

# Growth Performance of Agriculture and Allied Sectors in the North East India

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## Abstract missing

The North East India comprising of eight states namely Assam, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, Sikkim and Tripura has a total geographical area of 262180 km<sup>2</sup> which is about 8% of the country's total area with a population of about 45 million (2011 census). Agriculture and allied sector is the major source of livelihood for the majority of the workforce (around 50-70% across the states). By and large, the region is characterized by fragility, marginality, inaccessibility, cultural heterogeneity, ethnicity and rich in biodiversity. Rural population (82%) is agrarian and depends on agriculture and allied sector for livelihood in the absence of industries, except in the state of Assam. Around 56% of the area is under low altitude, 33% mid altitude and 11% under high altitude. The agricultural production system is characterized by and large CDR (Complex diverse risk prone) type, low cropping intensity, subsistence farming, undulating topography and faulty land use pattern. Under this low investment-low-income farming situation, probably horticulture sector has desirable attributes to accelerate the agricultural growth process in the region. Agriculture and allied sector particularly horticulture sector plays very important role towards sustainable rural livelihoods in all farming system in general and in rainfed and hilly farming system in particular like the north east region. Increase in production can be induced by research, development/extension and infrastructural facilities to take prudent public investment decision through understanding the relative importance of productivity enhancing factors (Thorat *et al.*, 2006). Viewing the importance and growth potential of the horticulture sector, planning commission has given special focus to this sector for its holistic development and considerable investment has been made during twelfth Five Year Plan (2012-13 to 2016-17). Primary objective of this plan investment is to increase area, production and productivity of various agricultural

and horticultural crops in all the north eastern states and to increase the livelihood of the resource poor farmers. Major impediments for attracting investment in the food grain sector is the lack of supply of seed and quality planting material, lack of or very high transportation cost and availability of market for these commodities. Low volume of marketable surplus and lack of assured supply of these high value products throughout the year, constraints the development of desired market dynamics in the region (Tripathi *et al.*, 2007). Lack of information, huge post harvest losses, lack of link road, poor market intelligence, high transport cost etc are the other constraints impede horticultural development (Mittal 2007). In view of these issues, the present paper is an attempt to analyse the performance of Agriculture and allied Sectors in the North East India (includes fruits, vegetables, spices, meat, milk, meat and egg) across the north eastern states.

## Data and Methodology

### *Sources of data*

Present article is based on information collected from various secondary sources as well as primary data collected from farm households. Relevant secondary information has been collected from National Horticulture Board (NHB) ([www.nhb.org.in](http://www.nhb.org.in)), *Indian Horticulture Database 2011-12*, Ministry of Agriculture, Govt. of India; *Agricultural Statistics at Glance 2004*, Govt. of India; Database on *National Account Statistics* of Central Statistical Organization (CSO); Spice Board of India, Govt. of India; Agricultural Processed and Export Development Agency (APEDA), Govt. of India, Database on Export of Agricultural and Processed Food Products; Annual Volume of Director General of Commerce, Intelligence and Services, Govt. of India; *Economic Survey – Various Issue*, Ministry of Finance, Govt. of India, *Handbook on Indian Statistics 2005*; *Basic Statistics of North East Region 2006*, North Eastern Financial Development Corporation (NEDFI data bank), North East Council, Shillong; Annual Report of Ministry of Development of North East Region – 2006-07, Govt. of India; Directorate of Horticulture, Govt. of Meghalaya 2006-07; and various technical bulletin on horticultural crops published by Division of Horticulture, ICAR Research Complex for NEH Region, Umiam, Meghalaya. Relevant primary data was collected from the selected farm household (sample size 160 households) from all seven districts of Meghalaya on pattern of expenditure and profitability from cultivation of various horticultural crops during 2011-12 through pre-tested survey schedule.

### **Analytical tools**

Tabular analysis including % change, maximum, minimum and average has been employed to generate useful interpretation from the data. Performance of agricultural and horticultural sectors has been estimated through Compound Growth Rates similar study.

