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Article · January 2013

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Status and Issues of Agriculture in Eastern India

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Introduction

Agriculture is a critical sector of the Indian economy. Though its contribution to the overall Gross Domestic Product (GDP) of the country has fallen from about 30% in 1990-91 to less than 15% in 2011-12, a trend that is expected in the development process of any economy, agriculture yet forms the backbone of development. An average Indian still spends almost half of his/her total expenditure on food, while roughly half of India's work force is still engaged in agriculture for its livelihood. The experience from Brazil, Russia, India, China & South Africa (BRICS) countries indicates that a 1% growth in agriculture is at least 2-3 times more effective in reducing poverty than the same growth emanating from non-agriculture sectors. Given that India is still home to the largest number of poor and malnourished people in the world, a higher priority to agriculture will achieve the goals of reducing poverty and malnutrition as well as of inclusive growth. The Indian agriculture growth pattern has been highly varied at the state level. Since agriculture is a state subject, the overall performance of the agriculture sector in India largely depends on what occurs at the state level. There is a wide variation in the performance of different states.

The eastern region of India—considered widely a sleeping giant in Indian agriculture is endowed with ample natural resources but its potential could not be harnessed adequately in terms of improving agricultural productivity, poverty alleviation and livelihood improvement. There is a large gap between potential and productivity of major agri-horti crops, livestock, fisheries etc. in eastern region. Eastern region contributes 407.07 million (33.64%) with the density of 604 person/sq km, which is much higher than national density i.e., 382. A majority of population (82.95%) lives in rural areas compared to 72.18% of Indian average. Eastern region comprises of 162 million people Below Poverty Line (BPL). In comparison to the BPL population in the country (29.8%), it is much higher in eastern India. Bihar is at the top with 53.5% population followed by Chhattisgarh (48.7%); Jharkhand (39.1%); Assam (37.9%); eastern UP (37.7%); Odisha (37%) and West Bengal (26.7%). The eastern region of India comprised of 17.33% SC and 8.91% ST population. Hence, livelihood improvement of sizable population below poverty line of eastern region (i.e., 38.3%) of the total population with other disadvantaged group is a major challenge. The region can play a lead role in ushering the second green revolution in the country for fulfilling the food requirements of the country, through improved management of its natural resources and some key initiatives.

Area and Available Soils

Eastern India—includes eastern Uttar Pradesh, Bihar, Jharkhand, West Bengal, Assam plains, Odisha and Chhattisgarh states with a total geographical area (GA) of 71.84 million ha with highest in Odisha (15.57 million ha) and lowest in Assam (7.84 million ha). Net cultivated area in the region is 31.43 million ha (about 45% of GA) with a cropping intensity of 142%. The total food grain production from the region is 63.81 million tonnes (27.21% of the total

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production). The eastern region consists of 40.50% alluvial soil which is fertile and suited for the most of the crops. Red and yellow soils are in 25.45% area followed by Red sandy soils (13.60%); *Tarai* soils (6.05%); Laterite soils (5%) and Grey and Brown soils (0.70%). Out of the total geographical area of the region, 11.31 million ha suffers either due to soil acidity or salinity. Ground water utilisation in this region is also very meagre and, more than 70% area is rainfed. Hence, effective land management policies are required to address these issues in addition to other concerns such as small and fragmented holdings, tenancy, ceiling limits, acquisition and diversion of productive land, land records and inventories, climate change and land use changes.

Water Resources and Wetlands

Eastern region of India is bestowed with the most important natural resources, i.e., water. The average annual rainfall in the eastern region is highly erratic and it ranges from 1091 to 2477 mm (Avg.1525 mm). The lowest is in eastern UP (1091mm) while Assam contributes a maximum, i.e., 1525 mm. The region has 18% of country's utilizable water resources with ultimate irrigation potential of 33.65 million ha meter. However, utilization of the created irrigation potential is only 65.5%. The annual ground water availability in the eastern states has been accounted for 145.12 Billion Cubic Meter (BCM) whereas; the annual ground water draft is only 52.39 BCM, i.e., 36.0% compared to 58% at national level. The perennial/seasonal water logged areas for the region have been estimated to be 4.05 million ha with highest in West Bengal (1.1million ha) followed by Assam (0.75 million ha).

These water ecologies are precious resources for agricultural production including fisheries, horticultural and animal husbandry practices. Nevertheless, potential utilisation of wetland ecosystem has not gained momentum in the eastern region in spite of the fact that the technologies are available for judicious use of water resources. Water productivity is major issue of concern in the eastern region since average water productivity is very low (0.21-0.29 kg/m^3) in most of the eastern states. A total of 4.05 m ha area is under wetlands in Eastern Region. West Bengal has the highest area (1.1 m ha) under wetlands, followed by Assam (0.752 m ha). The Bihar has 0.40 m ha area under the wetland. Among various eastern states, Jharkhand (0.17 m ha) has lowest area under wetlands mainly due to hill and plateau agro-ecosystem. Hence the comprehensive planning is required to increase the water productivity in terms of productivity and monetary gains through suitable technological interventions. The drought-prone areas (about 10 million ha) and hill and plateau areas also need the focussed programme on water use potential so as to enhance the land and water productivity.

Forest Cover and Waste Lands

Of the total forest area of the country (76.95 m ha), eastern region contributes 19.46 m ha. Of the total geographical area, Chhattisgarh has maximum forest coverage i.e., 5.97% followed by Odisha (5.81%). Eastern UP and Bihar have less than 1% area under forest coverage. In eastern region, 71.84 m ha area is under wastelands. Hence there is need to develop a comprehensive plan to use these natural resources judiciously, for improving the performance of agricultural sector in Eastern region.

