

## **PRESENT SCENARIO OF HORTICULTURE IN ASSAM**

Assam has a wide variety of climate and soils on which a large number of horticultural crops such as fruits, vegetables, spices, potato and other tropical tuber crops, mushroom, ornamental, medicinal and aromatic plants, plantation crops, cashew and betel vine are grown. After attaining independence in 1947, major emphasis by the Government was laid on achieving self-sufficiency in food production especially in cereals. After the Green Revolution in the sixties, it however, became clear that horticulture for which the Indian topography and agro climate are well-suited, is an ideal method of achieving sustainability of small holdings. However, the need for diversification was acknowledged by Government of India only in mid-eighties to make agriculture more profitable, through efficient land use; create skilful employment for rural masses and women, and optimize the utilization of natural resources (soil, water and environment ). Past efforts have been rewarding in terms of increased production and productivity of horticultural crops, the country have emerged as the largest producer of coconut, areca nut, cashew and tea, and second largest producer of fruits and vegetables in the world. The changing scenario encourages private investment. Resultantly, horticulture has moved from rural confinement to commercial venture attracting youth since it has proved to be intellectually –satisfying and economically- rewarding.



Diversification in horticulture is a best option as there are several advantages of growing horticultural crops. These crops:

- Produce higher biomass than field crops per unit area resulting in efficient utilization of natural resources
- These crops are highly remunerative for replacing subsistence farming and thus alleviate poverty level in rain fed, dry land, hilly, arid agro

eco-systems.

- have potential for development of wastelands through planned strategies,
- need comparatively less water than food crops,
- provide higher employment opportunity,
- are important for nutritional security,
- are environment - friendly
- are high-value crops with high potential of value-addition,
- have high potential for foreign exchange earnings, and
- make higher contribution to GDP, i.e. 24.5% from 8.5% area under these crops

Horticulture sector in Assam deals with the following crops and activities.

(1)Fruits (2) Vegetables (3) Spices (4) Floriculture (5) Potato (6) Onion (7) Medicinal & Aromatics (7) Mushroom cultivation and (8) Fruits & Vegetables preservation and processing. Besides it deals with Bee keeping, Food processing, Micro irrigation and post harvest management including Cold-chain development.

Major Fruit crops of the state – Banana, Pine apple, papaya, Assam lemon, Orange, Guava, Litchi, Jack fruit and Mango. Major tuber crops grown Potato, Sweet Potato and Tapioca, among Spices – Chilli, Turmeric, Ginger, Onion, Coriander, Garlic, Black pepper with different types of Rabi and Kharif Vegetables are grown in Assam. Flowers like Marigold, Gerbera, Anthurium, Lilium,



Tube rose etc. high value crops like Straw berry, Passion fruit and Apple ber are gradually becoming popular for cultivation because of higher return. In addition Mushroom production is being considered as profitable farming activities for unemployed youths.

Horticulture & FP Department, Assam is encouraging the farmers for area expansion of high value commercial fruits, Vegetables, Spices, Floricultural crops through different Central sector and State sector ongoing schemes, with an objective of increasing the production as well as productivity of these crops. The Department is giving emphasis on production and availability of quality planting materials of the commercial horticultural crops; so that higher production with better quality becomes possible, for which establishment of nurseries are encouraged under HMNEH and accreditation are advocated.

The Department is also performing the following activities in addition to crop cultivation –

➤ **Community Canning and Training** –

Almost each district have the Community Canning and Training centers where trainings are conducted on preservation and processing of locally produced fruits and vegetables; so that farmers, farm woman, entrepreneurs get ideas for preserving the produces for off time use and also for business purposes.

