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RAPORTEURS' REPORTS

**Agricultural Development in the North-East:
Status, Assessment and Prospects**

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I

INTRODUCTION

The North-East, comprising the seven states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura, constitutes a land surface of 255,083 square kilometres of hills and plains where, as per 2001 census, a population of 38.5 million belonging to different ethnic and cultural groups remain inhabited.¹ While the hills account for about 70 per cent of area and accommodate about 30 per cent of population of the region, the plains constituting the remaining 30 per cent of area hold about 70 per cent of its population. Though the overall density of population for the region works out to be 151 persons per square kilometre, it varies from 13 in mountainous Arunachal Pradesh to 340 in Assam, 80 per cent of which is plain.

When India attained Independence, the economy of the region was largely agrarian. Though a modern industrial sector existed, it was geared to colonial exploitation of the region's rich natural resource base and had very little linkage with the livelihood of the local population. Partition-inflicted isolation of the region coupled with some other factors prevented industrialisation from taking off in the post-Independence period (Sarma, 1966; Goswami, 1981). Meanwhile the process of integration of 'excluded' and 'partially excluded' areas – mostly the hill tracts inhabited predominantly by tribal population - into the modern administrative system of independent India resulted in emergence of small states and sub-states called autonomous/district/regional councils within the region.² Establishment of new administrative machinery in these newly formed states induced a decade of service sector-led growth from mid - 1980s to mid - 1990s. But that growth momentum has since petered away. Consequently the region today has remained more agrarian than the rest of the country in the sense that proportion of population dependent on agriculture for livelihood here exceeds the proportion for the country as a whole. The experts and policy makers are hence unanimous that the region's development depends critically on the development of its agriculture. Though quite a few studies on specific aspects of agriculture in the North-East states are available, attempts to deal with the problems, constraints and prospects of agriculture of the region in a comprehensive and in-depth manner are not well known. In that context the choice of

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‘Agricultural Development in the North-East: Status, Assessment and Prospects’ as one of the themes for the 66th Conference of the Indian Society of Agricultural Economics is indeed a timely response to the need of the hour.

II

. THE BACKDROP

Due to the difference of topography, history and socio-economic organisation, the evolution of agrarian structures and agricultural practices has taken different routes and shapes in the hills and the plains of the region. Traditionally shifting cultivation or jhum has been the dominant form of agriculture in the hills. When land used to be abundant and jhum cycles used to be long, the system was environmentally sustainable and it ensured reasonable food security in most of the times to the people living in the hills (Ramakrishnan, 1992). But over time, with growing population pressure and reduced availability of land for shifting, jhum cycles have become progressively shorter, and consequently the productivity of the system has declined and environmental degradation in the form of loss of forest cover and top soil has become increasingly pronounced (Dasgupta, 1996). Statistics show that area under jhum has decreased over the years and a gradual process of nomadic tribal village communities settling down by adopting cultivation of wet rice in valleys, various different crops in the terraces and other practices has been taking place. Yet the area affected by shifting cultivation still remains significant and interventions to win the remaining shifting cultivators away to more sustainable ways of life need to be continued. The programmes and packages tried out as alternative to jhum cultivation has so far met with limited success (Borah, 1993). The techno-economic viability of these programmes and their socio-economic acceptability to jhum cultivators is an area for debate and deliberation. Most of these suggested alternatives to jhum being of the nature of commercial farming, development of market connectivity, marketing organisation and management of risk associated with their practice are crucial factors for their success.

Traditionally land in the hills used to be held communally by a tribe or a clan and the user rights to land used to be distributed to families according to the customary norms by the traditional authority, which may be the village council or the village chief. With the inroads of settled cultivation and urbanisation, the individual holdings started to emerge in many parts. But as these developments have not been followed up with cadastral survey and land settlement, evolution of land holding rights to full property rights has remained incomplete which limits the usefulness of land as collateral for financial transactions. While the transition to alternatives of jhum such as plantation and horticulture requires infusion of investment, lack of progress toward document based property right regime can hinder the inflow of investment especially in the form of bank credit. Moreover as the old order of community ownership has decayed, absence of legal and institutional reforms has resulted in growing intra-tribal inequality in access to land and consequent emergence of landlessness (Ray and

Kuri, 2001). Though several scholars have raised and analysed these issues, these have not found adequate attention and treatment from the policy makers.

