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In Conversation with People of Meghalaya

Horticulture

IBDLP

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Horticulture In Meghalaya

Source - Department of Horticulture

The geographic and climatic conditions of Meghalaya provide an excellent opportunity for growing different types of horticultural crops including fruits, vegetables, spices, plantation crops, medicinal and aromatic plants. All over the State, tropical, sub-tropical and temperate fruits such as Pineapple, Banana, Mandarin, Orange Lemon, Guava, Pear, Plum etc., are grown. The varied agro climatic zones in the state provide a favourable environment for growing large variety of indigenous as well as exotic vegetables. Tuber and root crops such as potato, sweet potato and tapioca, spices such as turmeric, ginger, chillies, etc., Plantation crops such as tea, cashew nut, coconut, areca nut and other spice crops like black pepper are also grown abundantly in the state. The State has also made a successful foray into high value low volume crops, of which strawberry is a shining example. High value vegetables like broccoli and colored capsicum have also been introduced in the state and doing exceptionally well. Crops like rose, lilium, anthuriums, carnations, etc., have also made a mark.

The total cropped area can be classified broadly into agriculture and horticulture crops. Area under horticulture crops increased at a rapid rate during the last decade. The share of horticulture crops increased from 42.2 per cent in 1999-2000 to 53.3 per cent in 2010-11. East Khasi Hills are almost completely under horticulture crops with a share of 81.1 per cent. West Khasi Hills and South Garo Hills also have the dominance of horticulture with 67.0 per cent of the cropped area. Jaintia Hills and Ri-Bhoi have 55.0 per cent of the area under horticulture crops. Only West Garo Hills and East Garo Hills have relatively lower concentration of horticultural crops with major part of area under agricultural crops. However, West Garo Hills have been showing rapid changes towards horticulture. The share of horticulture increased from 17.7 per cent to 38.7 per cent during the last ten years.

Area under horticulture grew at a very rapid rate of 5.81 per cent per annum, while area under traditional crops declined at 0.25 per cent per annum. Though all the districts, except Ri-Bhoi, have been experiencing rapid growth of horticulture, West Garo Hills, South Garo Hills and Jaintia Hills showed exceptional growth performance of 7.0 per cent to 11.0 per cent per annum. The growth rate in other districts is in the range of 3.5 per cent to 4.3 per cent. Thus, the State is tilting towards Horticulture.

The State is organic by tradition. Use of chemical based fertilisers and pesticides is not as rampant as it is in the other states. This gives a tremendous advantage for a state like Meghalaya to become organic completely. The State Government through the Directorate of Horticulture is devising a strategy to promote organic horticulture farming in a big way. It has already initiated organic certification for selective crops like pineapple, ginger, turmeric, cashew nut, vegetables and tea by delineating specific organic zones. Use of organic manures like vermin-compost and bio-fertilisers like Rhizobium and Azolla are also being promoted.

The Directorate of Horticulture is also popularising the use of green house technology, poly-houses, drip and micro irrigation system, water harvesting structures, fertigation and soil-less culture. Dissemination of Technologies for Post harvest management, value addition, processing and marketing is being carried out across the state. The Directorate is also planning to set up Cold Chains and Refer Vans based supply system to create better market access for the produce. Horti Hubs are also being set up in each district of the State. These will function on a hub and spoke model within an area of 10-15 Kms radius. These Horti Hubs will help in creating homogeneous horticulture clusters and provide the requisite handholding for the farmers.

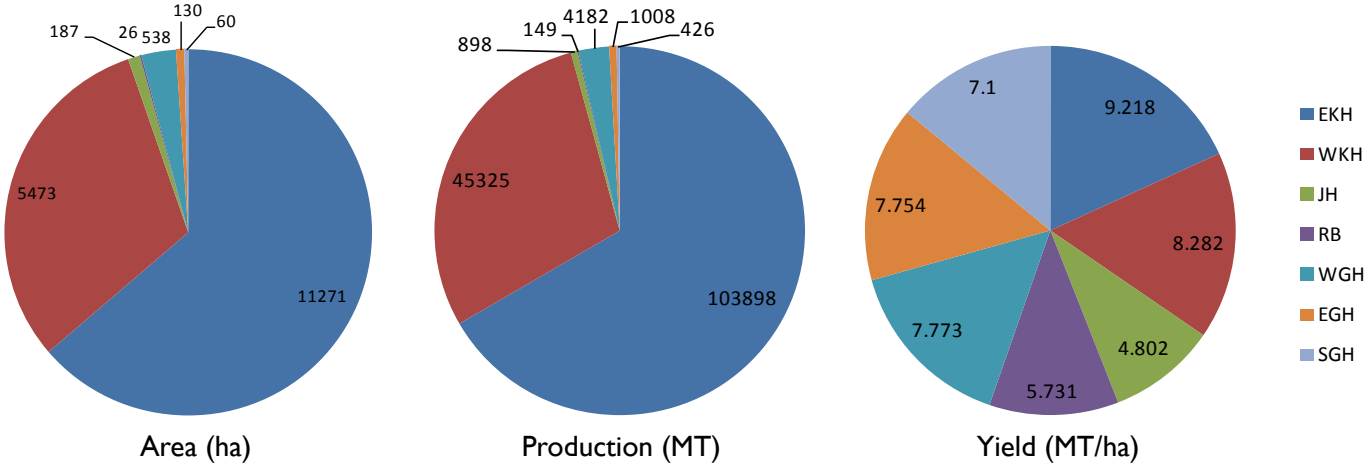
Horticulture Production in Meghalaya

Performance of Potato

Potato is an important crop in the State with an area of about 17.6 thousand hectares. The crop is highly concentrated East Khasi Hills and West Khasi Hills. The former has an area of 11.3 thousand hectares (63.7 per cent) and the latter 5.5 (30.9 per cent) respectively. Thus, 94.6 per cent of the area under potato is concentrated in these two districts. West Garo Hills has a small extent of about 500 hectares. The State produced 1.56 lakh MT of potato during 2010-11.

Area under potato declined slightly at an annual rate of 0.31 per cent per annum and production has grown at an annual rate of 1.06 per cent per annum. But the growth is unstable and the growth rate is not statistically significant. The yield of potato is only 8.8 MT per hectare which is less than half of the yield at the national level.

Area, Production and Yield of Potato by Districts

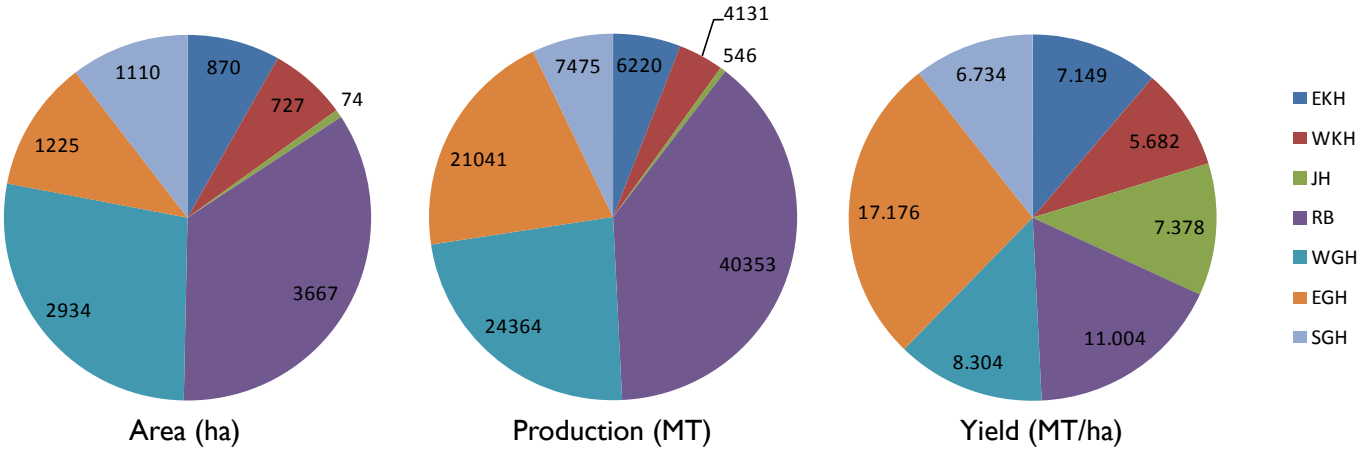


Performance of Pineapple

Pineapple is an important crop among fruits with an area of 10.6 thousand hectares which is distributed equally in the two regions of the State. Ri-Bhoi is the major pineapple growing district with an area of 3667 hectares accounting for 34.6 per cent followed by West Garo Hills with 27.7 per cent. Pineapple acts as a significant crop in the border areas of East Khasi Hills and West Khasi Hills as well.

The State produced 1.04 lakh MT of pineapple in 2010-11 with an average yield of 9.8 MT per hectare. It is difficult to compare the yield across districts as the new areas will not give yield immediately. However, West Khasi Hills shows a poor performance with a yield of 5.6 MT per hectare. Production of pineapple increased at an annual rate of 2.45 per cent per annum for which both, area and yield, contributed equally.

Area, Production and Yield of Pineapple by Districts

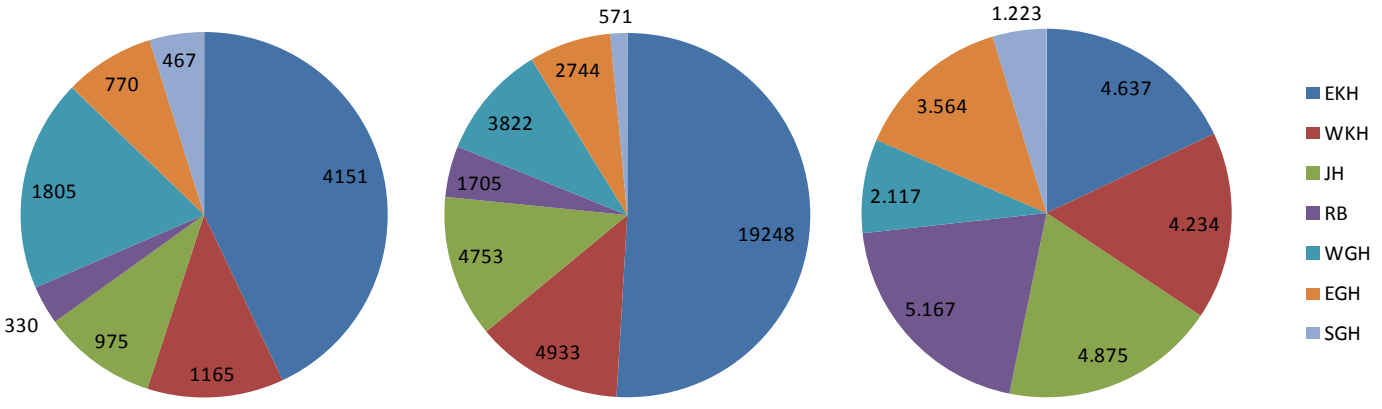


Area (ha) Production (MT) Yield (MT/ha)

Performance of Citrus

Citrus fruits are grown in an area of about 10 thousand hectares, of which 43.0 per cent is in East Khasi Hills and 18.7 per cent in West Garo Hills. The crop is important in all the districts, but Ri-Bhoi and South Garo Hills have a small share as compared to other five districts. The State produced 37.8 thousand MT of citrus fruits during 2010-11. Though Garo Hills accounts for 31.5 per cent of the area under citrus fruits, it contributes only 18.9 per cent towards production. Khasi Mandarin is the most famous variety in the State and East Khasi Hills is popular for its quality. While area increased at an annual rate of 2.21 per cent per annum, production increased only at 1.43 per cent, indicating decline in productivity.

Area, Production and Yield of Citrus by Districts

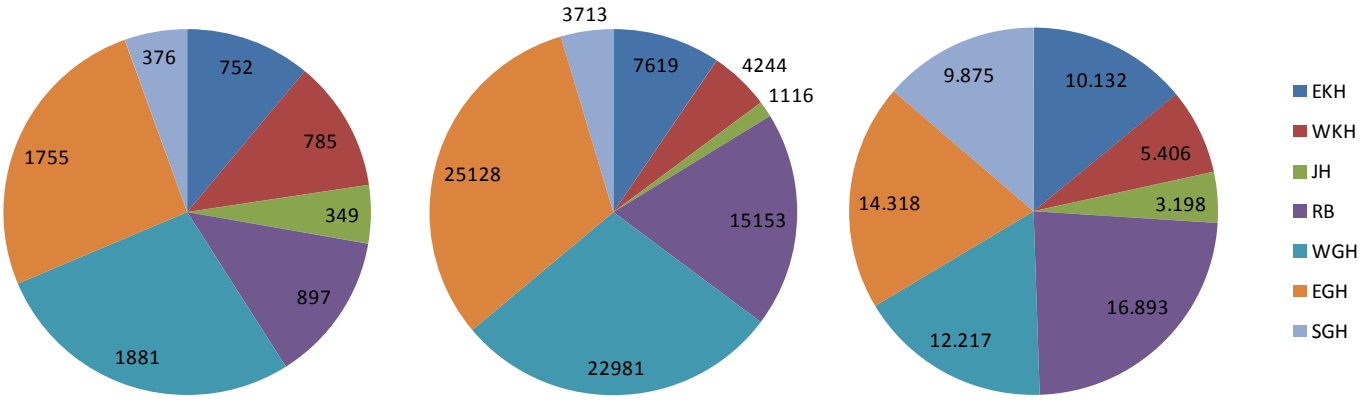


Area (ha) Production (MT) Yield (MT/ha)

Performance of Banana

Banana is also important among the fruits grown in this State with an area of 6800 hectares. It is highly concentrated in West Garo Hills and East Garo Hills. These two districts account for about 55.0 per cent of the area in the State. The crop is relatively less important in Jaintia Hills and South Garo Hills, which together account for only 10.0 per cent of the area. Yield of banana is the highest in Ri-Bhoi at 16.8 MT per hectare. East Garo Hills and West Garo Hills occupy next positions with a yield of 14.3 MT and 12.2 MT per hectare. While area under the crop grew at 2.64 per cent, production grew only at 2.19 per cent per annum.

