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## RESEARCH ARTICLE

# AGRICULTURAL BACKWARDNESS ANALYSIS OF NORTH-EAST INDIA: A CAUSE OF CONCERN FOR NATIONAL DEVELOPMENT

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### ABSTRACT

The North East Region (NER) constitutes eight states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. Its population of 45 million (2011 Census) constitutes 3.8% of country's population. Rural Population of 327.71 lakh is 84.34% in NER as against 72.20% in India. Agriculture provides livelihood support to 70 % of region's population. It produces only 1.5 % of country's food grain production and continues to be a net importer of food grains even for its own consumption. Agricultural land including fallow is 22.20% as against 54.47% in India. Cultivators [41.61%] and agricultural labourers [13.07%] together constitute the majority of the workforce as against 31.65 % and 26.55% respectively in India. Land is held almost by all. Share of marginal and small farmers is 78.92 %. Land distribution is mostly egalitarian rooted in the principle of community way of living and sharing. This region is inhabited by 100 major tribes and immigrant communities. Due to topographical and environmental conditions this region is rich in biodiversity and is one of the hot spots of the world. Mostly tribal people and immigrant communities depend on farming and forest products for their food and livelihood. Local people have been maintaining traditional agricultural practices, agro-biodiversity and knowledge. Generally farmers practice jhum or shifting agricultural system with other sedentary agricultural practices. Other agricultural system are wet rice cultivation which is practiced in valley land and Aji system where rice and millet are cultivated with fish in deep water. In valley land mono cropping as well as mixed cropping is practiced by farmers. Terrace land cultivation system introduced by government could not get wide acceptability by farmers due to high input of labour and fertilizers. Farmers also have cultivation systems such as home-gardens and agro-forestry that link their families to the forest ecosystem. Recently government and nongovernmental organization have introduced agri-horti-silvipastoral system for good harvest and yield. The current scenario of agriculture, horticulture, irrigation, institutional infrastructure-suggests strategic action plan is needed to accelerate the process of agricultural development.

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## INTRODUCTION

Agriculture is an important sector in the economy of the NER, with its share in State Domestic Product ranging from 19 percent to 37 percent in different states. As a result, agriculture in the region has not been able to generate surpluses for investment and augment purchasing power, not to speak of employment generation. There is prevalence of traditional agricultural practices and low productivity. The shifting cultivation (Jhum) is one such system. Rice is the major staple crop commonly grown in the NER states.

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But the rice-based agriculture system has failed to provide required household income-security. Although winter rice accounts for more than two-thirds of total rice area, but the average yield is 1.53 ton/ha, which is nearly half a ton less than the national average. Boro rice is a low risk option with yield 30 to 40 percent higher than the normal yield. It has increased cropping intensity, leading to a situation of surplus production in Assam. This successful venture should be replicated in other states also. This slash-and-burn system of cultivation (Jhum practice) is a unique feature of the region, which covers nearly 2 million hectares area (one-fourth of the total cropped area). The system faces criticism due to its low productivity and environmental diseconomies, but provides support to about 443 thousand jhumia households.

**Table 1. Formation of North Eastern states**

State	Historic Name	Capital(s)	Statehood
Arunachal Pradesh	North-East Frontier Agency	Itanagar	1987 (earlier a Union Territory of India, constituted in 1971)
Assam	Pragjyotisha, Kamarupa	Shillong (till 1969), Dispur	1947
Manipur	Kangleipak	Imphal	1971 (earlier a Union Territory of India, constituted in 1956)
Meghalaya	Khasi hills, Jaintia hills and Garo hills	Shillong	1971
Mizoram	Lushai hills	Aizawl	1987 (earlier a Union Territory of India, constituted in 1971)
Nagaland	Naga hills	Kohima	1963
Sikkim	Sukhim	Gangtok	1975
Tripura	Tipperah	Agartala	1971 (earlier a Union Territory of India, constituted in 1956)

(Sikkim was integrated as the eighth North Eastern Council state in 2002)

