HORTI VISION 2020

Assam is a traditionally horticultural State and the socio – economic fabric of its people is largely constituted by horticultural components. The horticultural beauty lies in its history, culture, traditions and in the mindset of the people – which has imbibed a lot from this colorful science of fruits, flowers, vegetables, spices, plantation crops, root & tuber crops, nut crops, medicinals , aromatics, mushroom, bee keeping and lately bamboo. With a mere acrage of 5.46 lakh hectors under horticulture, out of gross cropped area of 36.37 lakh ha, it is only 15% of this area but has a lot to say if we are to deliberate in terms of its economic and social contribution and more importantly, to see Horticulture in accordance with aspirations and expectations of coming generation in the years to come or precisely by the year 2020 and beyond. Horticulture has a commitment that no other sector may perhaps can come up as parallel i.e in terms of its importance to achieve nutritional security and as a most viable component of environment friendly industrial base. This is a sector gaining importance day by day and the reason behind for calling it as sunrise area are – diverse nature of its products to suit different agro climatic situation, higher bio mass production per unit area and thereby more income per unit area, scope for improvement in rural diet with least investment or any extra effort, scope for massive employment generation, unveiling new horizons of value addition and the science itself being intellectually satisfying with aesthetic outlook has an universal appeal for both developed and developing nations. The situation can be looked under Assam's perspective as here under :

1. Horticultural sector which includes fruits, vegetables, tuber crops, floriculture, mushroom, medicinal & aromatic plants, spices and plantation crops have proved beyond doubt to be the best diversification of agriculture for better land use.
2. The soil and climate is so ideal for a wide range of horticultural crops that experts comment Assam as a 'Sleeping Giant'.
3. According to latest survey on children aged 1 to 4 and pregnant women in Assam, 50.4% of them suffer from under weight and the growth of 52.5% are stunted. So individual dietary improvement through nutritional horticulture is the need of the hour- which is easily achievable and most viable.
4. Tremendous scope for employment generation including farm- women through horticultural ventures & self employment horticultural schemes.
5. Sustainable approach to raise productivity is best suited when horticulture is taken into account due our existing production system approach.
6. The natural flora of Assam have huge number of hitherto unexploited medicinal and aromatic plants including minor fruits and orchids. Any strategy to boost up this sector will particularly help local and more particularly tribal farmers. This has a bearing on preserving genetic variability that exists in case of many horticultural crops also.
7. The State being characterized for low consumption of fertilizer and plant protection chemicals, this so called weakness can be transformed in to strength through adoption of organic farming as the export tract is fast becoming clear for organics only.
8. Assam being gateway of North East India and the State being strategically located in close proximity to emerging South East Asian markets, has a lot to deliver in years to come.

Keeping these points in view and also considering the requirement against projected population of Assam by the year 2020 and giving top most priority on commercialization of this sectors , crops specific strategies are formulated and a gist of targets of various major sectors of horticulture has been formulated as stated below.

BANANA

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	42.6	60.0	70.0
Production (lakh MT)	5.9	12.0	21.0
Productivity (Ton / ha)	13.8	20.0	30.0

B. **Present Scenario** :

Highest area under fruit crops is occupied by banana. Out of more than 15 varieties grown, the commercially important varieties are Jahaji, Malbhog, Amrit sagar, Kach kol and Cheni cahampa. Marketable surplus is high and sizeable quantity is going outside the state. Commercial banana activity is common in and around Drangiri of Goalpara district. Jorhat district is known for abundance of best quality, Jahaji while Nagaon, Morigaon, Kamrup districts are referred as producers of best quality Malbhog. There is scope for more organised cultivation and better market tie-up to ensure price support to the growers.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 42.6 thousand Ha to potential 70.0 thousand Ha by the year 2020 with an annual growth rate of 3.78%
2. Thrust districts identified are Goalpara, Kamrup, Nagaon, Morigaon and Jorhat.
3. Hike in productivity and commercialization to be achieved by :-
    i. Identification of potential belts & organization of banana growers to from Growers societies and their training /awareness/ exposure.
    ii. Development of commercial plantation with commercial varieties
    iii. Adoption of package of practices
    iv. Adoption of modern technologies like Drip / Fertigation.
    v. Agronomic manipulation/ mechanization
    vi. Adoption of IPNM technologies.
    vii. Reduction in post harvest losses with appropriate technologies including proper harvest, grading, packaging , storage.
    viii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Quality improvement .
5. Value addition.

