

Stubble Burning in Northern India: Consequences and Solutions

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Introduction

As the name suggests stubble burning is setting fire to the straw stubble (remains after grains, like paddy, wheat, etc.). This was used majorly by masses until 1990s, when government restricted this practice as it was harmful for environment.



Over time many alternatives such as ploughing the stubble back into the ground or collecting it for industrial use are introduced.

In late September and October each year, farmers mainly in Punjab and Haryana burn an estimated 35 million tons of crop waste from their paddy fields after harvesting as a low-cost straw-disposal practice to reduce the turnaround time between harvesting and sowing for the second (winter) crop. Stubble burning have its advantages but there are disadvantages too. Both are mentioned below:

Advantages

- Kills pests as well as slugs.

- Reduce nitrogen tie-up.
- Cheap.
- Negligible equipment used.

Disadvantages

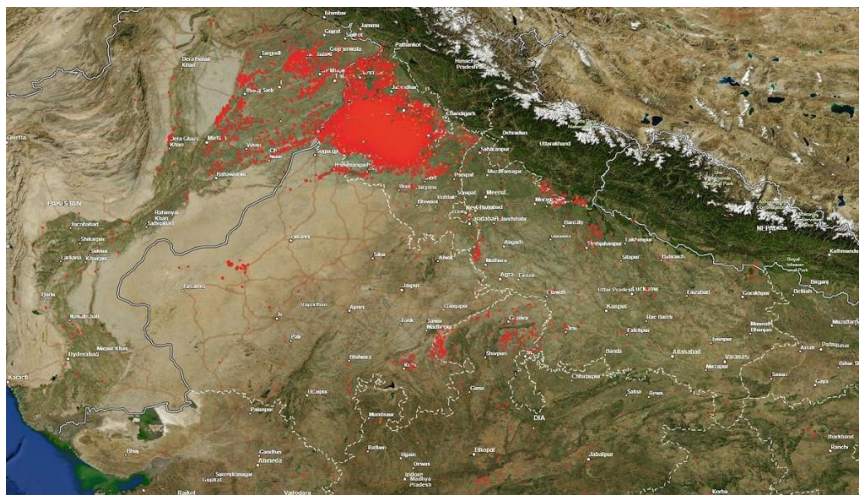
- Smoke is released which cause pollution.
- Nutrients are lost.
- Fire may get out of control.
- Can cause damage to public properties.
- The major reason of imposing restriction on this practice is release of Greenhouse gases which then leads to increase in Global Warming.

Some articles said that smoke from stubble burning in Punjab and Haryana may increase COVID-19 symptoms

- Doctors say that the emission from stubble burning will affect the COVID-19 situation in the region, especially in Delhi.
- The Punjab Remote Sensing Centre recorded 2873 cases of stubble burning in the state between September 21 and October 12 this year, almost four times the 755 cases that were recorded in the corresponding period last year.
- The stubble burning incidents are likely to have shot up as paddy harvesting is in full swing in the state from the first week of October and sowing of wheat crop begins in the last week of October.

Situation of Stubble Burning in Punjab and Haryana:

The Punjab Remote Sensing Centre (PRSC), an autonomous government body situated in Ludhiana, which is keeping track of stubble burning cases in the state since 2014, has already recorded 2873 cases of stubble fires in different areas in the three weeks between September 21 and October 12. In the corresponding period last year, 755 cases were recorded and 510 cases in 2018, revealed the PRSC data.



NASA in which red dots depicts the areas where stubble burning is prominent

Amritsar has been leading the chart with 1,111 fires followed by Taran Taran (655), Patiala (251), Gurdaspur (166), Ferozpur (115), Kapurthala (86) and Sangrur (81). As per the data from the Punjab Pollution Control Board (PPCB), penalties worth Rs. 40 lakh (Rs. 400,000) were levied last year on farmers burning stubble. However, how much of it was recovered is not clear, since different agencies at the local level are maintaining the data.

Haryana, also contributes to air pollution, although not as much as Punjab, has reported 1200 cases of field fires between September 25 and October 12. S. Narayanan, member secretary, Haryana Pollution Control Board said that last year, they had recorded 6700 stubble fire incidents. The per-day average cases reported this time is around 140 to 150. “This is not a very huge number but we are trying our level best to bring down the cases,” he said. Of the cases received, Kurukshetra is leading the chart with 250 cases followed by 238 cases in Karnal, 172 cases in Ambala, 102 in Fatehabad and 90 Jind.

How can we deal with this problem?

- **Waste Decomposer**

Scientists at the National Centre for Organic Farming have developed a ‘Waste Decomposer’ solution concocted with effective microorganisms that propel in-situ composting of the crop residue.

“This is done by spraying the preparation on the post-harvest stalks of crop plants and leaving it for a month. The waste decomposer comes in a small bottle that is distributed to

farmers at a measly price of ₹20. According to the centre officials, the solution can decompose over 10,000 metric tons of bio-waste in 30 days. The same can also be used in foliar spray and via drip irrigation,” says TBI report.

- **Converting Crop Stubble into Animal Feed, Manure, Cardboard**

In a recent tweet, eminent agricultural scientist MS Swaminathan said, “In South India, stubble is not burnt as there’s economic value as animal feed. For years I pointed out many commercial uses of rice straw. We should adopt a do-ecology approach with farmers to convert rice stubble into income rather than making them agents of eco-disaster.”

- **Happy Seeder**

Instead of burning the stubble, a tractor-mounted machine called the Happy Seeder “cuts and lifts rice straw, sow wheat into the bare soil, and deposits the straw over the sown area as mulch,” says Ideas for India Article.

According to a recent study published in the journal Science, it will “eliminate air pollution by crop burning and reduce greenhouse gas emissions (GHG) from on-farm activities by more than 78% relative to all burning options.”

- **Incentivising Farmers to Grow Crops That Don’t Guzzle Water**

The problem of crop burning cannot rest entirely on farmers. For example, in Punjab, this practice has a lot to do with the groundwater crisis. Since paddy is a water-intensive crop, why not incentivise farmers to make the shift towards millets. Besides using very little water, millets are suitable for the land available in Punjab and are highly nutritious.

- **Converting Crop Stubble to Biodegradable Cutlery**

Kriya Labs, an IIT-Delhi start-up, has developed a machine that can convert the leftover rice straw into pulp, and that is further moulded to produce biodegradable cutlery.

“The straw is treated with a natural solvent to separate the organic polymer from cellulose leading to the formation of pulp. The semi-solid substance is then dried and moulded into biodegradable cups, plates and jars. This entire operation is eco-friendly and sustainable,” says Kanika Prajapat, the Chief Technology Officer, speaking to Your Story.

Kriya claim that in a day they can generate 4-5 tonnes of rice pulp with residue generated by 800 acres of land every harvest season.

Why stubble burning in Haryana and Punjab has intensified in last 10 years

The stubble burning phenomenon in Haryana and Punjab is linked to three unlikely factors: the (relatively) large size of landholdings of farmers in these states; the (consequent), high level of mechanisation; and, only in Punjab, a water conservation law that shortens the harvest window, HT's reporting has shown. None of the three is usually listed among the reasons for stubble burning.



Summarily, land holding is high of people living in Haryana and Punjab; therefore, burning the remains is way cheaper than using other methods and government is not introducing the solution properly to farmers and they are unaware of other cheap methods; however, Only farmers cannot be blamed for this because ignorance and lack in spreading awareness is shown by government too.