



No Burn with More Earn

Critical role of Happy Seeder in ending crop residue burning

Each year across northwest India (especially, Punjab and Haryana), as much as 12 million tonnes (2018-19) of rice residue is burnt to prepare fields for the next crop. This age old practice wastes time and a valuable resource, reduces soil fertility and impacts hydrology. Burning the crop stubble contributes to the climate crisis and endangers the health of millions of people due to air pollution.

Since 2018, we've been complementing the Government's efforts in helping farmers across Haryana and Punjab to adopt a better way to manage crop residue. Instead of harvesting the rice, later burning the rice stubble left behind and then later still planting a new crop, it's now possible to harvest and replant all on the same day using concurrent use of Super Straw Management System (SMS) equipped combine harvesters and Happy Seeder. The Happy Seeder is a tractor-mounted machine that cuts and lifts the rice straw in front of seeding tyne, sows wheat in a single pass and drops the rice straw back onto the sown area as water saving and weed resisting mulch.

To assist farmers to adopt Happy Seeders, The Nature Conservancy India (TNC India), Borlaug Institute for South Asia (BISA), International Maize and Wheat Improvement Center (CIMMYT), Precision Agriculture for Development (PAD) and Tata Trusts, have come together under the project Harnessing the power of Agricultural Residues through Innovative Technologies (HARIT). HARIT aims to encourage Happy Seeder adoption and support farmers across Haryana and Punjab. Tata Trusts has been advancing this work in Punjab since 2018 through the Reviving Green Revolution (RGR) Initiative before HARIT was born. Through these projects, farmers are being supported with appropriate training and information as they align their agricultural practices and embrace Happy Seeders for optimum results.



RGR (green) and HARIT (orange) initiative districts in Punjab and Haryana

Happy Farmers

Using this new methodology benefits farmers and the environment as it improves soil fertility and farm yield, while reducing the use of water, fertilizer and herbicides.

From 2018 - 2020, the Reviving Green Revolution (RGR) Initiative:

- supported 540 villages across 38 blocks in 9 districts of Punjab.
- conducted 2,420 farmers' training camps at village level and 23 farmers' field days at a cluster level.
- conducted 1,080 field demonstrations using project assisted 95 Happy Seeder machines.
- shared information on crop cultivation practices with 256,000 farmers.

From 2019 - 2020, the Harnessing the power of Agricultural Residues through Innovative Technologies (HARIT) Initiative:

- supported 84 villages across 21 blocks in 7 districts of Punjab and Haryana.
- conducted field demonstrations with 83 Happy Seeders on 4,048 hectares of land.
- Trained 355 farmer ambassadors and 192 custom service providers through 35 farmer training sessions.
- More than 2,500 farmers were well informed about happy seeder and associated production practices through participation in field days and seminars.
- Shared information on crop cultivation practices with 5,000 farmers.

Impact

1. Around 80% of the farmers in the RGR pilot villages did not burn crop residue and use alternate sustainable practices and the major constituents (56%) includes Happy Seeder and zero tillage for sowing of wheat

Alternate sustainable practices used by farmers to sow wheat

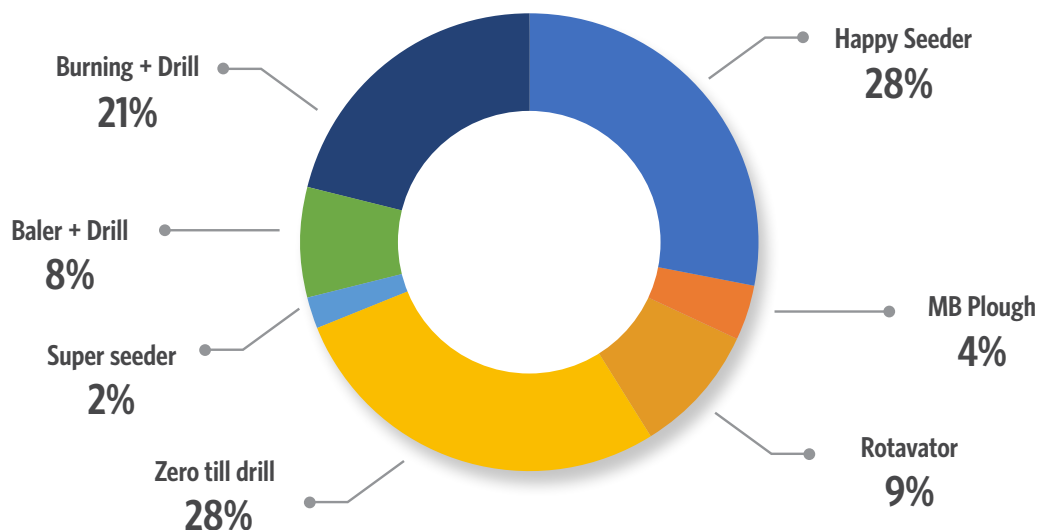


Figure 3. Response of 5,834 farmers across 9 districts of Punjab, RGR survey, 2020

2. Around 61% of the farmers in the RGR pilot villages reported availability of Super SMS as a challenge.

3. 58% farmers access Happy Seeder on rental basis from other farmers - additional income opportunity for farmers