ASSAM LEMON

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	8.80	12.50	17.50
Production (lakh MT)	0.51	1.02	2.10
Productivity (Ton / ha)	5.83	8.02	12.00

B. **Present Scenario** :

Local cultivars are of excellent quality but it is grown mostly as homestead and commercial cultivation is only in small scale. It is highly remunerative during Off-season i.e February, March, April and after

reaching a plateau , the price becomes un-remunerative. Almost continuation bearing habit, least demand for space, suitability as intercrop makes it very potential crop for augmenting farmers income per unit area. Potential districts are Kamrup, Sonitpur, Barpeta Bongaigaon, Nagaon. Dhubri, Goalpara, Kokrajhar. There is scope for organised cultivation for processing products to ensure price support to the growers. Can be grown as boarder crop for protection of orchard.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 8.80 thousand Ha to potential 17.50 thousand Ha by 2020 with an annual growth rate of 5.81%
2. Thrust districts identified are Kamrup, Barpeta, Bongaigaon, Sonitpur
3. Assam Lemon will be a major component for multi storied cropping.
4. Parallee thrust is semi urban and urban areas.
5. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & training /awareness to the growers.
   ii. Development of commercial plantation with suitable varieties.
   iii. Adoption of package of practices.
   iv. Intercropping with other horticultural crop arecanut, coconut etc.
   v. Post harvest processing for pickles, squash with proper packaging , storage.
   vi. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Organic farming .
5. Value addition.

ORANGE

Broad Objective:

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	5.96	8.20	10.00
Production (lakh MT)	0.66	1.23	2.20
Productivity (Ton / ha)	11.22	15.00	22.00

B. **Present Scenario** :

Local cultivars are of excellent quality but area is gradually declining due to lack of market support, maladies associated with “citrus decline” and above all, encroachment of traditional orange area by Mini Tea Garden since last one decade for obvious reasons of lucrative prevailing tea prices while prices of orange is totally unattractive, unstable / unpredictable governed by middleman.

C. **Strategies for increasing production and quality** :

1. Increase in area from present : 5.96 thousand ha to potential 10 thousand ha by the year 2020 with on annual grouth rate of 3.98%
2. Rejuvenation of existing orchards
3. Thrust districts identified are Tinsukia, N.C. Hills, Karbi anglong, Darrang, Kamrup, Goalpara.
4. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & organization of Orange growers to farm Growers societies and their training /awareness/ exposure.
   ii. Development of commercial plantation & rejuvenation of old orchards.
   iii. Adoption of package of practices
   iv. Adoption of IPNM technologies.
   v. Organic cultivation of orange for export market
   vi. Reduction in post harvest losses with appropriate technologies including proper harvest grading, packaging , storage.
   vii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
5. Quality improvement .
6. Value addition.

LITCHI

Broad Objective :

a) Entering into competitive domestic market with quality product.
b) Development of commercial plantation
c) Better price to growers.
d) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	4.12	5.77	6.77
Production (lakh MT)	0.19	0.38	0.61
Productivity (Ton / ha)	4.57	6.50	8.92

B. **Present Scenario** :

Wide range of varieties are grown and most of them are excellent in quality; very much identical to Muzaffurpur. Qualitatively, the varieties grown in Sonitpur district may surpass any elite variety. The crop being highly perishable, post harvest losses are common and fail to reach city market as garden fresh and thus price normally becomes un remunerative.

C. **Strategies for increasing production and quality** :

2. Increase in area from present 4.12 thousand ha to potential 6.77 thousand ha by the year 2020 with an annual growth rate of 3.78%.
3. Thrust districts identified are Sonitpur, Kamrup, Bongaigaon, Jorhat and Goalpara
4. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & organization of Litchi growers and their training /awareness/ exposure.
   ii. Development of commercial plantation with commercial varieties
   iii. Adoption of package of practices
   iv. Adoption of IPNM technologies.
   v. Reduction in post harvest losses with appropriate technologies to protect from bird and bats with plastic nests.
   vi. Facilitate marketing / market information/ market tie-up / for domestic and export market.
5. Value addition.