Livestock and Poultry

Livestock is an important sector of eastern India. On an average, it contributes 31.14% to total livestock population of India, i.e., 164.95 million. Eastern states have 48.0% cattle population, followed by goat (31.2%) and buffalo (13.3%). However, 93% non-descript cattle

population results into milk yield of only 1.5-2.0 kg/day. Black Bengal goat supports the livelihood of marginal and landless farmers to a great extent. Likewise, the region contributes 27.2% to total poultry population of the country. Animal husbandry sector contributes 10-33.7% of State Agricultural GDP in eastern region with highest value in Bihar and lowest in Odisha, respectively. The per capita availability of livestock products so far is, however, very low in case of milk (49.0 ltr/yr), meat (1.70 kg/yr), and egg (26 nos./yr) in eastern region. Further, the synergistic role of livestock in the farming systems of eastern states is yet to be realised in order to increase total factor productivity.

Operational Land Holdings

The average size of operational holdings in India has diminished progressively from 2.28 ha in 1970-71 to 1.55 ha in 1990-91 to 1.23 ha in 2005-06. As per Agriculture Census 2005-06, the proportion of marginal holdings (area less than 1 ha) has increased from 61.6 percent in 1995-96 to 64.8 percent in 2005-06. This is followed by about 18 percent small holdings (1-2 ha.), about 16 percent medium holdings (more than 2 to less than 10 ha.) and less than 1 percent large holdings (10 ha. and above). Fragmentation of operational holdings has widened the base of the agrarian pyramid in most of the states. In eastern India, about 85% of the farm holdings are marginal to small ranging from 0.3-05 ha and are highly fragmented, hampering the adoption of mechanised farming. The small and fragmented landholdings limit, by and large, the adoption of modern farming practices.

Food Grains Production and Productivity

Of the 234.47 million tonnes food grains production of India, eastern region contributed 63.40 million tonnes. In the region West Bengal recorded highest food grains production while Assam contributed lowest (4.14 MT). Among pulses, region's contribution is 2.32 m tonnes in the India's production (14.57 m tonnes). Oilseeds production was 1.33 million tonnes while the country's total production was 27.72 million tonnes. The productivity of food grains in *kharif* season was 1.68 tonnes/ha (national avg.1.65 t/ha) while it is somewhat higher in *rabi* season i.e. 1.78 tonnes/ha (National avg. 2.24 t/ha.). During 2010-11, the eastern region covered 1.34 m ha area under the fruit crops with total production of 15.01 m tonnes. The productivity of fruit crops is only 11.24 t/ha which is very near to the national average i.e.11.73 t/ha. Under vegetables, eastern region consists of 3.92 m ha area with production of 66.97 million tonnes, while the productivity remains 17.08 t/ha (National avg. 17.25 t/ha).

Fertiliser Consumption

Application of fertilizers was truly started during the green revolution era when the high yielding variety of seeds, irrigation, fertilizer and credit brought about increased food production. The all-India average consumption of fertilizers has increased from 95 kg per ha in 2004-05 to 144 kg per ha in 2010-11. Very high variability has however, been observed in fertilizer consumption among the states. While per hectare consumption is 237.1 kg in Punjab and 225.7 kg in Andhra Pradesh, it is comparatively low in Madhya Pradesh (81 kg/ ha), Orissa (58kg/ha), Rajasthan (48.3kg/ha) and Himachal Pradesh (54.8kg/ha) and below 5kg/ha in some of the North Eastern States. Country's total fertiliser consumption during 2009-10 was 26486 thousand tonnes, in which eastern region consumed 5841.1 thousand tonnes. Among eastern states, West Bengal (1644.6 thousand tonnes) ranked first followed by eastern UP and Bihar.

Seed Replacement Rate

During 2008 the country's paddy seed replacement rate was 25.9%. Among eastern region, it is highest in the West Bengal (28%) and lowest in Assam (15%). In case of Wheat, the national seed replacement rate is 25.3% while it is much higher in Odisha (40.4%); West Bengal (38.5%); and Assam (37.2%). However, it is as low as 6.5 % in Chhattisgarh. In Maize, Bihar has 57% seed replacement rate and has crossed the national seed replacement rate (i.e., 43.3%) while other states are much behind.

Farm Mechanisation

In the context of increasing commercialization of agriculture, mechanization is very important. There has been increase in the use of farm machinery in Indian agriculture as it contributes in the increasing the output by ensuring timeliness of operations and increasing precision in input application. Most of the mechanical inputs have displaced human and bullock labour and in some states like Punjab, Haryana farm mechanization has been taken in big way. Empirical evidences suggest that there is a strong correlation between farm mechanization and agricultural productivity. States with a greater availability of farm power show higher productivity as compared to others. In eastern India, the status of farm mechanisation is very poor needs attention.

Issues to be addressed

- Availability of quality seed and planting materials
- Low seed replacement rate and cropping intensity, particultrly in hill and plateau areas.
- Water use potential of flood prone and drought prone areas
- Low water productivity
- Farm mechanisation
- Livelihood security of 163 million BPL population
- Capacity building
- Diversification in agriculture
- Agro-processing, post-harvest and value addition
- Rehabilitation of degraded areas through agro-forestry and horticultural interventions.
- Shift of agricultural labourers to non-agricultural profession.

Keeping these facts in view, technology integration, scaling up and framing of demand driven productivity enhancing research agenda, in a network mode, using both conventional and frontier technologies ensuring scientific management of natural resources and production sustainability is essentially required since agriculture in eastern region is, by and large, diverse and risk prone. Research priorities need to be re-oriented accordingly so as to address diverse researchable issues and also to achieve the target of food security particularly during 12th plan period so as to cater the research and development needs of 407.10 million people of the region.

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