Area, Production and Yield of Banana by Districts

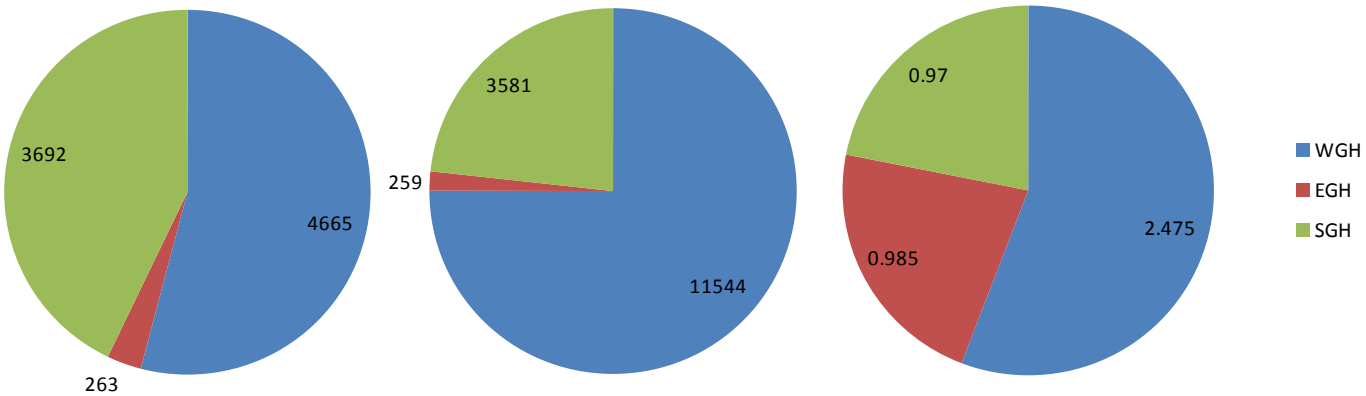


Area (ha) Production (MT) Yield (MT/ha)

Performance of Plantation Crops

Cashew, areca nut and tea are the major plantation crops in the State. Cashew is grown in 8.6 thousand hectares and it is confined to Garo Hills, especially West Garo Hills and East Garo Hills. The State produces 15.4 MT of cashew, of which 75.0 per cent is from West Garo Hills. There is a wide variation in the yield across the three districts, the highest yield being in West Garo Hills at 2.5 MT per hectare. Yield in the other two districts is only 1.8 MT per hectare. This high variation in yield is partly due to age of the plantations and partly due to poor management. There is a need to rejuvenate the old plantations. Since South Garo Hills have a huge extent of area under cashew and form a significant proportion (10.0 per cent) in the net area sown in the State, there is an urgent need to study the situation of the crop in the district and find out the reasons for low productivity. Cashew production has grown at the highest rate of 10.0 per cent per annum and 70 per cent of this growth is contributed by increase in productivity. Planting with new varieties might be the reason for high productivity.

Area, Production and Yield of Cashew Nut by Districts

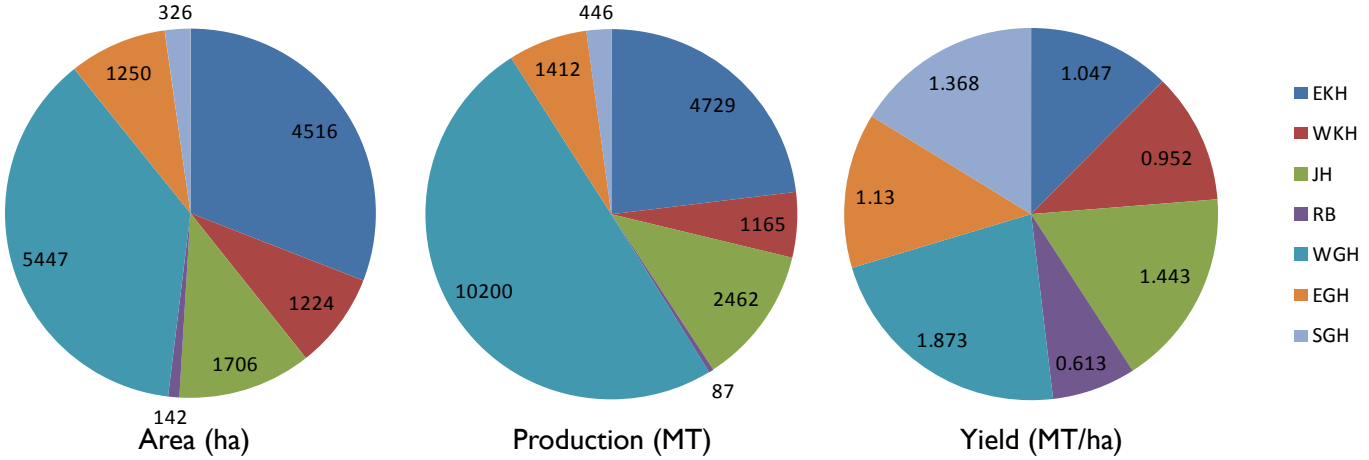


Area (ha) Production (MT) Yield (MT/ha)

Performance of Areca Nut

Areca nut plays an important role in the horticulture sector of the State. With an area of 14.6 thousand hectares, the crop occupies second place in the horticulture sector of the State. The crop is ideal for using as a mixed crop along with creepers. The crop is concentrated in West Garo Hills and East Khasi Hills, which together account for 68.2 per cent of the total area under the crop. Ri-Bhoi and South Garo Hills have a very small extent of area under the crop. Production of areca nut increased at a high rate of 4.0 per cent per annum and 70.0 per cent of this growth is contributed by expansion of area and the remaining 30.0 per cent by growth in yield.

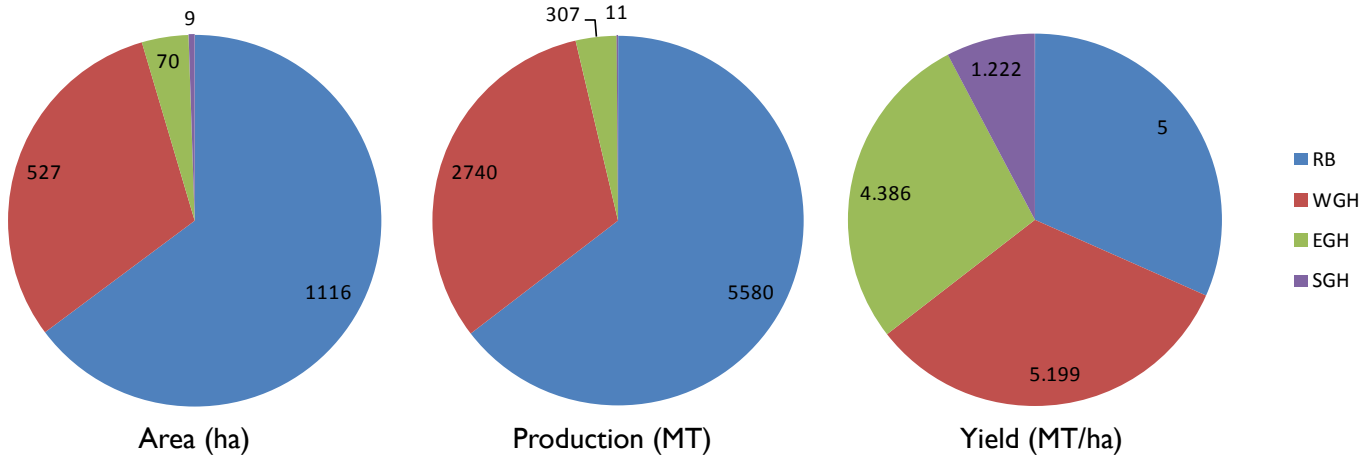
Area, Production and Yield of Areca nut by Districts



Performance of Tea

Tea is an important crop with an area of 1722 hectares and two thirds of it is concentrated in Ri-Bhoi. West Garo Hills occupies second position with a share of 30.6 per cent. As it is highly perishable, processing needs to be taken up immediately after plucking. Hence, cluster approach has to be followed for this crop. The State produced 8638 MT of tea during 2010-11. Area under tea plantation grew at an annual rate of 12.29 per cent and production at 8.20 per cent per annum. The yield of the crop declined at an annual rate of 4.1 per cent, the reasons for which are being studied. Being a labour intensive crop, neglect in the management due to labour scarcity will result in lower yield.

Area, Production and Yield of Tea by Districts

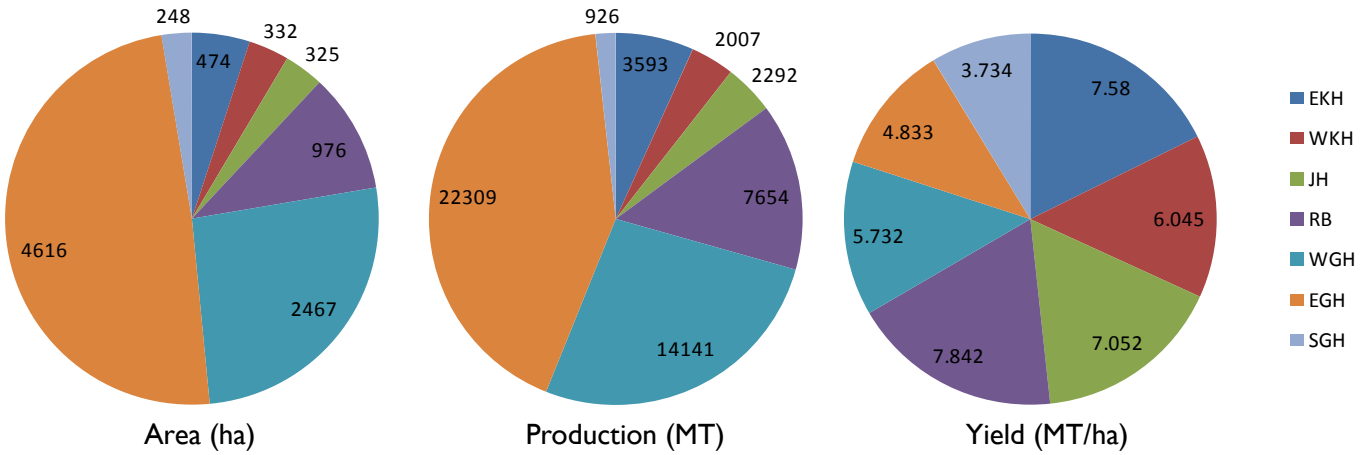


Performance of Spices

Ginger, turmeric and black pepper are the major spices cultivated in the State, of which ginger is the most essential with an area of 9.4 thousand hectares. The crop is highly concentrated in East Garo Hills and West Garo Hills districts with 48.9 per cent and 26.1 per cent respectively. Ri-Bhoi comes next with 10.3 per cent of the area. However, the crop is also grown in other districts. This crop is linked to shifting or jhum cultivation. As the crop exhausts soil nutrients heavily, farmers abandon the land after cultivating for one season, instead of providing nutrients for the soil.

The State produced 52.9 thousand MT of ginger during 2010-11, of which about 70.0 per cent is contributed by two districts. Ri-Bhoi district has highest yield at 7.8 MT per hectare. West Garo Hills and East Garo Hills have a low yield of 5.7 MT and 4.8 MT respectively. There is a need to study the reasons for this low yield of the crop in Garo Hills. The production of ginger grew at an annual rate of 1.79 per cent per annum and most of the growth (93.3 per cent) is contributed by area expansion and yield played a negligible role.

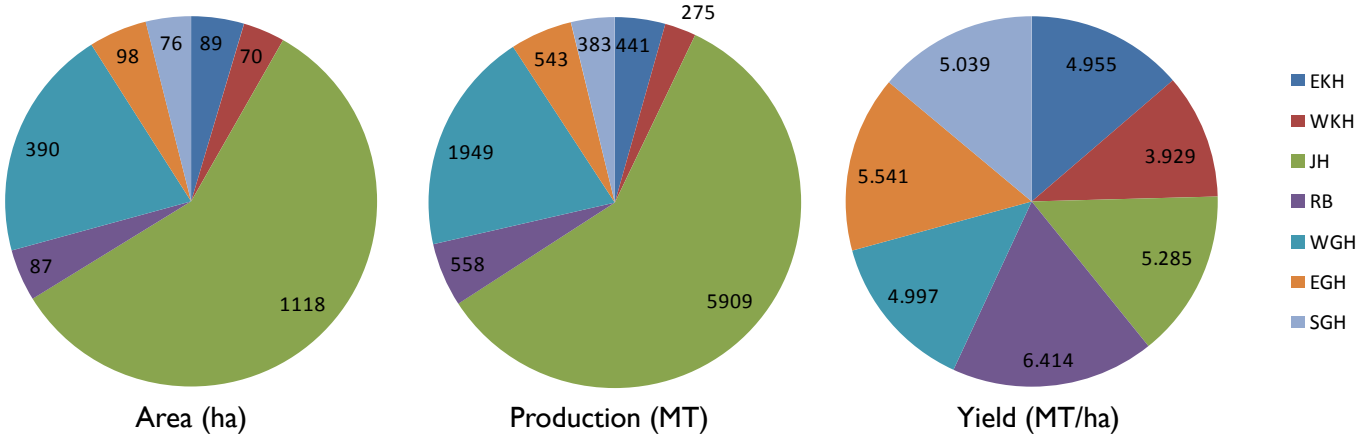
Area, Production and Yield of Ginger by Districts



Performance of Turmeric

Jaintia Hills is known for the production of high quality turmeric with curcumin content of 7.5 per cent. Though, the crop is grown in an extent of only 1928 hectares, Jaintia Hills accounts for 58.0 per cent and West Garo Hills 20.2 per cent. Each of the other five districts has about 4.0 per cent of the area. The State produces 10 thousand MT of turmeric, of which 72.0 per cent is contributed by Khasi-Jaintia Hills and 28.0 per cent by Garo Hills. Production grew at an annual rate of 2.47 per cent and area at 3.14 per cent per annum, indicating that yield declined at 0.67 per cent per annum, the reasons for which have to be examined.

