

## Tour Report of Horticulture Commissioner on his visit to Nagaland State during 21<sup>st</sup> - 23<sup>rd</sup> June, 2011

A visit to Nagaland State was undertaken from 21<sup>st</sup> to 23<sup>rd</sup> June, 2011 to review the performance and achievements of HMNEH since its inception (2001-02). The items reviewed includes (i) review of progress under HMNEH, (ii) status of availability of quality planting material for area expansion programme during 2011-12 and (iii) visits to farmers fields, etc.

### Nagaland

The State is strategically located where all types of agro-climatic conditions suitable for cultivation of tropical, sub-tropical and temperate crops are available. Although, the geography of the land does not provide a good scope for cultivation of cereal crops on economical scale except in some flat lands and valleys here and there, it provides an added advantage for the development of horticulture. So far, the people of the State have not been able to tap the available natural resources and potentialities and therefore, an attempt to improve the State's economy lies in the systemic planning to harness manpower resources to tap the available natural resources and potentialities properly.

The land holding and the land use pattern in the State under different categories are presented below: -

S.No	Categories	Area (ha.)	Percent
1.	Forest land owned by Government	1,00,420	6.05
2.	Forest land owned by villagers	7,52,012	45.36
3.	Area under jhum (Shifting cultivation)	6,10,350	36.81
4.	Permanent field area (Irrigated)	58,000	3.50
5.	Area under Town, Village, Roads, etc.	1,12,118	6.77
6.	Area under permanent Orchards	25,000	1.51
<b>Total Geographical Area</b>		<b>16,57,900</b>	<b>100.00</b>

### Total number and area of operational holdings:

S.No.	Size	Number	Percent
1.	Marginal holding (Below 1.0 ha.)	13298	9.40
2.	Small holding (1.0 to 2.0 ha.)	21403	15.12
3.	Semi-medium holding (2.0 to 4.0 ha.)	26203	18.52
4.	Medium holding (4.0 to 10.0 ha.)	47191	33.35
5.	Large size (10.0 & above)	33411	23.60
<b>Total</b>		<b>141506</b>	<b>100.00</b>

### Advantage of Horticulture Development:

- Congenial for growing various horticultural crops.
- Horticultural crops give higher production per unit area as compared to other agronomic crops.
- Good monsoon rain, rich & fertile soil and varied climatic conditions which are suitable for growing of various horticultural crops.
- Nagaland is the Centre of Origin for many horticultural crops like mango, citrus, orchids, medicinal & aromatic plants and many other plantation crops.

### The main crops identified are:

<b>Fruits</b>	:	Passion fruits, Citrus, Pineapple, Banana, Mango, Temperate fruits, etc.
<b>Vegetables</b>	:	Tomato, Cauliflower, Cabbage, Onion, Peas, Potato, Chow-chow, Cucurbits, etc.
<b>Flowers</b>	:	Roses, Anthurium, Lillium, Alstromerea, Orchids, Gerbera.
<b>Spices</b>	:	Ginger, Turmeric, Cardamom, Blackpepper, Chillies.
<b>MAP</b>	:	Patchouli, Aloe Vera, Lemongrass.
<b>Plantation Crops</b>	:	Cashewnut and Coconut.

### Impact of HMNEH in Nagaland

- An additional area of 25108 ha and 3156 ha has been brought under fruit and vegetable crops respectively.
- Hi-tech greenhouse infrastructure has been laid for production of flowers and vegetables.
- Marketing opportunities outside the State have been created for the local farmers to realise better price for their produce.
- More and more unemployed youth and women are getting involved in horticulture profession.
- A large number of self-help groups have been formed to promote horticulture development in the State.
- Crops of cardamom, black pepper, aloe vera, tazus baccata and lemongrass have been introduced on commercial scale in the State.

### **Thrust Areas**

- Increasing production and productivity of fruits, vegetables, spices etc.
- Improvement of cropping pattern with permanent cultivation of fruit crops with suitable inter-cropping.
- Cluster area approach.
- Transfer of technology through HRD programmes.
- Popularizing commercial cultivation of flowers.
- Selection of high value and low volume crop for each region.
- Establishment of PHM/ market infrastructure.
- Strengthening of nursery infrastructure for production of quality planting material.

### **New Initiatives**

- Establishment of Vegetable Villages in all the Districts.
- Construction of Wayside Portable Horticulture Stalls.
- Application of Modified Indigenous Bamboo Drip Irrigation System.
- Indigenous SAWO Drier for Cardamom, Naga Chilly, etc.

### **Major constraints**

- Insufficient planting material of fruit crops.
- Lack of standard rootstocks for citrus.
- Shortage of mother blocks of fruit crops.
- Huge gap between demand and supply of planting material.
- Lack of trained manpower for improved production system.

