

Burning of Parali In Fields: An Environmental, Agricultural And Health Problem

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Abstract

Pollution caused by burning of paddy residues after harvest to quickly prepare the land for wheat sowing is the latest problem which has a hazardous effect on the environment, agriculture and human health . Decades ago the environment was pure and healthy. Latest problem in North India nowadays is burning of Parali (crop stubble) by North Indian farmers in their paddy fields. When crop is harvested and residue is left in the ground, it is burnt by the crop growers. Stubble burning lowers the quality of soil. It causes haze, smog and pollution in the environment resulting in severe irritation to eyes and respiratory problems. This reviewed paper reflects the stubble burning causes of massive air pollution triggering a medical emergency in which people are advised to stay indoors and use masks when going out. The reviewed paper deals with Government policies to maintain the quality of air within safety limits due to burning of parali. This paper discusses the central government scheme to support farmers to purchase machines like super SMS, Happy seeder etc. Crop burning method can be replaced by other sustainable beneficial methods supported by government to improve the air quality. It deals with the case study of farmers who are spending a lot on machines which are only useful for one month. Also problems arising in implementation of government policies regarding subsidy. Also alternative methods to get rid of problem.

Keywords: *Pollution, Parali, Air quality,*

Introduction

Parali (Wheat crop residue) burning is relatively newer issue in last four to five years. Wheat stubble burning started with mechanised harvesting using combine harvesters. Infact farmers of North India especially Punjab , Haryana and Uttar Pradesh have been burning stubble at a large scale. To protect parali , state government has implemented policy for management of crop residue. National Green Tribunal (NGTs) on December 10, 2015 had banned crop residue burning in Rajasthan, Uttar Pradesh, Haryana and Punjab. Burning parali makes the soil and air toxic. There is a state of Environmental Emergency since last four years in the month of November. Severe air pollution is witnessed in National Capital Region (NCR) in the month of November 2016 when PM10 level touches 990 ug/M3. The safe limit prescribed of PM10 and PM2.5 is 100ug/m3 and 60 ug/m3. During environmental emergency schools and colleges are closed children , infants and older people are advised to stay indoors . Air pollution caused due to stubble burning causes severe eyes irritation, irritation in throat and breathing problem. People are suggested to wear mask to protect against pollution.

Delhi's environment minister Mr. Kailash Ghelot said :”The latest NASA images show a spike rise in crop residue burnings (stubble burnings) in the neighbouring states of Delhi, which has severely affected the air quality of Delhi. The stubble plume from north-west regions has become one of the significant factors in adversely affecting Delhi's air quality”.

Supreme Court asks Haryana, Punjab and U.P. to end stubble burning immediately.

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The state government has not implemented the National Policy for Management of Crop Residues to protect the *parali* (crop residue). On December 10, 2015, the National Green Tribunal (NGT) had banned crop residue burning in the states of Rajasthan, Uttar Pradesh, Haryana and Punjab.

Under Section 188 of the IPC and under the Air and Pollution Control Act of 1981, burning crop residue is an offence. However, government does not implement it's policy strongly.

The Delhi high court had also ordered against parali burning , while Punjab government imposed a penalty of Rs 73.2 lakhs farmers in 2016 for burning of stubble.

Farmers continue to burn residues every season thus making both the soil and air poisonous as the actual amount of fines charged was not available

Wheat , paddy and sugarcane leaves are most commonly burnt. More than 500 million tonnes of parali (crop residues) is produced annually in the country, according to an official report . Cereal crops (rice, wheat, maize and millets) account for 70 per cent of the total crop residue.

Thirty percent rice stubble and twenty two percent of wheat stubble, is burnt on the farm. Twenty million tonnes of rice stubble is produced every year in Punjab alone, eighty per cent of which is burnt, according to an estimate.

Instead of burning of the stubble, it can be used in different ways like cattle feed, compost manure, roofing in rural areas, biomass energy, mushroom cultivation, packing materials, fuel, paper, bio-ethanol and industrial production, etc.

Environmental Pollution, Soil Degradation And Health Risk

A study estimates that crop residue burning released about 149.24 million tonnes of carbon dioxide about (CO₂), approximately over 9 million tonnes of carbon monoxide (CO), 0.25 million tonnes of oxides of sulphur (SOX), about 0.07 million tonnes of black carbon and 1.28 million tonnes of particulate matter. These responsible for the haze in Delhi and melting of Himalayan glaciers and directly contribute to environmental pollution. The bacterial and fungal populations critical for a fertile soil are killed due to heat from burning of paddy straw which penetrates 1 centimetre into the soil, elevating the temperature 33.8 to 42.2 degree Celsius. Micro-organisms present in the upper layer of the soil as well as its organic quality is damaged due to burning of crop residue. Crops are more prone to disease due to the loss of 'friendly' pests, as the wrath of 'enemy' pests has increased. The upper layers of soil solubility have also been reduced.

According to a report, one tonne stubble burning leads to a loss of 5.5 kilogram nitrogen, 2.3 kg phosphorus, 25 kg potassium and more than 1 kg of sulfur — all soil nutrients, besides organic carbon.