➤ **Planting Material Production** –

Good quality planting materials of different Fruit crops are produced at Byrnihat Nursery, that are made available for farmers at minimum prices. For the purpose of planting material production, the Nursery has the capacity of producing 25000 nos. Litchi layers, 25000 nos. Leaf bud cutting of Assam lemon, 5000nos. layers of Round lemon, 5000nos. budded Mousambi, 5000nos. budded Orange, 1000nos. Mango graft, 6000nos. Guava layers/graft. Presently the following stock of Planting materials are available in the nursery for sale –

Sl	Crop	Nos.
1	Litchi layers	1700nos.
2	Leaf bud cutting of Assam lemon	10000nos.

3	Round lemon layers	500nos.
4	Budded Mousambi	150nos
5	Budded Orange	150nos
6	Mango graft	Nil
7	Guava layer/ graft	2000nos.

Moreover, automated V type nursery established at Ulubari are producing quality planting materials of vegetables at proper planting time, irrespective of unfavorable weather condition ; so that farmers may get disease free healthy and quality planting materials at minimum cost for cultivation.

➤ **Mushroom Production -**

As Mushroom farming is becoming popular as income generating activity, Department is encouraging growers with assistance under HMNEH and RKVY schemes. Moreover to ensure supply of quality spawn to the growers, Department has started a spawn production unit at Directorate; growers are also trained for improve mushroom production system.

➤ **Honey Bee rearing -**

Rearing of Honey bee colonies not only gives profitable returns to the rearers but also increases production of horticultural as well as field crops to a remarkable level because of enhanced pollination. To popularize the rearing of Honey bee colonies, Department is advancing assistance to the reares under HMNEH and National Bee Board schemes.

➤ **Coconut Development Board Scheme -**

Department is implementing LODP scheme of Coconut Development Board to assist the coconut growers as per the board's norms.

➤ **Promotion of Farmer Producers' Organization(FPO)**

Since Govt. of India is emphasizing on commodity wise cluster development under different central Govt. schemes; Department is rendering assistance for commodity wise FPO formation under RKVY and MOVCD schemes.

➤ **Organic farming**

Because of increased demand for organic farm produces, farmers are to be equipped with ideas and technologies for adoption and certification of organic farming so as to get additional economic benefit of their produces. Department is encouraging organic production of Horticultural as well as field crops through MOVCD and HMNEH schemes.

➤ **Micro irrigation in Horticulture**

Irrigation is one of the major input for getting better yield from crops raised, that too if scientifically arranged may lead to economic use of water with better harvest. Assistance for different irrigation system in horticulture is arranged from schemes like Prime Minister Krishi Sinchayee Yojana – Micro irrigation for Horticulture crops (Per drop More Crop) is being implemented in the state.

➤ **Farmers” Training**

Farmers should get the recent information and technologies for adoption in their field to reap better harvest of their crops grown in commercial way. To meet up the need , Department organizes farmers’ training at different locations of the state and also arrange exposure visit to progressive locations out side state under HMNEH, RKVY and other schemes.

➤ **Floriculture crops**

Since farming of Flowers assures better return over other crops, cultivation of Marigold, Tuberose, Anthurium , Gerbera, Rose, Orchids etc. are encouraged with schematic assistance under HMNEH, RKVY, CM Floriculture Mission etc.

➤ **Centre of Excellence**

Department has established 2nos. of Centre of Excellence(**CoE**), one for Vegetables and flowers at Khetri, and other for Citrus at Bamunigaon.

Improved and protected cultivation of the crops are carried out at the CoEs ; so that farmers may be



acquainted with the adequate technologies for adopting at farmers' field.

➤ **Post harvest, Processing and Marketing of Horticultural produces**

For better post harvest handling, processing and marketing of Horticultural produces specially the perishables (Fruits & Vegetables) , Department is providing assistances for setting up of Packing house, Ripening Chamber, Cold storage, Onion Storage structures, Refer Van, Vending Cart, Retail out let etc. under schemes like HMNEH

**HORTICULTURE SCENARIO PRIOR 2001:**

Till 2000-01, the sectoral growth of Horticulture in Assam was not significant as evident from lower production and productivity of Major Horticulture crops. Base line data on Horticulture collected during 2000-01 from the field level are as follows:

<b>Crops</b>	<b>Area lakh Ha</b>	<b>Production lakh MT</b>	<b>Productivity Kg/Ha</b>
Fruits	1.09	12.41	11384
Vegetables	1.95	24.71	12672
Spices	0.81	1.52	1879

**HORTICULTURE SCENARIO DURING 2000-01 TO 2015-16:**

Considering the low production and productivity of Horticulture Crops, despite high potentiality, the Central Government had given special thrust on Horticulture as priority sector.

