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## Extent of rice-fallow area in Bhagalpur district of Bihar

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**Abstract**

About 30% (11.7 mha) of the area under rice production during kharif season in India remain fallow in the subsequent rabi due to number of biotic, abiotic and socioeconomic constrains. In Bhagalpur district of Bihar approximately 39.89 per cent of the area remains fallow after kharif rice cultivation. The present study was conducted in Bhagalpur district of Bihar with the objective to study the extent of rice fallow area. To achieve the objective simple tabular and percentage method have been used.

**Keywords:** Rice-fallow, extent, kharif fallow, rice, Bhagalpur, constraints, area

**Introduction**

In India, rice is cultivated across the length and width of the country occupying about 43.39 million hectares area under four major eco systems i.e. irrigated (21 million ha), rain fed lowland (14.2 million ha), rain fed upland (6.3 million ha) and flood-prone (3.1 million ha) with total production of 104.32 million tones and average productivity of 2.4 t ha<sup>-1</sup>. Whereas in Bihar Rice is cultivated in 3.21 million hectares with total production of 6.49 million tonnes (DAC&FW 2016) [2]. In irrigated areas, rice-wheat, rice-rice, rice-sugarcane, rice-groundnut, rice-vegetables and rice-mustard are important crop rotations whereas in rain fed areas, rice-pulses, rice-sunflower, rice-sesame and rice-fallows are prevalent. Rice is the principal crop during kharif (rainy) season in India. The crop occupies an area of over 40 million ha. This area is not fully utilized for crop production in the subsequent rabi (post rainy) season; about 12 million ha remains fallow (Subbarao *et al.* 2001) [10]. This unutilized area offers enormous opportunities to overcome the problem of food and nutritional insecurity. Accomplishing household food security remains the primary concern though at the national level India has piled up a huge stock (about 60 million t) of food grains, mainly rice and wheat. Food crops such as pulses and oilseeds are critical to food security. Nutritional security is equally important; about 30% of the population suffer from malnutrition (Kumar and Ghosh 2013) [7]. About 30% (11.7 mha) of the area under rice production during kharif season in India remain fallow in the subsequent rabi due to number of biotic, abiotic and socioeconomic constrains. Despite of ample opportunities rice fallow systems have been bypassed in the research and developments for a numbers of constraints. Major rice fallow area (82%) is concentrated on eastern parts of the country. States with larger area of rice-fallows are Chhattisgarh, Madhya Pradesh, Jharkhand, Bihar, West Bengal and Orissa the remaining 18% area in the states like Tamil Nadu, Karnataka and Andhra Pradesh and there exists a large scope for expansion of area under pulse crops. Short duration pulses are ideal candidates for their cultivation in such areas (Bourai *et al.* 2002) [1]. The existing rice fallow area (11.7 m ha) is almost equivalent to the net sown area of Punjab, Haryana and western Uttar Pradesh –the sheet of green revolution in India. If this area is brought under cultivation it may usher another green revolution in India benefiting millions of farmers. Promotion of pulses crops in the existing fallow area would also improve sustainability of the rice production system besides enhancing production and augmenting income. It should be considered appropriate to identify abiotic, biotic and socio-economic constraints to rabi cropping that can be addressed through technological and policy intervention.

There are various reasons that lead to remain the land fallow after rice cultivation. Some of them are lack of irrigation, highly variable and inadequate monsoon rains, very low profitability of winter rains, low soil moisture in surface layer after harvest of rice, water stagnation / excessive moisture in November/December, soil compaction and cracks in vertisols, cultivation of long duration rice varieties, lack of appropriate varieties of winter crops for late planting lack of public awareness, research and development efforts and policy support and stray cattle.

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## Material and Method

The study was conducted in Bhagalpur district of Bihar. The Bihar state was purposively selected for the present study as it has 36.8% of total kharif rice fallow areas. The Bhagalpur district is purposively selected for the present study as the main crop cultivated in this region is rice and it has vast area under rice fallows. To achieve the objective of the study, i.e. to study the extent of rice fallows in Bhagalpur district the various category of farmers simple tabular and percentage methods have been used.

$$\text{Percentage} = \frac{X_i}{\sum X_i} \times 100$$

$$\text{Mean} = \frac{\text{Sum of observations}}{\text{Total number of observations}}$$

## Results and Discussion

In Bhagalpur district total geographical area is 248800 ha out of which cultivable area (net sown area) is 153600 ha. The major crop cultivated in this region is rice which is cultivated on 55100 ha during kharif season which is heavily dependent on rain. Out of this rice cultivated area in the kharif season 21980 ha area remains fallow during rabi season which is not available for cultivation during rabi season due to various constraints prevailing in that particular rice cultivated field. Table 1 represents the rice fallow area in Bhagalpur district.

**Table 1:** Extent of rice fallow area in Bhagalpur district

Sr. No.	Particulars	Area (ha)
1.	Net sown area	153600
2.	Gross cropped area	191100
3.	Rice cultivable area	55100
4.	Rice Fallow area	21980
5.	Percentage of rice fallows	39.89 %

**Source:** District, Agriculture Office, Bhagalpur and Gumma *et al.* 2016 [3]

Table 2 represents the total farm available with different categories of sampled farmers and rice fallow area remained after kharif rice cultivation. The total land holding of marginal farmers is 22.45 ha out of which 5.87 ha remains fallow after rice cultivation whereas in case of small sized farmers total land holding size is 50.75 ha and rice fallow area is 14.70 ha which accounts for 27.58 per cent. In case of medium and large sized farmers the total cultivated area is 57 ha and 78 ha respectively, where rice fallow area remains 9.75 ha and 12.5 ha respectively which accounts for 17.10 per cent and 16.02 per cent respectively. The per cent of rice fallow area is relatively lower in case of medium and large farmers than marginal and small sized farmers. The reason for less rice fallow area for large and medium sized farmers could be due to better moisture management practices and improved technologies adopted by the farmers to utilize the fallow land.

**Table 2:** Assessment of rice fallow areas of sampled farmers

Farmer	Marginal	Small	Medium	Large	Total
Number	21	16	8	5	50
Rice cultivated area (hectare)	22.45	50.75	57	78	208.2
Rice fallow area (hectare)	5.87	14.70	9.75	12.5	42.82
Percentage of rice fallows	26.15	27.58	17.10	16.02	20.56

\***Source:** compiled from field survey

## Conclusion

It can be concluded that the percentage of rice fallow in Bhagalpur district was 39.89 per cent while the rice fallow area available in the study area was 20.56 per cent. The major area of the Bhagalpur district remains fallow (about 39%) after kharif rice cultivation because of rainfed ecology as well as less availability of the moisture in the soil which provides vast scope for increasing the foodgrain production to feed the growing population of the country. The present study was an attempt to analyse the extent of rice fallow areas available in the Bhagalpur district so as to increase the productivity of different crops such as pulses and short duration crops by bringing the fallow land under cultivation by utilizing these fallow areas and the socio-economic constraints that are prevailing in the rice fallow areas.

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