

Impact of Spaced Transplanted Sugarcane in the FSR site Ishurdi

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ABSTRACT

An impact study on Spaced Transplanting (STP), a sugarcane transplanting technique developed at Sugarcane Research & Training Institute (SRTI) was conducted at Farming Systems Research site, Ishurdi, Pabna, during 1985-86 to 1990-91 cropping seasons. The study indicated that before FSR activities at Ishurdi site hundred percentage of sugarcane land was under conventional cultivation. But after initiation of STP technology in FSR site and successful operation of different trials, demonstration and pilot production programme in successive years, it was found that STP replaced 75 percentage conventional planting during 1990-91. On the otherhand sugarcane yield per hectare was only 44t. before STP introduction at FSR site, sugarcane yield was obtained upto 83.8 t. ha⁻¹ during 1990-91 cropping year. Economic analysis of transplanted sugarcane also showed highly positive effect compared to conventionally planted sugarcane. The result of the impact study showed that Farming System Research and Extension approach was highly effective compared to existing extension procedures.

INTRODUCTION

The sugarcane based Farming System Research (FSR) site Ishurdi is at the lowest rainfall belt of Bangladesh, having annual precipitation of around 1400 mm. Ninety percentage rainfall is received between May to September, and winter months (November-December) receive only 5.6% of the total rainfall (Anon, 1987). Therefore, sugarcane being a drought tolerant crop occupies about 80% of the total area either under plant or ratoon canes and it contributes 70% earnings of the farm families (Anon, 1987). Although sugarcane is a principal crop of this belt but yield is very low, and ranged between 42-44 tons in plant and 25-30 tons in ratoon canes per hectare in the conventionally planted sugarcane. In spite of using a huge quantity of seed (6-7 t. ha⁻¹) which is about 15-18% of the total yield, such a low production is caused by number of factors such as poor and gappy germination due to lower ambient temperature, moisture stress (Miah et al. 1988), and sometime late planting, lower initial plant population, higher tiller mortality due to interplant competition (Miah and

Sarkar, 1981; 1982) which lead to low production of millable cane ranging between 45-60 thousand per hectare.

In spaced transplanting (STP) technique pre-germinated settlings grown in nursery are transplanted in main field at desired spacing (Rahman & Rahman, 1979; Ali *et al.* 1989). STP technique ensures uniform plant population, seed requirement reduced to one-third of conventional planting, increases number of millable cane and yield (Panjee, 1970; Rahman and Rahman, 1979; Srivastava *et al.* 1981; Ali *et al.* 1989). STP technique was tested in the FSR Project site Ishurdi during 1985-91 on different parameters and was recommended for large scale adoption in farmers field.

MATERIALS AND METHODS

The study was conducted among the farmers of FSR site, Ishurdi, Pabna, Bangladesh during 1985-86 to 1990-91 cropping seasons. Population size ranging from 240 to 260. Almost 100% sugarcane farmers included in the survey/monitoring. Data were collected from the farmers over the years. Descriptive statistical procedures were followed in data analysis.

RESULTS AND DISCUSSION

The chronological increase in area has been shown in the Figure 1. It is seen from the Figure 1 that 75% area was occupied by STP cane within six years of introduction of STP cane at Ishurdi site.

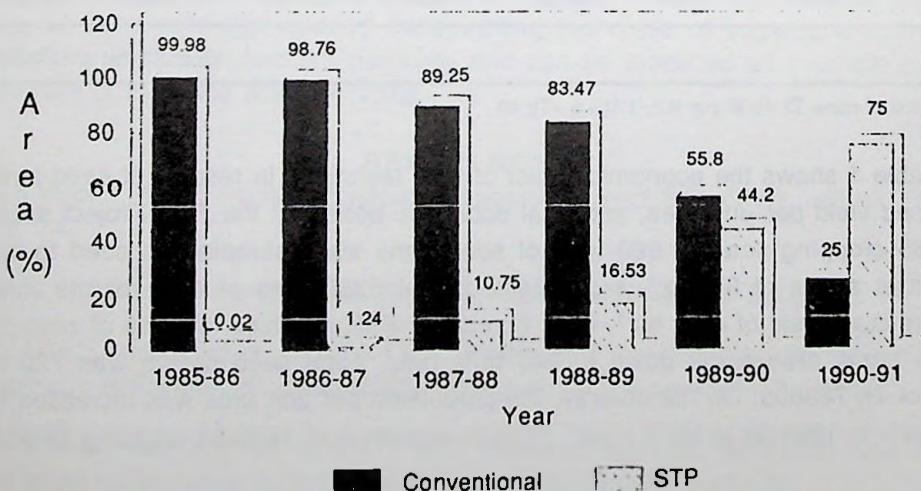


Figure 1. Chronological increase in area under STP cane compared to conventional cane at FSR site, Ishurdi.