The introduction of Centrally sponsored Scheme under Horticulture Mission by Govt. of India during 2001-02 and Rashtriya Krishi Vikash Yojana (RKVY) during 2008-09 has shown remarkable progress both in area, production & Productivity of Horticulture Crops and also the income of small and marginal farmer's.

**PERFORMANCE AFTER 16 YEARS OF INTERVENTION (2000-01 TO 2016-17):.**

**NEW INTIATIVES IN HORTICULTURE SECTOR DURING 2000-01 TO 2016-17**

- Setting up of Directorate of Horticulture & Food Processing during 2008-09.
- Horticulture crop area increased by almost 50%.
- Production increased by 100%.

- Productivity increased by 40%.
- Establishment Tissue Culture Laboratory in private sector at Silchar.
- Establishment of Centre of Excellence for Vegetables& Flowers at Khetri and for Citrus at Bamunigaon (Boko)
- Automated V Type Nursery at Ulubari

**PERFORMANCE AFTER 16 YEARS OF INTERVENTION: 2000-01 TO 2016-17**

Due to initiative of the present State Govt. for all-round development in Horticulture Sector, a remarkable changes in respect of area, production & productivity of Horticulture crops has been achieved.

(Area in Lakh Hactre, Production in Lakh MT, Productivity in Kg/Ha)

Crops	Area/Produ ction /Productivy	2000- 01	2016-17	Performance after 16 years
Fruits	Area	1.09	1.44	Increased by 0.35 Lakh Ha
	Production	12.41	20.56	Increased by 8.15Lakh MT
	Productivity	11384	14246	Increased by 2862 Kg/Ha
Vegetables	Area	1.95	2.79	Increased by 0.84 Lakh Ha
	Production	24.71	51.63	Increased by 26.92Lakh MT
	Productivity	12672	18457	Increased by 5785Lakh Kg/Ha
Spices	Area	0.81	1.08	Increased by 0.27 Lakh Ha
	Production	1.52	3.57	Increased by 2.05Lakh MT
	Productivity	1879	3293	Increased by 1414Lakh Kg/Ha
Flowers	Area	NA	0.0503	
	Production	NA	Loose – 0.33546 Cut -8400 Lakh Nos.	
	Productivity	NA	-	

\* Data for the year 2016-17 not yet finalized

With adoption of modern Horticultural practices and cultivation of horticultural crops along with the supply of elite planting materials/ quality seeds and providing horticultural techniques the productivity level during 2015-16 has been increased by 14246kg/ha over 11384 kg/ ha in case of Fruits, 18457 over 11384 kg/ ha in case of Vegetables and 3293 Kg/Ha over 1879 kg/ ha in case of Spices.

- Adoption of Organic vegetables cultivation through HMNEH and MOVCD
- Roof Top Gardening system in Urban area for awareness on Health hazard to avoid use of chemicals. 2000 number of Roof Top Garden structure have been supplied during 2013-14 to the city dwellers of greater Guwahati for Organic cultivation.
- Massive programme has been undertaken for supply of elite planting materials to farmers field through establishment of Tissue Culture Lab and “V Type” nursery .
- Establishment of Centre of Excellence at Khetri, Setting up of pvt. sector Tissue culture laboratory at Silchar and public sector Tissue Culture Laboratory at Khanapara are some of the major achievement during 2013-14 and 2014-15.