**Table 2. Etymology of state names**

Name of state	Origin	Literal meaning
Arunachal Pradesh	Sanskrit	Land of the rising sun
Assam	Sanskrit	Asama ("unequalled", "peerless", etc.)
Manipur	Sanskrit	Land abundant with jewels, adopted in the 18th century
Meghalaya	Sanskrit	Abode of the clouds, coined by Shiba P. Chatterjee
Mizoram	Mizo language	Land of the Mizo people
Nagaland	English	Land of the Naga people
Sikkim	Limbu Language	New House – Derived from the word "Sukhim", "Su" meaning new and "Khim" meaning house
Tripura	Kokborok	Sanskrit version of native names: Tripura, Tuipura, Twipra, Tippera etc.

**Fig. 1. Seven Sister States**

On account of diversified nature of the system, the jhum cultivation provides not only food security but also household nutritional security.

**Seven Sister States:** The Seven Sister States is a popular term for the contiguous states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Mizoram, Nagaland and Tripura prior to inclusion of the state of Sikkim into the North Eastern Region of India. The sobriquet 'Land of the Seven Sisters' was coined to coincide with the inauguration of the new states in January 1972 by Jyoti Prasad Saikia, a journalist in Tripura, in the course of a radio talk show. He later compiled a book on the interdependence and commonness of the Seven Sister States, and named it the Land of Seven Sisters. It has been primarily because of this publication that the nickname has caught on.

**Geography:** The Northeast region can be physiographically categorised into the Eastern Himalaya, the Patkai and the Brahmaputra and the Barak valley plains. Northeast India has a predominantly humid sub-tropical climate with hot, humid summers, severe monsoons, and mild winters. Along with the west coast of India, this region has some of the Indian sub-continent's last remaining rain forests, which support diverse flora and fauna and several crop species. Reserves of petroleum and natural gas in the region are estimated to constitute a fifth of India's total potential. The region is covered by the mighty Brahmaputra-Barak river systems and

their tributaries. Geographically, apart from the Brahmaputra, Barak and Imphal valleys and some flat lands in between the hills of Meghalaya and Tripura, the remaining two-thirds of the area is hilly terrain interspersed with valleys and plains; the altitude varies from almost sea-level to over 7,000 metres above Mean Sea Level. The region's high rainfall, averaging around 390 inch and above, creates problems of ecosystem, high seismic activity, and floods.

**Climate:** Northeast India has a subtropical climate that is influenced by its relief and influences from the southwest and northeast monsoons. The Himalayas to the north, the Meghalaya plateau to the south and the hills of Nagaland, Mizoram and Manipur to the east influences the climate. Due to monsoon winds originating from the Bay of Bengal releases heavy precipitation on these slopes. It is the rainiest region in the country, with many places receiving an average annual precipitation of 2,000 mm. Cherrapunji, located on the Meghalaya plateau is one of the rainiest place in the world with an annual precipitation of 11,777 mm.

**Temperature:** Temperatures vary by altitude with the warmest places being in the Brahmaputra and Barak River plains and the coldest at the highest altitudes. Generally, temperatures in the hilly and mountainous areas are generally lower than the plains which lie at a lower altitude. Summer temperatures tend to be more uniform than winter temperatures

due to high cloud cover and humidity. In the Brahmaputra and Barak valley river plains, mean winter temperatures vary between 16 to 17 °C while mean summer temperatures are around 28 °C. The highest summer temperatures occur in the West Tripura plain with Agartala, having mean maximum summer temperatures ranging between 33 to 35 °C in April.

**Rainfall:** The southwest monsoon is responsible for bringing 90 percent of the annual rainfall to the region. April to late October is the months where most of the rainfall in Northeast India occurs with June and July being the rainiest months. In the hilly parts of Mizoram, the closer proximity to the Bay of Bengal causes it to experience early monsoons with June being the wettest season.

**High risk seismic zone:** The North Eastern Region of India is a mega-earthquake prone zone caused by active fault planes beneath formed by the convergence of three tectonic plates viz. India Plate, Eurasian Plate and Burma Plate. Historically the region has suffered from two great earthquakes 1897 Assam earthquake and 1950 Assam-Tibet earthquake – and about 20 large earthquakes since 1897. The 1950 Assam-Tibet earthquake is still the largest earthquake in India.

