



Case Study on Zero Tillage Technique

About 'Improved Agricultural Practices' project at Munger (Dist.) in Bihar:

Munger district is located in the southern part of Bihar and its headquarter is located on the southern bank of river the Ganges. The district is spread over 1419.7 Sq. km. From administrative and development point of view, Munger is divided into three subdivisions namely Munger, Kharagpur, Tarapur and has nine developmental blocks namely Munger, Bariyarpur, Jamalpur, Dharahara, Kharagpur, Tetia-bambar, Tarapur Asarganj and Sangrampur. The economy of the district is dependent on agriculture. The farmers grow paddy, maize, wheat etc.

Currently, the agricultural practices used are of traditional method in terms of use of machines, equipment, irrigation types, etc. In this context IGS took up the intervention of improved agricultural Practices to demonstrate the potential of use of machines and better farming methods in order to increase the household income of farmers. IGS as a part of Mission Sunehra Kal Program of ITC started its intervention in the year 2011 - 12 with package of practice and farm mechanization in order to reduce the cost of cultivation. During 2014 - 2015, wheat cultivation was done in 396 acres of land and similarly paddy transplanter and Direct seeded rice (DSR) were used in an area of 1000 acres. At the same time during the year IGS supported agricultural business activities among the farmers. The activities were designed largely to develop new agricultural practices and contributed to strategic objectives of IGS of Sustainable livelihood Promotion through:

- (i) Productivity enhancement
- (ii) Alternate Market Linkage
- (iii) Value addition
- (iv) Risk Mitigation

The trend is continuing till date. This case study seeks to capture the strides made by IGS and its subsequent impact on farmers in context of livelihood generation.

Case Study:

Mr. Ranjit Mandal, 37 years old is a resident of Badhouna village (Haveli Kharagpur block) of Munger district. He has been associated with IGS since 2012-13. He is amongst the lead farmers with whom Munger IAP team has been working. He owns around 3 acre of farmland which is used for growing paddy and wheat.



Before IGS intervention he used to grow paddy (during July to Nov and method was non SRI) & Wheat (Nov to Mar). Cropping pattern was limited to two crops only and yield was poor (Paddy – 1200 kg/acre; Wheat 900 kg/acre).



After IGS intervention way back in 2012-13, he was selected as a lead farmer of the area and was trained regarding SRI, various POPs of improved agricultural practices. He now is very much familiar with SRI, SWI and Zero Tillage method of cropping and his yield has increased more than 1.5 times (Paddy – SRI method – 2000 kg/ acre; Wheat SWI/ zero tillage method – 1500 kg/ acre). He has started using improved POPs like sowing of new variety of wheat; during the last season of Rabi crop he has cultivated wheat of new variety HI 1563 through Zero Tillage Method in one acre and in one acre through broadcasting method after harvesting paddy

crop.

The details of the plots and inputs given / observations are as follow:

	Demonstration Plot	Control Plot
	Unit /Description	Unit /Description
Land Size (in acre)	1	1
Seed rate	40 Kg	50 Kg
Seed Variety	HI 1563	HI 1563
Sowing date	17th Nov'14	27th Nov'14
Sowing method	Zero Tillage	Conventional /Broadcasting
Input details		
Urea	60	60
DAP	36	36

Potash	30	30
Azophos	6 Kg	6 Kg
Crop Protection		
Tilt	200 MI	200 MI
Irrigation	3	3
Harvesting date	2nd April'2015	3rd April'2015
Total Production in Quintal	15	13
Total Production per acre	15	13

The costs of cultivation in both the methods are given below in details:

Sr. No.	Description	Zero Tillage Plot	Broadcasting Plot	Remarks
1	Land Preparation	0	1200	In Zero Tillage method no expense for land preparation
2	Seed	1280	1600	For Zero Tillage plot seed rate is 40 Kg whereas 50 Kg for Non Zero Tillage Plot due to late or broadcasting of seed.
3	Sowing	600	600	
4	Fertilizers			
	Urea	480	480	
	DAP	864	864	
	Potash	540	540	
5	Organic Culture	480	480	Azophos (Organic culture) is used to reduce 20-25 percent chemical fertilizers in the plot.
6	Crop Protection	300	300	Tilt is used to minimise the loss of fungal attack.
7	Machine hiring exp.	300	300	Two times azophos is used as foliar spray and one time tilt sprayed.
8	Irrigation	1600	2000	Three times.
9	Harvesting	4500	4500	18 labours appx. And thresher machine.
		11344	12864	

	Difference in Input Cost			
	Total Production in Quintals	15	13	
	Total Production per acre	15	13	
	Market Rate per Quintal (appx)	1350	1350	
	Total Return	20250	17550	
	Total Expenses	11344	12864	
	Net Return	8906	4686	

Observations:

1. The cost of Cultivation is less in zero tillage techniques in comparison to broadcasting method of wheat cultivation.
2. Seed rate is more in broadcasting method because of no defined space of seed.
3. Irrigation time takes approx. 20 % less in Zero Tillage plots in compare to broadcasting plot.
4. The loss of plants through wind is less in zero tillage plots because of deep root and healthy plants resulting in more yields.
5. At last, the production is high in zero tillage plots in compare to broadcasting plots as the farmer do not have to wait for field preparation which takes 7 to 10 days.
6. Zero Tillage techniques are a part of soil and moisture conservation because of minimum disturbance of soil.

One can see the confidence gained by him during these years after IGS intervention. He is now one of the most progressive farmers of the area who is not only well informed but highly skilled regarding usage of new techniques to be applied for better crop productivity.

Acknowledgement:

This document has been produced by Indian Grameen Services (IGS – BASIX), Bihar with the financial assistance from CUTS International, Jaipur under the project entitled Sustainable Development Investment Portfolio (SDIP) funded by Department of Foreign Affairs and Trade (DFAT), Government of Australia. The views expressed here are those of IGS, Bihar and can therefore in no way be taken to reflect the positions of CUTS International or DFAT.
