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A Study of Stubble Burning in State of Punjab & Environmental Justice

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ABSTRACT

This research paper presents a comprehensive study on the practice of stubble burning in the state of Punjab, India, with a specific focus on its implications for environmental justice. Chapter 1 outlines the foundation of the research, beginning with the identification of the core problem, which lies in the persistent and seasonal occurrence of stubble burning despite policy interventions. The chapter further presents the research hypothesis that stubble burning is both a socio-economic and environmental issue, examines the methodology employed, and sets forth clear objectives and guiding questions. Chapter 2 delves into the environmental and public health risks associated with stubble burning, including air pollution, soil degradation, and respiratory illnesses. Chapter 3 explores the socio-economic and agrarian factors contributing to the continuation of this practice, including short harvest cycles, lack of viable alternatives, and economic constraints faced by farmers. Chapter 4 highlights potential solutions, government initiatives, and successful case studies from within and outside India that offer practical and scalable alternatives. The study concludes that addressing stubble burning requires a multidisciplinary approach that integrates sustainable farming practices, economic incentives, and legal frameworks ensuring environmental justice for all affected communities.

Keywords: *Stubble Burning, Environmental Justice, Punjab Agriculture, Air Pollution, Sustainable Solutions*

I. INTRODUCTION

The term stubble burning in recent times specially in month of mid-September to December in northern region of India becomes a topic of debate and a matter of concern specially in state of Punjab. It is simply defined as a common practice followed by farmers to prepare fields for sowing of wheat in November as there is little time left between the **harvesting of paddy** and **sowing of wheat**. In North India the problem of stubble burning is a major problem both for environment and Human life because Stubble burning results in emission of harmful gases such as carbon dioxide, Sulphur dioxide, nitrogen dioxide along with particulate matter. The

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process of burning farm residue is one of the major causes of air pollution in parts of north India, deteriorating the air quality.

My seminar topic will deal with Concept of stubble burning and its effect on environment specially on Air Quality and its repercussions on Human Health and the possible solutions to benefit both farmers and environment. I will also discuss some stories of successful farmers in state of Punjab who despite being poor with only 6 acres of land have set an example for others by adhering to Government directions and stopped burning the stubble in his fields.

II. STUBBLE BURNING: ENVIRONMENTAL & HEALTH RISK

The problem of paddy residue and its burning is a old problem practised since decades in Punjab. It is practised vary widely by farmers specially from Punjab state that till oct 2021 last year there was 5,772 incidents registered. Almost every year in month of October and November farmers from states like Punjab & Haryana starts to burn their paddy residue left over after harvesting paddy which is known as stubble burning.

Stubble burning can simply be defined as method or means used by a farmer to clear their fields after paddy to sow next crop i.e., wheat. It is remaining part of paddy and has its roots attached to the earth. Which is left behind because during harvesting farmers cut off the valuable part of paddy which is useful and rest of the part is left in the field and is of no use for farmer. Under this method of stubble burning the farmer intentionally or willingly set their fields on fire to burn the crop residue (known as Stubble) to clear the field for making it ready for next crop. Because leaving the stubble behind will attract terminates and other insects and will also spoil other crops. This technique of stubble burning is usually used in those areas where crops residue is left by combined harvesting method.

The combine harvesting is a method of harvesting the thresh i.e. cleaning & separating the grain, all in one go. The problem arises when the machine does not cut the complete thresh and leaves behind stubble which is close to the earth. As, we know that stubble which is left behind is of no use for a farmer and due to pressure on the farmer to sow the next crop within the time period and while achieving the task to sow next crop. Farmers resorts to simplified and less time consuming and moreover cheaper way to clear their fields so ultimately left with no other option than to burning of stubble.

According to the study conducted in Aug 2019 titled “Fields on fire: Alternatives to crop residue burning in India”² the amount of nearly 23 million tonnes Paddy Stubble is burned in

² Gyan, I. (no date) *Stubble burning, Best IAS Coaching in India*. Available at: <https://www.iasgyan.in/daily-current-affairs/stubble-burning> (Accessed: 12 June 2025).

northwest India by the farmers in order to clear their field and ensure timely sowing of wheat. And nearly 500 million of tonnes crop residue also known as (Parali) in Punjab & Haryana is generated every year and most of which is burned which ultimately creates a problem of air pollution and badly effect our environment. The worst phase comes when the Delhi which is national capital of India surrounded by Punjab, Haryana & Uttar Pradesh as neighbouring states starts stubble burning and Delhi being a land lock suffers the worst as winds flows from neighbouring states towards Delhi. Fire in farms future provokes furious winters and noxious haze over some of the northern cities of India.

