



# Agri Articles

(e-Magazine for Agricultural Articles)

Volume: 02, Issue: 02 (MAR-APR, 2022)

Available online at <http://www.agriarticles.com>

© Agri Articles, ISSN: 2582-9882

## Stubble Burning in Punjab: Problems and Issues

(\*Faraaz Farooq<sup>1</sup> and Permendra Singh<sup>2</sup>)

<sup>1</sup>Division of Agronomy, Sher-e- Kashmir University Agricultural Sciences and Technology of Jammu, India-180009

<sup>2</sup>Advanced Centre for Rainfed Agriculture, Rakh Dhiansar, India-180001

\* [faraazfarooq9086@gmail.com](mailto:faraazfarooq9086@gmail.com)

Stubble burning is an important anthropogenic activity that involves burning of crop residue in order to clear the field for the next crop to be sown. In Punjab, rice-wheat rotation system is very common and most of the farmers of the region use combine harvesters for harvesting rice and wheat. This machine combines three different tasks, i.e. Reaping, Threshing, and Winnowing into a single and easy operation. However, it generates a huge amount of stubble consisting of tall stalks, about 15 cm high, which are very difficult to be incorporated into the soil and thus are being burned in field. On a global scale, stubble burning accounts for around a quarter of all biomass burning. According to the Indian Agricultural Research Institute (IARI), over 14 million tones (or 63.6 percent) of the 22 million tonnes of rice stubble produced each year in India is burned. Punjab and Haryana together account for 48% of the total. The suffocating haze visible over South Asia especially India during the winter months has been related to stubble burning. In India, pollution from fog and haze induced by stubble burning, other anthropogenic activities, as well as lower temperatures during the winter, especially during the months of October to December, have been a problem in New Delhi and other NCR (National Capital Region) cities. Burning of stubbles releases a significant amount of carbon dioxide, Carbon monoxide, Nitrous oxide, Sulfur dioxide, and Methane, all of which lead to air pollution and severely affect human health. Air pollution in Delhi has become a common feature, one that is repeated year after year with minor differences, exacerbated primarily by stubble burning in Punjab and Haryana.



## Concerns of Farmers

The average time interval between harvesting of rice and sowing of wheat is reported to be 2 weeks leaving farmers with a very short interval to clear field for next crop. If failed to clear, stubbles will be left in the field which will delay sowing of next crop and might also be attacked by pests such as termites leading to considerable losses,. As a result, the cheapest and quickest approach to get rid of the stubble is to burn it. The poor economic condition of farmer's doesn't allows them to use expensive mechanized methods to remove stubble. Moreover farmers are unable to use expensive robotic ways to remove stubble due to their poor economic conditions.

## Causes of Stubble Burning

- 1) The main reason for this problem is the use of combine harvesters for harvesting which leaves several inches of stubbles in the fields.
- 2) Rice straw being rich in silica is considered useless as fodder in case of non-basmati rice.
- 3) According to experts, with poor economic conditions, farmers are likely to be lured to burn their stubbles to cut costs rather than spending on scientific management of stubbles.