Dr Vitull K Gupta, Professor of medicine, Bathinda, conducted a study in 2016, revealed that 84.5 per cent people were

suffering from health problem due to increased incidence of smog and haze. It was found that 44.8 per cent people reported irritation in nose, 76.8 per cent people reported irritation in eyes, and 45.5 per cent reported irritation in throat. 41.6 per cent people reported cough or increase in cough and 18.0 per cent reported wheezing. Another study by the Institute for Social and Economic Change, Bengaluru, estimated that people in rural Punjab spend Rs 7.6 crore every year on treatment for ailments caused by stubble burning.

Solutions To The Burning Problem

The Union government released the National Policy for Management of Crop Residue in 2014. Crop residue management has helped make the soil more fertile, thereby resulting in savings of Rs 2,000/hectare from the farmer's manure cost.

Farmers can also manage crop residues effectively by employing agricultural machines like : Happy Seeder (used for sowing of crop in standing stubble), rotavator (used for land preparation and incorporation of crop stubble in the soil), zero till seed drill (used for land preparations directly sowing of seeds in the previous crop stubble), baler (used for collection of straw and making bales of the paddy stubble), paddy straw chopper (cutting of paddy stubble for easily mixing with the soil) and reaper binder (used for harvesting paddy stubble and making into bundle). The machines are very costly and the state governments should come forward and provide better subsidy so that farmer can afford these machines.

In states like Punjab, Haryana, Uttar Pradesh and the National Capital Region a

provision of Rs 1,151.80 crores for two years has been made under this scheme.

Problems Faced By Farmers

Debt-ridden farmers have to either rent or buy the machines, which pose several threats to their next crop. A report by Jitender Choubey on 15. 10.2018 tells that Hamir Singh, 53, who had a 14-acre farm in village named Kalajhar in Sangrur district of Punjab, had decided to toe the line, but didn't work for him. He was serious about following the ban on crop residue burning and tried using new technology like the rotavator, which has rotating blades that chop the straw in to small pieces and then it spreads it inside the soil.

On October 5, he hired a rotavator from Kalajhar village cooperative society and paid Rs 1,200 for eight hours. He then spent Rs 3,000 on diesel, Rs 300 on servicing the machine and rented a high-power tractor. Singh used the rotavator to mulch the paddy stubble on 4 acres of his farm. But, now he is in problem."I am afraid that all my efforts will go in vain because it seems like the straw will not dispose of even in the next one month," says Hamir Singh while looking at the straw that was visible even when it had been six days since he used the rotavator. "If the situation remains the same, I will not be able to grow wheat on time. I should have burnt the stubble instead of spending Rs 4,500," says Hamir Singh.

Effectiveness of machines

The effectiveness of the machines made available to farmers, like chopper, happy seeders, super straw management system (Super-SMS) and rotavator, is questionable as there are many hurdles and problems. "A 25-days are not enough to

decompose the straws," says Chand Singh, a farmer leader from Sangrur.

While explaining the matter, Chand says that happy seeder has the potential of causing a rat and termite attack when wheat seeds are sown in the stubble land. "This machine only sows wheat without cutting paddy straw and invites rat and termite to the field," he claims.

When it comes to super-SMS quality and production is reduced. "In one acre, we can lose up to 2.5 quintals of our rice and the quality also dips as it spreads paddy along with the straw during harvest," says the farm.

Not affordable

The machines purchased at subsidized rates, almost of rupees three lakhs, require higher basic horse power (BHP) tractors, which cost much higher than all these machines. "All these machines are quite heavy and require more than 70-80 BHP tractors to run them. It costs around Rs 10 lakh," says Shamser Singh, village head of Kaljhar.

The cooperative society of nine villages have holdings of around 50,000 acres, does not have machines like chopper, happy seeders, super-SMS, zero till drills to rent out interested farmers. Due to more demand and less supply machines are becoming costlier. "The cost of a rotavator was Rs 80,000 earlier, but it has now jumped to Rs 1.3 lakh in just few months," says Omkar Singh, farmer leader in Nabha village in Punjab's Patiala. "We were thinking of buying it at a 50 per cent subsidy by paying Rs 40,000. But now we have to cough up Rs 65,000," he adds.

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Even the cost of happy seeder machines has almost doubled from Rs 95,000 to Rs 1.7 lakh. Moreover, those who had bought rotavator, got the subsidy 4 months later. “I already took a loan from the bank to buy the rotavator machine at Rs 1.35 lakh but have not received any subsidy,” says Harjinder Singh, a farmer in Kalajhar village. Like Harjinder, six other farmers in the village have bought rotavator, but none of them have received any subsidy yet.

The farmers also complain that they are being forced to spend so much money to use the machines they need for just one month. “There is no other use of the machines except for this one month. So making this investment is not justifiable,” says Jagtar Singh, a farm leader.

Alternative ways to use Parali

Stubble can be used in different ways like, compost manure, cattle feed, roofing in rural areas, biomass energy,

mushroom cultivation, packing materials, fuel, paper, industrial production and bio-ethanol production etc.

A group of students named Sawan Khapne, Shivam Rana, and Shailendra Singh, of the Indian Institute of Management-Amritsar (IIM-A) have come up with alternative ways for farmers to utilise paddy straw waste and earn money instead of burning it. They conducted this study for three months – reported by Malvika Singh on 16.10.2018.

Conclusion

Now Court, Government, farmers and people are serious about environmental emergency caused due to parali burning. Use of Alternate ways to get rid from parali burning like machines (Happy seeder etc.). funds and loan for purchasing machines. Even researches are going on to combat the life threatening environmental problem. Hope for happy October –November 2020.

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