In the plains, which consist of the Brahmaputra and the Barak valleys of Assam, the Imphal valley of Manipur and parts of Tripura, agriculture is settled in nature as it is in most parts of the country. Cropping pattern is dominated by foodgrains, mostly rice. Wheat, pulses and other cereals are of marginal importance. By all-India standards the average size of holding is small, but not smaller than in neighbouring West Bengal which has maintained a remarkable growth of crop production over the last two decades. Obviously the relatively lower yield of crops is due to other reasons such as inadequate penetration of productivity raising technology. Two obvious factors restraining the advancement of the high-yielding variety (HYV) seed-fertiliser technology are high flood-proneness and low irrigation capacity. In the *kharif* season flood-proneness on one hand renders shorter high-yielding paddy varieties vulnerable and on the other hand investing in costly inputs like fertilisers a risky proposition. In the dry season the use of the HYV seed-fertiliser package is limited by small extent of irrigation coverage. In the Imphal valley, which is largely free from floods and has a better irrigation coverage, the farmers apply inputs like fertilisers at much higher rate. Hence in contrast to the region as a whole the yield of rice in Manipur has been at levels comparable with the all-India levels.

Besides these physical constraints, there are several institutional factors holding back agriculture in the plains. In Assam plains tenancy is widespread, mostly in the form of share cropping, but it is almost completely informal. While at the national level incidence of tenancy has been declining, here, with the spread of education in farm families, a tendency to lease out land has been observed (Kuri, 2003). The utilisation rate of public sector irrigation projects, which often suffer from lack of funds for maintenance, is abysmally low. Absence of the practice of collection of water charges and of effective water users' organisations does not help matters. The private tubewell based irrigation systems are relatively better utilised. But holdings being typically of small size, even their capacity is not fully utilised. The water market has not come up extensively to facilitate better utilisation of tubewell based irrigation systems (Dutta and Bezbaruah, 2006). Following deployment of tubewells under RIDF and ARIASP (a World Bank-aided programme) in the 1990s there was a spurt in production of summer (boro) rice in the Brahmaputra Valley. But the failure to organise procurement resulted in a crash in the post-harvest price and subsequently the production boom could not be sustained. Though farmers have increasingly taken to growing of vegetables, cold storage capacity has not come up concomitantly. There is urgent need of boosting both public and private investment. But delivery of institutional credit is very thin.

Natural resource base wise, the farmers in the hills and the plains of the region can specialise in mutually complementary cropping patterns. In plain areas, which are better suited for the HYV seed-fertiliser technology, the intensive use of better inputs with improved water management can greatly enhance the production of foodgrains.

Hills, being endowed with agro-climatic conditions for horticulture and other high value crops, can exploit the potentials of such commercial crops. The challenge therefore is provision of the infrastructure and the necessary organisational support, and putting in place the right institutions for converting such a technical possibility to a socio-economic reality.

III

FINDINGS OF THE PAPERS

Of the thirty six papers received on the theme, twenty five have been recommended to be accepted for discussion in the conference. The papers have discussed a wide and diverse range of subjects relating to agriculture in the region and brought to fore interesting facts and pertinent issues to be deliberated upon. The findings of the papers are summarised and reviewed below under the following broad heads: (a) overall regional perspective (b) production growth, cropping pattern and diversification, (c) alternatives systems to precarious hill agriculture, (d) status and prospects of the livestock sector (e) problems in the flood plains and (f) institutional issues.

(A) Overall Regional Perspective

Papers by Anuva Saikia, K. K. Bagchi, Subhasis Mandal *et al.*, S. S. Kalamkar and N. Ram Singh look at the problem of agriculture in the region from an overall perspective. Bagchi brings out the relatively backward state of agriculture in the region by comparing the intensities of input use and crop yields in the North-East states with the all-India average levels and those in the neighbouring West Bengal. Saikia identifies the types of technological innovation required in the flood plains and in the hills for increasing productivity. Mandal *et al.* find that agriculture in the region has shown signs of coming out of the traditional low income generating mode. To sustain and expedite the process they call for suitable interventions and also emphasise on improving the efficiency of the delivery mechanism. Singh attempts to draw up a framework for planning for agricultural development in the region keeping in view differences in the conditions in the plains and the hills. But his suggestions such as, 'forest areas in Assam valley should be used for intensive farming' and that shifting cultivators should be settled in contract land in Assam, appear to be far too radical to be socio-politically implementable.