**Economy:** The Ministry of Development of North Eastern Region (MDoNER) is the deciding body under Government of India for socio-economic development in the region. The North Eastern Council under MDoNER serves as the regional governing body for Northeast India. The North Eastern Development Finance Corporation Ltd. (NEDFi) is a Public Limited Company providing assistance to micro, small, medium and large enterprises within the north eastern region. Other organisations under MDoNER include North Eastern Regional Agricultural Marketing Corporation Limited, Sikkim Mining Corporation Limited and North Eastern Handlooms and Handicrafts Development Corporation.

**Past and present situation of agriculture:** Agriculturally, North-East India lies in the Southeast Asia rice domain. Rice is the principal food crop. Besides, the region, especially Assam, is famous for tea. New plantation crops that have entered the area are rubber and several varieties of tropical and temperate fruits. The most traditional tree crop that is grown in homesteads, and not in commercially organised plantations, is areca nut. The region, however, does not have much cultivable land, which is confined to the two alluvial valleys of Assam. Only 16 percent of the area of the region is under cultivation, and the total cropped area including area under multiple cropping doesn't exceed 22 percent. Rice, the major crop, claims over 85 percent of the cropped area.

The region is known for 'slash and burn' type of shifting cultivation, locally known as *jhuming*. About 12 percent of the net sown area is under shifting cultivation. Lately, the land under shifting cultivation is being brought under horticulture. Besides rice, other important crops in the region are pulses and maize. Rubber plantation is becoming a popular commercial plantation in Tripura. Agriculture, in the region, suffers from low productivity, and floods frequently damage even better crops. The average yield of rice for the region is around 1,600 kg/ha. Tea plantation is the principal plantation crop of the region. The region has over 30,000 large and small tea estates, occupying roughly 280,000 ha of land. Over 95 percent of the area of the region under tea is in Assam.

## Ground realities of North East India

1. The North–Eastern Region of India comprising eight states viz., Assam, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, Tripura and Sikkim has a total geographical area of 2.62 lakh sq km, accounted eight per cent of the total area and 3.4 per cent of total cultivable area of country.
2. The region contributes only 2.8 per cent to the total food grain production of the nation pointing to its low level of productivity.
3. Out of 21 agro–ecological zones of the country, four zones are covered exclusively by NEH region.
4. Approximately, 84 per cent of the soil in the region is acidic and low in available phosphorus and zinc but high to medium in available nitrogen and potash.
5. Jhuming is common in the region; nearly 0.88 m ha area is under shifting cultivation.
6. Total forest cover in the region is 13.02 m ha, which is about 49.65 per cent of its geographical area as against the national average of 19.39 per cent.
7. The region is hot spot of bio–diversity having many endemic species which accounts more than 50 bamboo species, 6000 rice lines, 14 species of banana, 17 species of citrus, 600 orchids out of which 175 are rare and many medicinal and aromatic plants.
8. The aquatic bodies of the region harbour a rich diversity of ichthyo fauna 274 fish species belonging to 114 genera under 37 families and 10 orders constitute about 34 per cent of the total freshwater fish species of the country.
9. The society is agrarian and depends on agriculture and allied sector for its livelihood.
10. Around 56 per cent of the area is under low altitude, 33 per cent mid altitude and the rest under high altitude.
11. The production system is characterized by low cropping intensity i.e. about 131.4 per cent, based on mono cropping and subsistence farming.
12. Average landholding is 2.5 ha which is high yet the entire holding cannot be used for agricultural purposes due to topographical disadvantages.
13. A family of 6–7 members requires at least 2 ha cultivable area in sloping hills to sustain their livelihood.
14. Land use pattern is relatively faulty for which annual loss of top soil is much higher (about 46 t/ha) than all India average (about 11 t/ha).
15. Due to lack of proper water harvesting and utilization measures, only 0.88 mhm out of 42.5 mhm water is used.
16. Area under irrigation is around 20.74 per cent out of which 18.78 per cent is irrigated through surface flow, 1.82 per cent through surface lift and 0.14 per cent through groundwater lifting.
17. Surface water is the main source of irrigation; therefore, water use efficiency is less than seven per cent.
18. Low input intensive agriculture is dominated.
19. Traditional farming techniques
20. Lack of farm mechanization
21. Subsistence farming
22. Low level of productivity
23. Poor infrastructure
24. The spread of HYV also very low, taking example of rice having only 56 per cent of the area has been brought under HYVs in NE hill states as against 74 per cent in the country.