**Schemes under Horticulture are as follows:**

1. Horticulture Mission for North East & Himalayan Region(HMNEH) under MIDH
2. Rastriya Krishi Vikash Yojana – Horticulture (RKVY - Hort)
3. Micro- Irrigation under PMKSY (PDMC)
4. Mission Organic Value Chain Dev for North Eastern region(MOVCD NER)
5. State Plan schemes

**STRATEGIC INTERVENTIONS TO BE ADOPTED FOR DEVELOPMENT OF HORTICULTURE**

- Large scale generation of quality planting material of elite cultivars with major focus on establishment of mother / Scion Blocks of improved varieties with provision for good quality root stock banks. At least 2-3 Scion/ Root stocks Block in each district.



- Horizontal expansion of Horticulture through crop intensification and diversification.



- Focus on Tree canopy management, rejuvenation of old/ senile orchards for enhancing

productivity, profitability and sustainability.

- High density planting for getting more return from unit area.
- Special emphasis more focuses on protected cultivation of high value crops including off season crops.
- Focus on covering more area under F1 hybrids.
- Promotion of export oriented varieties of Ginger, Turmeric and chilies specially Bhot jalakia.
- More Thrust on Horticulture mechanization to enhance efficiency of labour.
- More focus creation of infrastructure facilities for post harvest management, Value addition and marketing support

### **Critical Gap**

- Insufficiency of quality planting materials particularly in case of vegetatively propagated fruits crops like khasi mandarin, guava, mango etc.
- Absence of standard scion bank in case of khasi mandarin as well as root stock most of the citrus orchard suffering from the problem of citrus die-back due to occurrence of Triestza virus.
- Shortage of micro-propagation and plant disease diagnostic facility like TC lab, Diagnostic lab i.e. Plant health clinic etc.
- Lack of sufficient accredited nursery in the state for generation of quality planting materials due to absence of proper mother as well as rootstock blocks.

- Scattered nature of cultivation due to fragmented land holding by small and marginal farmers hindering the way of commercial horticulture.
- Unfavorable climatic condition for most of the horticultural crops characterized by excess and uneven rainfall.
- Poor socio-economic condition of the farmers for availing hi tech options like micro irrigation, protected cultivation etc.
- Huge post harvest loss to the tune of 40% due to poor cold chain infrastructure.
- Unorganized marketing system hampering coverage of cultivation cost by farmers.

### **Innovation**

- Strengthening the horticultural nursery production system through establishment of more public and private sector nurseries.
- Accelerated emphasis on skill development for nursery practices to create more trained manpower to help growth of nursery sector.
- Effort on organizing the nursery sector for better management and acquisition of accreditation.
- Setting up State of the Art “V-Type” automated nursery for large scale production of elite seedlings/ planting materials and rootstocks.
- HRD through “Centre of Excellence” on citrus khasi mandarin via exposure of farmers to Hi Tech options for transfer of technology of disease free citrus orchard management.
- Strengthening of post harvest management of horticultural perishables through provisioning of means of transportation.
- Creation of infrastructural facilities for setting up complete cold chain for horticultural commodities.
- Establishment of functional linkage with agricultural marketing for effective disposal of horticultural produce.

### **POST HARVEST MANAGEMENT:**

It is estimated that post harvest losses in Horticulture sector is 25-35%. PHL is significantly high in case of Vegetables particularly Kharif vegetables as well as Rabi vegetables. To minimize the PHL attempt have been made to popularize the Food Processing sector and the Cold -chain development. Few small & medium Food

processing units have been set up in different districts. Small Food processing units set up by individual or by the SHGs are unable to compete in the market. However, medium size units are performing well,. There is provision to support for setting up of Food processing units under MIDH where in the cost of project should be up to Rs 800.00 lakh. Regarding Cold-chain development the process of setting up of Cold storages are upcoming. Besides cold-storage Establishment of Pack house at farm gate, Supply of refrigerated Van, Integrated Cold-Chain infrastructure and Mega Food park of the State are some of achievement to minimize the PHL