(B) Production Growth, Cropping Pattern and Diversification

While the kind of comparative analysis done by Bagchi and also by some other authors is useful for assessing the present status, the performance of the sector in the dynamic context is better summarised in the growth trends. Apart from the growth of production and productivity of individual crops, diversification of cropping pattern

towards high value crops has come to be recognised as an important source of agricultural growth. Jayabati Gangopadhyay and Ratan Kumar Ghosal find that the growth rates of crop production are varied across states and within states over the two decades of the 1980s and the 1990s. Specifically for Meghalaya, S.V. Hariharan and M. Anandan find that the state has remained agriculturally backward even in comparison to other North-East states in spite of the state registering a rise in its share in India's net domestic product. Using data for Assam for almost half a century from 1951 to 2000, Pravat Kumar Kuri shows that growth in crop production was led more by area expansion than by productivity growth. Cropping pattern has not only remained foodgrain centric but tended to be further concentrated rather than diversified. The author finds that within total area under rice, the share of summer rice has increased. He however stops short of recognising that this constitutes a positive development in the context of Assam. Increase in the share of summer rice means a shift in the area under rice to the flood free season which can contribute to reduce flood related instability in rice production. Calculating entropy indices, K.C. Borah and D.K. Chakraborty show that indeed for the whole of North-East there was actually reduced diversification or a trend towards concentration in the cropping pattern in the 1990s.

A crop that registered a significant growth in area and production in Assam in recent years is potato. However the yield of the crop in Assam is rather low, which, as Arun Pandit *et al.* find from their investigation in Barpeta district, is due to lack of use of good seeds and awareness among farmers about better practices. The authors further argue that enhancing access to irrigation and cold storage will be critical for sustaining and accelerating the growth of production of this crop in Assam. In contrast to potato, the area and production of sugarcane, a crop traditionally grown in the central and upper Brahmaputra Valley and the Barak Valley, declined for sometime and now seems to have stabilised at a lower level. While attributing the decline to closure of the sugar factories in the state, Ashwini Kumar Sharma and D.V. Yadav are of the opinion that Assam still has a large enough acreage under sugarcane to support factories. To revive the sugar industry in the state, they argue, a better strategy would be to support khandsari units which can thrive on sugarcane produced in 100 to 300 hectares.

In contrast to the broad regional tendency towards concentration rather than diversification of crops, developments in Tripura took a different course in the 1980s. Moley Kanti Roy *et al.* document impressive diversification of agriculture in Tripura towards commercial crops in that decade. However they find that the trend slowed down somewhat in the 1990s and in fact the area under rice in the jhum system increased after it had declined in the earlier decade. P.S. Birthal and others point out that the natural conditions in the region are conducive for diversification towards high value crops such as fruits, vegetables and spices. But they find that the poor state of infrastructure including road connectivity, irrigation, storage capacity and market linkage, has been preventing utilisation of such potential. At the farm household

level, availability of family labour and access to tube well irrigation has been identified as factors conducive for diversification.

(C) *Alternative Systems to Precarious Hill Agriculture*

In the hills of the North-East diversification to high value crops assumes added significance as the process can be an important component of any strategy for replacing of shifting cultivation by alternative systems of farming which are environmentally more sustainable and economically more rewarding. J.P. Misra and A.K. Mishra highlights that many of the ongoing agricultural practices in these areas are degrading natural resource at rates that are unsustainable. They list alternative practices which can be more resource conserving. Analysing the data pertaining to locations in Meghalaya, M. Thimmappa and N. Mahesh show that various alternative systems exist which are not only more natural resource conserving but also economically much more rewarding than shifting cultivation or jhuming. The paper by R.P. Singh *et al.* relating to similar context and location corroborates their findings.