25. Of the total quantity of improved seeds required by the farmers, roughly 40 per cent is met from within the region leaving a gap of 60 per cent in its present requirement.

Based on ground realities of this complex, diverse and risk prone agro-ecology, farmers opted to retain traditional practices with emphasis on stability, resilience long term sustainability over the attainment of higher productivity hence, could not harvest the dividend of green revolution. Generally, the productivity of all the food crops is low as compared to the national average. The basic reasons behind the lower productivity of crops are abiotic factors like low photoperiod, aberrant weather, improper nutrient management and lack of sound scientific methodology of crop production.

**Major Crops Cultivated in North-East India:** The states of North East India are blessed with luscious greenery and unspoilt beauty. The NE states are all highly dependent on agriculture and a lot of revenue is earned from the production of crops. Here is an interesting account of the state wise production of agriculture in the states of North East India.

Intercropping is also used as a form of agricultural insurance against the failure of crop and the slump of price. The virgin hilly slopes of North East are being used increasingly for the production of organic tea, green tea etc. and there is huge international demand for the same.

**Cropping pattern of north east india:** The North Eastern Region is characterised with diversified agro-climatic condition, different soil types, and irregular physical features and the region is also lagging behind in development. Before the introduction of Green Revolution in India, the North Eastern Region is one of the dominant supporters of the country's foods production. But now the region is seeping down to the bottom level and has started importing agricultural products from the main land of the country. The agricultural practices of North East India are of two types- (i) Shifting cultivation, and (ii) Settled or plains agriculture. About three-fourths of her population, depends on agriculture and other allied activities. Rice and maize are the leading crops in both hilly regions and plain areas supporting food to the populace. The modern agricultural inputs used in agriculture are comparatively low.

**Table 3. Major Crops Cultivated in North-East India**

States	Major crops				Special characteristics
	Cereals	Fruits	Vegetables	Spices	
Arunachal Pradesh	Paddy, maze, millet	Almonds, walnuts, papayas, peaches, kiwis, lemons, oranges, pineapple, litchi, banana etc.	Cucumbers, brinjals, pumpkin, sweet potato, ginger, chillies	Cardamom, cinnamon and cloves.	Dominance of the Jhum style of cultivation
Manipur	wheat and maize	Apricots, limes, lemons, mangos, walnuts, papayas, peaches, pineapple etc.	All major types of vegetables produced	=	=
Meghalaya	Paddy and millet	Lemons, oranges, pineapple and banana etc.	Oilseeds and sugarcane	=	Only 10% of the total land is available for agriculture
Mizoram	Paddy and maize	Plums, oranges, pineapple and banana etc.	Pumpkin, sweet potato	Cardamom, cinnamon, turmeric, ginger, mustard, sesame and cloves	=
Nagaland	Maize and millet	Potato, sweet potato, pulses, ginger, chillies,	Sugarcane, oilseeds and plantations of tea and coffee	Cardamom, cinnamon and cloves.	Predominantly Jhum and terraced farming
Tripura	Paddy and wheat	Coconut	Cucumbers	Cardamom, cinnamon and cloves along with oilseeds	The largest producers of coconut, Jute and sugarcane, rubber cultivation
Sikkim	Rice and maize	Oranges, almonds, walnuts, areca nuts, bananas, coconuts and other fruits.	Cucumbers, pumpkin, sweet potato, potatoes, ginger, chillies	Cardamom, cinnamon and cloves.	Cotton is another major crop. tea plantations