Area, Production and Yield of Turmeric by Districts

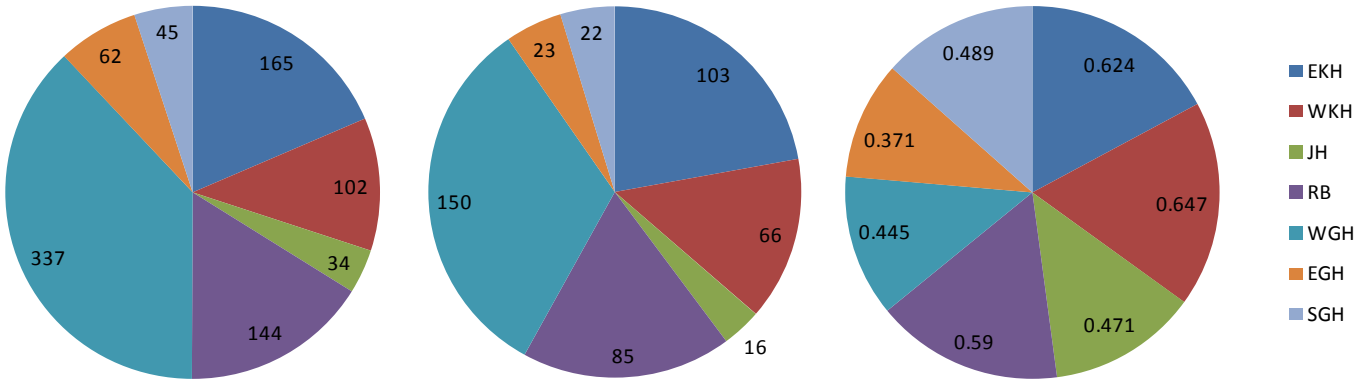


Area (ha) Production (MT) Yield (MT/ha)

Performance of Black Pepper

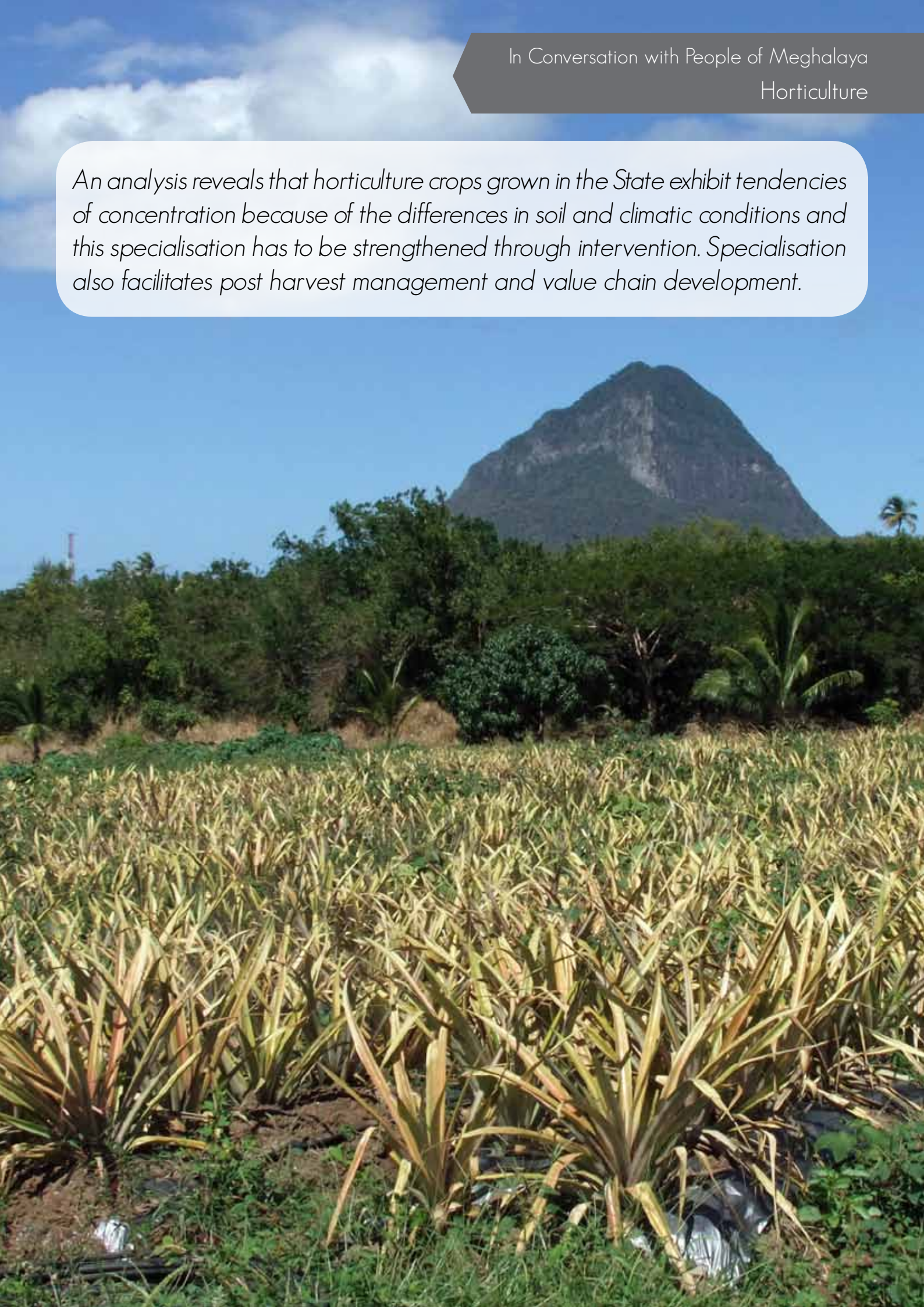
Black pepper is grown in all the districts, but West Garo Hills occupies top position with one-third of the area as well as production. Total area under the crop is about 900 hectares and production about 500 MT. Most of the production (about 90.0 per cent) comes from four districts namely, West Garo Hills, East Khasi Hills, Ri-Bhoi and West Khasi Hills. The performance of the crop in the last ten years is found to be quite poor. Though area under the crop grew at 0.29 per cent, production declined at an annual rate of 2.02 per cent per annum, indicating that yield of the crop declined at an annual rate of 2.31 per cent per annum. There is a need to look into the problem and identify the reasons for this poor performance.

Area, Production and Yield of Black Pepper by Districts



Area (ha) Production (MT) Yield (MT/ha)

An analysis reveals that horticulture crops grown in the State exhibit tendencies of concentration because of the differences in soil and climatic conditions and this specialisation has to be strengthened through intervention. Specialisation also facilitates post harvest management and value chain development.



Land Availability For Horticulture Development

Source - Department of Horticulture

Land Use Pattern

Forest is the major category of land use in the State with an extent of 9.46 lakh hectares, accounting for 42.5 per cent of the reporting area, but most of this area is under the control of the District Autonomous Councils. Only reserved forest, which is limited to only 1.13 lakh hectares, is under the control of Forest Department. It accounts for only 11.91 per cent of the total forest area in the State. A small extent of the remaining area (1234 hectares) is classified as protected forest. The remaining area of 8.32 lakh hectares falls under unclassified category. Thus, 88.1 per cent of the forest area is under the control of the community.

The Garo Hills region has higher proportion of forest area than the Khasi-Jaintia Hills. While 39.2 per cent of the reported area is under forest in Khasi – Jaintia region, the proportion is as high as 48.1 per cent in the Garo region. In the Garo region, South Garo Hills tops with 54.2 per cent of the land under forest. There is not much of a variation in the share of forest area in the four districts of Khasi-Jaintia region. However, Ri-Bhoi district has the lowest share of 35.7 per cent.

Land available for cultivation is low and cropping intensity is also low. Net area sown is only 12.7 per cent of the reporting area and cropping intensity is only 118 per cent. Thus, the State has only 2.83 lakh hectares of net area and 3.36 lakh hectares of gross cropped area. It is interesting to note that the extent of fallow land is very close to the extent of net area sown at 2.13 lakh hectares. The three districts in the Garo Hills have a relatively higher share of net area sown in the geographical area. West Garo Hills has 25.7 per cent of the land under cultivation and it is exactly double the State average. This district accounts for only a third of the net sown area in the State. Ri-Bhoi and South Garo Hills possess the lowest extent of net area at 22 and 25 thousand hectares respectively. The remaining four districts have an area of 30 to 38 thousand hectares.

A very important land resource in the State is in the form of cultivable waste, which can be used for productive purposes. Its extent is 3.94 lakh hectares, which is higher than the net area sown by more than one lakh hectares and it accounts for 17.7 per cent of the geographical area. Its extent is very small in Garo Hills (1802 per cent of the total). Jaintia Hills has the largest extent of cultivable waste (1.16 lakh ha) followed by West Khasi Hills (1.07 lakh ha).

Fallow land is also the largest in the State accounting for 9.6 per cent of the geographical area. Out of the total fallow land of 2.13 lakh ha, West Khasi Hills and West Garo Hills have more than half of the land. South Garo Hills also has a high share of fallow land in the total geographical area.

Land suitable for conversion into productive use is available in three forms namely, fallow land, cultivable waste and land under miscellaneous tree crops and groves. The total land available under the three categories comes 7.69 lakh hectares, which farms 34.6 per cent of the geographical area. In three districts namely, West Khasi Hills, Jaintia Hills and Ri-Bhoi this proportion is more than 40.0 per cent of the reporting area.

Table : Land Available for Horticulture Development

District	*Miscellaneous Tree Crops*	*Cultivable Waste*	*Fallow Land*	*Available for Development*	*Horticulture Area*	*Net Area Sown*
East Khasi Hills	17161	48110	10681	75952	36986	37795
West Khasi Hills	42562	101170	65858	209590	24205	30097
Jaintia Hills	17003	116040	26721	159764	20274	36091
Ri-Bhoi	29194	56983	15052	101229	13671	22232
West Garo Hills	24506	15274	45737	85517	46259	94492
East Garo Hills	25195	36952	25195	87342	18568	36921
South Garo Hills	6171	19516	24048	49735	20222	25311
State	*161792*	*394045*	*213292*	*769129*	*179227*	*282939*

Trends in Cropped Area

The State has been experiencing an increase in cropped area, which has gone up from 2.76 lakh hectares in 1999-2000 to 3.36 lakh hectares in 2010-11. The average annual growth rate is found to be 2.57 per cent per annum. The growth performance varies widely across districts. The growth rate is very high in West Garo Hills and South Garo Hills districts at 3.90 per cent and 3.71 per cent per annum respectively. Ri-Bhoi and East Garo Hills have not shown any increase in cropped area. The remaining three districts showed moderate growth ranging between 1.41 per cent and 2.87 per cent. West Garo Hills is the most important district for agriculture because this district alone accounts for 35.5 per cent (1.20 lakh hectares) of the cropped area in the State.

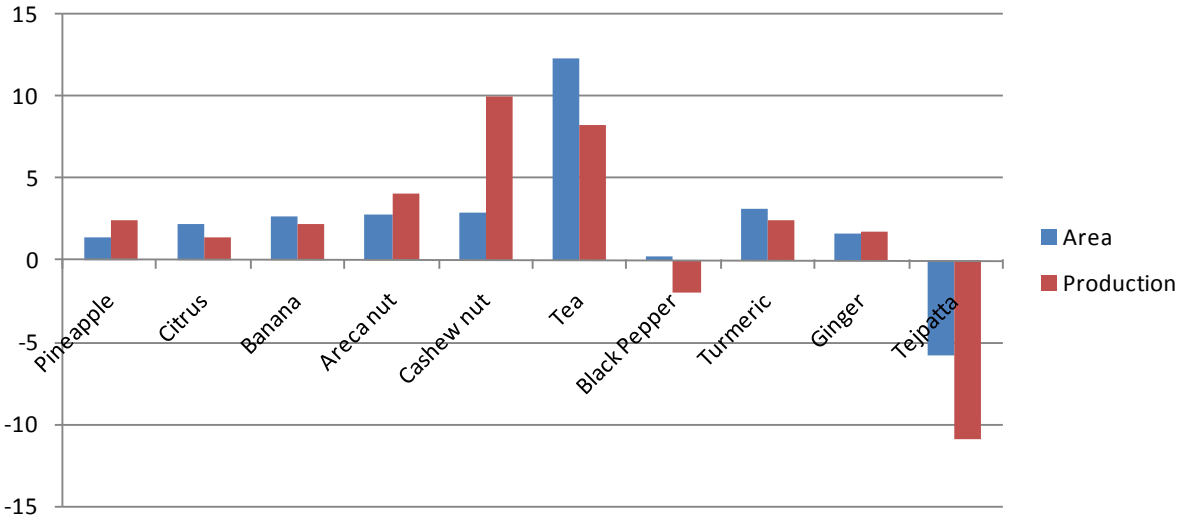
Table : Land use Pattern by Districts: 2009-10

Classification	EKH	WKH	JH	RB	WGH	EGH	SGH	State
Reporting Area	272938 (100.0)	516717 (100.0)	380869 (100.0)	243775 (100.0)	367011 (100.0)	259351 (100.0)	188253 (100.0)	2228914 (100.0)
1. Forest	107080 (39.2)	206580 (40.0)	154064 (40.5)	86923 (35.7)	165085 (45.0)	124596 (48.0)	101990 (54.2)	946318 (42.5)
2. Non-agric. Uses	17172 (6.3)	21745 (4.2)	17092 (4.5)	13961 (5.7)	14701 (4.0)	5814 (2.2)	7318 (3.9)	97803 (4.4)
3. Barren & Unculturable	34939 (12.8)	48702 (9.4)	13858 (3.6)	19430 (8.0)	7216 (2.0)	4678 (1.8)	3899 (2.1)	132722 (6.0)
4. Miscellaneous Trees	17161 (6.3)	42562 (8.2)	17003 (4.5)	29194 (12.0)	24506 (6.7)	25195 (9.7)	6171 2(3.3)	161792 (7.3)
5. Cultivable Waste	48110 (17.6)	101170 (19.6)	116040 (30.5)	56983 (23.4)	15274 (4.2)	36952 (14.2)	19516 (10.4)	394045 (17.7)
6. Other Fallows	6079 (2.2)	47709 (9.2)	17086 (4.5)	8871 (3.6)	35612 (9.7)	20267 (7.8)	19664 (10.4)	155288 (7.0)
7. Current Fallows	4602 (1.7)	18149 (3.5)	9635 (2.5)	6181 (2.5)	10125 (2.8)	4928 (1.9)	4384 (2.3)	58004 (2.6)
8. Total Fallow Land	10681 (3.9)	65858 (12.7)	26721 (7.0)	15052 (6.2)	45737 (12.5)	25195 (9.7)	24048 (12.8)	213292 (9.6)
9. Available for Development (4+5+8)	75952 (27.8)	209590 (40.5)	159764 (42.0)	101229 (41.6)	8517 (23.4)	87342 (33.6)	49735 (26.5)	769129 (34.6)
10. Net Area Sown	37795 (13.8)	30097 (5.8)	36091 (9.5)	22232 (9.1)	94492 (25.7)	36921 (14.2)	25311 (13.4)	282939 (12.7)
Sown More than Once	7802	6553	370	2901	24957	5306	5578	53477
Total Cropped Area	45597	36660	36461	25133	119449	42227	30889	336416

*Figure enclosed in brackets () denotes percentage

Table A2.2: Change in Percentage Share of Agriculture and Horticulture in Total Cropped Area

District	1999-2000			2010-2011			Horticulture Area (ha)	
	Agriculture (%)	Horticulture (%)	Total	Agriculture (%)	Horticulture (%)	Total	1999-2000	2010-11
EKH	23.4	76.6	100.0	18.9	81.1	100.0	27009	36986
WKH	39.4	60.7	100.0	34.0	66.0	100.0	21094	24205
JH	61.8	38.2	100.0	44.4	55.6	100.0	12743	20274
RB	46.5	53.5	100.0	45.6	54.4	100.0	15718	13671
WGH	80.3	17.7	100.0	61.3	38.7	100.0	16447	46259
EGH	64.8	35.3	100.0	56.0	44.0	100.0	13107	18568
SGH	55.0	45.0	100.0	34.5	65.5	100.0	10392	20222
State	*57.8*	*42.2*	*100.0*	*46.7*	*53.3*	*100.0*	*116510*	*179227*



Average Annual Growth Rates of Area and Production

Meghalaya State Horticulture Mission

Source - Department of Horticulture

Introduction

Meghalaya has three key factors conducive for the development of horticulture – a large extent of land suitable only for horticultural crops, diversity in agro-climatic factors making a variety of fruits, spices and plantation crops feasible and established tradition of growing horticultural crops making further expansion easy. Net area sown is only 2.83 lakh hectares forming 12.7 per cent of the geographical area and 7.69 lakh hectares is available in the form of fallows, cultivable waste and miscellaneous tree crops. Most of this land is in the hill slopes and is more suitable for plantation and fruit crops rather than traditional agricultural crops.