For the twin goals of preventing the environment degrading consequences of shifting cultivation and providing farm families dependent on jhum with alternative livelihood, there are attempts to integrate these farming systems to form micro-level development plans with watersheds as the spatial units. Examining the impact of such programme in Manipur, S.B. Singh *et al.* find the outcome to be a mixed one. They find that there was little improvement of irrigation, and area under operation of Jhum actually increased though there was also a marginal expansion of area and production of rice. The beneficial effect of the programme manifested in the form of some growth of employment and income outside the farm, arising apparently from the public expenditure incurred in the implementation of the project. These benefits of course appear to be fairly widely shared as the authors have found a reduction in income inequality among the households. Lack of empowerment at the grassroots and administrative failures in implementation have been identified as the two main factors responsible for the failure of the programme in achieving its intended goals.

In all the above-mentioned papers the potentials of horticultural and other high value crops in the natural environment of the hills are well recognised. But conversion of such potentials to economic successes critically depends on the management of the post harvest chain of activities such as handling, storage, processing and marketing. Discussing the issue in the context of Arunachal Pradesh, S.S. Sangwan concludes that adequate private investments are unlikely to materialise for development of this chain. While enough private capital may not be locally available for investment in these activities, investments from outside are unlikely to flow in because of the variety of restrictions that are in operation in the state. In that context he argues that the government will have to take up a more active role in developing agro-processing activities. The need for streamlining the post-harvest chain remains elsewhere in the region too. C. Hazarika finds that the post-harvest loss

of output of fruits and vegetables in Assam ranges from 9 per cent for pineapple to 23 per cent for tomato.

Another activity which was initially promoted as an alternative to shifting cultivation in the hills of North-East was plantation of coffee and rubber. Apart from the above-discussed problems associated with commercial crops, plantation crops had the added complication of a longer gestation period (Borah, 1993). Reviewing the status of coffee development programme, K.B. Umesh *et al.* finds that the impact of the programme on improving income of the people has at best been marginal. But the authors are of the opinion that coffee still has a prospect in the North-East as an organic farming proposition if not so much as a jhum control measure.

(D) *Status and Prospects of the Livestock Sector*

In Indian agriculture, the livestock sector has assumed increasing importance in terms of its share in the agricultural gross domestic product. Analysing evidence on dairy cattle in Tripura, Pranjit Bhaumik *et al.* have demonstrated that there is much to gain from adopting cross breeding. However the missing links for adoption in the form of management of the higher risk involved in the new technology and capital for higher investment requirement need further analysis and discussion.

(E) *Problems in the Flood Plains*

As in the hills, in the flood-prone areas of the plains of the region also agriculture has its special problems. In a substantial part of the plains of Assam farmers have to cope with annual recurrence of floods. The agricultural activities in such areas have to be restricted to the flood free period of the year only. Apart from that the farmers in such areas operate under infrastructure-wise poorer conditions. K.C. Talukdar *et al.* find that the farmers in flood plains have taken to a cropping pattern which is different from the overall pattern in the plains. A crop of summer rice is usually backed up with a cash crop such as jute, oilseeds or onion. In the 1990s there was a decline in the area and production of oilseeds but a revival of area and production of jute. The authors attribute this to market forces. The problem of floods is more acute in char areas, the riverine sandy areas which remain submerged for prolonged period during the rainy season but get naturally fertile by alluvial silt when the water recedes. The population living in such conditions are usually very poor and the cultivators there operate with no infrastructure worth the name. Even access to market is usually extremely difficult. Not surprisingly therefore R. N. Barman and R. Das, from their study of two chars in Sonitpur district, find that adoption of the package of the recommended practices is very little among farmers. On the positive side they find that the farmers are getting together to address their problems by forming Field Management Committees in which they are being helped by NGOs.

(F) *Institutional Issues:*

Today an important institutional issue in the hill areas of the North-East is the changing structure of property rights, especially in land. From his study relating to Arunachal Pradesh, Deepak K. Misra relates the transition from community ownership of agricultural land to individually owned holdings to changes within the traditional system of cultivation in response to various constraints and opportunities. He cites evidence of rising inequality of holding in recent years and also reports appearance of a land lease market in which farmers from outside the state lease in land from tribal owners, notwithstanding restriction on the entrance of people from outside to the state. The author however does not spell out the kind of institutional reforms required for equitable and efficient use of land in the state.

