AGRICULTURAL REFORMS IN EASTERN STATES
AGRICULTURAL REFORMS IN EASTERN STATES

The eastern region comprises of plains of Assam, Bihar, Chhattisgarh, Eastern Uttar Pradesh, Jharkhand, Odisha and West Bengal, representing 21.85 per cent of the geographical area of the country and supporting 33.64 per cent of country’s population. Though the region is endowed with rich natural resources to support higher agricultural production including livestock and fisheries, the production levels have remained low due mainly to lack of location specific production technologies, dissemination of scientific knowledge to farmers, fragmented land holdings, low seed replacement rate, large population of non-descript type of livestock, poverty, lack of infrastructure facilities, natural calamities like frequent floods and droughts, water logging and social conflicts. Nevertheless, the region has vast untapped potential to enhance the production.

Agriculture is the mainstay of the economy in the Eastern States, since 83 per cent population living in rural areas depends on it for their subsistence.

The key features of agricultural scenario of Eastern States are:-

- The net sown area is 31.43 million hectares out of total geographical area of 71.84 million ha.
- The cropping intensity is 150 per cent as against 141 per cent of the national average.
- The average rainfall varies from 1091 to 2477 mm with a regional average of 1526 mm
- The region has 18 per cent of country’s utilizable water resources.
- The region has about 2.73 million ha total area under water constituting reservoirs, ponds, tanks and beels, oxbow lakes, brackish water, etc.
- The irrigated area in the region is 39 per cent as against 45 per cent of the national average.
- About 10 million ha land is monocropped with rice, and remain fallow after harvest.
- On an average, Eastern States contribute about 50 per cent of the total rice Production, 44 per cent of vegetable production and 34 per cent of inland fisheries.

Eastern States comprising of Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, eastern Uttar Pradesh and West Bengal comprising about 30 per cent of gross cropped area and 40 per

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1 India, Ministry of Agriculture, Indian Council of Agriculture Research Complex for Eastern Region (ICAR-RCER), Annual Report 2014-15, p 3
2 ICAR-RCER, Vision 2050, pp 1-2
cent production of food grains. The region has fertile soil and ample water resources, the two prerequisite for high productivity. However, its potential could not be harnessed in terms of improving agricultural productivity, poverty alleviation and livelihood improvement.

**MAIN CONSTRAINTS OF AGRICULTURE IN EASTERN REGION**

1. Farmers mostly depend on unpredictable monsoon for crop production and owing to poor utilization of water resources the cropping intensity is low, particularly in rainfed upland ecosystems. Since water is one of the major resources for agricultural development, deliberation on water use potential of flood affected and drought-prone areas of eastern India is essentially required.

2. Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Uttar Pradesh and West Bengal account 61 per cent of 153.66 Billion Cubic Meter (BCM) of total available ground water for future use. With the exception of Uttar Pradesh the States in Eastern Region have lower ground water development than the national average. The abundance of surface and ground water and less intensive use of land resources means that the region has considerable scope for increase in agricultural productivity and production.

3. Rice-based cropping system suffers a lot due to abiotic stress such as drought, flood, submergence and salinity.

4. Although Eastern States receive adequate rainfall and soil and climate are very congenial for cropping after harvest but most of the farmers leave their fields fallow after the harvest of rice and do not opt for second crop in the same year. The estimates of International Crop Research Centre for Semi-Arid Tropics (ICRISAT) reveals that about 11.6 million ha area is left fallow after the harvest of rice in the country. Of this, about 82 per cent lies in the Eastern States.

5. The ultimate irrigation potential in eastern region is 33.65 million ha, however, the utilization of the created irrigation potential is only 65 per cent. The region has about 4.05 million ha of wetland which are by and large underutilized.

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3 India, NITI Aayog, Raising Agricultural Productivity and Making Farming Remunerative for Farmers, December, 2015, p 1
6 *Ibid. NITI Aayog, p 2
8 *Ibid.* p 3
Management strategies for rain water harvesting and on-farm water management along with conjunctive use of rain, surface and ground water, multiple use of irrigation water, use of water saving and energy efficient devices are the need of the hour in this region\(^9\).

To address the diverse issues in eastern region relating to agriculture, Indian Council of Agricultural Research Complex for Eastern Region (ICAR-RCER), Patna came into existence on the 22 February 2001. Its main aim is to address the different aspects of land and water resources management, crop husbandry, horticulture, agroforestry, aquatic crops, fishery, livestock and poultry, agro-processing and socio-economic aspects in holistic manner. ICAR-RCER works to promote and facilitate, coordination and dissemination of appropriate technologies through network approach in involving ICAR Institutes. It provides scientific leadership and do the liaison work among the States and the Central Government Departments. It also provides need based consultancy and advisory support for promoting agricultural sector in the region\(^10\).