The State has a great diversity of agro-climatic factors. The average annual rainfall is high at 12000 mm and elevation varies from 150 m to 2000 m mean sea level. As a result, temperature varies from 2 0 to 36 0 Celsius. This diversity allows favorable atmosphere for horticultural crops to be grown.

The Horticulture Mission for North Eastern & Himalayan States could help in area expansion, but it has a little impact on marketing and processing activities. There is a scope for interventions in this direction along with area and production augmentation.

Constraints for Development of Horticulture

Marketing is the major weakness of the State. The topography and poor connectivity are the major hurdles for the development of horticulture in the State. The monopoly of the private traders, weak cooperatives and lack of market intelligence are the major constraints in marketing. Despite high rainfall, the State suffers from moisture stress as most of the rain water runs off the hills and is taken away to plain areas of Bangladesh and Assam. There is a need for more intensive conservation of water through check dams and diversion channels. The topography requires the use of drip and sprinkler systems and technologies suitable for the local conditions.

Post harvest management becomes an important factor for the success of commercial horticulture, but the State is highly backward in this respect. There are only two small fruit processing units run by the State Agriculture Department. Few cold storage units available in the State are inadequate considering the volume of harvest.

Meghalaya's Achievements in Horticulture

Significant expansion of area and production of low volume high value crops like strawberry, anthurium and coloured capsicum led to income and employment generation among farmers. The State is one of the top producers of strawberry. These crops have also come up in non-traditional districts like West Khasi Hills, Jaintia Hills, and South Garo Hills. New and improved technologies have been inducted in the form of micro-irrigation and protected cultivation in farmer's fields. The area under poly houses and green houses has been expanded both in non-traditional and traditional districts.

Export markets for floricultural products have been developed and the State is exporting anthurium in non-traditional colours to Japan.

Organic farming was promoted by the Department and the programme of certification and advisory services is taken up.

Five new horticultural hubs have been commissioned at Thadlaskein, Rongram, Nongstoin, Minneng and Upper Shillong. In effect, there is now one horticultural hub in each district to supply quality planting material and extension of marketing services. Horti – hubs at Mynkre, Mairng, Sarngma and Zikzak have been established recently.

Case for launching the Meghalaya State Horticulture Mission

Given the tremendous potential for the development of horticulture to generate income and employment for the farming community, a much more intensive, focused and holistic strategy, coupled with major investments, is needed. The Mission is taking up the task of conceptualising, designing and executing projects in a systematic and focused manner.

Vision

Since the State has limited scope to enhance area under traditional agricultural crops and a large extent of land is available with undulating topography, horticulture is becoming an area of focus. A farmer is being assisted to increase production and productivity through assistance for area expansion, technology induction and support services to facilitate emergence of the State as horticulture hub of the North East.












Mission Objectives

- Expand the area under horticulture by 40,000 hectares in five years covering about one lakh beneficiaries. This will add 22 % to the existing area under horticulture.
- Adopt holistic approach for the development of horticulture by providing support for irrigation, technology transfer and post harvest management.
- Improve the productivity of existing orchards by rejuvenation of senile plantations, introducing proper management practices and replacing the low grade varieties with the high grade varieties.
- Develop farmers' organisations to derive the benefits of higher prices through exporting to outside areas in the country and outside.
- Develop cold chain for high value and perishable crops and provide access to the cold chain through development of collection centres at appropriate locations.
- Develop entrepreneurship in processing and marketing of horticulture products.
- Strengthen the existing horticulture farms to produce adequate planting material and convert them as hubs so that they can create spokes and link to the cold chain.
- Encourage the farmers in organic production and assist them in certification.

Mission Strategy

The Mission will follow cluster approach to strengthen the existing concentration of crops. For each crop, post harvest management and value chain management is given an emphasis so that additional income and employment is generated in the State itself.

New technologies in post harvest infrastructure like grading, packaging, ripening chambers will be introduced for the major crops in their concentration areas. As it is difficult to attract huge investment to start large scale processing units, small scale and cottage units will be encouraged and support will be provided for them.

Farmers associations will be formed to take care of the management of the post harvest infrastructure developed.

Convergence with other programmes is being established in order to optimise the resource use.

Demonstration of new technologies and crop management practices are being taken up on the fields of progressive farmers who have got the assistance for inputs. The success stories of the farmers will be documented by audio-visual methods and shown to other farmers.

Capacity building is an important component for all the beneficiaries as well as officials. Farmers' attitudes for the adoption of the practices and their difficulties will be taken into account at the time of introducing new technologies.

Approach

The Meghalaya State Horticulture Mission is being implemented through three Mini-Missions. The Area Expansion Mission focuses on the identification of areas and clusters for the selected horticulture crops. Mini-Mission II has its focus on production of seed and planting material. This Mini-Mission will take care of the production of planting material not only for the new areas planned, but also for the existing areas. Establishment of nurseries wherever needed is the basic focus of the Plantation Mission. It will focus on the supply of planting material, provision of inputs and plant protection measures. Mini-Mission

III focuses on post harvest management, marketing and cold chain development. Creation of storage houses, establishment of collection centres with grading, sorting and provision of transport facility will be the focus of this Mission. Processing of important agricultural items like ginger, patchouli, aloe vera, tea, jack fruit and cashew apple are some of the examples.

Implementation Process

Implementation of the Horticulture Mission requires a separate administrative set up because of the massiveness of the Programme. A separate administrative structure will be created at the State, district and block levels. There is also a need to identify the land to be taken up for development and care will be taken to avoid lands that will result in adverse impact on environment.

The following steps will be taken before commencing the plantation activity:

- The implementation will begin with Mass Mobilisation Campaigns to make the people aware of the new areas that can be developed under the Mission. The assistance of NGOs can be availed for the purpose with some lump sum payment for the activity.
- Plantation crops will be developed in clusters so that SHG can be formed for each cluster.
- Beneficiaries in a cluster will form into groups for effective implementation of the Programme.
- It is preferable to have one acre for each beneficiary, but because cluster approach is followed, area more than one acre may sometimes have to be allowed.
- The area identified for a cluster will have water sources. If it is not presently available, it may be developed under convergence with MGNREGS. However, expenditure for bringing water to the individual field can be met from the Mission. The cost of such expenditure will not exceed Rs. 10,000 per acre.
- Based on the estimated cost of cultivation per acre, each beneficiary will be provided 60% of the cost in the form of assistance, 25% in the form of bank loan and the balance is the contribution of the beneficiary. The contribution of the beneficiary will be in the form of labour required for the development of the plantation or own material used.
- After selecting the beneficiaries, they will be provided with the material for fencing and vermin-compost. They have to make the field ready for plantation. The vermin-compost will be ready and fencing work will be completed. Then planting material will be provided. Plantation activity can be taken up under convergence with MGNREGS so that the beneficiaries need not invest their own funds much.

The Meghalaya State Horticulture Mission will be implemented by the Meghalaya Horticulture Development Agency (MHDA), an autonomous body created for the implementation of the Mission. The Minister of Agriculture will be the Chairman of the Agency and the Commissioner and Principal Secretary, Agriculture and Horticulture will be the Deputy Chairman. Principal Secretary, Rural Development will also be a member to facilitate convergence with MGNREGS.

It will have a two tier system of organisational structure, one at the State level and the other at the District level. The Director, Horticulture is the Chief Executive Officer (CEO) at the State level. In view of the heavy work pressure in the Department for implementation of other State and Central Schemes, an additional Director will be appointed as the Deputy Chief Executive Officer (DyCEO) to look after the technical and administrative matters. However, the DyCEO will be of the rank slightly below the director and will have all the powers to take decisions regarding implementation with proper information to the Director Horticulture.

At the district level the District Horticulture Officer (DHO) will be the nodal officer with separate office and staff for the implementation of the Mission. The District Mission Office will be run by an Assistant Director who will be taken on deputation from the Department with a horticulture back ground. In addition to this, there will be two Programme managers and two deputy Programme managers with B.Sc. horticulture. The Horticulture Development Officer in the block will be the nodal officer at the block level who will be assisted by 2-4 multiple service providers appointed on contract basis for the period of the Mission. They will possess a minimum qualification of class XII.

Monitoring and Evaluation

The MSHM will organise monitoring in two steps and evaluation again in two steps. The first step in monitoring is conducting the base line census survey of all the beneficiaries to obtain their socio – economic characteristics and the lands identified for the development of horticulture. The second step will be the collection of information for the MIS.

Evaluation will be entrusted to a third party and will be conducted in three stages. The first stage of evaluation will be after completing one year of implementation. This will help to identify the deficiencies in implementation. The second evaluation will be the mid-term appraisal conducted after the completion of second year. It will focus more on the aspects not touched in the first evaluation and also the benefits derived by the farmers covered in the first year. The third and final monitoring and evaluation report will be at the end of the fifth year. The sample size of the evaluation study will be 1000 farmers in the first year, 1500 farmers in the second year and 1500 farmers for the final evaluation.

Management Information System (MIS)

Management Information System (MIS) needs to be introduced in the Horticulture Mission so that all relevant data is collected, stored and retrieved instantaneously to facilitate planning, executing, monitoring, and evaluation.

Human Resource Development

Successful execution of various components of the Horticulture Mission will call for systematic building of the competencies of various stakeholders to the required degree. The Mission intends to enhance the capacities of the stakeholders in efficient management of crops, reducing the post harvest wastage and undertaking primary processing of fruits.

The Horticulture Officers will be trained in the following aspects:

a. Project management and book keeping
b. Participatory rural appraisal methods (PRA)
c. Cold chain management

Training of Trainers

Training for the beneficiaries has to be organised at the district level. Active SHGs and Co-operative members may be engaged for training. This will build local capacities and strengthen the organisations. Selected members may be trained along with the Programme managers. They will be trained intensively and material will also be provided. These trainers can be from any district in the region. Thus, two batches of trainers will enlist and provided training so that they can in turn train the beneficiaries.

Awards to Horticulture Farmers and Incentives to Departmental Officers

To encourage innovations in management, the Mission will identify progressive farmers and give awards at the end of each year separately to individual farmers, communities and co-operative societies. The criteria for selection will be enhancement of productivity, introduction of new initiatives and management practices.

Scope for Convergence

Two schemes in the MSHM can be implemented efficiently under convergence with MGNREGS. One is planting and fencing of fruit and plantation crops and the other is rejuvenation of cashew orchards. Both these schemes are highly labour intensive and require participation of orchard owners. The machinery needed for rejuvenation will be provided by the MSHM and implementation can be done by the Rural Development Department under MGNREGS.

Majority of the works relating to water catchments, water conservation and water management are handled by the Department of Water Resources. As more than 50 per cent of MGNREGS works are related to water conservation, the possibility of convergence between MGNREGS, Department of Water Resources and Horticulture Mission will achieve sustainable development of the horticulture sector.

The Department of Commerce and Industries, Government of Meghalaya is implementing National Mission on Food Processing (NMFP). The main objective of the scheme is to increase the level of processing, reduction of wastage, value addition, enhance the income of farmers as well as increase exports. The scheme envisages provision of financial assistance for setting up of new food processing units. It will provide grant in aid of 33% subjective to a maximum of Rs. 75 lakh. It has another scheme of developing cold chain infrastructure. The objective of the scheme is to provide integrated and complete cold chain and preservation infrastructure facilities. Pre cooling facilities at production sites, reefer vans, and mobile cooling units can also be provided under the Integrated Cold Chain Projects.

Intelligent Advisory System for Farmers in North East India

by - Mr Canning Shabong, ADO (Information), Directorate of Agriculture

Farmers require timely, accurate and location specific information and need based advisory services in relation to pest, disease, weeds and fertiliser management of their crops from agricultural experts. Intelligent Advisory System for Farmers (IASF) is a web based platform which is seamlessly integrated to mobile service delivery gateway (MSDG), connecting KVK scientists and experts from Department of Agriculture to farmers through an e-platform in order to solve farmer's problems in real time.

CONTEXT

North East India is geographically diverse and many farmers depend on subsistence farming, totally dependent on the weather and sometime on luck, to make ends meet. Frequent crop failures are the rule rather than the exception. Plagued by illiteracy, militancy, poor access to resources and low purchasing power, they are often left out of the beneficiary net of the State government. Being more often left at their wit's end, they have no one to turn to but to fend for themselves, in case of impending crop failures. This is compounded by the fact that majority of small and marginal farmers are without any risk cover from insurance companies. How can ICT address such pressing issues that stares farmers directly in the face? Can ICTs help bring some change in the agricultural situation of such needy farmers?

The challenge of meeting immediate needs/priorities are overwhelming to development planners and therefore provision of tangible and short term benefits often takes precedence over development of knowledge and skills which have more lasting impacts.

IASF

During the year 2010, C-DAC (Centre for Development of Advanced Computing) Mumbai, under its North East India initiatives sanctioned a project on harnessing ICT for the farming communities of North East India. Funded by the Department of IT (DEITY) this project named "Intelligent Advisory System for Farmers" (IASF) aimed to leverage C-DAC's core strength in artificial intelligence (AI) using Case Based Reasoning (CBR) from projects like "Vidur" to solve present problems based on past experience (cases), mimicking human problem solving methods. C-DAC subsequently approached Department of Agriculture Meghalaya to collaborate on the project and to share domain knowledge.

IASF was launched in Meghalaya on 29th November 2012 with the following objectives:

- Provide improved services to the farming community through the use of ICTs.
- Advice and help farmers to solve problems related to their farming activities. (Otherwise, they need to contact agricultural experts and private extension workers).
- Provide vital and generic information to farmers so that they get periodic alerts on important/useful tips, ideas, knowhow etc.
- Update farmers on latest agricultural technologies for improved productivity and quality farming.
- Develop an advisory system which can be extended with any other types of crops in any State of India.
- Improve agricultural extension service by using mobile services so that farmers can send queries about their farming problem from their mobile device.
- Develop educational materials to be used by students for their practical experience with real case scenario.