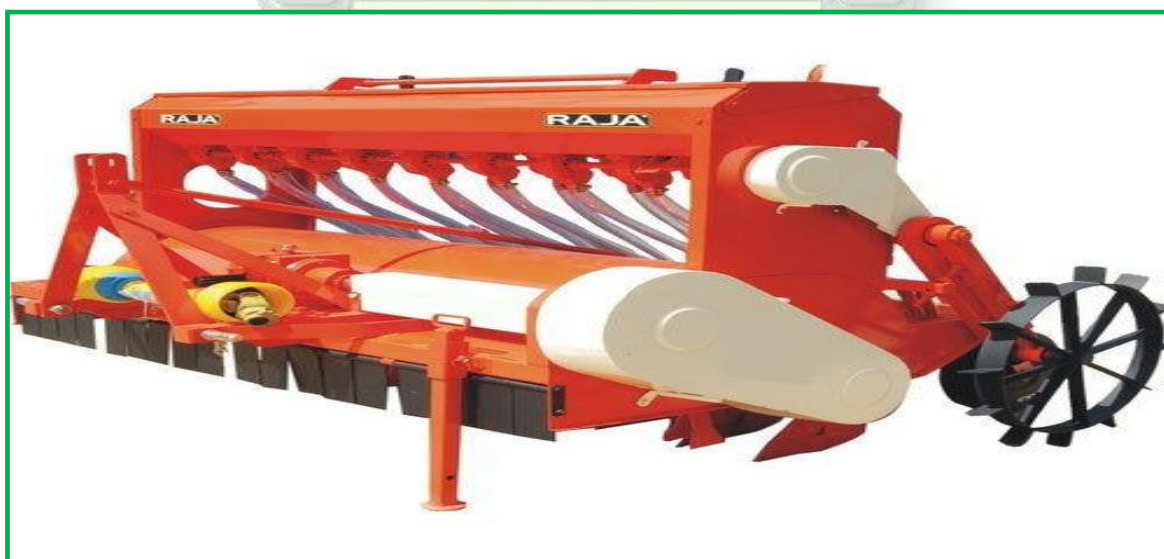
## Harmfull Effects of Stubble Burning

1. Stubble burning releases gaseous pollutants and harmful particulate matter which being too light weight stays in air causes smog and travels with wind covering a larger distance.
2. Shortness of breath, coughing, eye irritation, asthma, bronchitis, and other lung disorders are more commonly caused due to pollutants released while stubble burning.
3. Stubble burning depletes soil nutrients such as available nitrogen, phosphorus, and potassium as well as other micronutrients.
4. Carbon dioxide and methane generated during stubble burning have a direct impact on weather and climate because they are important greenhouse gases whose increased emissions in the atmosphere cause global warming and climate change.

## Innovative Ways for Combating Stubble Burning

### 1. Happy seeder machines

The 'Happy Seeder' is a device which combines stubble mulching and drilling into one unit, is a promising new approach in which stubble is cut and gathered before seeding, and the cut stubble is then deposited as a mulch behind the seed sower. The nine-row Turbo Happy Seeder weighing 506 kg is one of several Happy Seeder machines developed is capable of seeding wheat in the field using rice residue.



## 2. Composting

Composting is a biological process in which microorganisms turn organic waste into compost that can be used as a fertiliser under controlled aerobic conditions. Composting is a technique that is commonly used to handle off-field leftovers when the compost produced is not returned to the field, although it can also be utilised on fields (in situ composting) Rice straw is heaped up at threshing areas [45] as an example of composting, where the straw decomposes gradually, largely aerobically, and the compost can then be disseminated into the soil as a fertiliser at the start of the next season.

## 3. Chhattisgarh Model

The Chhattisgarh government has embarked on an interesting experiment by establishing gauthans. A gauthan is a five-acre field kept in common by each community where all unused parali is collected through parali daan (people's donations) and transformed into organic fertiliser by mixing cow manure with a few natural enzymes. The programme also creates jobs for young people in rural areas. The government encourages parali to be transported from the farm to the nearest gauthan. 2,000 gauthans have been successfully developed by the state

## 4. Bio-char

PAU, Ludhiana, has developed a method for converting stubble into biochar, which would assist to reduce pollution and improve soil fertility..Biochar is a carbon-rich, steady, and persistent product utilized by farmers to improve soil health and quality. Biochar is derived from the thermal treatment of crop residues. The thermal treatments involved in biochar generation are incorporate carbonization, combustion, torrefaction, gasification and pyrolysis. The application of biochar is proven to be potentially successful in improving soil carbon sequestration increasing crop productivity, mitigating greenhouse gas emissions and reducing leaching of nutrients.



## Need of the Hour

It will be difficult to totally eliminate stubble burning unless the Centre provides financial aid to increase farm mechanisation. As directed by the NGT, states must develop alternate arrangements for the consumption of paddy straw into the soil.