MANGO

Broad objective :

a) Development of commercial plantation with elite varieties.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	3.70	6.40	10.95
Production (lakh MT)	0.29	0.58	1.15
Productivity (Ton / ha)	7.81	9.00	10.50

B. **Present Scenario** :

Inspite of being an major fruit crop, it is not commercially cultivated. Cultivation is confined to few districts in homestead garden only with local cultivars which is not competitive with the imported (other state) one. At present few villages have been selected as Mango village with supply and introduction of improved varieties

like Amrapalli, Doseri, Mallika etc. Local varieties being infested by fruit borers, utilized mostly for pickle production

C. **Strategies for increasing production and quality** :

1. Increase in area from present 3.70 thousand ha to potential 10.95 thousand ha by the year 2020 with an annual growth rate of 11.52 %
2. Thrust districts identified are Kamrup, Sonitpur, Bongaigaon, Goalpara, Kokrajhar, Golaghat and Nagaon.
3. Hike in productivity and commercialization to be achieved by :-
   - i. Identification of potential belts & villages and organization of Mango growers to form Growers societies and their training /awareness/ exposure.
   - ii. Development of commercial plantation with commercial varieties
   - iii. Adoption of package of practices
   - iv. Adoption of IPNM technologies.
   - v. Reduction in post harvest losses with appropriate technologies.
   - vi. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Quality improvement .
5. Value addition.

PAPAYA

Broad objective :

a) Development of commercial Plantation.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	6.94	10.00	14.00
Production (lakh MT)	1.02	2.00	4.5
Productivity (Ton / ha)	14.625	20.00	32.14

B. **Present Scenario** :

In Assam, Papaya is a traditional homestead crop and commercialization is not yet started. Varieties grown are almost local and improved hybrid varieties grown only in small scale. The present use of Papaya is mostly as vegetables and not popular as industrial crops.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 6.94 thousand Ha to potential 14.00 thousand Ha by the year 2020 with an annual growth rate of 5.98%.
2. Thrust districts identified are : N. C. Hill, Kamrup, Nalbari, Kokrajhar, Darrang, Cachar, Karimganj, Nagaon, and Jorhat.
3. Hike in productivity and commercialization to be achieved by :-
   - i. Identification of potential belts & villages and organization of training /awareness/ exposure.
   - ii. Development of commercial plantation with commercial varieties
   - iii. Adoption of package of practices
   - iv. Adoption of IPNM technologies.
   - v. Reduction in post harvest losses with appropriate technologies including proper harvest, packaging .
   - vi. Exploring Industrial uses primarily through small scale entrepreneurs
   - vii. Facilitate marketing / market information/ market tie-up and exploring contractual farming .
4. Quality improvement .
5. Value addition.

PINEAPPLE

Broad Objective :

a. Self –sufficiency and market exploration and commercialization.
b. Better price to growers.
c. Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	13.89	16.60	22.50
Production (lakh MT)	2,12	4.15	9.00
Productivity (Ton / ha)	15.30	25.00	40.00

B. **Present Scenario** :

Local cultivars grown are Kew (70%) queen and Joldhup. The quality is ideal for fresh as well as processed market and mostly organic. The crop is unremunerative and distress sale and spoilage during peak period is common. Weak processing sector is also a major problem.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 13.89 thousand ha to potential 22.50 thousand ha by the year 2020 with an annual growth rate of 3.64%
2. Thrust districts identified are Kamrup, Karbi Anglong, N.C. Hill, Nagaon, Goalpara and Cachar.
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & organization of Pineapple growers to form Growrs societies and their training /awareness/ exposure.
   ii. Development of commercial plantation with commercial varieties as monocrop/ intercrop
   iii. Adoption of package of practices
   iv. Adoption of modern technologies like plastic mulching, Fertigation through drip etc.
   v. Agronomic manipulation for yield and extension of harvesting period to escape glut and supplement processing sector.
   vi. Adoption of IPNM technologies.
   vii. Reduction in post harvest losses with appropriate technologies.
   viii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Quality improvement .
5. Value addition.

