



Paddy Straw Management- Major issues in Haryana

**Pooja Rani*, Ritu, Krishan
Kumar Singh**

Assistant Professor,
Maharishi Markandeshwar
(Deemed to be University),
Mullana, Ambala)



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*Corresponding Author

Pooja Rani*

Article History

Received: 14. 12.2022

Revised: 18. 12.2022

Accepted: 22. 12.2022

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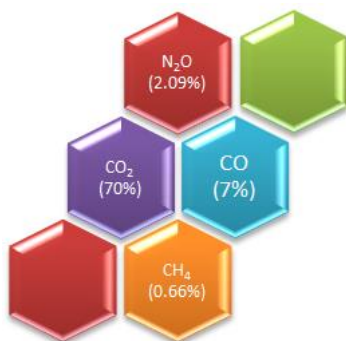
INTRODUCTION

Paddy straw burning is a serious problem that affects people all over the world. It has several negative effects, including environment pollution (the smoke produced when paddy straw is burned contains deadly gases like carbon monoxide and dioxide), damage to soil fertility, harm to trees in fields and along roadsides, and danger to birds because nesting birds' eggs are burned when paddy straw is burned). When paddy straw is burned in the fields, dense, dark smoke spreads far, almost completely eliminating vision and increasing the likelihood of road accidents. Numerous illnesses, including cough, fever, cold, T.B., cancer, eye irritation, allergy, choking of the lungs, breathing difficulties, and other respiratory issues are on the rise these days as a result of smoke and soot suspended in the air. When rice straw is burned, the temperature in the neighborhood rises several degrees above average, changing the atmosphere. Rice residues are valuable natural resources, and recycling them enhances the physical, chemical, and biological qualities of the soil.

PROBLEMS:

1. Methane, carbon monoxide, nitrous oxide, and other hydrocarbons, which are hazardous chemically and radioactively, are among the possible greenhouse gases produced by burning crop waste. Ozone degradation and environmental contamination result from this. Burning rice straw is thought to emit nitrogen (N) as N₂O (2.09%) and carbon (C) as CO₂ (70%), CO (7%) and CH₄ (0.66%). Burning agricultural waste also releases a significant amount of particulate matter, which is rich in both organic and inorganic organisms. When taken in large doses, a range of known or suspected carcinogens found in biomass smoke can result in lung conditions.

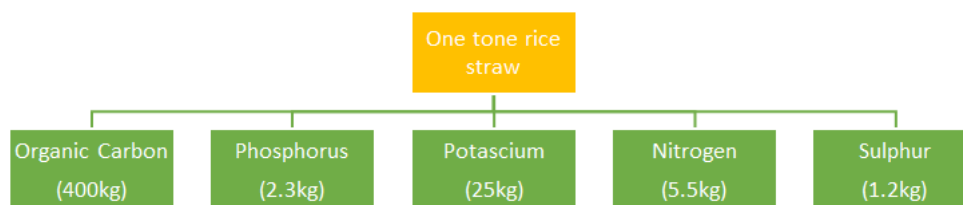
After being discharged into the sky, pollutants spread across the surrounding area, go through physical and chemical changes, and eventually have a negative impact on human health. Burning of stubble has a direct effect on human wellbeing. This is owing to the fact that all of the hazardous chemicals and heavy metals generated during the burning of residue function as gradual poisons in people.



According to studies, those who are pregnant, have young children, are elderly, or have a history of disease are more likely to have health issues due to air pollution. Human exposure to these potentially dangerous gases has been linked to several respiratory,

cardiovascular, neurological, skin, and ocular conditions.

- Burning of stubble in Haryana results in a heavy layer of pollution that, during the winter, not only poses a major health concern to residents of Delhi and the neighboring areas but also impairs vision. The smoke screen that develops after burning causes transportation issues. Numerous accidents every day cause the loss of priceless lives and assets. Burning straw eliminates the vegetation around fields and on the sides of roads, eradicating biodiversity.
- The burning of straw results in the loss of soil nutrients. 400 kilograms of organic carbon, 5.5 kilos of nitrogen, 2.3 kilograms of phosphorus, 25 kilograms of potash, and 1.2 kilograms of Sulphur are among the common elements lost when one tone of rice straw is burned. Additionally, the heat produced by burning paddy straw destroys beneficial bacteria in the soil. So, burning straw has a negative impact on the fertility and health of the soil.