But it is equally important to hear the other side also i.e. hear the farmers point of view also so that before coming to any conclusion we need to also analysis their stand also i.e. why they burn stubble?. Farm fire in Punjab usually starts from the Majha region and progress towards Malwa region. And in Punjab it is the Amritsar and Tarn Taran area near Amritsar which are worst effected and reports highest fire incidents from Sept to Oct.

Effects of stubble Burning:

1. Air Pollution

The stubble burning not only effects the quality of soil but also causes adverse effect on the human health and Environment. It is one of the major reason for the cause of air pollution and deteriorating the air quality our environment.

As we know that stubble burning by farmers in Punjab, Haryana, and Uttar Pradesh is one of the major reason of air pollution which ultimately effects our environment and rise in health issues. Pollution from stubble emits toxic pollutants particles which are very harmful for both human health and our environment like gases like methane, carbon Monoxide, Volatile organic compound, aromatic hydrocarbons. These gases ultimately creates Smog during winters. Basically it effects the air quality of cities in northern India among which worst effected is Delhi which according to Air quality report 2019 has recorded above 999 air quality which much beyond the emergency level. The most dangerous are PM 2.5 and PM 10 that forms basis of major human health issue like cancer.³

Severe neurological, cardio vascular, respiratory, cancer, obstructive pulmonary disease and even effects lungs etc. mortality rate has also increased due to high exposure of pollution to human body.

³ Vasudeva, V. (2022) *Punjab farmers want to be compensated to stop stubble burning*, *The Hindu*. Available at: <https://www.thehindu.com/news/national/other-states/punjab-farmers-want-to-be-compensated-to-stop-stubble-burning/article65902983.ece> (Accessed: 12 June 2025).

2. Soil Fertility

The heat generated by burning the straw effects 1 cm into the soil which ultimately increases the temperature to 33.8 to 42.2 degree Celsius. Which leads to killing of vital bacteria's and fungal insects that are needed for the fertile soil. Also effecting the upper most layer of the soil and lead to its depletion and reduced. The stubble burning not only effects human health but also soil fertility by damaging the essential micro-organisms present in the top layer of soil and due to this loss of friendly pests which are essential and good for soil fertility the enemy have increased i.e. crops are more prone to diseases and pest attack. Which ultimately effects long term soil fertility.

3. Environment

The farm fire directly results in smog in atmosphere dropping the quality of air and moreover the air pollution also has an effect on melting of glaciers in Himalayas. The environmental damages due to air pollution can be estimated approx. nearly 30 million dollars per year.⁴

It also deteriorate the quality of soil and erode the essential nutrient of the soil which helps in good growth of crop. And the stubble burning is the main reason for the problem of Haze in the Delhi.

III. REASONS FOR STUBBLE BURNING IN INDIA

1. Mechanism of Agriculture:

Mechanised harvesting method like combine harvesting which lead to huge left over after harvesting thresh attached to earth. But if you of manual harvesting then there is no residue left behind and the field is cleared entirely but manual harvesting of the field is not a valuable option as it is more expensive to the farmer as labour charges demand more fees and moreover there is problem of non- availability of labour. As we know farmers do not have sufficient time to clear the field and is in a hurry to sow next crop i.e. wheat. So this stubble burning acts as a quicker means to clear the field and make it ready for next crop.

2. Lack of Awareness:

As we know majority of farmers are not well educated and lacks awareness in the new technologies and methods or solutions to the problem related to farming. So this is the reason that they don't realise the importance of not setting their farms on fire and resort to alternative

⁴ Migrator (no date) *Struck by higher costs, Punjab farmers wait to burn stubble; fire incidences likely to flare up, Down To Earth*. Available at: <https://www.downtoearth.org.in/news/agriculture/struck-by-higher-costs-punjab-farmers-wait-to-burn-stubble-fire-incidences-likely-to-flare-up-79857> (Accessed: 12 June 2025).

means of clearing the fields. As setting fire in the field will lead to the burning of essential soil nutrients, organic elements, loss to nitrogen, potassium and DAP.⁵

There is also misconception in the minds of the farmers that if they don't clear their fields properly then it will create problem and damages in next crop or even hampers the productivity of wheat i.e. next crop. The farmers has lack of proper guidance and is struck with only age old techniques of setting farm of fire as cheap and quicker way to clear the field but as we know with growth in technology. The alternative methods are even more comfortable, easier, and quicker in clearing their field.

It is also misconception in the minds of farmers that machines like "Happy Seeder", "straw reaper" are expensive and are difficult to own and maintain and in most of the cases they are even not aware of welfare subsidy schemes of State Govt like Punjab Government started to facilitate farmers in not burning the stubble. For example Punjab Government offers subsidies at 'happy seeder' to make it affordable option for the farmers to use it and not resort to stubble burning.⁶ As there is also fear and mindset of farmers that use of happy seeder despite offer of subsidy is an costly affair and is not pocket friendly as compare to method of just setting the farm on fire. I will explain this with an example the use of Happy seeder machine the cost is Rs 1000 per acre of land as rent charges and future Rs. 2000 diesel cost. So from here we can clearly see that despite of the efforts of state govt offering subsidies it is a costly method for farmers.