OTHER FRUITS

(Jalphai, Outenga, Kujithekera, Amara, Silikha, Jamun, Aonla, Bael, Castard Apple etc.)

Broad objective :

a) Strengthening production base & market exploration and commercialization.
b) Better price to growers.
c) Exploring Value addition and MNC Tie-up.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	1.95	2.50	3.00
Production (lakh MT)	0.07	0.14	0.20
Productivity (Ton / ha)	3.59	5.50	6.67

B. **Present Scenario** :

In Assam many minor fruits are grown in homesteads,. Commercial cultivation is not started though these fruits have high nutrative and medicinal value and there is demand for raw consumption and for preparation of pickles, Jam Jally etc. The major fruits are :- Jalphai (Elaoocarpus florgundurs), Outanga (Dillenia indica), Silikha (Terminalia Chebela), Aonla (Emblica officinalis), Jamun (Syzygium cumini), Bael (Aegle marmelos), Castard apple (Annong squomosa) Etc.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 1.95 thousand Ha to potential 3.00 thousand Ha by the year 2020 with an annual growth rate of 3.16%.
2. Thrust districts identified are almost all the district of the State.
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts, Villages & organization of farmers for commercial production.
   ii. Reduction in post harvest losses.
   iii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Evaluation of local germplasm with research support .
5. Value addition.

CASHEWNUT

Broad objective:

a) Large scale introduction in non traditional bu potential areas in districts to strengthen production base.
b) Marginal & waste land utilization.
c) Development of commercial plantation to augment farmers income and develop processing unit.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (Ha)	798(Mostly new plantation)	1300	1750
Production (MT)	51 (from 50 ha)	2366	4200
Productivity (Ton / ha)	1.02	1.82	2.4

B. **Present Scenario** :

Assam is not incorporated in the Cashewnut map of India but the fact remains that as many as 10 Nos. of cashew processing factories are running in Assam. The success of this crop is demonstrated in Mankachar area adjoining Garo hills of Meghalaya. Like tea, the processing sector being well organized, cashew crop may dominate other crops in most of the districts as even marginal lands can fetch an income of Rs. 1,00,000/- ha. when cashew is grown.

C. **Strategies to boost up this sector** :

i. Identification of potential belts particularly in areas adjoining Arunachal prodesh, Meghalaya etc. and hill districts and gist fallow lands.
ii. Strengthening of nursery sector with elite planting material.
iii. Explore mix cropping / inter cropping to accommodate cashewnut with parallel thrust in mono cropping to strengthening production base.
iv. Processing under private/ cooperation sector.
v. Facilitate marketing / market tie-up.
vi. Quality improvement.

COCONUT

Broad objective :

a) Strengthening production base by encompassing non traditional but potential areas.
b) Better price to growers.
c) Explore value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	21367	24567	26967
Production (000 Nut)	249566	2088195	2561865
Productivity (Nut per bearing Tree)	73	85	95

B. **Present Scenario** :

Though Assam is suitable for Coconut cultivation but the productivity is low as non descriptive local varieties are mostly grown due to non availability of good quality Coconut seedlings within easy reach of farmers, very poor management practices in plantations, affect of diseases more particularly by Ganodema, Borax deficiency etc. Moreover, the coconut farmers are also not getting attractive prices due to non existence of coconut based industries and proper market tie up. Ongoing scheme of Coconut Development Board is providing impetus to this sector . Performance is excellent in districts of Kamrup, Nagaon, Morigaon, Nalbari and Barpeta.

C. **Strategies for increasing production and quality** :

1. Establishment of Coconut Nurseries for availability of best planting materials for the farmers.
2. Increase in area from present 21367 thousand Ha to potential 26967 thousand Ha through area expansion inter cropping, mixed cropping etc. by the year 2019-20.
3. Increase in productivity from present 73 to 95 Nuts per bearing tree through introduction of improved technologies.
4. To Identify the potential coconut pockets followed by thrust programme for higher productive and to establish coconut based industries like tender coconut water, coir etc.
5. Management of diseased/ unproductive / old coconut garden and need base replacement with new seedling
6. Introduction of multitier and farming in coconut garden for attractive benefit to the farmers.
7. Establishment of net work for market tie-up and promotional activities.

