

## Status of Rice Production in Assam, India

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Assam possesses a very marked individuality and in the broad sense, the state is transitional towards High Asia and Indo-China. It is situated in the North-East corner of India between 24.3°N and 28°N latitudes and 89°51' E and 96°1' E meridians of longitude. The state covers an area 78,438 Km<sup>2</sup>. i.e. 2.39% of the total geographic area of India and supports a population of 2.6 crores as per 2001 census accounting for 2.59% of the total population of the nation. The state is surrounded by two foreign countries namely Bhutan and Bangladesh. Also the state is surrounded by seven Indian states like Arunachal Pradesh, Meghalaya, Nagaland, Manipur, Tripura, Mizoram and Sikkim. Assam consists of four physiographic divisions: Brahmaputra Valley (Indo-Gangetic trough); Karbi Anglong (a part of Meghalaya plateau which is an outlier of Peninsular India); North Cachar hills (belongs to extra-peninsular mountain and Barak valley (extension of Surma valley).

### Agricultural Land and Land Holding Pattern

Assam comprises of 2.38% of total geographical area of India and bears 2.59% of total country's population, according to 2001 census. However, the percentage of population below poverty line in Assam is lower than the all India average, which is 19.7% as against 21.8% in India, Assam uses 35.06% of total geographical area as net sowed area as per the data available during 2005-06. The average size of holdings in Assam is relatively smaller than some states indicated in the table. It is even smaller (1.5 hectare) than the national average (1.32 hectare).

Moreover; the distribution of operational holdings in Assam is highly skewed with the concentration of almost half of the holdings (45%) in the lowest size class of below 2 hectares. It is said that seed fertilizer technology is scale neutral, but too small a holding size renders adoption of modern agricultural operations economically unviable.

### Cropping Pattern

Cropping pattern is defined, as the share of different crops in the gross cropped area or in other words a definite succession of crops following one another in a specific order. The agricultural sector of Assam is dominated by paddy crop, accounted more than 73% right from 1990-91 to 2005-06 when estimated by considering gross cropped area. The share went still higher up to more than 90% when only food-cropped area was taken into account and by excluding other cropped area from 1990-91 onwards. This however would not show any distinctive difference when other cropped area would have been taken into account. Rice paddy has been the dominant crop over the years. It accounts more than 90% of the total food crop area and during 1975 to 2007 its share in total food crop area ranged in between 93 and 88%. The share of other crops like wheat, maize, other cereals, and pulses to total food crop area was insignificant. In comparison to these crops (wheat, maize, other cereals, and pulses), pulses did have higher share in total food crop area fluctuating in between 5 and 3%. The share of crops like maize and other cereals to total food crop area was of no consequence (below 1%). Paddy, which is the dominating module of the crop rotation comprises with three distinguished crops, relating to the harvesting seasons, they are autumn rice, winter rice, and summer rice. Of these three, again winter rice dominates the two so far the rice

pattern is concerned. However, the share of summer rice in terms of area, productivity, and production has shown an improvement over the two. However, as whole, winter rice remains as the rule rice (above 70%) of Assam. The share of summer rice though smallest in size has shown a remarkable increase. In 1990-91 the share of autumn rice was 24.06%; winter rice 71.28% and summer rice had 4.64% in terms of total rice area. While in 2006-07 autumn rice had the share of 17.31%, winter rice had 68.43% and that of summer rice had 14.2%.

### Yield of Rice

The productivity of autumn rice was only 713 Kg.hectare<sup>-1</sup> of land in the year 1961 and after long 15 years that is, in the year 1975 it has increased marginally to 717 Kg. This was really a depressing phenomenon. Not only this, the polygon showing the values of productivity of autumn rice since 1975 to 2006-07 will be a horizontal straight line with minor spurts in the years 1998, 2001, 2002 and 2006. In fact, productivity of autumn rice could not even able to touch the 1000 marks except the years indicated till the year 2006-07. In the year 2010-11 its productivity was 1155 Kg. hectare<sup>-1</sup>. The picture of winter rice in this direction was somewhat impressive. However, although both the production and productivity of this particular rice had shown some amount of improvement over the years it was not that this improvement could be expressed as a marked one. For example, in the year 1961 the productivity of this rice was 1046 Kg. Per hectare which has increased only to 1088 Kg in 1975. Productivity of winter rice had reached its peak in the year 2004 (1651 Kg) and thereafter decreased to 1321 Kg.hectare<sup>-1</sup> in 2007 and 1993 Kg. hectare<sup>-1</sup> in the year 2010-11.