### **Field visit**

<b>Areas</b>	<b>Crop</b>	<b>Planting material</b>
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Sendenyu	Mandarin	Seedling
Phaerima	Mango and Pineapple	Grafted mango
Zubza	Mango and Citrus	Grafted
Tseipema	Mango, Pineapple and Citrus	Grafted
Kohima	Flower project	

Visited above areas and interacted with fruit growers. It was observed that most of the citrus orchards were developed by seedlings which come in fruiting after seven years. I gathered after discussing with the farmers that they are not aware of grafting techniques, canopy management, rejuvenation, etc. These farmers are interested in using quality planting material but it is in short supply. A live demonstration was given by me to local farmers on grafting operation and canopy management and also explained in detail, steps involved in rejuvenation technology. There is a plenty of area under old and senile orchards in the states which need to be managed properly.



A comprehensive discussion was held with Parliamentary Secretary, Chief Secretary, APC, Secretary & Commissioner, Director and other officials with a special reference to development of horticulture including use of quality planting material in place of seedling under area expansion, strengthening of nursery, clonal selection of mandarin from existing seedlings progeny, canopy management, rejuvenation, protected cultivation, etc.



### Action points

- State Government should strengthen its nursery infrastructure for mass multiplication of quality planting material for fruits especially mandarin, sweet orange, mango, guava, etc. To begin with, establish mother blocks of important fruits for its mass propagation. The required material may be obtained from ICAR and SAUs systems.
- Restrict the “area expansion programme” to the availability of quality planting material in the state. The saving may be diverted for (i) establishment of mother blocks of improved varieties of focused fruit crops for propagation purposes, (ii) plantation of sweet orange using grafted plants alone to be procured from NRC, Nagpur or any other certified nurseries, (iii) rejuvenation / canopy management.
- For mass multiplication of mandarin, it was suggested to use rootstocks i.e. trifoliolate, rough lemon and rangpur lime.

- There are a large number of old and senile orchards in the State. Efforts should be made to manage these orchards properly through techniques of rejuvenation/ canopy management (in new plantation) to enhance its productivity.
- Considering that the state is in short supply of quality planting material, it was advised to mass multiply the requisite planting material through grafting alone. In no case, the seedling plants should be permitted.

### Availability of quality planting material (2011-12)

Fruit crops	Area (Ha)	Requirement (Nos)	Availability of quality planting materials			
			Govt. Nursery	SAUs/ICAR	Regd. Nursery	GAP
Citrus	810	486000	50000	-	150000	286000
Passion fruit	300	240000	100000	-	50000	90000
Pineapple	663	13260000	-	-	13260000	-
Banana	400	480000	20000	-	400000	60000
Kiwi	113	68000	8000	-	-	60000
Mango	100	50000	-	-	-	50000
Guava	50	25000	-	-	-	25000
Apple	150	75000	-	-	-	75000
<b>Total</b>	<b>2586</b>	<b>14684000</b>	<b>178000</b>	<b>-</b>	<b>13860000</b>	<b>824000</b>

Visited Central Institute of Horticulture (CIH) along with State Horticulture Director-cum-Mission Director (HTM-NE). Discussed with Director, CIH about ongoing activities and future strategies for overall development of horticulture. During discussion with CIH, Director and other working staffs, I stressed upon adaptation of new technologies (improved propagation techniques, high density planting, canopy management, micro irrigation, fertigation, protected cultivation, mulching for *in situ* moisture conservation, etc.) so that the productivity and quality of horticultural produce could be improved. Further, I visited fruit plantation site i.e. banana, cashew, guava, mango and citrus. I displayed personally how tree canopy is maintained by topping and hedging. This I did to show how tree architecture is maintained since inception of tree plantation for sustainable production. Even all the sequential steps for canopy management were described in the field itself.



Detailed information regarding maintenance of scion block and production of scion shoots for mass multiplication of quality planting material was also given.

I exhorted the Director, CIH to conduct training programmes for trainers & farmers on regular basis. In this regard, I suggested to provide model demonstration plot in the farmer's fields so that technologies could reach the end –users. I provided a number of literatures and counseled them to get them published in folder forms / extension bulletins for the benefit of the officers as well as farmers.



### Highlights of achievements

- The Institute has now various infrastructures in place such as an administrative office building (made of treated bamboos), a laboratory, store rooms, 14 polyhouses, drip irrigation system water reservoir, security hut, CC road, well fenced campus, electrical sub-station, DG set back up, street lighting all over the campus, etc.
- The Institute has taken initiative in facilitating market linkages for the farmers of NER. Various exposure trips, exhibitions, capacity building programmes, buyers' sellers' meets and workshops on supply chain management to help farmers market their produce.
- One of the key mandates of CIH is production of quality planting material and the institute have established about 10 ha area under different fruit blocks as mother plants for scion collection to be used in propagation activities. Rootstock block has been established for citrus virus free mother block of different varieties of citrus has been established in green house for mass multiplication of virus free planting material.



### Major Constraints

- Since, the inception of CIH in the year 2006, the emoluments of CIH staff has remained the same.
- The weed growth in the plantation area is very rapid, especially during rainy season, and only 14 labours are engaged for an area of about 12 ha plantation which is very unequal. Hence, more labour needs to be outsourced for proper maintenance of plantation.