FLORICULTURE

Broad Objective :

a) To check flow from neighboring States .
b) To fulfill ever increasing domestic market demand.
c) To explore external /export market
d) Complete commercialization to augment farmers income.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	0.80	1.20	2.00

B. **Present Scenario** :

Floriculture is a sunrise area in Assam. The area is fast expanding, commercial production has started. Major components at present are Marigold, Gladioli, Tuberose, Gerbera and recently Anthurium and foiages in the form of fresh flower, garland, cut flowers, dry flower, Buquecy, potted pants. Farmers more particularly farm woman of Kamrup district are entering into commercial floriculture followed by Morigaon, Nagaon and Tinsukia & Cachar. The major problems are lack of off season production

technology and very poor post harvest handling practices. If these two problem are properly addressed , and if local orchids & ferns can be explored, floriculture has not only a very bright prospect in Assam but can explore foreign markets.

C. **Strategies for increasing production and quality** :

1. Advantage Guwahati i.e. exploring most prospective market of Guwahati due to its strategic location for floriculture products will be overall target.
2. Identification of Floriculture potential villages more particularly in Kamrup & districts surrounding Kamrup, formation of growers soceities, their training and exposure
3. Saturation of floriculture area with better crops/ Specie/ varieties having market demand.
4. Explore local germplasm particularly orchids/ ferns etc. with research support .
5. Easy availability of planting materials.
6. Adoption of improved and hi-tech technologies for productivity hike and off-season production.
7. Quality improvement

Exploring Market/ Market information/ Market tie up.

RABI VEGETABLES

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Restricted use of Chemicals
d) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	142.62	223.00	356.80
Production (lakh MT)	21.42	36.79	69.58
Productivity (Ton / ha)	15.02	16.50	19.50

B. **Present Scenario** :

Rabi vegetables in Assam have already shifted from tiny homestead to large scale commercial plantation in almost all districts. Hybrids being admired and cultivated much, market glut at peak season has become a problem in case of vegetable crops. High perishability, lack of storage facility, poor communication has contributed to the malady. Besides common Cole crops, solanacius vegetable, new crops like capsicum, Broccoli and new varieties are dominating the production and market sscenario.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 142.62 thousand Ha to potential 356.80 thousand Ha by the year 2020 with an annual growth rate of 8.83%
2. Thrust districts identified are : Barpeta , Dhubri, Bongaigoan, Darrang, Kamrup, Goalpara, Nagaon, Morigaon & Cachar.
3. Hike in productivity and commercialization to be achieved by :-
    i. Identification of potential belts & organization of Vegetable growers to form Growers societies and their training
    ii. Off season production
    iii. Development of commercial plantation with commercial varieties
    iv. Adoption of package of practices
    v. Agronomic manipulation/ mechanization
    vi. Adoption of IPNM technologies and organic farming.
    vii. Reduction in post harvest losses with appropriate technologies including packaging , storage.
    viii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Introduction of new potential crops
5. Quality improvement .
6. Value addition and encouragement of contractual farming.

POTATO

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	75.48	115.23	140.23
Production (lakh MT)	5.90	9.79	17.53
Productivity (Ton / ha)	7.81	8.50	12.50

B. **Present Scenario** :

Though Potato in Assam have already been started on a commercial scale in many districts, the present availability is below our requirement. But market glut at peak season has become a problem in case of potato. Perishability lack of storage contributed to less return to the growers.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 75.48 thousand Ha to potential 140.23 thousand Ha by the year 2020 with an annual growth rate of 5.04%.
2. Thrust districts identified are : Goalpara, Kamrup, Barpeta, Morigaon, Dhubri , Darrang and Sonitpur.
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & organization of Potato growers to form Growers societies and their training /awareness/ exposure.
   ii. Development of commercial cultivation with commercial varieties.
   iii. Adoption of package of practices
   iv. Agronomic manipulation/ mechanization
   v. Adoption of IPNM technologies.
   vi. Reduction in post harvest losses with appropriate technologies including proper harvest, grading, packaging , storage.
   vii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Easy availability of standard planting material.
5. Quality improvement .
6. Value addition.
7. Emphasis on TPS technology.