IASF is a very unique project and the first of its kind in India which uses web services with seamless integration to national Mobile Service Delivery Gateway (MSDG) via push SMS, thereby linking farmers with agricultural experts from the agriculture department and KVK agricultural specialists in real time. The dashboard gives a 360% view of all the processes and the administrator is kept informed both by email and SMS about the various events in real time. Both farmers and experts are registered in the IASF database. Only agriculture experts with relevant Master degree and PhD with not less than 5 years experience are registered to provide solutions to the registered farmer's web query as well as SMS based query. The all India 51969 short code is used for all mobile services.

Registered farmer can login to the system to use the web interface to connect with agriculture experts via a structured module. They can also

directly link to expert via direct query and upload photographs (upto 3 MB size). Even farmers who don't have access to computers and internet can easily register to IASF by sending an SMS to 51969. They can also pull agricultural information like crop calendar simply by sending an SMS to 51969 in a specified format. For eg. "IASF CAL MEG 1 4". This pull SMS will deliver the Meghalaya agriculture crop calendar for the month of January (denoted by 1) in Khasi language (denoted by 4).

Farmer can also send a Direct Query (Mobile Crop Doctor) to an expert by sending an SMS in this format to 51969. For eg. IASF D MEG Your_Query. All the registered crop experts will simultaneously receive this SMS query from the farmer but only the first SMS answer from a registered expert will be processed by the system and automatically forwarded to the concerned farmer. This is designed in order to avoid varying solutions from multiple experts, which may confuse the farmer.

Development of IASF

Developed entirely on open source software (PostgreSQL RDBMS and JSP) IASF project took two years to develop by a team of dedicated engineers at CDAC, Mumbai. Subsequently, IASF was also translated to Khasi language by a virtual team of agriculture experts from the department of agriculture, Meghalaya. Finally, in mid 2012, the Khasi version was ready to launch starting with 8 crops Viz., Rice, Potato, Mustard, Pea, Cabbage/Cauliflower, Tomato, Brinjal and Chilli). The IASF project contains 5 modules viz., Pest Management, Disease Management, Weed Management, Fertilser Management and Seed Variety Management. This project was initially designed purely as web services framework without any integration to mobile services. But it was during the early part of the year 2012 that IASF was integrated with mobile service delivery gateway (MSDG).

The project initially adopted a soft launch by piloting the project in East Khasi Hills district with the active collaboration of KVK, East Khasi Hills. About 150 farmers of East Khasi Hills district were registered in the IASF database by the project team. Awareness training was also conducted with only progressive farmers of the districts to determine their response. Attention/Awareness, Interest, Desire, Action (AIDA) technique was used to design the communication strategy and was followed by a sample survey to get feedback from the targeted audience. A random sampling of 65 registered farmers was selected by KVK and the findings of the survey are given in table 1, 2 and 3.

Table 1: Type of message required by farmers

Topics of Message	*No of Farmers*
Package of Practices for Vegetables	26
Time of sowing/transplanting/planting	16
Livestock Management	15
Package of Practices of Field Crops	14
Nutrient Management	14
Pest Management	9
Information on Trainings/ Schemes	9
Seed Production Technique	9
New Technology in Agriculture	7

Flowers	6
Selection/ Availability of Seeds/ Planting Materials	3
Disease Management	2
Pesticide/ Fungicide Dosage	2
Fruits	1
Nursery Management	1
High Value Crops	1
Post Harvest Management of Crops	1

Table 2: Preferred time for receiving a message

Time	*No of Farmers*
Morning	9
Afternoon	1
Evening	17
Anytime	38

Table 3: Types of advice required

Sl. No	Topics	No. of Farmers
1	Time of Sowing	20
2	Disease Management	19
3	Pesticide Usage	18
4	Package of practices of Vegetables	17
5	Nutrient Management	13
6	Selection of Planting Materials	8
7	Fruits	4
8	Flowers	3
9	Capacity Building	3
10	Livestock Management	3
11	Seed Treatment	1
12	Nursery Management	1
13	Site Selection	1
14	Market Prices	1
15	Post Harvest Management	1



Unique Features of IASF

IASF is now assisting farmers living in remote geographical areas of North East India, often without road connectivity to get timely, correct diagnosis and advice from crop and disease experts in order to take timely corrective measures to save their crops.

Self Learning System: IASF is a self learning system that acquires new problems and corresponding solutions. The more varied the system's database is populated, the better the system can autonomously provide highly probable solutions to a particular case via its referencing engine. If there is a 100% match to a new case (routine and repetitive) from its database, the solution is immediately shown to the farmer without the expert's intervention. However, the expert can review the given solution and suggest new/updated solution to any case. This revised and updated solution will immediately pass on to the concerned farmer in his dashboard simultaneously via email and by SMS.

Improved access to information: The system can help farmers in critical times where access to an agricultural expert is not forthcoming or due to unavailability of agriculture extension worker in the field. The system is especially useful in States and rural areas where the ratio of extension worker to farmer is very wide and where access to such experts is not feasible. Our need assessment field surveys, analysis of kisan call centre logs and various researches from the field and ICT projects in agriculture confirms that pest and disease advisory is the most sought after service by farmers in Meghalaya.

Early warning system: The other unique feature of the system is that it has the capability to give advanced information to experts of impending pests and diseases outbreak. For instance, if there is a rise in data traffic emerging from a specific geographical area of the State with similar reports of specific pest or disease infestation, this can be a sure indication that an epidemic may likely occur and hence alerts can be broadcasted to farmers and early action can be taken by field extension workers to control the outbreak.

IMPACT

To date, IASF is benefiting 2345 registered farmers in 5 districts of Meghalaya who use the platform for redress of their farm problems. The project targets to increase this number to 5000 by the end of 2015. 35 Nos. of multi disciplinary **Subject Matter Specialist** from Meghalaya are also registered in the portal voluntarily to respond to farmer's queries in real time. A total of 2005 Number of structured and direct queries have been received from farmers belonging to Manipur and Meghalaya so far. Maximum queries received relate to rice pests and diseases as the two States are predominantly rice growers. The fastest time responded by an expert to a farmer's direct query has been recorded as 1.40 minutes. This project can be easily scaled and rolled out with localised content and languages to any State of North East India in a very short time.

Further, in order to overcome existing hurdles facing farmers from availing IASF services, the project team took upon themselves the task of registering farmers to the IASF database. The team requested the list of progressive farmers along with mobile numbers maintained by the existing 5 KVK's in the State and all these farmers have been registered by the project team members. About 1000 farmers were registered during 2012-13 and subsequently the District Agricultural Officer and District Horticultural Officer of other districts also sent their list of progressive farmers for registration.

During July 2013, mobile based registration via SMS was introduced where farmers could self register using their mobile phones. Now more farmers are self registering with IASF via their mobile phones and an encouraging trend is being witnessed. The Department took a decision to conduct more sensitisation training of all officials of the department,

upscale publicity and promotion campaign to spread awareness about this project among various stakeholders. A 10 member Expert Committee chaired by the Director of Agriculture, for steering and monitoring the implementation of the project has also been constituted. To know more about this project, please visit this link http://iasf.cdacmumbai.in

MOVING FORWARD

In order to strengthen and expand the current initiative and to address some of the challenges faced, IASF has implemented additional features to broaden its reach and access to its clientele.

Voice mail: IASF IVRS facility through a single number has been implemented, so that illiterate and semi literate farmers can access its team of expert via voice facility. This IVRS is available in English, Khasi and Garo language on the number 02267870110.

Links to KVKs: Discussions with all the KVK's in the State were held to partner and volunteer as Experts and Resource Persons to help answer to farmer's query using location specific knowledge base and technical solutions which best fit farmer's individual needs.

Publicity and Promotion: Farmer's training, publicity in print media, electronic display boards were also used to spread awareness about the utility of the service, highlighting the main USP of the project. A radio campaign in local language was also conducted on Radio Red FM to create awareness about the mobile services provided under the IASF platform like SMS Pull Services, Direct Query Service (mobile crop doctor) by sending SMS in a specified format to 51969.

Award: IASF bagged the Winner Award in the eNorth East Challenge during 2013 under the category "livelihood and Improvement" from North East Development Foundation. It was also a Finalist in the eBillionth Award South Asia 2014 held at New Delhi.

LESSONS LEARNT

- ICT project implementation in the field of agriculture requires thorough understanding and intimate domain knowledge of what kind of services farmers requires the most, which has maximum potential of impacting on their economic returns.
- Strong partnership between research institutions in the field of ICT and State Agriculture Departments can go a long way to create path breaking applications using state of the art systems for improving agriculture extension delivery system.
- Stability of tenure of agriculture extension personnel is vital to successfully design, develop and implement ICT applications in the sector.
- Strong ICT infrastructure combined with ICT champion in State Agricultural Departments is necessary to successfully implement ICT projects.
- Administrative support from the Head of the organisation including sectoral heads of key sections like Planning, Finance is necessary to smoothen the process of ICT implementation.
- Team work, networking and collaboration among the multi disciplinary team of officers are required to achieve any tangible results from ICT interventions.
- Technology driven intervention requires both self service and assisted service options in order to provide stakeholders seamless experience and satisfaction.
- While executing ICT projects, some degree of innovation and flexibility is required by all partners in order to improve effectiveness rather than sticking strictly to the "out of project scope and budget" excuse.

DEPARTMENT OF AGRICULTURE

INTEGRATED AGRICULTURE TRAINING CENTRE UPPER SHILLONG, MEGHALAYA.

by - Mr N.S.Nongbri Director, MAMETI

Introduction:

The Department of Agriculture is basically an extension oriented department. Apart from input delivery and demonstration of new agriculture technologies, its main function is convincing the farmers to adopt, adapt and accept the technologies. Thus, training, awareness and capacity building are of utmost importance whereby knowledge and skills of farmers and departmental functionaries can be upgraded periodically with the ever-evolving technologies in the field of agriculture. Integrated Agriculture Training Centre at Upper Shillong seeks to achieve those objectives. With this objective in view, efforts were made and initiated towards having an Integrated Training Centre. The process of identification of location, source of funds, designing and planning for the Centre started sometime in April 2010. With the concerted effort of the department under the leadership of the Principal Secretary, Agriculture, the work of construction of the Integrated Training Centre was started in January 2012. It was completed after a period of 20 months and was inaugurated by Honourable Chief Minister of Meghalaya, Dr Mukul Sangma on 25th June 2014.

Purpose of Integrated Agriculture Training Centre:-

The Integrated Agriculture Training Centre, as the name suggests, will cater to the different training needs of the Department. At present, the different training activities of the department are carried out by District Training Officers, Basic Agriculture Training Centre, MAMETI, and are all imparting training to farmers and staff through different schemes. For a more integrated and target oriented approach, it is envisaged that trainings in the State will henceforth come under the umbrella of the Integrated Agriculture Training Centre.

Apart from co-coordinating training in the State, the Centre will impart need based training to the following categories:-

1. Training to officers: Training will be given by resource persons to be invited from within and outside the State and country for delivering inputs relating to agriculture, horticulture and even allied sectors to acquaint the Departmental officers with the latest advances in these sectors.

2. Training of field functionaries of the Department: The field staffs are at the cutting edge of implementation of schemes and are in direct contact with farmers. Awareness programmes and training for them would enable them to more effectively deliver new technological interventions directly to the farmers.

3. Training to Farmers: Training and orientation programmes for farmers on improved crop technologies, pest and disease control, nutrient management and other advances in agriculture and horticulture. Providing them with suitable options to take up new crops and ways of precision farming, controlled farming with the objective of improving their livelihood and enhancing their income.

4. Training to Rural Educated Unemployed Youth to develop farm and entrepreneurial skills with a view to equipping them for managerial options and for setting up agro-services on their own.

Facilities at Integrated Training Centre:-

The Integrated Training Centre is equipped with the following:-

1) Auditorium
2) Seminar room
3) Lecture halls
4) Computer room
5) Office rooms for officers and staff, lounge.
7) Hostel rooms, dormitories along with kitchens, dining room, and rest room

The Road ahead:

With the commissioning of the Centre and as the name suggests, it is envisaged that the entire gamut of training within the Agriculture Department will be streamlined bringing all the training institutes and offices under one head. Such an effort will go a long way in making every training effective and target oriented as the resources will be consolidated and effectively utilised.

Mr N.S.Nongbri (The Director, MAMETI, Integrated Agriculture Training Centre, Upper Shillong):-

MAMETI is one of the apex bodies in the state extension reform scheme which is a central scheme. MAMETI's basic mandate is in building capacity of officers through training and sending them to out station training building centers. The modalities of selecting for training are being done based on All India level training needs which are being discussed and managed annually in Hyderabad. On the basis of those training needs the trainings are conducted in MAMETI. MAMETI also deals as a study centre for the candidates who appear for Post Graduate Diploma in Agriculture Extension Management (PGDAEM). For Meghalaya, MAMETI is the state study centre and till date we have conducted two batches of PGDAEM courses and this is the second batch running this year. In the first batch we had 26 candidates out of which 16 of them completed and in the second batch we have 16 candidates, 14 of them are due to complete the course. It also collaborates with the other training centers of the department like district training office in Shillong and Tura. Trainings which are conducted by the officers from the DAOs' and DHOs' are mainly farmer centric and we organise for the capacity building training of the officers.

This centre is called as the 'Integrated Agriculture Training Centre'. At present the training is being conducted by different agencies for different areas and target groups or may be even for the same target group. So there is not a concerted effort were training is being target oriented. The future prospect would be that all training should be amalgamated under one head, so that the thrust will be made towards target oriented and at the same time will help the department in utilising the resources effectively in the extension activities of the department.

Implementation of National Vegetable Initiative for Urban Cluster (NVIUC) in Meghalaya

Source - Department of Horticulture

The National Vegetable Initiative Scheme for Urban Cluster was implemented in Meghalaya in East Khasi Hills district in March 2012. Prior to this, Baseline survey was conducted by Indian Society of Agri-Business Professional (ISAP) under SFAC which was completed during August 2011. The process for social mobilisation and for formation of FIGs and FPOs was done by Indian Grameen Services (IGS) and started during November 2011. Altogether, 140 (One Hundred Forty) nos. of Farmer Interest Groups (FIGs) were formed involving 1750 (One Thousand Seven Hundred Fifty) nos. of farmers. The vegetable growing clusters in peri-urban areas of Shillong City viz. Mylliem, Mawphlang and Mawryngkneng Blocks were identified for implementation of the scheme.

