

## Farm Mechanization: Zero tillage benefits farmers

By Upasana Upadhyaya

Farm mechanization implies usage of machinery in agriculture for tillage operations, harvesting, and thrashing. Farm mechanization increases land productivity by facilitating timeliness and quality of cultivation, which helps in achieving food security while simultaneously improving people's livelihoods. Other benefits include reduced drudgery, saving time, and allowing for other productive work.

According to Food and Agriculture Organization of the United Nations, applying new environment-friendly technologies enables farmers to produce crops more efficiently using less power. Sustainable agricultural mechanization also contributes significantly to the development of food systems as it has the potential to function more efficiently and effectively in an environment-friendly manner.

However, small and marginal farmers cannot benefit much from agricultural mechanization due to their small and scattered patches of landholdings. Under a village development project in Bihar, *Gram Utthan* (village rise), aimed at sustainable and inclusive development, the Sehgal Foundation team is working with farmers' groups to increase productivity by providing machinery to farmers at subsidized rates. Farmers are trained to operate the machines based on a cluster entrepreneurship model where they also earn additional income by renting the machines to other farmers.



"Farm machinery was never an option for me as they are quite expensive until 2016 when I decided to buy the machine after attending a community meeting organized by Sehgal Foundation on farm mechanization. I had previously heard about zero tillage machines from fellow villagers but never fully understood the benefits and advantages. I was able to grasp it fully when the foundation team presented us with a demonstration of the machine. The machines were provided at a subsidized cost, so I decided it was worth the risk and invested my money in

buying it at an amount of Rs 9,200," said Jadav from Mathiya village in Sitamarhi district, Bihar.

There are a number of benefits of using zero tillage machine. Excessive digging and ploughing of the land can damage the soil and make it vulnerable to soil erosion. Zero tillage is a solution to these problems. Jadav further shared, "Before zero tillage, I used to rent a cultivator for ploughing where the expense would amount to Rs 2,000/3,000. There is no extra expense with zero tillage as there is no fuel cost. I incurred a profit of two lakh rupees that year. I also rent out my machine to fellow farmers, which also results in an extra income for me."

Another farmer *Ramakant Kushwaha* agreed, “Besides being environment friendly, zero tillage has helped me cut down on expenses and resulted in an increase in productivity. I incurred more profit by using zero tillage, as there was no extra expense on fuel. Unlike a cultivator that requires four or five passes over the land, the zero tillage machine requires only one pass to make the land ready for farming, which in turns reduces damage to soil. In addition, it requires less labor and helps in reducing carbon emissions. The only expense is on its maintenance, which needs to be done periodically.”

Tools such as zero tillage machines are available to farmers where the farmer contributes 20 percent of the machine cost and agrees to share the machine with a cluster of farmers to extend the benefits.



In Bihar, where a large population depends on agriculture for their livelihood, farmers mostly rely on age-old farming techniques, which do not yield much profit. Providing new technology-based farm machinery at a reasonable price supports them in making agriculture rewarding.

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