Original Research Article

ASSESMENT OF CROP RESIDUE GENERATION IN MAJOR CROPS OF TELANGANA

Abstract

India is one of the key producer of food grains, oilseeds, sugarcane and other agricultural products. Agricultural crops generate considerable amounts of leftover residues, with increases in food production crop residues also increasing. These leftover residues exhibit not only resource loss but also a missed opportunity to improve a farmer's income. The main aim of this paper is to asses the amount of crop residue generated in four major crops paddy, maize, red gram and cotton. of Telangana in the year 2021. The assessment of crop residue generation is done using the residue to product ratio of the above four crops and the total production in the year 2021 in Telangana state. The results shown that these crops are generating considerable amount of crop residue which is need to disposed or managed properly without harming environment with burning. The study suggests that the generating crop residue is very high in the state which is needed to be managed properly.

***Key words**: Crop residue, assessment, residue to product ratio, Paddy, Maize, Red gram, Cotton, Burning, Environment.*

Introduction

Crop residues are plant's part which are left in the field after harvesting which are good source of nutrients when added to the soil as they contain all the nutrients required for plant growth and they are not waste but a useful natural resource. The agriculture residues are having major contribution in the biomass, MNRE; government of India estimated that about 500 to 540 MT of agriculture residue generating in India every year. In India Telangana state also contributes maximum share in the crop residue generation. The generation of agriculture residues has been increased due to use of modern cultivation methods and fertilizers.

The agriculture residues are of different forms and depend upon the type of crop. The residues are classified as the stalks, stubble (stems), leaves, straw, husk, shells, roots, and

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cobs etc. The major crops of Telangana i.e., Paddy, Cotton, Maize and Red gram generate large amount of crop residue which may be utilized in many ways. Disposal of these crop residues has turn out to be a huge problem in Telangana state, resulting farmers prefer to burn the residues in-situ. Burning biomass pollutes environment and also results in appreciable amount of plant essential nutrients. The objective of this article is to access the amount of residue generation of the major crops in Telangana:. ~~In this paper the four agriculture crops have been chosen for assessment they are~~ Paddy, Maize, Red gram and Cotton. Collection and transportation of voluminous mass of the above crop residues is cumbersome, therefore, ex-situ residue management is still not in practice. The agricultural waste opens many options for its versatile usage and is possible only when residue is collected and managed properly. It is also very important to use surplus residues for conservation agriculture.

There is an urge to create awareness among farming communities to direct them to understand importance of crop residues in conservation agriculture for sustainability and resilience in agriculture. The deployment of the crop residue may differ among various districts in Telangana. Few opt to use it as cattle feed, composting, cattle shedding, agriculture crop processing and small industries like brick kilns, mushroom cultivation and even they are burnt in fields causing environmental pollution without contributing any energy. Open residue burning is a common practice in Asia and in other countries as well. India is an annual gross crop residue producer of 371 million tons (*S. K. Lohan et al.*) of which wheat and paddy residues constitutes 27-36% and 51-57% respectively. Cereal crops contribute 70% residue of which paddy crop is the contributor of 34% of it. The information resulting from this study will serve as a base for further, more detailed site-specific crop residue assessments. Some studies also revealed that crop residue has potential to be the important source of energy due to its huge availability of surplus crop residue.

MATERIALS AND METHODS

Study region

The study was initiated to assess the crop residue generated from Paddy, Maize Red gram and Cotton in Telangana State. The major crops grown in Telangana includes Paddy, Maize, Redgram and Cotton. The districts are selected zone wise based on the area of the crop, two districts are selected from each zone. Adilabad and Jagitial are selected from NTZ, Warangal and Sangareddy from CTZ, Nagarkurnool and Rangareddy from STZ. Data from the above

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districts collected in randomly selected mandals which enabled to find the residue to product ratio.

Methodology

The assessment of crop residue is done using the total production of crops and the residue to crop ratio of the above crops. The residue to product ratio is calculated by data collected from the farmers in 6 districts of Telangana. The ratio is an average of the residue to crop ratio of Paddy, Maize, Redgram and Cotton in the selected districts. Besides primary data collection through direct interviews, secondary data were also collected from various sources. Information of area under above crops and crop wise per unit area productivity and production were collected from Statistical Abstract of Telangana, 2020-2021. Before starting the field survey, a pilot survey was conducted to pre-test the questionnaires for the refinement, wherever necessary.

Residue generation = Crop yield x RPR quintals or tonnes

Results and Discussion

Above analysis shows the crop residue generated from the selected crops in the year 2021 in Telangana state. Residue generation varies with variety but with very insignificant difference which is ignored in the above analysis. Among the selected major crops in Telangana paddy generating the highest amount of crop residue which is very important to manage it without causing any damage to environment. Now a days crop residue management became cumbersome because of the quantity generated. So, burning became the easy method of residue disposal on farm. But this burning of crop residue will generate harmful gases into the environment and also damage the soil fertility. Crop residues are of great economic value as livestock feed, fuel and industrial raw material. However, management challenges of the crop residues are varied across the region and its socio-economic needs.

Table 1: Crop residues and yield

Crop	Total crop area (acres)	Crop yield (q / acre)	RPR	Residue generation in quintals
Paddy	10423177	218514710	0.7	152960297
Maize	639816	17553700	0.6	10532220
Red gram	1059004	3321790	2	6643580

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Finally, I must say that, the discussion is an argued debate of the result.

Cotton	5827842	57990520	1.8	104382936

Conclusion

Crop residue utilisation is very important, since the burning of crop residue generate harmful chemicals and also leads to loss of nutrients from the residue which can be added back to soil through in-situ incorporation. Crop residue management became cumbersome because of high transportation cost and labour requirement for the bulk amount of crop residue generated. Hence, there is a urgent need for the development of environment friendly crop residue management practices with the support of government through new initiatives which can benefit the farmer through the income obtained by proper utilization of generated residues as well as the environment. Proper management of crop residue reduces the environmental damage causing by crop residue burning and also reduces the fertility loss of soil by its potential uses like briquettes, bricks and biofuel etc.

References

Comment [UdW24]: The list of bibliographic references should consider only those referred to in the text of the manuscript.

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