**Plantation Crops of North East India:-**The states of North East derive a lot of value from plantation crops and this provides good employment opportunity to the women. The tropical climate in some states is very favourable to the cultivation of crops like rubber, tea and coffee. The states of Nagaland, Arunachal Pradesh, Mizoram, Manipur, Meghalaya have a very good practice of plantations of rubber, tea and coffee. Approximately 3.33 lakh hectares are currently utilised for the cultivation of these crops. The state of Assam is the largest producer of Tea in India with the average production rate is 1850 kilograms per hectares. Coffee was cultivated as a plantation crop in North East since the year 1960. The North Kacchar and Karbi Anglong districts have a lot of coffee plantations. Currently there are 10.1 thousand hectares under the cultivation of coffee and 44.7 hectares for the cultivation of rubber. The accelerated development of rubbers plantation scheme of the government has spurred on the growth of rubber plantations in the North East. Tripura alone is responsible for the production of 25.38 thousand hectares of rubber. There is a practice of growing seasonal produce like vegetables in the formation stage of the plantation crop and permanent crops like gooseberry, arecanut, tree beans, black pepper, orange etc.

Traditional slash-and-burn agricultural cycles are characterized by the alternation of cropping and fallow phases, when secondary vegetation grows. At the end of fallow phases, trees are cut and burnt, and the ashes enrich the soil, thereby allowing a new cropping phase. Slash-and-burn agriculture is considered to be well adapted to tropical climates and soils, and accessible to small farmers because of its low cost.

**Crop diversification:** A large number of households in the NER practise crop diversification by growing multiple crops as well as livestock, fishery, piggery, etc. High-value crops like fruits and vegetables, oilseeds, spices and nuts are also widely grown in the region. Fruits and vegetables occupy the second place (12% area share) next to rice. Interestingly, not only the area allocation is high, the proportion of households growing fruits and vegetables is also high. Area under other crops is also growing and the notable gainer include fibres, sugarcane, rubber, sericulture, coffee, arecanut and coconut. Floriculture is also expanding rapidly. But, a huge potential remains untapped due to a number of constraints and institutional rigidities. In a situation of extreme diversities and geographically-limited cultivable area in many parts of NER,

vertical intensification rather than horizontal expansion is more relevant. To reap the benefits of the huge opportunities for societal welfare, the following strategies are suggested:

- a) Increase adoption of HYVs of rice
- b) Increase agri-inputs in all the NER states
- c) Develop small farmers-oriented technologies
- d) Expand area under boro rice.
- e) Promote aromatic rice
- f) Develop market incentives in the region.

**Irrigation condition:** NER is endowed with 33% of country's water resources. It receives annual rainfall ranging from 2,480 mm to 6,350 mm. The annual water availability of 16,500 cubic meters per capita and 44,180 cubic meters per hectare is the highest in the country. Due to high rainfall, NER has inherent advantage to exploit rain-water harvesting. However, the rate of harnessing and utilizing irrigation potential has been low since only 11% of net cultivable land is irrigated. Accelerated Irrigation Benefit Program emphasizes exploiting surface irrigation through Minor Irrigation schemes in NER. The NER is endowed with high rainfall, but rain-water is neither conserved nor harvested to increase crop yields and intensify agriculture. Appropriate watershed programmes with people's participation need to be encouraged to harness the untapped benefits.

#### Problems:

1. The productivity of land as compared to its potential is low since NER, according to the latest available statistics, has only 29 soil testing laboratories.
2. NPK consumption is low,
3. Indigenous plough is the main farm implement (95.66%)
4. Irrigation covers only 11% of net sown area
5. Area under High Yielding Variety (HYV) paddy is 9.50 lakh hectares (35%)
6. HYV seed replacement rate is extremely low
7. About 4.31 lakh farmers possess Kisan Credit Cards.
8. Nearly five lakh families practice shifting cultivation (jhuming) covering about 2.2 million hectares of which 17% is jhumed at any point of time.
9. Climate change and variability are a considerable threat to agricultural communities.
10. Adaptation and mitigation based on organic agriculture can build on the well-established practice
11. Organic farming reduces the vulnerability of the farmers to climate change.
12. The picturesque scenario of NER is contrasted by widespread poverty.
13. Low per capita income,
14. High unemployment
15. Low agricultural productivity leading to food-insecurity.
16. The region suffers from weaknesses such as subsistence agriculture with poor infrastructure like roads and markets.
17. The high vulnerability to natural calamities.
18. The low utilization of modern inputs in agriculture.
19. Large proportion of small and marginal farm households, traditional and low-input agricultural practices coupled with the problem of insurgency have affected the agricultural economies adversely in the region.