3. Reduction in usage of stubble:

In the past times what use to happen was that stubble generated after the harvest of paddy was used by the farmers as food for animals, to keep their house warm during winters and even used as cooking fuel but due to changing in times and use of modern methods replacing old age the use of stubble has become outdated. Moreover the rice straw which is earlier used as food or fodder for animals like cattle by farmers are not used nowadays as it contain high silica content which is not good for the health of the cattle. It is also harder to chew and digest for the animals so we can say these are some of the reasons why it is unfit for animal consumption.

⁵ *Ground zero: Punjab's farmers explain why they burn stubble* (2024) CEEW. Available at: <https://www.ceew.in/blogs/punjab-farmers-explain-why-they-burn-crop-stubble> (Accessed: 12 June 2025).

⁶ IASbaba (2022) *Baba's explainer - stubble burning*, IASbaba. Available at: <https://iasbaba.com/2022/05/babas-explainer-stubble-burning/> (Accessed: 12 June 2025).

Moreover the stubble left behind is of 1-2 ft tall and can take up to 1-2 months for decomposing in the soil on its own. This is very time consuming process and requires patience which farmers don't have due to time crunch to prepare their fields for next crop.

4. Government Policies:

The policies made by various State Govt with intention to promote farmers to not set their farm on fire and resort to alternative schemes like use of happy seeder for disposing the crop residue. But however, the govt scheme have unintentionally promoted the use of stubble burning by farmers. For example Punjab govt policy of Punjab Preservation of water act, 2009⁷ had unintentionally promoted stubble burning due to its bad implementation at grass root level.

The biggest problem in agriculture sector is the poor implementation of Govt policies. For example Green revolution which was introduced as a major reform in agriculture sector and has contributed a lot in India's development. But has negative repressions also like in terms of degrading the land, effect on health of the soil due to overuse of fertilizers and pesticides spray, reducing the water table of ground water. The policy of minimum support price given to the farmers by the govt is so less that they resort to alternate crop rotation which lead to use of methods by farmers that are less expensive and productive.

The Govt has framed policies to minimize the use of stubble burning by farmers and even made policies and strict measures like ban on setting fire in farm, even penalized those farmers who practise stubble burning and even jailed some farmers for this practise so as to set example for others. But every efforts of govt go in vein as farmers still practise stubble burning. This strict measure is not enough and need for permanent solution which is effective in controlling stubble burning.⁸

Like stated earlier the farmers are given share which is not appropriate to the cost of clearing the fields and is very less and not appropriate. And moreover the farmers get share of blame that they are the only one responsible for Delhi's pollution in air. Farmers are also effected by weather as they burn stubble twice a year in summer and in winter the stubble burning in summers are blown away by warm wind current but in winters due to cold air and weather in sept and oct the dust or smog gathers all around the atmosphere.

Use of happy seeder despite offer of subsidy is an costly affair and is not pocket friendly as compare to method of just setting the farm on fire. I will explain this with an example the use

⁷ <https://dswcpunjab.gov.in/contents/docs/Pb-preservation-of-Subsoil-Act,2009.pdf>

⁸ Krishi Jagran (2022) *Stubble burning in India: Causes, effects & measures*, *Krishi Jagran*. Available at: <https://krishijagran.com/blog/stubble-burning-in-india-causes-effects-measures/> (Accessed: 12 June 2025).

of Happy seeder machine the cost is Rs 1000 per acre of land as rent charges and future Rs. 2000 diesel cost. So from here we can clearly see that despite of the efforts of state govt offering subsidies it is a costly method for farmers.⁹

IV. WAY FORWARDS & SUCCESFUL CASES

The real-life example of Kuldeep Singh¹⁰ who is 40-year-old and is a farmer with land of just 6 acres from village Kala Sanghian in Kapurthala district was among a lot of those initial farmers who adopted alternative methods and stopped use of old age practise of stubble burning by following government directions and stopped burning stubble in his field.

It was in year 2013 that Punjab Govt 1st initiated to stop farmers from burning stubble in their farm and the satellite images which was circulated in media and Punjab farm fire was highlighting and was cause of concern. So, NGT also took the cognizance of the matter instructed Punjab govt to make policies and regulations to curtail farm fires.

The Kuldeep Singh a small farmer from Kapurthala district noy only adopted alternative technique to dispose the paddy residue in his own fields but also encouraged his ither fellow farmers to not to burn stubble and to incorporate stubble into the soil itself. Today he is managing the area of 1200 acres of stubble of approx. 100 farmers in other villages within 35 Km of his own village.