Farmers' Producers organisation (FPO)

The formation of FPO registered under cooperative society completed during the month of March 2013 namely
(i) Iai-jyrngam Vegetable Cooperative Society Ltd. which will cover the Mylliem and Mawphlang cluster and
(ii) Rilum Khasi Vegetable Cooperative Society Ltd. which will cover the Mawryngkneng Block cluster.

The Iai-jyrngam Vegetable Cooperative Society will cover 84 Nos. of FIG and 1000 Nos. of farmers whereas the Rilum Khasi Vegetable Cooperative Society will cover 56 Nos. of FIG and 750 Nos. of farmers.

Market

At present there are two main markets in East Khasi Hills, namely Mawiong regulated market and Iewduh market (both wholesale and retail). Another wholesale market mainly for Vegetable produce is newly opened at Upper Shillong.

Channel of Vegetable movement from farmers to consumers

1. Farmers – Consumers
2. Farmers – Village level Aggregators (agent)/ big farmers/ farmers' club/ producer organization or agent – traders – consumers.
3. Farmers – Wholesalers – Retailers – Consumers.
4. Farmer – Agent/ Traders/ Wholesalers (from Assam, Tripura, Mizoram, Manipur, Nagaland) traders at respective market – wholesaler – retailer – consumers.

Achievements

Fund Allocation 2011 – 12.

Fund Allocation 2011 – 12	= 3.50 crores
1st released as on March 2012	= 1.75 crores
2nd released as on April 2013	= 1.50 crores
Total fund released	**= 3.25 crores**
Balance amount yet to be released	**= 0.25 crores**

The Physical & Financial Target and Achievement for 2011 – 12.

Sl. No.	Item	Units	Target		Achievement	
			Physical	Financial	Physical	Financial
1.	Baseline survey			6.65858		6.65858
2.	Promotion of Farmers Association Group			35.00		35.00
3.	a) Vegetable seed production (OP) (construction of polyhouse)	Ha.	0.35	49.555	0.35	49.555
	b) Cost of planting material	L. S	L. S	2.63642	NIL	NIL
4.	a) Vegetable cultivation in open condition, Improved (OP)	Ha.	200	60.00	246.25	73.87605
	b) Hybrid	Ha.	108	48.60	179.96	80.98431
5.	Protected cultivation : a) Naturally ventilated system Tubular Structure	Sqm	8000	74.80	NIL	NIL
	b) Cost of planting material	L. S.	L. S.	10.50		
6.	Promotion of INM/IPM	Ha.	300	6.00	NIL	NIL
7.	Post harvest management Pack house	Nos.	10	30.00	NIL	NIL
8.	HRD – Training of farmers (no)	Nos.	35 (1750 farmers)	26.25	NIL	NIL
	Total :		**350.00**			**246.07394**

N.B: Out of the fund released 3.25 crores, 78.92 lakhs (Balance amount) earmarked for construction of polyhouses for cultivation of off-season which are under process.

Success Stories: National Vegetable Initiative Urban Cluster under RKVY

Source - Department of Horticulture

I. Success stories under Mylliem Block Cluster

i) CARROT CULTIVATION UNDER THE SCHEME RKVY-NVIUC 2011-12 IN MYLLIEM BLOCK

The National Vegetable Initiative Urban Cluster under RKVY Scheme paved the way as a blessing to the farmers who got the opportunity to become members of Kissan Sammrudhi Group. With the implementation of this Scheme, the farmers who are genuine vegetable growers and suppliers were formed into groups and different types of vegetable seeds (based on climatic condition) were distributed to them free of cost through the office of the District Horticulture Officer, Shillong.

Carrot is one of the vegetables which are being included for the implementation of the Scheme and seeds of varieties Kuroda (US Agri) and New Kuroda Improved were distributed to 15 cluster groups which consisted around 150 No. of farmers, mostly in Shilliangum area, which covered an area of around 20 Ha. Inputs like P.P Chemicals, Equipments, and Multiplex were also distributed to the farmers free of cost and the beneficiaries had to contribute labour charges, farm yard manures and chemical fertilisers. The implementation of the Scheme is effective and successful as the crop not only performed well but also fetched good price in the market and brought profits to the farmers.

The expenditure incurred for cultivation of this crop and the Net profit is being worked out approximately as follows:

Total cost of cultivation for 1 Ha	-	2, 20,000/-
Average Yield/ Ha	-	20 MT
Average market price	-	30/- per Kg
Total income for 1 Ha	-	6, 00,000/-
Net profit	-	3, 80,000/-

ii) RADISH CULTIVATION (OPEN POLINATED) UNDER THE SCHEME RKVY-NVIUC 2011-12 IN MYLLIEM BLOCK

Mylliem Block with a favourable climatic condition has a great potential for Radish cultivation (open pollinated) of local variety both for table consumption and for seed production where farmers raise the seed to meet their own requirements and also for selling to other farmers of other areas. The launching of NVIUC under RKVY Scheme in 2011-12 has strengthened the farming community. M/S K.Pathaw Private Nursery a successful nursery (aided under TMH) at Laitjem, got the opportunity to supply Radish seed to the office of District Horticulture Officer, Shillong and the same was distributed in cluster mode to different Kisan Samruddhi Groups under the district for area expansion. The performance of the crop is good and the farmers are being benefited which ultimately brings to the success of the implementation of the scheme.

Under the scheme NVIUC 2011-12 inputs like seed, multiplex, plant protection measures were distributed free of cost through the office of District Horticulture Officer, Shillong to a number of groups at Rngi Shillong, Mawklot, Umlyngka, etc. Simple and easy cultural practices of only one time earthling up is being carried out in this crop, with almost zero percent of Farm Yard Manure and fertiliser application as the crop is being sown as the second crop after potato or beans. The farmer had to contribute only labour charge and contingency expenditure right from the time of sowing to the time of marketing.

The following is the consolidated cost of cultivation and Net profit being worked out approximately:-

Total cost of cultivation for 1 Ha (with contingency expenditure)	-	60,000/-
Average yield /ha	-	20 MT
Market price	-	10 /Kg
Total income	-	2,00,000/-
Net profit	-	1,40,000/-

The success of the Group and the successful impact of the scheme have worked as a motivation to the attention of other farmers who also wish to avail the assistance from the Department.

iii) CAULIFLOWER CULTIVATION AT MAWKRIAH VILLAGE

With the launching of NVIUC/RKVY 2011-12, Thirty three (33) groups have been selected under Vegetable Cluster, where three groups have been identified at Mawkriah (East) Village viz.

1. Lasynroplang KSG, Mawkriah East (10 members)
2. Behsha Kathong KSG, Mawkriah East (11 members)
3. Nangpynroi KSG, Mawkriah East (11 members)

Each member of the group grows cauliflower extensively ranging from 5,000-25,000 seedlings. Mawkriah offers an excellent scope for growing different types of horticulture crops including fruits and flowers, both indigenous and exotic. The higher altitude provides a conducive Eco-system to grow the traditional crops like Potato and Cole-crops during rainy season. The total area covered under cauliflower cultivation is approximately 20 hac.

The above mentioned groups are very hard working and are being supported with necessary inputs and the technical guidance from the office of the District Horticulture Officer, East Khasi Hills, Shillong.

The cost of cultivation and the yield report as per the information worked out is as follows: -

A.	Inputs = (450gm seeds = 45,000 no's of seedlings) hac (approx)			
	i.	Cost of seeds 450gm	=	Rs. 5,500/-
	ii.	Cost of farm yard manure 6MT	=	Rs. 65,000/-
	iii.	Cost of fertilizer 1 MT(approx)	=	Rs. 15,000/-
	iv.	Cost of P.P Chemicals (LS)	=	Rs. 4,500/-
		Total	=	Rs. 90,000/-
B.	Operation & Labour Cost: -			
	1.	Land Preparation (20MD * 12 days * 150)	=	Rs. 36,000/-
	2.	Laying Out and Pit digging @ Rs. 50/100 No's	=	Rs. 22,500/-
	3.	Application of Manures, P.P.C & Planting @ Rs. 50/100 No's	=	Rs. 22,500/-
	4.	Cost of weeding, spraying top dressing etc (5MD *45days *150)	=	Rs. 33,750/-
	5.	Harvesting, dressing, packing @ Re. 1/No.	=	Rs. 35,000/-
	6.	Transportation @ Re. 1Kg	=	Rs. 35,000/-
	7.	Misc etc.	=	Rs. 15,250/-
		Total	=	Rs. 2, 00,000/-
		Total (A+B)	=	Rs. 2, 90,000/-

Yield

The average yield/hac	= 35MT
The average sale of Cauliflower	= Rs. 18,000 – 20,000/MT (approx)
	= Rs. 6, 65,000/- per hec
Net Profit	= Rs. 3, 75,000/- per hec

Cauliflower cultivation at Mawkriah Village is a very successful one, as the farmers do not face any difficulties in marketing this crop. Successful implementation of this scheme serves the Village as a model for the neighbouring Villages and as a result more farmers have come forward to avail the assistance from the Department.

II. Success Stories under Mawphlang Block Cluster

IMPLEMENTATION OF NATIONAL VEGETABLE INITIATIVE SCHEME FOR URBAN CLUSTER UNDER RKVY 2011-12 AT MAWPHLANG DEVELOPMENT BLOCK.

The National Vegetable Initiative Scheme for Urban Cluster (NVIUC) was introduced in East Khasi Hills district in 3(three) community and rural development block of Mylliem, Mawryngkneng and Mawphlang. The main objective of the scheme is to promote farmers in organizing themselves in a group with a common holistic approach to strengthen their capacity through best agriculture activities at various levels right from input of better technology, increased level in productivity, access to high quality inputs, better marketing opportunities etc. It is expected that with implementation of this scheme, all these core issues will help the farming community to strengthen their livelihood through sustainable agriculture.

Under the specific guidelines, the office of the Horticulture Development Officer, Mawphlang kick start the implementation of the scheme after organizing several meetings with farmers of identified areas in and around Mawphlang to share about the concept of the scheme. In collaboration

with Field Executives from Indian Grameen Services, the first and foremost task of baseline survey was completed in April 2012. Altogether, 22(Twenty Two) Nos of Farmer Interest Groups (FIGs) was formed involving 250(Two Hundred Fifty) Nos of farmers. These 22 FIGs spreads over 13 villages under cluster approach. With the successful formation of FIGs, the rest of the programme implementation got underway with each group started operating their bank account in nationalised and state cooperative banks located in Mawngap and Shillong.

Through this scheme, various input support were distributed to these groups which include Hybrid Vegetable Seeds, Open Pollinated Vegetable seeds, Plant protection chemicals and equipment, fertilizer etc. The vegetable seeds comprised mainly of Cauliflower, Pea (both hybrid and open pollinated), Cabbage, Capsicum, French Bean, Tomato, Chilli. During the process of implementation, the implementing agency conducted several visits to these identified villages and assessed the overall condition of the crops during different stages. The FIGs received on the spot training programmes with concrete advisory tips to improve productivity. The overall performance of this scheme was very satisfactory in which the supervising officer lauded the effort of the co-operation of these FIGs which ultimately brought commendable results vis a vis better net returns.

To sum up the report, the undersigned have observed that all these 250 nos of farmers were benefitted from the scheme and the entire group performed within the expectation of the implementing agency. However, amongst all , 4(Four) FIGs viz Iatyllilaang FIG of Mawreng Village, Umpohliew FIG of Mawngaprim Villaage, Maitnaphang FIG of Marbisu Village and Erpynggad FIG of Kharnongwah Village have extremely performed very well and produced phenomenal results.

T. Jyrwa Member of Iatyllilang FIG attending his cauliflower plants

Luxiriant growth of cauliflower in Mawreng village

III. Success Stories under Mawryngkneng Block Cluster

1. TOMATO CULTIVATION

The Synroplang KSG consists of 13 members all from Pdengshnong locality under Mawryngkneng village. They cultivate tomato in one plot of land measuring 1 hectare in area under the NVIUC Scheme. Through this scheme they acquire 2 packets each of tomato hybrid (TO-0170), multiplexes and insecticides, and cultivate it in the plot of land (divided among themselves) which they hire from the local people. Cultural practices such as weeding, spraying of insecticides and harvesting are done on their own with their own expenses.

Through their hard work, they were able to get a good harvest as well as good returns. Harvesting was done in different harvesting stages i.e in 4-5 stages.

By Calculation:-

1 farmer	= 2 pkts
2 pkts	= 3000 plants @ 1500 plants / pkt.
3000 plants X 2Kg/plant	= 6000 Kgs.
6000 Kgs X Rs. 20/Kg	= 1,20,000.00

Gross income = Rs. 1,20,000.00
Deducting misc. expenditure – Rs. 20,000.00
Net income = Rs. 1,00,000.00
(Rupees One lakh) only.

Thus, as the proverb says 'as you sow, so shall you reap'. The same with SYNROPLANG KSG, because of their hard work, dedication, unity, they were able to uplift their living standard in supporting and bringing up their kids in a proper manner.

2. LAMJINGSHAI KSG, PURIANG.

KNOL-KHOL CULTIVATION:-

Smt. Rosina Mynsong is one of the 11 members of Lamjingshai KSG, Puriang. She plants Knol-khol, cabbage and tomato in her plot of land. She acquired these seeds from the NVIUC Scheme cum RKVY, implemented by the Office of District Horticulture Officer through Horticulture Development Officer, Mawryngkneng. Smt. Rosina Mynsong is a hardworking farmer who along with her family spends most of her time in farming. Thus, in return she gets a good harvest of all her produce.

For example;
Knol-khol : 1 tin @ 250 gms = 500 Kgs
500 Kgs X Rs. 30/Kg = Rs. 15000.00

Gross Income = Rs. 15000.00
Deducting misc. expenditure of Rs. 3000.00
Net Income = Rs. 12,000.00
(Rupees Twelve thousand) only.

Cabbage :-2 Pkts @ 1000 plants / pkt.
2000 plants X 1.5 Kg/plant = 3000 Kgs
3000 Kgs X Rs. 8/Kg = Rs. 24,000.00

Gross Income = **Rs. 24,000.00**
Deducting misc. expenditure = Rs.5000.00
Total Net Profit **= Rs. 19,000.00**
(Rupees Nineteen thousand) only.

Farmers Point of View :

Through the help of the said Scheme, I am able to support my family as well as expand my farming. Thanks a lot.