The productivity of summer rice was more or less similar with the productivity of winter rice since 1971 to 1988 with minor variations. After 1988 the productivity of summer rice had outshined the productivity of winter rice. In the year 2010-11 the productivity of winter rice was 1993 Kg and summer had 2577 Kg.hectare<sup>-1</sup>. However, Assam never approaches near to the Indian average. For example, in the year 1979-80 the rice productivity in Assam was 892 Kg. as against 1074 Kg. of the corresponding average of India. The gap remained more or less constant in these years. In fact, the gap widened since 2004-05 when productivity of rice in Assam had been worked out as 1475 Kg and that of India as 1980 Kg. It may be noted that insufficient irrigation system as well as recurring overwhelming flood was responsible for this lower productivity in Assam.

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## Expansion of High Yielding Variety (HYV) Area

The area covered by HYV seeds in Assam has shown a marginal but steady increase from 1988-89 to 2005-06. In the year 1990-91 the area covered by HYVs was 1174.8 thousand hectares and the percentage against total rice cropped area was 46.48. This has increased to 1450 thousand hectares in area and to 59.9% as against total rice area in the year 2005-06. The area under HYV and its percentage to total rice area was lower than the all India average. The greater fluctuations in the area of HYVs are due to inadequate irrigation and other input services.

Among the three paddies, HYV seeds were used extensively in summer paddy, covering around 75% in average of its cultivated area up to 2004-05 and thereafter increased its coverage to 84 and 85% in the years 2005-06 and 2006-07. Moreover the average productivity of HYV seeds used in summer paddy was highest compared to other two paddies during the years from 2000-2001 to 2006-07.

Expansion of HYV area with increased production and increased productivity, were associated with the implementation of sufficient dose of fertilizers and pesticides, improved irrigation facilities and more intensive crop care. This was evident, as India had registered an increase in production by more than three times during the last two decades. However, in Assam both production and productivity had increased by less than 25% and 32% respectively in the last two decades.

## Status of Irrigation Infrastructure

For sustained development in agricultural sector availability of assured irrigation facilities are undoubtedly the most important prerequisite. The modernization of agricultural practices vis-à-vis increase in productivity of crops cannot be conceived in the absence of assured irrigation facilities. The HYV fertilizer technology based

strategy for agricultural growth through increase in crop yield and cropping intensity depends critically on irrigation. Besides, the uneven distribution of rainfall throughout the year has called for a developed irrigation infrastructure. In fact, excessive rainfall during the months of May to September caused heavy flood, water logging, and damage of crops and even lives. On the other hand, too little rainfall in the winter season stands as a hindrance to cultivate crops.

Irrigation involves with the creation and utilization of surface and ground water. North Eastern states (excepting Assam), Haryana, Rajasthan, Tamil Nadu and Punjab, had low irrigating potential compared to some other states. In terms of creation of potential available different states of India like Uttar Pradesh, Punjab (100%), Nagaland, Rajasthan, and Haryana (80%), Bihar, Jammu Kashmir, Himachal Pradesh, Sikkim, and Kerala (40-50%) have created their irrigation potential. Due to the environmental, technical and economic constraints, states like Assam, Bihar and Northeastern states failed for profitable exploitation of available potential.

In Assam, all developmental programs of irrigation are classified as Major, Medium, and Minor schemes, and categorized as surface flow and surface lift (for major, medium and minor schemes) and the ground water lift category (for minor irrigations).

The irrigation potential utilized against created irrigation for different districts of Assam for the year 2006-2007 depicts a very poor picture of irrigation utilization by the different districts against their own creation. The gloomy picture of utilization of irrigation potential may be appropriated with the factors like—irrelevant cropping pattern with the irrigation schemes, poor electricity supply to electrical lift irrigation projects, non-functioning of pump sets due to non-maintenance of the sets. Above all the farmers are reluctant to utilize Government schemes for fear of high amount to be paid as service charges.

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