Main achievements of ICAR-RCER are:

- Improved variety of paddy ‘Swarna Shreya’ has been developed and released.
- Five cropping/farming situations have been developed for rice-fallow management.
- Ecologically and economically viable integrated farming system models have been developed for irrigated, rainfed, Hill and Plateau and flood plain wetlands.
- Studies on application of solar energy in agriculture has been initiated by the institute.
- First ever variety of Makhana, ‘Swarna Vaidehi’ have been released by Central Variety Release Committee.
- The horticulture production system was integrated with swine husbandry.
- In order to improve the livelihood of resource poor farmers, poultry production system has also been developed
- Six integrated farming system models (cattle-cum-fish, buffalo-cum-fish, goatcum-fish, poultry-cum-fish, pig-cum-fish and duck-cum-fish) have been studied by the institute to improve upon the fish production\(^11\).

BRINGING GREEN REVOLUTION TO EASTERN INDIA (BGREI)

Bringing Green Revolution to Eastern India (BGREI) program is the outcome of the recommendations of the Task Force constituted by the Government of India in pursuance of the decisions taken in the meeting of the Committee of Secretaries held on 29 November 2009 to make short and medium term recommendations for efficient management of water, power and other inputs as well as subsidy to maximize agricultural production on a sustainable basis. BGREI program was initiated in 2010-11 to address the constraints limiting the productivity of "rice based cropping systems" in Eastern India comprising of seven States namely, Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Eastern Uttar Pradesh and West Bengal. The goal of the BGREI program is to harness the water potential for enhancing rice production in Eastern India which was hitherto underutilized.

OBJECTIVES OF BGREI

The objectives of BGREI are:

- To increase production & productivity of rice and wheat by adopting latest crop production technologies;
- To promote cultivation in rice fallow area to increase cropping intensity and income of the farmers;
- To create water harvesting structures and efficient utilization of water potential; and
- To promote post harvest technology and marketing support.12

ACTIVITIES UNDERTAKEN THROUGH BGREI

The following activities are undertaken:

- Cluster demonstrations for rice and wheat in Non-National Food Security Mission (NFSM) districts.
- Asset building for water management activities such as construction of dug wells/Shallow Tube wells/Borewells/Lift Irrigation Points; Promotion of Farm Implements such as Drum Seeders/Zero Till Seed Drills, Paddy Transplanters and Pumpsets.
- Site specific activities for enhancing the production and productivity of crop. Activities also include other crop development programme, construction of water channels, power, etc.

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12 India, Department of Agriculture and Cooperation, BGREI, Operation guidelines, January, 2015, pp 1-2.
• Marketing Support for the Promotion/Creation of Primary Processing Facilities including farm level storage, drying, grading, par-boiling of paddy, bagging etc.; Promotion of Self Help Groups (SHGs); Institution building /linkage for procurement operations.\(^{\text{13}}\)

PROGRESS UNDER BGREI

BGREI was launched as a sub-scheme of Rashtriya Krishi Vikas Yojna (RKVY) in 2010-11. An amount of Rs. 400 crores each was allocated for programme during 2010-11 and 2011-12 and an amount of Rs. 1000 crores each during 2012-13 to 2014-15. The programme is being implemented in 121 identified Districts which are not covered under National Food Security Mission Rice and Wheat after modification of NFSM programme from 2014-15\(^{\text{14}}\).

\textit{(Statewise allocation of fund under BGREI is at Annexure-I)}

Through the above-mentioned activities, production of rice increased substantially during 2012-13 and 2013-14 over the normal in all the States. The maximum gain was recorded in Bihar followed by Chhattisgarh, Jharkhand, Uttar Pradesh and Assam in 2012-13 while in 2013-14 maximum gain was recorded by West Bengal and Odisha. The major share of this achievement was attributed to implementation of BGREI along with NFSM and other crop development programmes.