Hilly agri-ecosystem also marred with land of steep slopes leading to high soil erosion and thus, loss of soil fertility, high soil acidity and light texture of soil leading to leaching losses

of nutrients through percolation under high rainfall conditions. As a result, agriculture in the region has not been able to generate surpluses for investment and augment purchasing power, not to speak of employment generation. Moreover, factors like natural calamities, large number of smallholders, low intensity agri-inputs and negligible seed/variety replacement are also threatening the livelihood-sustainability in the region.

#### Specific Problems of Agriculture in NER

1. Adherence to traditional agricultural practices
2. Low adoption of modern rice varieties (HYVs) of rice.
3. Problems of property right
4. Small size of operational holdings, ranging from 0.60 ha to 1.33 ha.
5. High vulnerability to natural calamities, and degradation of prime agricultural land
6. Over-dependence on monsoonal rains with poor irrigation infrastructure.
7. Low use of fertilizers varying from 2 kg/ha to 63 kg/ha
8. Weak institutional credit delivery system.
9. Negligible agro-processing and post-harvest management
10. Poor transport and market infrastructure.
11. Poor monitoring and accountability of public service delivery system

**Challenges Faced by Northeast India Farmers:** The challenges faced by the NE Indian farmers are innumerable and some of these challenges are quite critical in nature putting the future prospects of NE Indian farming at stake. A farm visit to any of the Northeast Indian farmlands drops a hint of the kind of struggle the NE Indian farmers need to undertake.

1. **Fragmented Land Holding:**-Between 1951 and 2001, the population of Northeast India saw a 350% increase. And with this kind of growth, it was inevitable that the pressure on land would only increase. Very serious side effect of fragmented land holdings is that farmers earn only enough to sustain their immediate needs.
2. **Lack of a Stable Market:** It is stated that unless the markets don't open up, farmers will continue to grow conventional crops, which in turn, are heavily influenced by the market.
3. **Lack of Mechanization:** Other than Assam, the other states in Northeast India have adopted little in terms of mechanization. It is not an uncommon sight for farmers to manually plough, sow, harvest or winnow their crops. Even transportation is time-consuming. Often produce is loaded in hand woven bamboo baskets and manually transported as there are not roads for vehicles to pass.
4. **Agricultural Infrastructure:** In India, post-harvest losses due to unavailability of proper storage is said to be as much as 30 percent! Did you know that wastage in fruits and vegetables cost the Indian economy more than 2 lakh crores annually due to lack of storage, food processing units and proper market infrastructure?
5. **Lack of Education Creates Gap Between Northeast India Farmers and Prosperity:**-A government survey on India's adult literacy estimates that 32 percent of the

country's rural population is illiterate, as compared to 15 percent of the urban population. Education is not only a basic right, it also helps reveal opportunities and scope for improving one's circumstance in life. However, given the lack of proper education, farmers more often than not, are unable to even capitalize on the various government schemes for farmers and the unemployed youth of the region.

**Causes of low performance in agriculture:-** The factors responsible for low performance as compared to targeted include, inter alia, difficult topography, sparse population settlements, inadequate infrastructure, discouraging land tenure system, lack of agricultural entrepreneurship, massive amount of grants and subsidies under Government programs, and law and order conditions in some parts.

**Prospects:** Diverse agro-climatic conditions, varied soil types and abundant rainfall have endowed NER with promising horticulture and value added products that can be marketed within the country and abroad.