Smt. Rosina Mynsong at her Knol-Khol Farm

CABBAGE CULTIVATION (HYBRID) UNDER NATIONAL VEGETABLE INITIATIVE FOR URBAN CLUSTER SCHEME, RKVY 2011 – 12 UNDER NONGKREM CIRCLE

With the implementation of National Vegetable Initiative for Urban Cluster Scheme under RKVY 2011 – 2012 from the office of the District Horticulture Officer, East Khasi Hills, Shillong, thirteen (13) Kisan Samruddhi Groups were formed under Nongkrem cluster comprising of 165 farmers. Based on the agro – climatic condition prevailing in the area, different types of vegetable seeds (both hybrid and open pollinated) were distributed free of cost to the

members. Apart from vegetable seeds, inputs like plant protection chemicals & equipments and multiplexes were also distributed. The farmer had to spend only for farm yard manure, chemicals fertilisers and labour charge for land preparation, sowing, transplanting of seedlings, intercultural operations, harvesting, packing, transporting etc. Among hybrids, cabbage cultivation is very popular at Nongkrem and its surrounding areas in East Khasi Hills District since the area is quite suitable for this crop which brings economically higher returns for their livelihood.

View of Cabbage cultivation in the main field

In lowland areas, the time of sowing starts from 2nd week of January whereas in upland the best sowing time is from the month of March and continues till the month of June for continuous production and supply in the market.

The crop performance is good; resulting to higher yield since the farmers welcome every suggestions and ideas imparted by the technical officers of the department.

The cost of cultivation and cost benefit ratio being worked out approximately as follows:-

Total cost of cultivation for 1 Ha	=	1, 00,000 (Approx.)
Average yield / ha	=	25 MT.
Average market price	=	12.00
Total income	=	3, 00,000
Net income	=	2, 00,000
Net benefit ratio	=	1:3

Through this scheme the members of Kisan Samruddhi Group have been able to increase the acreage under vegetable cultivation for sustainable production. This success has drawn the attention of other farmers and many of them wants to be a member of Kisan Samruddhi Group.

PEA (CHERRAPUNJEE) CULTIVATION (OPEN POLLINATED) UNDER THE SCHEME NATIONAL VEGETABLE INITIATIVE FOR URBAN CLUSTER UNDER NONGKREM CIRCLE

Pea is an important vegetable crop which requires cool and dry climate as longer cold spell incerases its yield. As a cool season crop, it is extensively grown in temperate zone.

The introduction of NVIUC Scheme under RKVY 2011 – 12 has greatly benefitted the vegetable growers of Kisan Samruddhi Group since the office of the District Horticulture Officer, East Khasi Hills, Shillong has supplied them with different types of vegetables seeds (both hybrid and open pollinated), among which pea (Cherrapunjee) seeds is one of them. Other inputs like plant protection chemicals & equipments, multiplex were also distributed. The farmer had to spend only for FYM, Chemicals fertilisers and labour charge for land preparation, sowing, intercultural operations, harvesting, packing, transporting etc. Technical guidance and support was given to the farmers from time to time.

Harvesting of Pea

The following are the cost of cultivation in brief and cost benefit ratio:-

Total cost of cultivation for 1 Ha	=	1, 50,000
Average yield / ha	=	8 MT
Average market price	=	60/kg
Total income	=	4, 80,000
Net income	=	3, 30,000
Cost benefit ratio	=	1:3.2

The ability of the members of Kisan Samruddhi Group to adopt the latest technologies involved under pea cultivation along with the assistance gained from the Department has enabled them to improve their economic condition which in turn helped them to increase their acreage for hybrid and open pollinated vegetables. More farmers have approached the Department for assistance and technical advice and wanted to be a member of Kisan Samruddhi Group. This is one of the achievements of the successful implementation of NVIUC Scheme under RKVY.

ORGANIC FARMING UNDER RKVY SCHEME FOR VEGETABLES IN EAST KHASI HILLS DISTRICT PROGRESS AND ACHIEVEMENTS.

Source - Department of Horticulture

The marketing board Shillong was entrusted with the organic certification of vegetables in East Khasi Hills district under RKVY scheme 2007-08. For this a total amount of 13.00lakh was earmarked for implementation work, out of which an amount of Rs. 9,25,043/-(rupees nine lakh twenty five thousand forty three)only has been incurred till date. Umtyrniut Mawmyrsiang village under Mawphlang block was identified and till now 25 farmers have been registered for an area of 5.00 hectares under this programme.

Crop undertaken is cauliflower which is followed by garden pea as rotation crop. Pea is planted in order to maintain the fertility of the soil. SGS, Kolkata is identified as certifying agency for organic certification of the crop. The crop undertaken under the programme has already been certified by the certifying agency and the certification is to be renewed after every year.

Regular trainings and discussions are organised on nutrient management, crop protection and other farming operation as and whenever the need arises. The inputs such as seeds, cowdung etc., are being provided by the board to the farmers free of cost under the scheme.

Designated officials of the SGS (certifying agency) had in the beginning visited the organic farm site and briefed both departmental as well as registered growers on the importance to adhering to the guidelines while implementing this programme.

PRODUCTION DETAILS

YEAR	AREA	QUANTITY HARVESTED IN KGS
2010-11	2.00 Ha	13824
2011-12	0.625Ha	3336
2012-13	1Ha	10224

These where sold locally as produce under organic conversion period at a premium price of Rs. 25-30/-.

PHYSICAL ACHIEVEMENT

Components	Physical Targets Against Installment Fund	Physical Achievements Till March 2013	Remarks
Vegetables Viz. Cauliflower, Pea.	5HA	5HA	The Crops Undertaken Has Already Been Certified By The Certifying Agency.

FINANCIAL ACHIEVEMENT

Components	Amount Received (In Rs.)	Physical Achievements Till March 2013	Remarks
Vegetables Viz. Cauliflower, Pea.	13,00,000.00	9,02,543.00	Implementation Still In Progress.

Tea Development Centre, Umsning

Source - MBDA Media Team

The Tea Development Centre, Umsning was inaugurated in the year 2010 which was one of the pilot projects and also the first organic tea project in Meghalaya initiated by the Directorate of Horticulture, Government of Meghalaya. Since then the Development centre has made a steady progress in Ri Bhoi and its adjoining districts as well. The certification of being organic according to the National Programme of Organic Standards (NPOP) and the certifying agency being the Control Union Certifications (India) has helped the development centre not only in the domestic market but in the international market as well.

The development centre has emphasised more on the quality production of the organic tea rather than focusing only on quantity and fetching a high price in the market. The area of tea plantation in the Tea Development Centre is 4 hectare with 34 workers working in the field and 6 solely in the factory for manufacturing, processing and packaging of the tea. The capacity of the factory is 5 tones. The Tea Development Centre also assists the Ri Bhoi Tea Growers Association in processing their raw materials in the factory of the centre. The Ri bhoi Tea Growers Association has a strength of 106 active members with its objective of working for the welfare of the tea grower members in the district.

The horticulture department organised an exposure trip to Bangalore for the farmers to inform them about the production of organic tea and other essential information for the same. A group of farmers also participated in an International Trade fair held at Pragati Maidan in the National capital where they displayed varieties of the organic tea produced in the state of Meghalaya.

The Ri Bhoi Tea Growers Association has approached the government for setting of a new factory through a gap funding project for the tea farmers of the district which will help them in attaining an increase in overall production as well as help them in fulfilling their economic needs. The Ri Bhoi Tea Growers Association has decided the name of the new factory as ARSLA Organic Tea Growers and Producers Cooperative Society Limited. ARSLA is a local term where AR means two and SLA means leaves, combining the two it is "Two Leaves". Till date, approximately 29 farmers have joined the association. It is assumed that the setting up of the new factory by the association will be a great boost for the overall production of the Organic Tea in the district and also in the state.

Mr. Ketrick W.Chyne (Bir under Umsning C& RD Block in Ri Bhoi district):-

Mr. Ketrick W.Chyne is a partner under the Tea Plantation scheme of the Horticulture Department. The project started in the year 2003 and completed in 2007.The department provided training to Mr. Chyne on tea plantation and management and also gave him a small incentive for plantation in the initial years. He was also provided with the planting materials free of cost along with the equipments and chemicals in a subsidised rate. The total area covered by tea plantation is 2 hectares with an annual production of 3500 kg. He sells the tea leaves at Rs 18 per kg to Nalari Industries in Nongpoh. Mr. Chyne is the Secretary of the Ri Bhoi Tea Growers Association (RBTGA) and also the Manager in the Internal Control System (I.C.S) of the First Organic Tea Project in Meghalaya. The annual income of Mr. Chyne is 75 to 80 thousand approx.

Appreciating the efforts of the State Government Mr. Chyne said that "We are approaching the Government for a gap funding project, to set up the proposed factory in Ri Bhoi. The factory will be a boon for the farmers of the area as it will help them to improve their standard of living and in return will boost the overall production of the organic tea in the District and in the state".

Mr. Storworthton Dohling (Ermawrong under the Umsning C & RD Block in Ri Bhoi District):-

As the old saying goes…" there is no alternative to hard work", until the pinnacle of your life is reached. Mr. Storworthton Dohling has proved the above saying in all respects in the field of organic tea plantation. He is still carrying on at the age of seventy keeping up his good work, with 100% dedication. He is the partner under the tea plantation scheme. The project started in the year 2003 and completed by 2007. The annual production is 12 tonnes. He sells it at a price of 18 Rs per Kg to Nalari Industries, Nongpoh. His farm is in Um dikar. In addition to tea he practices farming of ginger which has an annual production of more than 10 tonnes. He is also the Headmen of the village and the chairman of Ri Bhoi Tea Growers Association (RBTGA). His annual income is 2.3 to 2.5 Lakhs per annum.

Fruit Processing Unit, Shillong

Source - ADH, Food Processing, Horticulture Dept.

The Fruit Processing Unit at Shillong was first established by the Department of Agriculture (Horticulture wing) Government of Assam in the year 1955. At present the unit is functioning under the Directorate of Horticulture, Government of Meghalaya. The Unit has an installed capacity of processing products of 60 MT annually, and on an average processes 35-40 MT annually.

The main objective of the Processing Unit is to enhance the knowledge of the local growers on the commercial processes like conversion of raw products to more refined ones like jam, jellies, squash and many more. It also emphasises on disseminating technical information on the subject through practical trainings and also offers the facilities to the local public in converting their fruits into fully processed ones. The Unit also helps the local growers to understand the importance of preservation of perishable fruits and vegetables from spoilage and wastage.

The Fruit Processing Unit manufactures different products under the trade name "MEG" fruit products which include squashes, ready to serve drinks, jams, jellies, marmalade, canned fruits and pickles extracted from the conventional and indigenous fruits and vegetables.

Short training for a week once in a year is organised by the fruit processing unit Shillong in its Community training centre where the local growers, housewives, entrepreneurs and interested masses join the training programme. Trainings are also conducted in the various fruit growing areas in collaboration with the District Training Officers or the District Horticulture Officers.

The Fruit Processing Unit also has the Community Canning facility which is offered by the unit for the utilisation of the local growers. The raw materials like fruits are brought in by the people and processed according to their wants based on which a nominal value is charged by the department for the preservatives, labour, fuel and cans or bottles, if supplied by them. The Processing unit has sale outlets of all manufactured products in the unit as well as in the Directorate of Agriculture and Horticulture. It also participates with the products in State/District Level Exhibitions, International Trade Fairs and Departmental Festivals like Sohiong Festival, Kisan Mela and Aquafest.

Success Stories

Source - MBDA Media Team

Sohliya Village under Umsning C& RD Block in Ri Bhoi District

A small village in the Ri Bhoi district with around 78-80 households has turned out to be an example in the state for the achievement through the hard work of the villagers in the fields. The Headmen of the village Shri O.S. Lynkoi popularly known as Bah OS guided the village in a direction towards happiness and prosperity. They are the third largest strawberry growers and producers in the country. Shri Lynkoi brought few plants of strawberries and planted them in the fields. After assessing the positive results and vast opportunity in the sector, he approached the local horticulture department for assistance. He became the partner under the scheme of NEC Technology Mission in the district. Initially they planted the plants in an area of 0.25 hectare later extended to O.75 hectare. At present he has planted around 12000 plants imported from California (USA) which has a surviving rate between 70 to 80%.

Shri Lynkoi was the pioneer in introducing the process of mulching of strawberries in the year 1998 which is still followed all over the state by the Strawberry growers. Shri Lynkoi is the General Secretary of the Ri Bhoi Strawberry Growers Association (RBSGA) with 200 hundred active members working in the fields. The local horticulture department assisted the village with planting materials, water tanks, organic fertilisers, motors, mulching plastic and the facility of drip irrigation. In addition to strawberry the village also grows tea. The annual production of strawberry is 4 tonnes which is exported to Guwahati at a price of Rs. 200 per kg. Apart from exporting to Guwahati the farmers, through their own networks and associations, are also managing to sell their strawberries for a higher price at other markets.

The Ri Bhoi Strawberry Growers Association (RBSGA) earned a huge profit from the strawberry business which helped them to construct a school for the village children. They also recruited few teachers for providing quality education to the children. At present they have two teachers holding PG Degree, especially for the secondary section of the school.

The association has a cold storage with a capacity of 3 tonnes which is utilised after the harvesting of the strawberries in the field. The packaging is done by the members of the association. Shri Lynkoi gains a huge profit of 3 to 4 lakhs per annum which he invests for the welfare of the farmers of the village.

Bah Rowen Syngkli (Pahamardoloi, under the Umling C&RD Block)

- by Maywakit Lyngdoh, MBDA Media Team

Hard work and determination pays off. This adage could not be truer than in the case of Bah Rowen Syngkli, a man of about sixty years or more who has been an orange farmer for more than two decades, in the Ri Bhoi district of the state of Meghalaya, Pahamardoloi, under the Umling C&RD Block.

The road to being a successful orange farmer has not been an easy one for Bah Rowen. Sitting in his halfway house in the middle of his beautiful orchard, we listen to his story. Between mouthfuls of oranges, he tells us how his decision of planting oranges was initially a very unpopular one, with many questioning his choice of cultivation, how even he doubted whether or not this was the right way to go. Knowing that it would take 7-8 years before he could actually harvest his fruit, Bah Rowen, dotted his hillock with various other trees and plants that would bear fruit in a year or two.

We still find scattered all over his orchard areca nut, papaya, pears, banana and various other plants and fruit bearing trees- these helped sustain him in his initial years of starting his orchard, and over the years, they have been able to provide him additional income along with the yield from his oranges.

From being questioned about his choice of plantation to becoming a pioneer in orange cultivation, Bah Rowen has come a long way, and has generally done it all by himself: until very recently when the horticulture department reached out and helped Bah Rowen with various schemes under Area Expansion and Farm Mechanisation in the year 2011, to help him with expanding his orchard and a few tools to aid in the upkeep of his farm.

On being asked how being an orange farmer has changed his life, Bah Rowen told us how for him this is the only way of life he knows, and says perhaps the best thing about being an orange farmer is the fact that he has been able to send all his kids to school - Ten of them, who are at various stages of their education now. Bah Rowen cannot hide his disappointment when he recalls how his first born dropped out after his 8th standard. To Bah Rowen, living a good life is being able to educate his children and to provide for them, which he has been able to do, and quite well too, and in these past few years, his orchard has also seen an increase in production and has been able to generate quite a pretty income for him. With an annual production of 65 to 75 tonnes, he gets a profit of 12 lakhs approx after bearing the miscellaneous costs.

