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Farm interventions lead the way for farmers

By Upasana Upadhyaya

"I sowed almost 40 acres of land with a zero tillage machine the first time, including mine as well as other fellow villagers'," says Ajay Kumar, village Bhandari, Sitamarhi, Bihar. Singh's contribution for buying the machine was Rs. 12,000. "We previously we had to spend almost Rs. 8,000–9,000 per bigha, but with zero tillage, the expense came down to Rs. 2,500–3,000. The crops are just germinating, and they look fine."

Ajay is one of many farmers who have moved away from traditional methods of farming toward farm mechanization. Bihar, known for its endowed soils and fertile land, is the hub of agriculture. But nowadays agriculture does not incur much benefit and is not as sustainable as it used to be. The reasons are many, including traditional methods of farming that are still being used and turn out to be expensive, lower adaptability to the changing environment, and the effects of climate change. With most people in rural India dependant on agriculture for their livelihood, and a growing demand for agriculture products, there is a dire need to promote improved farming practices for farmers to increase their productivity and earn a sustainable income.

To provide cheaper and greener solutions as well as increase productivity and farm yield, rural farmers in Bihar are assisted by Sehgal Foundation, which offers farm machinery at subsidized rates, conducts capacity building programs that include exposure visits, soil testing, organized field days, and crop demonstrations that promote improved farm practices, quality seed selection, crop diversity, and balanced and adequate use of fertilizers.

Farm mechanization includes the usage of machinery for tillage operations, sowing/planting, water saving, harvesting, and threshing, thereby increasing land productivity by facilitating timely and quality cultivation, which helps in achieving food security and simultaneously improving farmers' livelihoods. Other benefits include reduced drudgery, and saving time and cost, which allow for other productive work. Farmers are trained to operate farm machinery based on a cluster entrepreneurship model where they also earn additional income by renting the machines to other farmers.

Under farm mechanization, the most promising technology to have helped boost farmers' yield is the zero tillage machine, which has seen tremendous success among farmers. Under the *Adarsh Panchayat* (model village council) project with support from PTC Foundation Trust in Bhandari village, Sitamarhi, in 2018, the acceptance of zero tillage use was immense in a short span of time. About 80.63 acres of land were covered using zero tillage in a span of one and a half months. "It requires fewer passes over the field, thus saving fuel costs as well as expenses," adds Ajay.

"We observed a 14 percent increase in farm yield using zero tillage at project areas, and an overall average of Rs. 4,000 has been saved by farmers. Looking at the current crop situation, we are expecting a higher increase in yield with the usage of zero tillage in Sitamarhi," says a Sehgal Foundation staff member.

Of course it takes time for farmers to adapt and accept new methods in the field. There are lots of risks involved. "We have always relied on traditional farming methods passed on to us by our ancestors. It proved beneficial in their time, but now things have changed, and I feel we need to adapt to the new environment for progress to happen. Taking risks is a part of our life," says Hira Lal Shah, potato planter, East Champaran, Bihar.

Hira Lal was provided with a planter for Rs. 25,000. During the first year, with the help of the machine, he managed to sow potatoes in 40 acres of land and earn around Rs. 80,000 as profit by renting the machine to fellow villagers. With the income earned, he bought a paddy thresher. He says that besides reducing drudgery, the potato planter helps save time and Rs. 3,000–4,000 per acre cost that would otherwise go to hiring laborers. Sharing his benefit with fellow farmers provides an additional income to him. Hira Lal now also plans to buy a zero tillage machine from the District Agriculture Office at a subsidized rate.

To reduce irrigation costs, solar irrigation pumps have been provided, which are environment-friendly as well. Where diesel irrigation costs around Rs. 120 per hour, the total cost of irrigation with solar irrigation pumps averages Rs. 4,000–5,000 for

the entire irrigation cycle. Hence solar irrigation pumps provide a sustainable solution for irrigation.

Another such tool to have reduced drudgery and helped in increasing productivity is the solar sprayer pump. A solar sprayer pump acts as a substitute to the hand-operated knapsack sprayers. The pump works on solar power, thus reducing the dependence and cost of electricity as well. With a solar-powered sprayer pump, the farmer can spray one acre in about 3–4 hours. Under the *Samagra Krishi* project by Sehgal Foundation in collaboration with Bayer CropScience, a sprayer is provided to a group of five beneficiaries and accordingly 126 pumps have been provided to a total of 630 beneficiaries. There is a community contribution of Rs. 200 per farmer for the sprayer.

In order to strengthen extension services, one of the most important initiatives has been the Mobile Agri Clinic van under *Kaushal Krishak Pariyojana* in collaboration with Pi Foundation. Farmer's queries on agriculture and technology are answered along with providing information on various schemes related to social security, agriculture, livestock, health, education, etc. The Clinic also conducts free soil testing.

Continued building of farmers' capacities to ensure that they have knowledge and access to farm interventions, exposure visits and field days are held in collaboration with Krishi Vigyan Kendra and Borlaug Institute of South Asia.

(Upasana Upadhyaya is working with Sehgal Foundation as an Ideosync UNESCO Information Fellow)