## **Results and Discussion**

Food grain crops include production of cereal and pulses mainly. As like in the trend in all India level, the progress of production of food-grain in the north east region has been quite encouraging during the preceding decades. In fact, the % increase in total production of food-grain in the region has

Table 1. Performance Area, production and yield of major food grains

States	1990-91			2000-01			2010-11			% increase/ decrease of production in 2000-01 over 1990-91	% increase/ decrease of production in 2010-11 over 2000-01
	Area (Lakh ha.)	Prod (lakh MT)	Yield (Kg/ha)	Area (Lakh ha.)	Prod (lakh MT)	Yield (Kg/ha)	Area (Lakh ha.)	Prod (lakh MT)	Yield (Kg/ha)		
Arunachal	1.83	2.14	1173	1.84	2.03	1103	2.01	3.33	1663	-5.14	55
Assam	27.19	34.42	1226	28.88	41.67	1443	27.67	48.76	1763	21.06	17.04
Manipur	1.62	2.85	1763	1.64	3.78	2305	2.64	5.92	2244	32.63	49.75
Meghalaya	1.33	1.53	1147	1.31	2.03	1550	1.32	2.39	1802	32.68	10.64
Mizoram	0.59	0.77	1296	0.61	1.24	2033	0.53	0.66	1246	61.04	-47
Nagaland	1.70	1.97	1161	2.11	2.77	1313	2.98	5.68	1902	40.61	76.10
Sikkim	0.81	1.06	1313	0.76	1.03	1355	0.76	1.10	1447	30.86	6.87
Tripura	2.89	5.15	1783	2.54	5.23	2059	2.75	7.12	2587	1.55	36.1
NER	37.14	48.83	1315	39.69	59.78	1506	40.67	74.99	1832	22.42	23.62

Table 2. Performance of Rice production across the states

State/ UT	Production (' 000 Tonnes)											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Arunachal Pradesh	132.7	134.6	152.5	154.6	135	146.2	146.2	158.1	163.9	215.8	234	255
Assam	3998.5	3854	3738	3880	3470.7	3552.5	2916	3319	4008.5	4335.9	4736.6	4516.3
Manipur	381.7	387.3	332.6	381.2	435.9	386.1	386.1	406.2	397	319.9	521.7	591
Meghalaya	179	189	190.9	200.7	193.7	151.9	200.2	200	203.9	206.7	207	216.5
Mizoram	103.7	105.7	109.2	114.6	104.1	99.2	105.96	103.08	46	44.3	47.2	54.3
Nagaland	230	237.3	225	248	259.8	263.1	263.5	290.6	345.1	240.3	381.4	382.4
Sikkim	21.4	22.3	21.2	21.2	21.6	21.5	21.5	22.9	21.7	24.3	21	20.9
Tripura	513.4	587.4	602.3	516.6	545.1	552.9	620.5	624.6	627.1	640	702.5	718.3
NER	5560.4	5517.6	5371.7	5516.9	5165.9	5173.4	4659.96	5124.4	5813.2	6027.2	6851.4	6754.6

2010-11. During the period maize productivity increases from 1395 kg/ha in 2001-02 to 1647 kg/ha in 2010-2011.

been recorded to be around 23.62% increase during the period of 2000-01 to 2010-11 (Table 1). All the North –Eastern Hill states have shown positive growth rate in rice productivity (0.56%) leading to an increase in food-grain productivity of this region from 1506 kg/ha in 2000-01 to 1832 kg/ha in

As rice is the main staple food of this region and among the cereals rice occupies more than 70% area, with the increase in rice productivity, food grains productivity has also increased. During the period rice production has increased from 5560.4 thousand tonnes in 2000-01 to 6754.6 thousand tonnes in 2010-11.

**Table 3. Performance of Pulse production across the states**

Production ('000 Tonnes)

State/UT	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Arunachal Pradesh	6.8	7.1	7.7	7.4	6.8	8.3	8.3	8.3	9	9.7	9.1	10.5
Assam	62.3	65.7	60	64	61.4	54	59	63	64.5	64.6	70.1	68.55
Manipur	3.2	3.1	2.6	3.2	3	4.5	4.5	7.2	6.5	7.2	24.2	26.85
Meghalaya	3.5	3.5	3.3	3.5	3.6	3.6	2.9	3.3	3.9	3.5	3.7	3.72
Mizoram	3.9	3.9	5	4.5	4.8	7.9	5.8	2.7	3.6	6.5	6.1	5.32
Nagaland	21.1	29.7	28	33.5	25.2	39.7	45	41.6	39.7	34.7	36.4	34.66
Sikkim	5.2	5.6	6.6	6.8	6.6	6.1	6.1	11.6	11.8	12.9	11.9	5.87
Tripura	5.9	5.5	5.5	5.2	5.5	5.6	5.3	4.7	4.4	4.5	5.2	6
NER	111.9	124.1	118.7	128.1	116.9	129.7	136.9	142.4	143.4	143.6	166.7	161.47

Pulse production in North-East India is not encouraging. In North-East Chickpea, pigeon pea, green gram, black gram, lentil and field pea are important pulse crops which are contributing to the total production of pulses in the country. North East India soils are acidic in nature, and this region can contribute considerably to pulses production. Despite the scope that the phylogeny and particularly physiology of bacteria involved in these associations, as well as the relative agronomic importance of the different pulse production systems pulse production remained almost stagnant during last two years. During the period pulse production has increased from 111.9 thousand tonnes in 2000-01 to 166.7 thousand tonnes in 2010-2011.