**Potentialities:** With more than 98 percent international border, the region has several unique features: fertile land, abundant water resources, evergreen dense forests, high and dependable rainfall, mega biodiversity and agriculture-friendly climate. Yet it has failed to convert its strengths optimally into growth opportunities for the well-being of the people. The region suffers from weaknesses such as subsistence agriculture with poor infrastructure like roads and markets.

**Untapped Potentialities:** In spite of several constraints, the NER has huge and unique potentialities too, such as:-

1. Rich natural resources
2. Biodiversity
3. High dependable rainfall
4. Congenial climate for agriculture
5. Social commitment to equitable and sustainable use of land resources.
6. High potential to increase agricultural productivity.
7. High potential for crop diversification towards horticultural crops
8. Low use of agro-chemicals indicates considerable potential for 'organic' agriculture

#### **Agricultural products of northeast India fetching northeast pride**

Few may know that these nine organic and exotic agricultural produce of Northeast listed below have fetched northeast pride. Accorded under the latest list of the Geographical Indication (GI) registry, 2015, these items are now protected from production elsewhere. GI tag is a certification which indicates the distinctiveness of the product's origin in a particular geographical location and carries an assurance of quality of that particular product.

- 1) **Pungent Karbi Anglong ginger:** The "Poorest district of Assam" for years, Karbi Anglong was in the news for producing the best organic ginger in the world.
- 2) **Sikkim Large Cardamom:** Sikkim, the land of Mystic beauty is also known as the "valley of rice". Sikkim Large Cardamom earns a GI registry for its infamous spice. The state is considered as Large Cardamom epicentre of the world.

- 3) **Mizoram Birds Eye Chilli:** Attempt was made to introduce this chilli to the wider world.
- 4) **Manipur Kachai Lemon:** Popularly known as Kachai Champra (Lemon) is widely grown in the Kachai Village in Manipur's Ukhrul District.
- 5) **Tripura Queen Pineapple:** Tripura is one of the leading pineapple-growing states in the Northeast with the total production estimated at around 117531 MT during 2010-11. Unseasonal cultivation of pineapple, made possible by horticulture scientists in Tripura, is providing more revenue to farmers in the State.
- 6) **Khasi Mandarin Orange:** The citrus fruit from Meghalaya, which cultivates one of the best citrus fruit species in the world. The fruit is grown abundantly in Khasi and Jaintia Hills.
- 7) **Arunachal Orange:** In fact, Mandarin Orange is the oldest cultivated major fruit of Arunachal Pradesh contributing about 57 per cent of total fruit production in the state.
- 8) **Tezpur Litchi:** Litchi produced at Lichu Pukhuri in Tezpur town and at Porowa near north bank district headquarter town of Sonitpur, Assam.
- 9) **Nagaland Tree Tomato:-** The Nagaland Tree Tomato has been a commercial product since 1930. In India, this organic indigenous fruit is abundantly grown in the hilly region of Nagaland.

**Ways of development:** State Governments should create enabling environment that can improve credit absorption capacity of farmers and geographical areas, accelerate flow of credit and loan recovery simultaneously. Banks, Government and print/electronic media can launch massive campaign to create awareness among farmers to avail financial services. As the land use pattern in the plains and hills is different, significant resources need to be allocated for research and designing separate strategies to improve farm productivity to match requirements of hills and plains. The land productivity as compared to its potential is low except for few pockets in Manipur, Assam and Tripura. Land productivity and farm output can significantly be enhanced through initiating measures, among others, viz.

1. Formulating a State specific land and water use policy and adopting agro-climatic Zonal planning.
2. ICAR, SAU and CAU to facilitate breeder seed production of HYV and their multiplication and distribution involving SHGs.
3. Establishing State-wise warehouse, centers for certified seeds, fertilizer, pesticides, farm- equipment depending on scale of operation, in co-ordination with National Seeds Corporation, National Fertilizer Corporation and Governments
4. Improving and expanding agricultural extension service network significantly.
5. Making small operational holdings of farmers economically viable and profitable.
6. Establishing institutions for capacity building of farmers to adopt technology.
7. Enhancing public investment and institutional credit to enable farmers to access technology to achieve.
8. Neutralizing soil acidity through soil testing and judicious application of lime and cultural practices
9. Reasonably reducing crop duration by evolving short duration hybrid and high yielding varieties
10. Commercializing traditional diversified farming system