Super Straw Management System (SMS) Availability

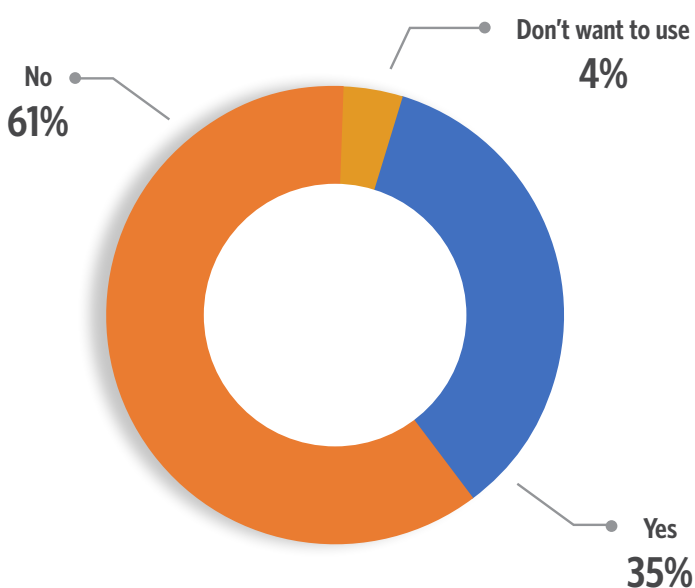


Figure 4. Response of 1,616 farmers across 9 districts of Punjab, RGR survey, 2020

Farmers access to happy seeder

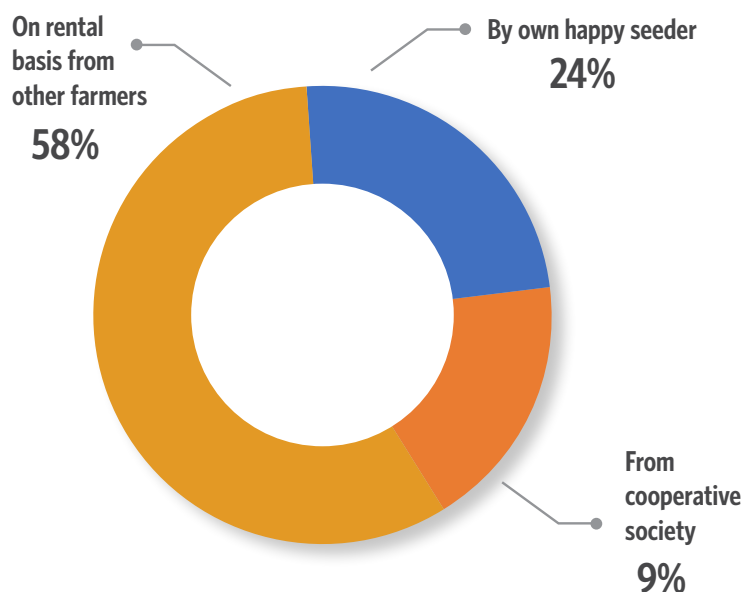


Figure 5. Response of 3,954 farmers using happy seeder from 16 districts of Punjab and Haryana, Compiled survey results (RGR and PAD survey), 2020

Benefits of sowing with Happy Seeder

i) Biggest benefit -

Cost saving

48%

Recent survey by RGR - 1,616 farmers response who have used Happy Seeder

Timely sowing

30%

ii) Other benefits -

Improved productivity

55%

Recent survey by PAD (HARIT) - 363 farmers response who have used Happy Seeder

Improved soil condition

51%

iii) Key message from field demonstration -

Net yield gain in happy seeder sown wheat fields

0.34 to 0.40 tonnes per hectare

Net profit in happy seeder sown wheat fields

Rs. 10,000 – Rs. 12,000 per hectare

Crop cut of happy seeder vs traditional method sown wheat (776 samples across 7 districts) analysis, BISA and CIMMYT, 2020

iv) Some key outcomes:

- farmers earning **6.5%** more net profit
- 32%** less spent on weedicides
- 6%** less spent on fertilizers
- Happy Seeder was used in **25%** more land with the number of Happy Seeders in use increasing by **43%**

Recent survey by RGR, 2020

What Next?

With the support and collaboration of governments, research institutions, farmer organizations and other policy makers and key stakeholders working on crop residue management, we hope to take this proven technology to a massive scale. We aim to end all crop residue burning using sustainable practices across northern India by 2024. This will greatly amplify the associated benefits as described above.

Please join us! For more information, contact TNC India or any of the project partners.

Mr. Kulbir Singh Brar

RGR Cell, Tata Trusts
9888730348; ksbrar@tatatrusters.org

Mr. Manoj Singh

Project Head – Crop Residue Management, TNC India
9810931908; manoj.singh@tnc.org

Dr. H. S. Sidhu

Principal Research Engineer, BISA
9815077311; H.Sidhu@cgjar.org

Dr. M. L. Jat

Principal Scientist and Systems Agronomist, CIMMYT
9999108787; M.Jat@cgjar.org

Mr. Prateek Uniyal,

Project Head, PAD
8527609880; puniyal@precisionag.org

This project is a partnership between:

RGR Cell, Tata Trusts -
<https://www.rgrcell.org/>

The Nature Conservancy India (TNC India) - <https://www.tncindia.in/>

Borlaug Institute for South Asia (BISA) - <https://bisa.org/>

International Maize and Wheat Improvement Center (CIMMYT) - <https://www.cimmyt.org/>

Precision Agriculture for Development (PAD) - <https://precisionag.org/>