### *Performance of Fruits*

The north eastern region is well known for production of a number of high value fruits across the various states, mainly, Banana, Citrus, and Pineapple, Papaya, Passion fruits, Strawberry and a number of underutilized fruit crops. All the north eastern states except Sikkim have recorded substantial increase in fruit production. Manipur, Nagaland and Arunachal Pradesh have recorded substantial increase in production. However, the real concern for the fruit crops in the north eastern states is the low productivity (7.69 tones/ha) which is far below than the national level (10 tones/ha). All the north eastern states except Tripura (16 tones/ha) and Assam has recorded higher productivity (12 tones/ha) than the national

level. Productivity of fruits in Meghalaya (9 tones/ha) is close to the national level. In fact, the congenial agro-climatic condition of the region expected to favour the higher productivity as being recorded so far. More concern is that the fruit productivity of the north eastern states has been either declining or remaining stagnant during the preceding decades. The major reasons for the low productivity might be first; almost all the fruit crops are cultivated in traditional method and lack commercial mode of production, second; lack adequate irrigation facilities and fruit production is purely based under rainfed condition; third, inorganic input use is almost nil; and finally; high degree of presence of diversity in fruit crops impede the productivity enhancement because in general diversity in crop germplasms is negatively correlated with the production improvement. Special focus is urgently needed to increase the productivity of fruit crops through supply of quality planting material, capacity building of the farmers and to facilitate adoption of improve fruit production method.

**Table 4. Production of fruits in 000' tonnes**

States	Year										
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Arunachal Pradesh	47.3	82.06	101.26	103.2	105.1	107.8	107.9	108	107.9	107.9	107.93
Assam	1335.1	1126.46	1181.1	1151	1352.1	1392.2	1410.8	1574.8	1575.5	1763.5	1851.7
Manipur	134	137.8	353.25	320.9	189.1	229.1	273.7	341.9	281.9	286.3	405.85
Meghalaya	186.9	153.3	199.61	199.6	231.7	234.3	235.2	294.8	294.8	241.9	300.42
Mizoram	63.4	55	42.4	42.5	66	179.7	219.6	123.1	328.3	211.5	275.71
Nagaland	302	65.89	48.82	48.9	19.6	31.9	53	151.3	223.7	151.3	347.68
Sikkim	10.3	11.2	11.52	12.2	13.2	13.4	13.9	15.7	18.5	25.8	22.24
Tripura	452.1	459.93	487.72	503.4	525.1	525.4	525.6	477.2	573.8	643.9	644.34
Total Ne	4533.1	4094.64	4429.68	4386.7	4507.9	4720.8	4847.7	5095.8	5414.4	3432.1	4157.1

***Performance of Vegetables***

The north eastern states are congenial for production of a number of important vegetables and the market value of these produce become significantly higher when produced during off-season. Major vegetables grown with substantial area in the region are Potato, Cabbage, Cauliflower, Tomato, Radish, and Brinjal. The progress in vegetable production has not gain the momentum as it has been observed for fruit production. Sikkim, Meghalaya and Nagaland have recorded substantial increase in area and production However, for other states the vegetables production has been observed to be either marginal increase or declining. The major factor affecting the vegetables production is the wide fluctuation in prices in local markets due to supply from neighboring states like West Bengal and also from within the