11. Farmers practice organic farming particularly in the hills and organic products fetch high market price.
12. Exploiting the potential of non-traditional and high value crops like aromatic and medicinal plants, flowers, spices and condiments.
13. Replicating the Integrated Agricultural Development model.
14. Total involvement of the community to guarantee the success

**Policy Perspectives:** The NER needs development compatible with the comparable regions in the country. Hence, there is an urgent need for appropriate policy interventions to break the vicious cycle of underdevelopment, food deficit, poverty and regional imbalance.

1. NCAP has been established by the Indian Council of Agricultural Research (ICAR) with a view to upgrading agricultural economics research through the integration of economics input in planning, designing and evaluation of agricultural research programmes and strengthening the competence in agricultural policy analysis within the council.
2. High-value crops such as pachauli, passion fruit, aromatic and medicinal plants have good potential in both domestic and international markets. These should be widely practised.
3. Combination of food crops with livestock, fishery, piggery, forestry and horticulture are suggested for the states of Arunachal Pradesh and Mizoram, where the cultivable land is less than 10 percent of the total geographical area.
4. The hilly terrains and slopes of these states may be used for plantation crops (such as fruits, rubber and forestry), flower and livestock to supplement food production and income generation.
5. The strategy for the hilly terrains of Mizoram, Meghalaya and Nagaland is to promote production of staples (rice, maize and pulses) and high-value crops along with livestock and sericulture.
6. As the climate is favourable to horticultural crops, effort should be made to improve their cultivation, specifically the off-season vegetables.
7. The low chemical-inputs use in the NER should be converted into an opportunity by promoting the 'organic products' for which demand is fast rising in the national and international markets.
8. International marketing opportunities under the "Look East" policy should also be exploited for the agri-products like aromatic rice, pineapple, passion fruits, ginger, spices, bay leaf, medicinal plants and flowers.
9. Strengthen public-private partnership approach.
10. Streamline credit delivery system:-The existing institutional credit system is severely hampered due to certain institutional problems in the region. Therefore, strategy should be evolved to promote community-based collaterals for the effective credit delivery.
11. Revitalize rural institutions: Strengthening the rural institutions is yet another innovation suggested. Promoting high-value agriculture through contract farming, reviving the village institutions like Field Management Committees, Water Management Committees and village panchayats and councils is important. These institutions are valuable social capital and can act as agent of change.

12. Appropriate entrepreneurship development:-For efficient market system, entrepreneurship development is indispensable. Institutions like Krishi Vigyan Kendras, entrepreneurship development institutes such as Indian Institute of Entrepreneurship, Panchayati Raj Institution and other regional organizations can play a significant role in this venture.
13. Increase investment in agriculture R&D.
14. Strengthen regional database:-Inadequate database is a serious constraint in the NER; it needs to be streamlined for an effective analysis of the agricultural economy.

## Conclusion

It is envisioned that sincere attempts would revitalize agriculture in the NER, which will have the following characteristics-(a) Improved livelihood through enhanced productivity of rice and other high-value commodities (b) Expansion of region-specific traditional and new high-value crops for enhancing economic development (c) Global marketing of certified organic products of the region through strong public-private partnership in agriculture (c) Well-developed infrastructure facilities like roads and markets through interactive dialogues among the regional stakeholders in a synergistic manner (d) Strong integration of NER with the national economy for attaining high and inclusive growth; devoid of extreme inter-regional disparities. Wide disparities are obtained in the level of development among different states. Rich economic resources of the region cannot be exploited due to lack of proper infrastructure. It would not be wrong to say that the region's mass agitations and other forms of arm conflicts are the result long neglected attitude towards the region by India government. Communication and transport, health and sanitation, power production and supply, agricultural modernization, flood control, erosion and land slide, technical education, employment generation, industrialization, social unity, terrorism are problems of this region which are to be realized by both of governments to solve population and workers problems.

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