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# STUBBLE BURNING-ITS IMPACT ON ENVIRONMENT

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## Abstract

Stubble burning is one of the major issues in today's agriculture. After the harvest of crops like rice and wheat farmers are left with a lot of straw or stubble. Even if they want to incorporate that in the soil for land preparation of the next crop, they cannot do it for the whole lot, so the fast and easy option left with them is to burn it in the field itself as there is shortage of store houses. But the impact of stubble burning is of great concern from the environmental point of view. It burns the soil up to at least 12 cm depth, so we need to find some alternatives as in the process the beneficial microbes and the inherent capacity of soil to rebuilt itself is also sacrificed. In this article we are discussing about this issue which may be of interest for the readers.

## Introduction

Managing the stubble in the field is a very technical issue faced by our farmers during the harvesting season. Single solution that can fit for all is again a very tough job. Through burning of stubble is not preferred by most of the farmers, but they are left with no option but to burn it in the field itself. In some cases where the weeds are resistance, the burning of stubble in the field may help to get rid of the obnoxious weeds as well. The farmers try to avoid burning if they have considerable and available alternative options. The stubbles need to be managed in a very proper manner to reduce the residual effect on soil health.

## Why farmers go for stubble burning: (CIMMYT, Karnal)

- The method or tactic is cheaper as compared to other strategies.
- Instant effect and result can be obtained.
- It may also aid in weed management, insect-disease management.
- The nitrogen tie-up is also reduced.

## Few demerits of stubble burning

- It leads to loss of important nutrients from soil.
- Also, loss of carbon from soil.
- It implements negative impact on soil micro-organisms.
- The soil aggregation (soil structure) also gets broken-down.
- It may raise the soil acidity levels.
- Soil erosion and wind erosion may also be observed due to stubble burning.

## Impact of crop residue burning

In the environment, the impact of residue burning has a lot of negative effects. The aerosols and smog caused by the residue burning depletes the air quality and creates depletion in ozone layer (Jain *et al.,* 2014). Along with carbon monoxide a lot of other gases toxic to the respiratory system which leads to respiratory hazards are also produced (Shan and Yan, 2013).

During harvesting of crops, at least 50% of organic carbon is obtained but when we are burning the stubbles it is completely lost and in return the soil flora and fauna is also harmed. So, these kind of contribution to the soil environment may lead to global warming as most of them are greenhouse gases. (Singh *et al.,* 1992).

The heat emitted from burning the residues increase the soil temperature which kills the fungal and bacterial microbes in the soil. Repeated stubble burning may kill the microbes permanently, thus deteriorates the soil inbuilt capacity to recover itself. The increase in soil temperature may also harm the balance of carbon and nitrogen in the soil profile.

## Other options to manage crop residues

- The residues can be used for soil mulching.
- The crop residue helps to maintain the soil acidity for good growth of crops.
- Crop residues obtained from rice-wheat cropping pattern usually provides higher C:N ratio.
- The crop residues can be uniformly distributed by using combine harvester.
- An increase in organic carbon uplifts the fungi and bacteria which are beneficial to the soil.
- Straw bailing machines are also phenomenally successful in managing crop residue.
- Farmers can use high horse-power segmented tractor for deep cutting of straw while harvesting.
- The machines such as, use of double disc coulters, zero tillage and happy seeder would help in good mulching action.
- Intimating farmers about the chaff making process from the crop residues.

## Conclusion

As discussed in the above article, we have come across a lot of issues related to our environment where the demerits are more than the advantages of stubble burning. There are some other options which can be useful if the farmers take some cooperative steps towards minimizing the hazards caused by stubble burning. Combine harvesters, Happy seeder etc. can be of better options which can be effective in managing the straw or stubbles in farmer's fields.

## References

(CIMMYT, Karnal) (www.cimmyt.org)

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