He initially started as an alternative method from basic tools like mulcher and plough but today he has set up his own farm machinery bank and now owns modern machinery like Happy Seeder, Straw Ripper, rotavetors etc. under crop residue management scheme. And farmers has continuously booking his machines like this year he already have 600 acres stubble managing.

There are 3 ways by which stubble can be managed:

1. By pressing the left over stubble in the fields itself.
2. Directly sow wheat in the standing straw or stubble.
3. To collect and form in the form of bundles.

The farmer Kuldeep is managing the stubble in all three ways. And further after collecting the straw he supplies the straw collected to the Biomass power generation plants for making

⁹ *Stubble burning: Why it continues to smother North India* (2020a) *BBC News*. Available at: <https://www.bbc.com/news/world-asia-india-54930380> (Accessed: 12 June 2025).

¹⁰ Anmolchoubey (2022) *Stubble burning: This son of soil fighting fires & minting money also*, *The Indian Express*. Available at: <https://indianexpress.com/article/cities/chandigarh/stubble-burning-this-son-of-soil-fighting-fires-minting-money-also-8117830/> (Accessed: 12 June 2025).

power, to factories, and even to the Gujjars who are a milk cattle rarer because they own big cattle dairies and stubble is used by them as fodder for their cattle's.

There are several factories and bio gas plants set up by Sate Govt to generate power and farmers can earn a lot of money from selling their stubble to them and can ultimately help in improving the quality of soil. Use of different tools for sowing different crops like for sowing wheat happy seeder is used because it not only incorporate stubble in the soil but also helps in sowing wheat. On the other hand mulcher and plough is used to clean field for sowing Potato and vegetable.

Moreover, the cost of use of happy seeder is cost effective as potatoes are sown by stubble burning is Rs 2000 to 4000 on preparing the field whereas use of alternative method is between Rs. 2500 and 3000 per acre.¹¹

After seeing the Kuldeep Singh managing problem of stubble in his village others people has also been encouraged to use these alternative methods to save environment and human health. It is need of hour for farmers to understand that they are ultimately is first victim of farm fire as poisonous farm fire as it effect his soil and nutrient of soil.

Need to educate farmers:

there is also a need of today's time that farmers are made aware of consequences of stubble burning not only to human health and environment but also to their own soil fertility which hampers growth of their next crop and welfare schemes started by govt to provide subsidies and cash incentive for not burning stubble.

Long Term solution:

The solution for the problem of farmers is crop diversification i.e. adopting other crop than paddy to maize, fruits, vegetable and cotton.

Improving the Machinery:

There is need to improve in technology used in current machine in farms because they leave behind residue which causes problem of stubble burning. And such machines to be used which don't leave any residue behind.¹²

¹¹ Migrator (no date) *Struck by higher costs, Punjab farmers wait to burn stubble; fire incidences likely to flare up, Down To Earth*. Available at: <https://www.downtoearth.org.in/news/agriculture/struck-by-higher-costs-punjab-farmers-wait-to-burn-stubble-fire-incidences-likely-to-flare-up-79857> (Accessed: 12 June 2025).

¹² IASbaba (2022) *Baba's explainer - stubble burning, IASbaba*. Available at: <https://iasbaba.com/2022/05/babas-explainer-stubble-burning/> (Accessed: 12 June 2025).

V. BIBLIOGRAPHY

1. "Stubble Burning: Why It Continues To Smother North India". BBC News, 2022, <https://www.bbc.com/news/world-asia-india-54930380>.
2. GYAN, IAS. "STUBBLE BURNING". *Iasgyan.In*, 2022, <https://www.iasgyan.in/daily-current-affairs/stubble-burning>.
3. "Stubble Burning: This Son Of Soil Fighting Fires & Minting Money Also". The Indian Express, 2022, <https://indianexpress.com/article/cities/chandigarh/stubble-burning-this-son-of-soil-fighting-fires-minting-money-also-8117830/>.
4. "Here's How AAP-Led Punjab Govt Planning Its Stubble-Burning Fight". Mint, 2022, <https://www.livemint.com/news/india/heres-how-aap-led-punjab-govt-planning-its-stubble-burning-fight-to-alleviate-delhi-pollution-11663387435327.html>.
5. "Struck By Higher Costs, Punjab Farmers Wait To Burn Stubble; Fire Incidences Likely To Flare Up". Downtoearth.Org.In, 2022, <https://www.downtoearth.org.in/news/agriculture/struck-by-higher-costs-punjab-farmers-wait-to-burn-stubble-fire-incidences-likely-to-flare-up-79857>.
6. "Ground Zero: Punjab'S Farmers Explain Why They Burn Stubble". CEEW, 2022, <https://www.ceew.in/blogs/punjab-farmers-explain-why-they-burn-crop-stubble>.