SOLUTION

- By mixing stubbles into the field, they are simple to manage. Such as integration is not preferred by farmers, however, because it takes time for the stubble to break down. Numerous factors, such as late wheat sowing and nitrogen immobilization, which results in insufficient nitrogen availability, can have a negative impact on wheat productivity.

The Happy seeder is used to sow wheat in paddy fields that have been combined harvested without removing the straw. For the happy seeder to function successfully, the

loose straw needs to be distributed evenly around the field. Carbon, nitrogen, and other nutrients are recycled back into the soil as rice straw decomposes, restoring soil fertility.

Both aerobic and anaerobic environments can support microbial activity. However, for the majority of soils, aerobic channels are more important than anaerobic ones. There is a possibility of feeding leftover rice to animals. Rice waste can also be used to produce electricity. The fuel utilized in thermoelectric plants is biomass.

- Utilizing a combine harvester outfitted with the PAU super straw management

technology, the paddy should be harvested (SMS). The PAU created the Paddy Straw Chopper-cum-Spreader to chop and spread rice straw and stubble in the field. After a light irrigation, rotating tillers can be used to incorporate the chopped straw into the soil. Efficacious decomposition can take the place of burning straw. Microorganisms that break down cellulose and lignin are needed for straw breakdown.

3. Farmers can utilize paddy straw as bedding material in the winter. By enhancing the animals' comfort and leg health, this bedding improves both the quality and amount of milk produced. The perfect raw material for creating paper and pulp boards is rice straw.
4. Paddy straw coupled with wheat straw can also be used to make paper. This technique is already being used by paper mills to provide 60% of their energy requirements.
5. Paddy straw can also be used as a growing medium for *Pleurotus* species, *Volvariella volvacea*, and *Agaricus bisporus*. Per kilogram of paddy straw, these mushrooms produce 300, 120–150, and 600 g of yield, respectively. Paddy straw mushrooms are those that are raised on paddy straw (*Volvariella volvacea*). The substrate for cultivating this fungus can also be prepared using a range of agricultural wastes, including dried banana leaves, typha, oil palm bunch waste, cotton, and wood waste.
6. An age-old technique for preparing organic stuff that is rich in useful nutrients is composting. Composting is the natural breakdown of organic materials by microbes like bacteria, which also break down some municipal garbage, crop

residues, and animal and vegetable waste. It can be applied as organic fertilizer naturally once the breakdown process is finished. This organic fertilizer improves soil fertility in addition to its physical, chemical, and biological qualities.

Almost 3.2 tons of nutrient-rich Farm yard manure are produced by paddy straw per hectare. Biogas can be created from agricultural waste and used as an alternative energy source. Crop leftovers, including rice straw, are the main source of lignocellulose for the production of biogas. There are several advantages to using rice straw as a fertilizer in the garden. This helps to keep soil moist, manage weeds, and moderate soil temperature, all of which are beneficial for strong plant growth.

CONCLUSION

Rice farmers must use rice straw properly, but the government must also create appropriate laws and regulations to prevent stubble burning. Rice straw management needs to be made more widely known, and farmers need to receive mandatory training in this area. The leftover rice straw should be broken up into small pieces and scattered around the fields using the Super Straw Management System (SMS). Farmers receive some financial assistance from the use of rice straw. Various uses for rice straw as a fuel that could cut greenhouse and other harmful gases are possible. The environment can be safeguarded against the grave pollution scenario of the future in this way. Rice straw should be able to be moved from the field to industry with the least amount of work possible. Otherwise, all efforts would be in waste. For our next generation, the environment is preserved through these actions.