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Managing Crop Residue

Improving Soil Health and Reducing Pollution

In this article, **Sarita Brara** highlights that the burning of paddy straw in Punjab and Haryana significantly contributes to rising pollution levels in Delhi each October and November. To combat this issue, the states are implementing various methods, including the use of Super Seeder machines. These advanced agricultural implements not only incorporate paddy residue into the soil but also help manage crop residue more effectively. By reducing the need for stubble burning, Super Seeders play a crucial role in mitigating air pollution and enhancing soil health. They simplify residue incorporation, improve soil structure and fertility, and support microbial activity and nutrient cycling. Additionally, these machines minimize the need for extra tillage, saving both time and fuel for farmers. The adoption of Super Seeders across India is expected to improve soil management practices, promote environmental sustainability, and boost agricultural productivity.





National Agro Happy Seeder. Source: <https://en.wikipedia.org>

Before 2023 Vikas Singh admits that he and other farmers in Dayalpur village in Kurukshetra district of Haryana used to burn their paddy stubble to clear the their fields before sowing the next crop. That is no longer the case now. Last year their village was

one of the 100 villages selected by an NGO to ensure zero burning of paddy residue. Twenty-seven Super Seeder machines were provided to individual farmers who in turn let other farmers in their village use the machine on payment basis. The multi-tasker Super Seeder

machine attached to a tractor finely cuts the paddy stubble, ploughs it back to the soil and is also used for sowing seeds for the next crop and all this is done fast. This means that there is no need to burn paddy stubble locally referred to as *parali* and hence no air pollution. Secondly, the soil is enriched with nutrients in the residue and most importantly sowing is completed for next crop within the small window of time available after harvesting paddy.

“In Dayalpur village, the panchayat owns nearly 500 acres of land which is given on lease to farmers for growing crops and another 500 acres are privately owned for cultivation,” says Vikas Singh. One of the recipients of the Super Seeder, Singh grows paddy in five acres of land owned by him and charges INR 1500 per acre for use of his machine by other farmers in his village. He says that it takes just 2–2.5 hours per acre to complete the task saving both energy and time.

The main reason for stubble burning in Haryana as well as Punjab is the limited



time available between harvesting of paddy and sowing of wheat. Delaying wheat sowing can negatively impact crop production. Left with only a 2–3-week window between harvesting the paddy crop and sowing the next one, the farmers find burning the crop residue as the most cost-effective way to clear the fields post-harvest, not realizing the harmful effects caused by pollution from the burning.

The NGO SM Sehgal Foundation initiated the project in 2023 to address crop residue burning in northern India starting with villages in Kaithal and Kurukshetra districts of Haryana. Under the CSR supported project being implemented by the Foundation, the farmer has to just pay INR 1,00,000 for the Super Seeder machine that costs about INR 2.5 lakh. The rest that is 60 per cent of the cost is provided under the project.

In addition to providing financial support, the NGO educates villagers about the harmful effects of burning parali and holds workshops and programmes aimed at improving agricultural practices to boost production. The NGO also supplies seeds for various types of paddy that can be harvested in a shorter period. Additionally, it assists farmers with soil testing.

Vikas Singh says that with this variety of seed, paddy is ready for harvesting in 85 days, compared to 120–135 days with the previous variety they were using. Mehma Singh, a farmer in Manjhla village of Kaithal district, owns five acres of land and does farming in 20–25 acres of land that he takes on rent. He used to pay INR 1500–2500 per acre for the use of Super Seeder machine from a farmer in another village. Many a times, the machine was

not available on time and a lot of money and time was wasted in removing the paddy residue from the fields. He like other beneficiaries contributed INR 1,00,000 from his savings as part of his share for the cost of Super Seeder machine that he got from the NGO.

“Not only do I earn from the machine used for other farmers in the villages I am saving money as I have to spend much less on fertilizers as the soil is enriched with paddy residue that has multiple nutrients including nitrogen, zinc, and DAP”

Ranjit Singh, a farmer in his village, is one among 100–125 farmers who is benefitting from Mehma Singh's Super Seeder machine. He says now he is able sow the next crop on time. “Earlier I used spend INR 5000 on fertilizer and now the cost has come down to INR 2000,” he says.

According to the Principal Lead





Agriculture Development and Extension Department of the Foundation Pawan Kumar, villages which had the highest incidence of parali burning as per the state data were selected under the project. Also, only those villages were chosen where no farmer owned or there was no community-owned Super Seeder. Under the project, Super Seeder

machines were provided to individual entrepreneurs. These machines were also put to use for other farmers in their villages or nearby places on payment basis. According to the Foundation, 5000 farmers have benefitted and 30,000 acres of land were covered under the project for the purpose. The result was that residue from these many acres of land

after harvesting paddy was not burnt reducing pollution levels in the area. "This year another 27 Super Seeder machines will be provided to benefit more farmers," says Pawan Kumar.

The aim of the initiative besides promoting the use of Super Seeder machines for effective paddy residue management was also to develop a



replicable and scalable holistic model and build the capacities of small and marginal farmers across rural India. Workshops were held to sensitize farmers about soil health and organic content through demonstrations and regular capacity-building sessions by experts. The Foundation also supports farmers who already have Super Seeder machines by including those training programmes.

Under the project, farmers in the selected villages in the two districts were given training to make proper use of the machine and also given cues on crop diversification as well as how to grow paddy that is ready for harvesting in a shorter period. Workshops were held as part of the community awareness programmes in which they were also informed and educated about the government schemes under which subsidy is provided for buying machines like the Super Seeder. In order to inculcate leadership qualities in women in the selected villages, Village Development Committees (VDCs) and Women Leadership Schools, WLS were set up.

Sudesh Rani from Kainthal khurd village in Kurukshetra says that initiative by the NGO has brought down the number of people who used to have breathing-related problems due to

A farmer using the super seeder machine



burning of parali. She says that she got seeds from the Foundation to grow vegetables, learnt how to take care of the cattle and more importantly taking part in joint sessions with male counterparts has increased her confidence level.

Maya Kaur, a member of WLS from Manjhla village, received training and seeds to start a kitchen garden. She was also given guidance on caring for domestic animals and their health. Kaur says she is now growing her own vegetables and no longer needs to buy them from the market.

The burning of paddy straw in Punjab

and Haryana is seen as a significant contributor to the rise in pollution levels in Delhi during October and November every year. The use of Super Seeder machines that disposes of the paddy residue by mixing it in the soil and using paddy stubble for production of fuel gas and manure are some of the methods being employed by the two states to reduce the incidence of parali burning and thereby trying to reduce air pollution. ■

Sarita Brara is a Delhi-based senior freelance writer who regularly contributes articles in TerraGreen.