In the FSR Project site Ishurdi about 120 ha of land was under sugarcane cultivation. Hundred percentage land was cultivated following conventional planting in 1984-85 cropping season. With the beginning of the project in 1984-85 cropping season 0.02 ha was under STP technique of sugarcane cultivation. It is seen from the Figure 1 that the area increase in STP technique is tremendous. It is because of successful performance of different STP trials, demonstration and pilot production programme.

Table 1. Economics of STP technique of sugarcane cultivation at the FSR Project Ishurdi.

Years	Seedcane used in 120 ha (t)	Savings of seed cane (T)	Total production of cane in 120 ha (t)	Yield of cane (t. ha ⁻¹)	Additional income (Tk)		
					By seed saving	By addl. production	Total
1984-85	960.0	0	5280	44.0	-	-	-
1985-86	958.7	1.3	5304	44.2	1303	24120	25427
1986-87	948.0	12.0	5400	45.0	12060	120600	132660
1987-88	856.9	103.1	6192	51.6	103616	916560	1020176
1088-89	801.3	158.7	6732	56.1	159494	1459260	1076054
1989-90	535.7	423.3	8208	68.4	425417	2642640	3368057
1990-91	240.0	720.0	10056	83.8	723600	4799880	5523480

Grand Total = 11145854

Note: Price of cane Tk 1005 per ton, 1 US \$ = Tk 40

Table 1 shows the economic impact of STP technique in respect of seed saving, increased yield per unit area, and total economic benefit in the FSR Project area. In 1984-85 cropping season, 960 tons of seed cane was estimated as seed to cover 120 ha at a rate of 8 t ha⁻¹ and obtained total 5280 tons of cane at the rate of average cane yield of 44 t. ha⁻¹. After 6 years of FSR activities, the use of seed cane for the same area came down to 240 tons only. Total seed saving was 720 tons worth of Tk 723600. On the contrary, the production per unit area was increased from 44 t. ha⁻¹ in 1984-85 to 83.8 t. ha⁻¹ (90.5 % increase) in 1990-91 cropping season.

The total additional income from seed saving and additional production in 1990-91 was Tk 5523480 and the cumulative grand total of economic gain during the last 5 years tenure of project was Tk. 11145854 (Table 1).

Table 2. Economic analysis of STP and conventional cane production at the FSR site Ishurdi.

Economic Parameters	STP cane	Conventional cane
1. Cost of cultivation (Tk. ha ⁻¹)	21411	23637
2. Income (Tk. ha ⁻¹)	84599	56135
3. Net profit (Tk. ha ⁻¹)	83188	32498
4. Benefit-cost ratio	3.95	2.38
5. % of return on investment	395.11	237.69
6. Cane yield (t.ha ⁻¹)	78.92	57.90
7. Break even point on yield (t. ha ⁻¹)	22.04	23.51
8. Break even point of cost of cane (Tk. ha ⁻¹)	271.28	454.72

The Table 2 shows that the total cost of cultivation of STP cane was about Tk.21411 whereas it was Tk 23637 in conventional cane. Lower cost in STP cane was mainly due to saving of seed materials. Gross income, net profit, benefit-cost ratio, % of return from investment, yield, break even point etc. all these economic parameters showed highly positive effect of STP compared to conventional cane.

It is seen from the Figure 1 that area was increased under STP cane from 0.02 to 75 percentage within six years of introduction to STP in FSR Ishurdi. It is because of sharp monetary benefit in terms of seed saving and increased production of cane. It may be concluded that spaced transplanting technique of sugarcane cultivation has positive impact on farmers economy and can be practiced all over the country irrespective of mills and non-mills zone.

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