<table>
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<tr>
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<td>1.</td>
<td>Assam</td>
<td>41.83</td>
<td>47.37</td>
<td>45.16</td>
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<td>31.02</td>
<td>71.63</td>
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<td>52.23</td>
<td>61.59</td>
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<tr>
<td>6.</td>
<td>Uttar Pradesh</td>
<td>123.40</td>
<td>119.92</td>
<td>140.22</td>
<td>146.16</td>
<td>146.36</td>
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<td>7.</td>
<td>West Bengal</td>
<td>143.50</td>
<td>130.46</td>
<td>146.06</td>
<td>150.24</td>
<td>153.70</td>
</tr>
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<td>8.</td>
<td>Total for Seven States</td>
<td>501.58</td>
<td>469.74</td>
<td>552.73</td>
<td>591.67</td>
<td>575.77</td>
</tr>
<tr>
<td>9.</td>
<td>% share of Seven States</td>
<td>51.58</td>
<td>48.95</td>
<td>52.49</td>
<td>56.22</td>
<td>54.00</td>
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<tr>
<td>10.</td>
<td>All-India</td>
<td>972.42</td>
<td>959.70</td>
<td>1053.01</td>
<td>1052.41</td>
<td>1066.45</td>
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</table>

During 2013-14, demonstration rice were conducted in 7.40 lakh ha area under upland, shallow water, medium water and deep water conditions using high yielding varieties, hybrid rice

\(^{\text{13}}\) India, Department of Agriculture and Cooperation, Annual Report, 2013-14, p 24.

\(^{\text{14}}\) India, Department of Agriculture and Cooperation, Annual Report, 2014-15, p 21


\(^{\text{16}}\) Rajya Sabha Starred Question No. 123 dated 31.07.2015
and System of Rice Intensification (SRI) technology. Similarly, 0.63 lakh ha was covered under wheat demonstration. Under asset building component, 36,759 shallow tubewells were supported besides distribution of 0.75 lakhs pumpsets, 5084 agriculture implements and 731 paddy transplanter. For site specific activities, 1.20 lakh ha demonstration on line sowing and 38,013 ha demonstration on SRI technology. Supply of 28,571 plant protection sprayers, 81,200 meter conveyance pipe and 6,666 power reader were made. Under marketing support, 2,806 pucca threshing floors were constructed.17

**ORGANIC FARMING IN NORTH EASTERN REGION**

Many North Eastern State Governments have promoted organic agriculture in the region. Sikkim has aimed to make entire State 100 per cent certified organic by 2015 and has already brought 64,296 hac. area under certification process. Nagaland and Mizoram have also drafted and adopted policies to promote organic farming18. The tribal dominated areas of Odisha, Jharkhand and Chhattisgarh where the chemical fertilizer used is very low and farming is organic by default offer good scope for expansion of organic farming19.

Keeping the various opportunities in view and the priority for facilitating the North Eastern areas to make efforts to achieve a quality of life on par with the rest of the country, the Government of India through the Ministry of Development of North Eastern Region (DoNER) has launched a Scheme for organic farming in the North Eastern Region with an initial outlay of Rs. 100 crores for the year 2014-1520. The Union Ministry of Agriculture has announced the establishment of the National Organic Farming Research Institute (NOFRI) at Gangtok, Sikkim to provide research and technological backstopping to Organic Production System in the country in general and the North East Hill Region in particular21.

**WAY FORWARD**

To chalk out a way forward to accelerate the growth of agriculture sector in eastern region, a Workshop "Agriculture scenario in Eastern India - Review and Future Prospects" was held in April, 2015 under the Chairmanship of the Union Minister of Agriculture.

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18 Concept Note on Mission Organic Farming in North East, January 2015, p.5
19 *Op.cit.*, NITI Aayog, p. 4
Several issues relating to agriculture scenario of Eastern States were being raised like lack of marketing and processing infrastructure, slow pace of procurement of farm produce, shortage of quality seeds, soil health, less number of Farmer Producer Organisations (FPOs) in Eastern States compared to other States etc. The Union Minister of Agriculture emphasized on ample scope for productivity enhancement of agriculture and horticulture in Eastern States. The need of ample availability of high quality seeds and agriculture plantation material to farmers for increasing productivity. It was felt that initiatives of Central Government like the Soil Health Management System, Soil Testing Laboratories, Unified National Agriculture Market need to be expedite was also emphasized. Vision of 'Per Drop More Crop' to be realised by proper coordination between the Centre and the States. He also urged that Small Farmers Agriculture Business Consortium and more Farmer Producer Organisation to be formed to support farmers.

Special focus should be given to soil health and also on efficient use of water in order to ensure continuity for sustainability of second green revolution in eastern India. Focus may be given to the following points:-

- Block, district and state-wise action plans for implementation of Pradhan Mantri Krishi Sinchai Yojna (PMKSY) in close coordination of the concerned Ministries/Departments.

