parameters of sugarcane at harvest as influenced by various treatments of planting methods and intercrops.

Treatments		Brix (%)	Pol (%)	Purity (%)	CCS (%)
T_1	Sole sugarcane – 90 cm	19.33	88.36	12.60	17.86
T_2	Sole PRS (60 x 60 – 120 cm)	19.67	87.33	13.00	18.35
T_3	PRS + Groundnut	20.33	88.84	12.95	18.48
T_4	PRS + Sweet corn	18.00	87.31	13.25	18.11
T_5	PRS + Cabbage	19.17	87.29	12.72	17.93
T_6	PRS + Amaranths	19.67	88.42	13.11	18.45
T_7	PRS + Green gram	20.67	89.12	12.93	18.56
	S.E.±	0.87	3.35	0.94	0.74
	C.D. at 5%	N.S.	N.S.	N.S.	N.S.
	General mean	19.54	88.09	12.93	18.24

Table 8: Yield of sugarcaneas influenced by various treatments of planting methods and intercrops

Treatments		CCS yield (t ha^{-1})	Sugarcane Equivalent yield (t ha^{-1})	Harvest Index
T_1	Sole sugarcane - 90 cm	79.87	82.69	10.10
T_2	Sole PRS (60 x 60 – 120 cm)	83.62	81.82	10.90
T_3	PRS + Groundnut	118.62	81.53	11.20
T_4	PRS + Sweet corn	209.85	82.76	10.02
T_5	PRS + Cabbage	138.01	80.54	10.90
T_6	PRS + Amaranths	91.34	81.59	10.81
T_7	PRS + Green gram	93.39	81.03	11.55
	S.E.±	5.00	0.81	1.15
	C.D. at 5%	15.41	N.S.	N.S.
	General mean	116.38	81.71	10.78

Table 9: Total cost, gross income, net income and B: C ratio influenced by various treatments of row spacing and intercrops.

	Treatments	Total cost (₹ ha^{-1})	Gross income (₹ ha^{-1})	Net income (₹ha^{-1})	B:C Ratio
T_1	Sole sugarcane - 90 cm	173379	223780	50401	1.29
T_2	Sole PRS (60 x 60 – 120 cm)	171918	238438	66520	1.38
T_3	PRS + Groundnut	182398	325425	143027	1.78
T_4	PRS + Sweet corn	187462	332615	145153	1.77
T_5	PRS + Cabbage	187647	308499	120852	1.64
T_6	PRS + Amaranths	181615	248711	67096	1.36
T_7	PRS + Green gram	178849	283332	104483	1.58

Conclusion

1. Intercropping with green gram and groundnut were obtain maximum growth and yield in paired row planted sugarcane (60 x 60 – 120 cm).
2. Sweet corn crop is suitable for intercropping in paired row planted sugarcane.
3. Paired row planted sugarcane intercropped with sweet corn found to be more remunerative followed by paired row planted sugarcane intercropped with cabbage.

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