It is said that "Fortune Favours the Brave", although here, luck has nothing to do with the success of Bah Rowen, only his resolute determination to succeed. From being that foolish man who started an orange orchard instead of pineapple in 1987 to being a pioneer of orange cultivation in 2014, Bah Rowen's story is in every sense of the word a success.

Mr. Gilbert Syngkli (Pahammardoloi under Umling C & RD Block in Ri Bhoi District):-

Source - MBDA Media Team

Mr. Gilbert Syngkli is one of the enterprising pineapple farmers of the Pahammardoloi village under Umling C & RD Block in Ri Bhoi District. The Horticulture Department supported Mr. Syngkli in expanding his farm to 7 hectares which yielded him with an annual production of 2000 pieces of pineapples per year. Nearest market to the village is in Nongpoh where he sells his fruit at a healthy price of Rs 300 per basket containing 20 pieces of pineapples. His annual income from the activity is 35 to 40 thousand (approx) per year. Mr. Syngkli in addition to pineapples has a paddy and maize field solely for his household consumption only. He states that, "at present with a competitive market the time has come when a farmer should be aware of more ways to add value to his product in addition to what practices or activity he is engaged in. Adding value to his products will fetch a farmer with a handsome amount from the market and in return will become an extra source of livelihood. I have completed training in the food processing of pineapples organised by the Department of Industries and Commerce in Nongpoh in the year 2013. At present we are waiting for the scheme to be implemented by the department so that we can start the food processing unit for pineapples".

Mrs Mili Lyngdoh (Um Rangsai under Umling C& RD Block in Ri Bhoi District):-

Source - MBDA Media Team

"All the schemes that the department or the Government implements for the farmers motivate us to work hard in the fields. Today the hard work has paid off and it has helped me to improve my source of livelihood. With the assistance from the Local Horticulture Department I am able to maintain the poly house which is generating a healthy source of income for me and my family. People come to buy the anthuriums from shillong and areas adjoining to Nongpoh. They usually buy the anthuriums for ceremonies like wedding, engagement or sometimes for decorating their own houses. I get around 3 to 4 thousand sticks annually which I sell at different prices (Rs 5, 8 and 10 small, medium and big sticks respectively)", said Mrs. Mili. She has an additional source of income which she attains from farming of vegetables and fruits. Her annual income is 40-45 thousand approx per year from all the agricultural activities.

The Horticulture Department has assisted the farmers like Mrs Mili Lyngdoh by providing them with the planting materials, sprinklers and also constructing the poly houses under the schemes like the Area Expansion of Anthurium in the Ri Bhoi District which is funded under the Technology Mission (MM II) 2005-2006.

Ms Libon Maring (Umling Lambhrang under Umling C& RD Block in Ri Bhoi District):-

Source - MBDA Media Team

Ms Libon Maring, a 25 year old young lady supporting the livelihood activity of the family, expresses the change brought in the standard of living by the intervention of the District Horticulture Office, Nongpoh. The District Horticulture Office provided Ms Maring with sprinklers, planting materials and also constructed the poly house covering area of 100 sq mts, funded under the Technology Mission (MM II) 2005-2006. The nearest market for selling the exotic orchids is Nongpoh, where she sells for a price of Rs 10 per stick. Annual production is around 500 to 520 sticks. She makes a profit of 5 to 6 thousand annually. Apart from the business of the exotic orchids her family is also engaged in agricultural practices like farming of vegetables and fruits. Their annual income from all the activities is 50-60 thousand per year which is enough to fulfill their day to day needs and save a little for the future.

Mr. Lalit Rongki (Um Rangsai under Umling C& RD Block in Ri Bhoi District):-

Source - MBDA Media Team

One of the progressive farmers and a shining example for his village, Mr. Rongki has managed everything by himself. With the assistance from the Horticulture Department under the Technology Mission Mr. Rongki has constructed two poly houses. One poly house consists of the cherry tomatoes which he sells to the market at a price of Rs 80 to 90 per kg. The annual production of the cherry tomatoes is 6 to7 quintals, in the other poly house he has planted Anthuriums and sells it for a price of Rs 5, 8 and 10 (size - small, medium and large respectively) with an annual production of 3000 to 3500 sticks per year. He also has an alternate source of livelihood where he has a poultry farm and also manages his fish pond with and overall income of 2.5 to 3 lakhs annually from all the activities.

He is happy with the assistance provided by the District Horticulture Office Nongpoh and expressing his gratitude towards the department said, "I am happy with the intervention it has played an important role in changing my economic condition and provided me with a platform for practicing other activity. I have 5 Children and I am content on being able to send them to a good private school. After saving for my day to day requirements I was also able to renovate the house. I have a plot of land and want to utilise it for some other beneficial activity for which I am trying for assistance from the government or the local department who can help me in providing with bank linkages and loan.

Horticulture Hubs' in Meghalaya

Source - MBDA Media Team

The horticulture hub is a government initiative with an ultimate aim of taking horticulture to a bigger scale and boost state's rural economy. The primary objective of the horticulture hub is to serve as a demonstration center for the farmers and people at a large of the state. The horticulture hub also functions as the training centre for the farmers on new technology of cultivation, preservation and management of the crops. At present there are sixteen horticulture hubs cum nurseries functioning all over the state.

Ongoing construction with a total area of 2684 sq mts for a fully computerised green house

Workers covering the strawberry field through the process of mulching

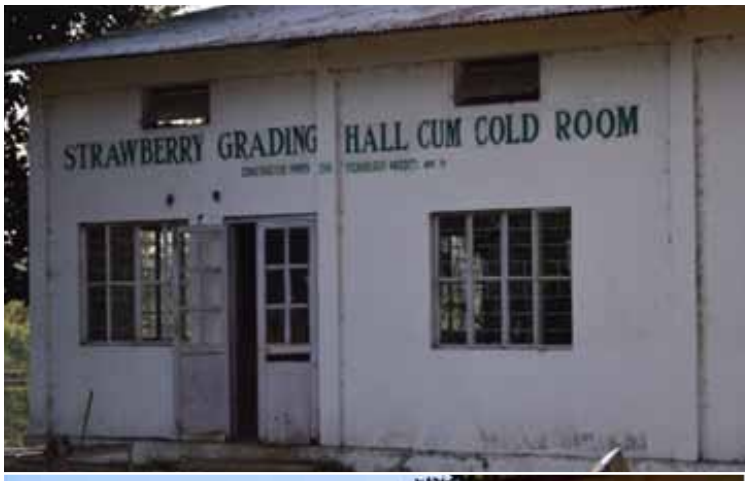
The Strawberry fields in the hub with an expected yield over 10 tonnes

Dis infecting the garden from the attack of insects

Yellow Vanda in bloom

Yellow Vanda in bloom

Pre budding process of the citrus or Khasi Mandarin



Vermicompost unit in the farm, Diewlieh

The strawberry and flower grading units in Diewlieh

Different colour of bell peppers in Horticulture Hub

Varieties of flowers in full bloom in the poly house in Upper Shillong

Interview of Shri Daniel J.W. Ingty, Director, Horticulture, Government of Meghalaya

Shri Daniel J.W. Ingty, Director, Horticulture, Government of Meghalaya

1. Meghalaya has a huge potential in Horticulture sector. What are the key attributes that can lead to further development of this sector?

The key attributes that are in favour of horticulture development in Meghalaya are conducive ecological system, favourable climatic parameters, organic tradition, wide varieties of horticulture crops ranging from temperate fruits to vegetables, spices, tubers, flowers and plantation crops. The State is also endowed with evenly distributed rainfall, fertile soil and altitudes ranging from 50 Metres MSL up to 1965 Metres MSL. The highland and plateau region of the State provides a natural advantage for growing off-season vegetables, fruits and flowers. The southern slopes are very favourable for growing the famous Khasi Mandarin, a wide variety of Citrus fruits, Black Pepper, Betel Nut and Betel Leaf which are exported to neighbouring Bangladesh.

2. What are the key activities that the horticulture department is undertaking to promote horticulture in the State?

The Horticulture Department is implementing a number of State Plan schemes, Central Sector schemes covering Fruit Development, Vegetable Development, Floriculture, Spices, Mushroom, Tea, Strawberry and Fruit Processing. Further the Department has also set up Horticulture Hubs at every district including spokes, to promote organized production and marketing of horticulture crops. The department is also introducing oil palm plantation in Garo Hills on a pilot basis with buy back arrangement with oilpalm processing companies.

3. It is understood that the growth of horticulture sector in Meghalaya is attributed more to area expansion. Since area is limited what is being done to increase the productivity?

Yes indeed area expansion has limitation and may potentially reduce area under forest beyond a certain point. The total cropped area in the State is about 3,39,725 Hectares which is 15.14% of geographical area(22,42,900 Hectares). This available area is not enough to create economy of scale and competitive advantage. Therefore, the department is planning to popularise multi-tier horticulture where 3-4 horticulture crops can be grown in the same unit of land. For eg, in arecanut plantation, our farmers grow betelvine, bayleaf and pepper longum (black pepper long). Farmers are also encouraged to go for multiple cropping (eg. Potato-Cabbage-Pea) and intercropping (eg.Radish-Bean) thereby increasing the cropping intensity.

4. Horticulture Mission would be launched in some time. How the schemes of the Department would be interlinked with the IBDLP programme?

The State Government is keen to converge its resources and intervention in a multi modal, multi-disciplinary mode in order to create synergy among the various departments of the State. This linkage of schemes in mission mode will ensure optimization of resources and reduce duplication of efforts. For example, the Horticulture Mission would also be implemented in a converged mode through the IDBLP.

5. Convergence of various schemes and missions is essential for efficient and effective utilization of capital, human, and natural resources of the state. In what ways is the horticulture department converging with other missions and schemes in this aspect?

The Department of Agriculture has been working closely with Planning Department under the MEGHALAMP project. The Department is also closely associating with the MBDA in relation to the different missions like Horticulture mission, Organic mission and Apiculture mission by providing technical expertise, training and capacity building. Further, the Department also works with GIZ, Germany under the Climate Change initiatives for crop risk management and mitigation.

6. In Meghalaya, horticulture sector is moving from conventional to organic farming. Why this shift? What benefits would organic horticulture farming would bring to Meghalaya?

Globally, there has been a strategic shift from conventional to "Green Agriculture" and "Organic Agriculture". This shift is a result of growing demand by consumers for safe food, nutritious food and the need for reduction of chemicals and pesticides which are degrading our soil fertility and harming the environment.

The State is inherently organic by tradition and practice and has comparative advantage in relation to other States which have shifted entirely to conventional agriculture. In fact most of our produce like Cashewnut, Banana, Pineapple, Ginger etc. are grown naturally since time immemorial but farmers have not been able to capture the premium that certified organic produce fetches in the market. Therefore, organic production and certification will add value to our existing produce ranging from spices, fruits, vegetables to plantation crops and ensures that our farmers who practice this form of cultivation will be able to earn extra income for themselves and their families as well as build brand Meghalaya as a destination for organic food in complement with eco-tourism.

7. Availability of quality planting material is necessary for the growth of horticulture sector. What are the plans of Horticulture department in this area?

The Department is setting up a Citrus Planting Materials hub in collaboration with Israel, at a strategic location in order to meet the need for quality planting materials. A Seed Certification Agency will also come up in the State shortly to undertake seed certification programs. Under funds made available from Special Plan Assistance(SPA), a Capital investment program for 3 years is under implementation for production and marketing of Strawberry, Color Capsicum, Gerbera, Dendrobium etc., under protected cultivation in a PPP mode with accredited Service Providers.

8. Capacity building and training farmers about new and improved technology plays a very important role. What measures are being taken in this direction?

The department has given top priority in training and capacity building for both its Officers, Staff and the farmers through various types of programs, both within the State and outside the State. The Department has also set up an Integrated Agriculture Training Centre at Upper Shillong with hostel facilities, and a world class practical training centre in technical collaboration with PTC+ of Netherlands is under implementation. Further, the department has tied up with Leibniz University, Hannover, Germany for Post Graduate Studies for inservice Officers. Currently, 3 inservice officers are undergoing post graduate studies in Floriculture, Vegetable Science and Pomology at this university. 4 Officers were also deputed to IRRI, Manila for short term post harvest management training.

9. Post harvest management is one of the key aspects in horticulture sector. What is being done by the department in this aspect?

30% of fruits and vegetables are lost due to absence of proper post harvest management. The department has 2 fruit processing units of 100 MT capacity to process surplus produce. These centres also impart training on processing and post harvest management to farmers. The department is also providing 50% subsidy for purchase of pickup transport vehicles of 3 MT capacities to SHG's for evacuation of their produce. Further, select private/farmer entrepreneurs of the State in the field of processing were assisted with grants to improve and upscale their processing activities.

10. Private participation in Post Harvest Management and processing would be the key to Meghalaya emerging as a major producer of Horticulture Products. What is being done to promote Private participation keeping in mind that Post Harvest Management and Processing is capital intensive?

The Department is encouraging private players to invest in Meghalaya in PHM and processing. However, due to absence of economy of scale and the capital intensive nature of the business, few players have shown interest. However, a number of processors/ co-operatives/entrepreneur have started small scale units in Pineapple, Cashewnut, Tea, Turmeric, Ginger in East Khasi Hills, Ri-Bhoi and West Garo Hills.

11. What is being done by the Horticulture department to create better market access for the horticulture farmers?

The Department has set up 2 Regulated Markets in the State to help the farmers bring their produce to market. Further, 5 Farmer's have also been established at different parts of the State which are run and managed by registered SHG's/Farmer's groups. Further, the department is planning to construct Lay Bye markets near national highways to assist farmers to sell their produce. Progressive farmers, entrepreneurs are also sent regularly for exposure to national trade fairs, buyer seller meet, horti expos and kisan melas.

12. Horticulture produce from Meghalaya has a huge export potential what steps are being taken in this direction?

The Department has signed MOU with Horticulture Service Providers like Zopar Exports, North Bengal Floritech etc. for exporting flowers (Orchids, Anthurium, Gerberas etc) high value low volume crops to overseas markets. We have also empanelled 8 Service Providers for organic production, certification and marketing of select horticulture crops.

We are also exploring trade ties with neighbouring States like Bangladesh, Myanmar, Nepal, Bhutan etc. to market its horticulture produce. Buyer Seller meet have also been organized at Sylhet, Bangladesh and Yangon, Myanmar. The Department has also explored European markets like France, UK, Germany for its organic teas and spices.

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