- Implementation of Ekikrit Upaj Mandi Yojna (EUMY) with e-marketing to ensure remunerative price to the farmers.

- Pilot Project of Krishi Amdani Bima Yojna (KABY) in selected districts.

- Encourage Paramparagat Krishi Yojna (PKY) to utilize indigenous Technical Knowledge (ITK) and organic farming technologies.

- Strengthening the bargaining capacity of farmers for procurement of quality inputs including seeds and sale of their produce through Farmer Producers Organisations (FPOs).

- Strengthening of infrastructure of Kisan Vikas Kendras (KVKs) and coordination between KVK and extension functionaries of State Department of agriculture at district level.

- Purchase of seeds only from authorized seed producing agencies without any favour to any individual company/agency to ensure supply of quality seed.

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22 India, Department of Agriculture and Cooperation, Workshop on Agriculture Scenario in Eastern India-Review and Future Prospects dated April, 2015, p.1

23 PIB, Press Release, Ministry of Agriculture, 16 April 2015
• Development of climatic resilient varieties/technologies to meet the challenges of frequent floods and droughts.

• Establishment of Two Centre of Excellence in Assam and Jharkhand.\textsuperscript{24}

CONCLUSION

Eastern region is endowed with natural resources, however, its potential could not be harnessed in terms of agricultural productivity, poverty alleviation and livelihood improvement. The region has about 71 per cent marginal farmers. Small and fragmented landholding, soil acidity, poor infrastructure facilities for storage, processing and marketing poses a threat to agro-development in the region\textsuperscript{25}. The necessity to grow enough food, feed and fibers to meet requirement of the ever increasing population has put tremendous pressure on natural resources\textsuperscript{26}. Keeping this in view using both conventional and frontier technologies for ensuring scientific management of natural resources are essential. Though, government has taken many initiatives to address these issues and launched programmes like BGREI to enhance the agricultural development in this region, research priorities need to be re-oriented accordingly as to address the diverse issues and also achieve the target of food security\textsuperscript{27}.

\textsuperscript{24}India, Department of Agriculture and Cooperation, Workshop on Agriculture Scenario in Eastern India-Review and Future Prospects dated April, 2015, pp 1-2
\textsuperscript{25}Op.cit. Vision 2050, p VII
\textsuperscript{26}ibid., Vision 2050, p 21
\textsuperscript{27}ibid. Vision 2050, p VII
### State-wise Funds Allocated, Released and Utilised under the Programme of Bringing Green Revolution to Eastern India (BGREI) During 2010-11 To 2014-15.

(100 % Central Assistance)

(Rupees in crore)

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<td>1</td>
<td>Assam</td>
<td>35.000</td>
<td>17.500</td>
<td>17.500</td>
<td>33.320</td>
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<tr>
<td>2</td>
<td>Bihar</td>
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<td>63.940</td>
<td>63.570</td>
<td>55.330</td>
<td>119.250</td>
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<td>Chhattisgarh</td>
<td>67.150</td>
<td>67.150</td>
<td>67.150</td>
<td>55.210</td>
<td>131.500</td>
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<td>4</td>
<td>Jharkhand</td>
<td>29.600</td>
<td>14.800</td>
<td>14.800</td>
<td>31.680</td>
<td>59.000</td>
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<td>5</td>
<td>Odisha</td>
<td>79.670</td>
<td>74.890</td>
<td>62.620</td>
<td>62.620</td>
<td>217.250</td>
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<td>Uttar Pradesh (East)</td>
<td>57.270</td>
<td>57.270</td>
<td>57.270</td>
<td>85.660</td>
<td>105.500</td>
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<td>West Bengal</td>
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<td>102.370</td>
<td>102.370</td>
<td>72.200</td>
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<td><strong>Total</strong></td>
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<td>402.700</td>
<td>397.550</td>
<td>396.020</td>
<td>398.920</td>
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<td><strong>National Level</strong></td>
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<tr>
<td>(i) CRRI</td>
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<td>0.090</td>
<td>0.360</td>
<td>0.260</td>
<td>0.300</td>
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<td>(ii) NSC</td>
<td></td>
<td>0.760</td>
<td>0.680</td>
<td>0.670</td>
<td>0.530</td>
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<td>0.000</td>
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<td><strong>Grand Total</strong></td>
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<td>402.700</td>
<td>397.550</td>
<td>400.000</td>
<td>396.910</td>
</tr>
</tbody>
</table>

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**Notes:**
- BGREI, Progress Report, bgrei-rkvy.nic.in

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