

## Winter is coming Is Stubble Burning, too?

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Article Content:

### BURNING ISSUE

# WINTER IS COMING IS STUBBLE BURNING, TOO?

**S**ince winter is around the corner, people in North India, especially Delhi NCR have started worrying about air pollution. As the harvest season ends in Punjab and Haryana, the thick, suffocating smoke from stubble burning blankets the region. During this period, Delhi's air quality plunges, with PM2.5 levels at times reaching 80 times higher than the WHO permissible limits. Not many people realize that the farmers themselves face the brunt of stubble burning emissions, and yet they continue to do it.

Stubble burning is a significant source of gaseous pollutants such as, carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulphur oxides (SO<sub>x</sub>), and methane (CH<sub>4</sub>) as well as particulate matters (PM10 and

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PM2.5) causing serious damage to human health and the environment.

Scientific estimates suggest that crop residue burning contributes about 15 per cent to India's PM 2.5 emission load annually. The stubble burning in north-western states contribute about 20-30 per cent to Delhi's PM 2.5-pollution load during the peak burning period.

#### Why Do Farmers Burn Stubble?

So, why do the farmers of Punjab and Haryana burn stubble despite the well-known harmful effects? This is because farmers have a short window - usually about two to three weeks between harvesting paddy and planting wheat. They need to quickly dispose the stubble before moving onto the next crop cycle.

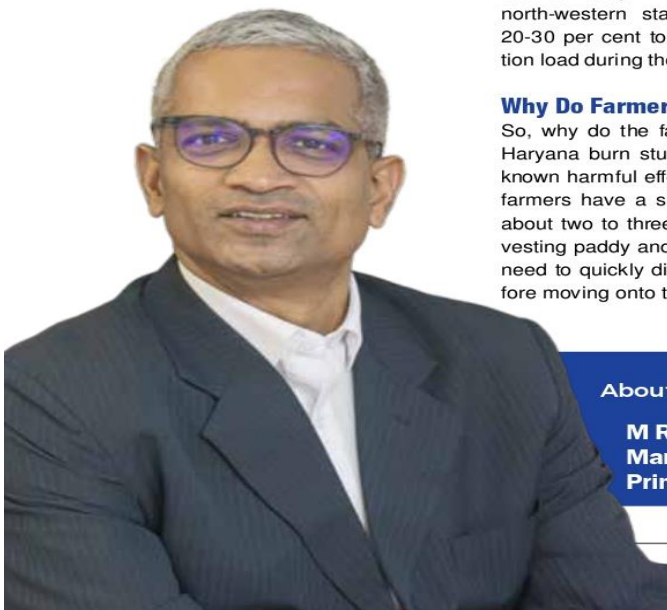
#### What can Farmers do with Stubble?

The answer to stubble burning lies in associating economic value with it. The 27.62 million tonnes of stubble produced annually by Punjab and Haryana could be transformed into valuable products that generate income for farmers and create jobs.

One promising avenue is **biofuel** production. The Indian government has a target of 20% ethanol blending with gasoline by 2025. Farmers can direct paddy straw towards producing second-generation biofuels. India has the potential to produce 45 billion litres of bio-ethanol per year, much of it from agricultural waste like stubble. Current ethanol blending in India stands at around 15%, and experts believe this can easily reach ~25%.

Another key sector is **biomass power**. India has a 10 GW installed capacity for biomass power, but agricultural residue could contribute up to 18 GW of additional power. Biomass power plants not only reduce stubble burning but also provide reliable, decentralized energy to rural areas. Punjab currently has 11 biomass power plants with an installed capacity of 97.5 MW, using 0.88 million MT of paddy straw, and two more being commissioned, along with several biogas projects that utilize paddy straw. Farmers can explore where the nearest biomass power stations are and supply their stubble there.

**Sustainable packaging** is another growing industry which could benefit from stubble. With India's ban on single-use plastics, there is increasing demand for eco-friendly packaging. Consumer



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awareness around climate change and their increasing spending power have led to significant demand for climate-friendly products. Farmers can sell their crop residue to sustainable brands, or paper and packaging industries. Thus, the crop residue can be processed into biodegradable packaging materials. Start-ups like Dharaksha are experimenting with this, and this sector could scale up rapidly.

### What can the Government do?

However, realizing the full potential of stubble as an economic resource would require a supportive ecosystem. High initial costs for setting up stubble-based businesses remain a barrier. Also, the big killer, with limited buying units for these stubbles, is the logistics cost. The landed cost of crop residue from far away farms makes it unviable for businesses.

To mitigate this, the government should offer subsidies, incentives, or interest subvention to encourage private investment. In the EV (Electric Vehicle) space, we see significant progress thanks to incentives laid down by the government and the infrastructure (i.e. charging stations) investments. Simi-

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larly, for addressing crop stubble, the Government (both at Centre and State levels) should offer financial support to set up bioethanol production and biomass power plants across the Punjab / Haryana farming belts.

To cut down the logistics cost, we probably need a large number of small-capacity-plants, spread across the clusters. Decentralized storage and processing units, supported by government initiatives and private investment, could be a major driver for change.

PPP (Public-private-partnerships) could play a crucial role in scaling up infrastructure. The government can also look at supporting FPOs to take up this

activity and increase their income.

Similarly, Government should provide incentives to small businesses or traders (Arhatiyas) to procure stubble directly from farmers, making it economically attractive.

**Farmer education** is another critical component. Government-backed awareness campaigns, combined with assured procurement programs, almost like a MSP – minimum support price – program can be a huge help. Haryana's recent initiatives, offering financial incentives for non-burning practices and rewarding panchayats that achieve "zero burning," have shown encouraging results. Expanding such programs across northern India could drive wider adoption of sustainable practices.

### An Economic and Environmental Imperative

Stubble burning is not just an urgent environmental crisis, but also an overlooked economic opportunity. By incentivizing the private sector and FPOs to invest in stubble-based businesses, India can not only reduce its air pollution but also create new industries, jobs, and income for farmers.