**Table 5. Production of Vegetables in 000' tonnes**

Prodn 000' tons

State/Ut's	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Arunachal	83.7	83.9	81.5	80.9	78.8	31.4	31.3	37.3	110	38.5	38.5	83.5
Assam	2693.1	2935.2	2845.34	2890.27	3987.4	4229.3	4449.5	4474.2	2916.7	4569.9	2925.5	3045.56
Manipur	67.4	66.1	71.9	86	86	67	91.8	113.7	174.3	221.8	236.5	200.32
Meghalaya	303.6	265.9	338.9	270.5	270.5	340.2	345.4	352.5	415.8	415.8	356.5	385.011
Mizoram	47.3	44.1	31.9	24	24	79.1	80.8	95.9	114.4	179.1	115.6	221.101
Nagaland	80	86	78.5	88.1	88.1	51.2	44.6	63.5	78.3	78.3	79.4	222.626
Sikkim	59.7	60	59.1	75	76.5	81.1	110	110	98	106	120.9	77.10
Tripura	328.1	353.2	360.3	352.2	373.4	373.7	415.9	423.5	294.7	446.9	532.3	552.55
Total	3662.9	3894.4	3867.44	3866.97	4984.7	5253	5569.3	5670.6	4202.2	6056.3	4405.2	4787.768

region, Assam. The vegetable production is mainly determined by the demand in major cities within the region where the population is high. Therefore, the vegetables production is primarily confined to the capital cities of the various north eastern states only. The opportunity of commercial vegetable production in rural areas is mainly impede by the poor road transportation facilities, which is essential to shift these perishable commodities in quickest possible time. However, in some pockets (like East Khasi Hills in Meghalaya) the use of inorganic inputs and pesticides has been observed to be very high and the productivity is also quite high and these farmers are cultivating vegetables in commercial mode. Therefore, there is distinct dichotomy in vegetable production in the various pockets of the region and marked difference is there in terms of productivity.

***Performance of Spices and Condiments***

The north eastern states have distinct advantage in production of a number of high value spices such as Ginger, Turmeric, Large Cardamom, Chillies, and Black Pepper etc. which have substantial demand in domestic as well as international market. The export potential of these crops area enormous and usually these crops are considered to be the major cash crops for the livelihood of the farmers. Among the spices and condiments Ginger is the most important crop irrespective of states in the north east region and accounted for more than half of the total areas under all spices and condiments, followed by Chilly and Turmeric. In Sikkim, Large Cardamom is the most important spice crop and accounted for around 80 per cent of the total area under spices and condiments. The value of these spices and condiments can substantially be increased when producing organically which have large export demand within the country as well as around the developed countries. The initiative and process of organic farming production has already started in this region through active participation of Spice Board, respective state government, various agencies (like APEDA) as well as research organization such as Indian Council of Agricultural Research (ICAR). But the region has to resolve several issues, like promotion of inspection and certification in compliance with the National Programme on Organic Production (NPOP)/ destination countries, maintaining quality standard, arranging proper packaging and distribution of these crops etc, to take forward the organic farming movement Nevertheless, spices and condiments have the highest potential to be grown organically from this region.

**Table 6. Production of Spices in 000’ tonnes (2011-12)**

Spices /crops		NER	India	Share in India's area and production
Pepper	A	5.15	117.59	4.379624
	P	2.62	51.962	5.042146
Ginger	A	59.391	158.8	37.39987
	P	370.46	756.88	48.94567



Chillies	A	43.71	793.59	5.507882
	P	39.68	1299.94	3.052449
Turmeric	A	28.55	193.57	14.74919
	P	77.89	969.5	8.034038
Garlic	A	10.55	247.15	4.268663
	P	69.061	1250.722	5.521691
Cardamom	A	25.96	99.14	26.18519
	P	4.98	18.07	27.55949
Coriander	A	28.33	547.42	5.175185
	P	49.56	527.4	9.397042

### *Performance of Livestock sectors*

Integrated farming system is mostly used in the hilly farming system where combination of crop, livestock and fishery farming through which the resources are well managed economically in order to have more and steady income. Pigs are the most common and preferred livestock species in all the districts of North-East. Almost 60% of households rear livestock mainly for nutritional, manure and additional income generation purpose. The production system in the villages is very traditional, mainly based on indigenous breeds.

**Table 7. Production (Thousand tonnes) performance of Allied Sectors in North-East India**

Items	2001-02	2010-11
Fish	223.41	302.99
Milk	1032	1209
Meat	117.22	235
Egg (Lakh nos.)	8305	10294

Fish production has increased from 223.41 thousand tonnes in 2001-02 to 302.99 thousand tonnes during 2010-11 with an annual compound growth rate (CGR) of 5.67% per annum in this region. Milk production has increased from 1032 thousand tonnes in 2001-02 to 1209 thousand tonnes during 2010-11 with an annual compound growth rate (CGR) of 5.67% per annum in this region. Meat production has increased from 117.22 thousand tonnes in 2001-02 to 235 thousand tonnes during 2010-11 with an annual compound growth rate (CGR) of 5.67% per annum in this region. Egg production has been increased from 8305 Lakh numbers in 2001-02 to 10294 Lakh numbers in 2010-11. During the last five years Egg production has increased with an annual compound growth rate (CGR) of 0.93% per annum in this region.