The other paper in this segment, authored by G. Gopakumaran Nair, goes into the low penetration of institutional credit in the region. He finds both demand and supply side factors responsible for the present state of affairs. While insufficient bank branches and low level of NGO activity for extension of microfinance restrict deployment credit, poor infrastructure limits investment opportunities and thereby restricts credit absorption. The author suggests use of community-based organisations as banking correspondents and business facilitators for a greater outreach and organisation of contract farming for boosting agricultural activity and hence demand for institutional credit.

IV

QUESTIONS AND ISSUES FOR FURTHER DISCUSSION

In the papers placed for discussion, different dimensions of the problem of agricultural development in the North-East have been addressed and some specific issues requiring further discussion have been brought to fore. At the same time, some aspects falling under the broad theme have not received the amount of attention they deserve. Some of the issues that can be taken up for intensive discussion in the conference have been identified as the following.

1. As mentioned in the above discussion, techno-economically viable alternatives to precarious hill agriculture systems currently in practice have been identified. Moreover it has also been recognised that successful transition to these alternatives will critically depend on efficient organisation of the post-harvest chain of storage, processing and marketing. But how this can be brought about in practice requires further discussion. In particular the desirability and feasibility of contract farming is worth more detailed probing.

2. The issue of efficient organisation of the post harvest chain is pertinent also for inducing diversification of rice centric agriculture in the plains to crops like potato and vegetables which have shown some growth potential in recent years.

3. The factors restraining farmers rearing livestock from the adoption of productivity raising practices such as cross breeding need to be identified so that they can be addressed with appropriate policy measures.

4 Institutional barrier in land and labour markets in hill areas have reportedly created hurdles for credit flow and resulted in potentially inefficient covert tenancy. These barriers are unlikely to be removed in the short run. The relevant question for the present time therefore is how best to tackle these issues within the existing set-up.

5. Low penetration of technology and consequent slow growth of yield in the plains have been traced to weak rural infrastructure in general and poor road connectivity and paucity of irrigation in particular. Why these facilities have remained undeveloped in the North-East states in contrast to what has happened in similar physical conditions in neighbouring West Bengal deserves pondering. Is it merely an issue of governance and management or a deeper issue of institutional weakness and lack of enough grassroots empowerment?

6. Measures for addressing the problems of agriculture in the flood plains, such as enhancing access of farmers there to irrigation, storage and connectivity, deserve intensive discussion.

7. In the background note on this theme, reference has been made to emergence of farmers' peer organisations called Field Management Committees (FMCs) (locally known as Pathar Parichalana Samiti) which can potentially play an effective role in view of the typically small and fragmented holdings in Assam plains. Notwithstanding the success of a few FMCs, effective replication of the model has been very limited. A thorough review of the FMC movement has become necessary.

8. Facilitation of expansion of the nascent water market with effective regulation with an eye to sustainable exploitation of ground water resource is another issue deserving attention.

9. For growth in agricultural productivity in the longer run, the Approach Paper to the Eleventh Five Year Plan has called for prioritised research for extending the technological frontier (Government of India, 2006: p 20). In that broad context, review of research priorities for agriculture in the North-East region can be a worthwhile exercise.

NOTES

1. In the 1990s Sikkim was added to these seven states in the denotation of the North-East of the Central Government and the state was included in the North-Eastern Council. However Sikkim shares neither geographical contiguity nor a common historical-economic evolution with the other seven states. Since the original seven states, form a more compact spatial-economic block, the North-East region here is viewed as comprising these seven states only.

2. Under the British Raj hills of the region were classified as 'excluded' or 'partially excluded' areas depending on whether 'a tract of country was inhabited by a compact aboriginal population or the aboriginal population was mixed with other communities... Both these areas were excluded from the competence of the provincial and federal legislatures' (Agnihotri, 1996: p. 58) and the tribal communities living in such areas were allowed to continue with their traditional arrangements of self-governance.

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