### ***Share of livestock in agricultural State Domestic Product (SDP)***

Over the years the share of agriculture and allied sector to the Gross Domestic Product (GDP) of India has started declining whereas the share of livestock sector to the agriculture GDP is increasing over the years but the trend is reverse in case of livestock sector in NE states. Growth in both sectors has varied widely across states within the NEH region. However, the inter-state growth in the livestock sector has been more equitable than the crop sector (*Kumar et al.*, 2007).

### ***Livestock and poultry population***

According to Livestock Census 2003, NEH region is home for 210.32 lakh livestock and 364.62 lakh poultry which accounts for 4.34 per cent of the total livestock and 7.46 per cent of poultry birds in India. Assam being the largest state have maximum (66% and 59%) of the total livestock and poultry resources of NE Regions and followed by Meghalaya (7% each) and Tripura (7% and 8%). Cattle population occupies 55 per cent of the total livestock of the NEH region. Goats and pig are the other major animals reared in the region with a share of 21 per cent and 18 per cent of the total livestock population.

Maximum of the cattle population is local cows, crossbreds (CB) being only 8 per cent which is much lower than the national average of 13%. The proportion of crossbred animals to total population in Nagaland (54%), Sikkim (50%) and Manipur (17%) is higher than the national average. Nagaland has 26 per cent of the total CB population of the NEH Region, after Assam (47%). The region is also home tract of 91% of Mithun population of India and mainly concentrated in Arunachal Pradesh. Assam, Nagaland and Meghalaya are the major pig rearing states of NEH region. Twenty eight per cent of total pig population of India is found in the region. In case of poultry, Assam accounts for 59.42 per cent of the total poultry population of NEH region, followed by Tripura (8.38%) and Manipur (8.07%).

In between 1997 and 2003, the population of cattle, buffalo and yak has declined in the region. Yak population has declined significantly (35%) in Arunachal Pradesh but the region has registered significant increase in sheep (51%) and pig (25%) population during the same period. The percentage increase in sheep, goat and CB population is higher in NEH region than the average national level increase. The region has experienced an increase of 13% in poultry population. Maximum growth in CB population can be observed in Nagaland (58%) and Sikkim (54%) but decline can be observed in most of NE states in case of local cows. Only in Mizoram and Meghalaya the population of buffalo increased during the period of 1997-2003. Sheep population has jumped by 102% and 100% in Assam and Nagaland during the same period. Maximum growth in goat population can be observed in Arunachal Pradesh and Sikkim.

The per capita milk availability is 100g/day during 2005-06 which is only 40% of the national average of 241 g/day and much lower than the Indian Council of Medical Research (ICMR) recommendation level of milk consumption of 220 g/day for a person. The per capita milk availability has increased from 7% during 1998-99 and 2005-06 while during the same period national average has improved by 13%. Arunachal Pradesh, Assam and Mizoram witnessed decline in per-capita availability of milk while in other states, it has increased.

In aggregate level in NEH states egg production is only 2% of the total egg production level in the country during 2005-06. Assam is the highest (55%) producer of egg in the region, followed by Tripura (11%) and Nagaland (9%). Though the country has witnessed a huge leap in egg production during the 1998-99 and 2005-06 but it has been much slower in NEH region. A significant decline of 78 per cent can be observed in egg production in Arunachal Pradesh whereas Nagaland has witnessed highest (81%) increase in egg production in the region during the same period.

In NEH states per capita egg availability is 34 in comparison to national average of 42. The per capita availability of eggs is higher in Nagaland (41) followed by Manipur (40) and Meghalaya (39). All the states registered varying degree of increase in per capita egg availability except Sikkim, Mizoram and Tripura.

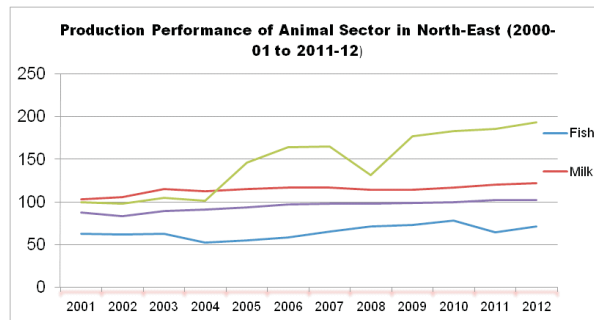
The meat production in recognized sector has also gone up by 63% in NEH region between the period of 2000-01 and 2005-06 which is significantly higher than the increase in all India level. Though all the states in the region have witnessed increase in meat production but the increase in Nagaland and Assam is significant which may be due to their large livestock base and people's preference for meat.

### ***Productivity of animals***

The average productivity of crossbred cattle in milk in NEH region is 6.37 litre per day which is slightly lower than the national average of 6.44 litre per day. The productivity of crossbreds in Meghalaya, Mizoram and Manipur is more than the national average. But the local cows which constitute more than 90% of the total cattle population of the region are low yielder with productivity of 1.25 litre of milk per day only. Amongst the NE states, in Nagaland the productivity of local cows is highest (2.2 litre/day) whereas in Assam, which is the major milk producing state in NEH region, it is lowest (0.92 litre per day). Perusal of productivity of milk in case of buffalo shows that the buffaloes in the region are very low yielder in comparison to other parts of India. Similarly, the productivity of deshi and improved fowl is much lower than the national average. Deshi fowls of Arunachal Pradesh and Sikkim produces more than the rest of India whereas improved fowls of Sikkim, Nagaland and Arunachal Pradesh produces more than the rest of India.

### ***Feed and fodder***

The quantum, the type and quality of feed resources also vary across the states in the region.. Crop residues and byproducts are used as animal feed in the region. The feed resources used by the farmers of the region are not balanced in terms of protein and energy to meet the nutrient requirement of the animal leading to poor performance. The gap between demand and availability is major challenge to the animal rears in the hills, especially in summer. The area under fodder is very minimal in NEH region as like whole India. Farmers mainly depend on common property resources, viz., permanent pastures and grazing lands, wastelands, fallows etc. for grazing of animals. However, these resources have been dwindling over time (Kumar *et al.*, 2007). Gap in availability of concentrate is around 75% (Gupta, 2007).



**Figure 1. Production Performance of Animal Sector in North-East (Production of Fish (000' tons), Meat (000' tons), Milk (ten thousand tons), Egg (Crore Number))**

Milch bovines assume a greater significant role in the livelihoods of people of North-East. Growth Rate of Milk and Fish 1% (approximately), Meat 3.31% and Egg (0.5%). However, to meet the deficiencies -57.63%, -76.34%, -85.48%, -56.71% in fish, milk, eggs and meat respectively, scientific rearing of animals should be followed to increase production and productivity.

**Factors Affecting Development of Horticulture in the North East Region**

In spite of having substantial growth potential of the agriculture and allied sectors, the north east region so far has failed to develop as desirable. The reasons are manifold including both supplies as well as demand side. In supply side, the low volume of production surplus due to small holdings and traditional methods of cultivation practices results into low volume of marketable surplus, which is the major impediment for growth of desirable market dynamics in the region. In demand side, extremely low population density and the low purchasing power particularly in the rural areas constrained the expansion of demand for these high value commodities. High cost of transportation as well as lack of cold chain infrastructure (which is essential to transport these perishable commodities) forced the producers either to sell at low prices or increases the extent of post harvest losses which acts as dis-incentives for the producers. Key factors influencing the development of horticultural sector is described in the following section.

**Conclusion**

The region is a food grain deficit region therefore, judicious utilization and conservation of natural resources is the approach in the farming system concurrent policy and research back up to increase production and productivity. The investment in agriculture and allied sectors in the north eastern states has started paying dividend but at a slower rate in comparison with its underlying potential. Development of fruit sector has been observed to be encouraging but same is not true for the growth in vegetable production. And the spices production have been growing at a slow rate or remaining almost unchanged across the various states of the region. Farming system requires integrated or holistic approach in sustaining productivity of hill agriculture. Providing loan at a special rate of interest (may be 4%) can be attempted to address this issue. Though there are different constraints in the rearing of crossbreeds,

sheep, goat, pig and fishery breeds but they are proving good scope for the landless and marginal farmers in improving their socio- economic condition as being prolific and low input requirement. Pig rearing is very promising in this region which is helping farmers in diversifying their income source. The main thrust of livelihood 3Fs, food, fodder and fuel can be ensured through following integrated farming approach. An integrated community based approach is best to bring about incremental changes in the production system to improve productivity and efficiency.

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