KHARIF VEGETABLES

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	67.31	115.00	184.00
Production (lakh MT)	7.03	13.22	24.84
Productivity (Ton / ha)	10.45	11.50	13.50

B. **Present Scenario** :

Kharif vegetables in Assam is a profitable venture now more particularly the Off season production.

Ladies finger, spine gourd , snake gourd, smooth gourd and other cucurbits are most sought after crop. Hybrids being admired much, market glut at peak season has become a problem in case of Kharif vegetable crops. High perishability, lack of storage facility, poor communication has contributed to the malady. However, district like Barpeta, Darrang, Kamrup are far ahead of other districts in case of commercial vegetable cultivation.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 67.31 thousand Ha to potential 184.00 thousand Ha with an annual growth rate of 10.19%
2. Thrust districts identified are : Barpeta , Dhubri, Darrang, Kamrup, Nalbari, Goalpara, Nagaon, Morigaon .
3. Hike in productivity and commercialization to be achieved by :-

   i. Identification of potential belts & organization of Vegetable growers to form Growers societies and their training
   ii. Development of commercial plantation with commercial varieties
   iii. Adoption of package of practices
   iv. Agronomic manipulation/ mechanization
   v. Adoption of IPNM technologies.
   vi. Reduction in post harvest losses with appropriate technologies including packaging , storage.
   vii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
   viii. Minimize the involvement of middleman through the organization of vegetable growers .
4. Protected cultivation
5. Quality improvement .
6. Value added.

BLACK PEPPER

Broad objective:

i. Entering into domestic and external market.
ii. Better price to growers.
iii. Processing and Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	2.70	4.35	6.80
Production (lakh MT)	0.04	0.08	0.15
Productivity (Ton / ha)	1.34	1.89	2.20

B. **Present Scenario** :

Black Pepper is a common component in homestead in Assam and seldom finds a commercial status. In spite of assured market and its nonperishable nature, easy growing habit in arecanut and coconut plantations, this commercial giant could not draw the attention of common Assamese farmers. A simple estimate shows that per ha. return is more than Rs. 100,000/-

C. **Strategies for increasing production and quality** :

1. Increase in area from present 2.70 thousand Ha to potential 6.80 thousand Ha by the year 2020 with an annual growth rate of 8.93%
2. Thrust districts identified are : All the district are more or less equally potential but the location should be free form flood & water stagnation
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & villages on the basis of available standards like Arecanut, Coconut etc. and organization of Black pepper growers societies.
   ii. Development of commercial plantation with commercial varieties.
   iii. Adoption of package of practices.
   iv. Agronomic manipulation.

v. Adoption of IPNM technologies.
vi. Reduction in post harvest losses with appropriate technologies including proper harvest grading, packaging , storage .
vii. Facilitate marketing / market information/ market tie-up / for domestic and export market.

4. Quality improvement .
5. Value addition like white pepper , oil, oleoresins etc.

CHILLY

Broad objective :

a) Commercialization.
b) Better price to growers.
c) Value addition.

A**. Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	14.88	21.00	27.00
Production (lakh MT)	0.10	0.19	0.38
Productivity (Ton / ha)	0.66	0.90	1.40

B. **Present Scenario** :

It is common spice crop in Assam which is widely grown specially in Rabi season in Nagaon, Morigaon, Darrang, Sonitpur, Nalbari, Barpeta, Kokrajhar, Goalpara and Dhubri district. It has a local market which is used as raw and dry. But there is a scope for replacement with improve varieties to meet the demand. There is scope for more organized cultivation and better market tie up to ensure price support to the growers. One local capsicum specis locally know as Bhut Jalakia is reported to be the most pungent spices and the highest capsis content projecting scope for commercialization. Another specis, Birds eye chilli is grown abundantly in Karbi Anglong, N.C. Hills and Barak valley and exported to Bangladesh.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 14.88 thousand Ha to potential 27.0 thousand Ha by the year 2020 with an annual growth rate of 4.79%.
2. Thrust districts identified are Nagaon, Morigaon , Barpeta, Dhubri, Cachar and Bongaigaon.
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & organization of Chilli growers and their training /awareness/ exposure.
   ii. Adoption of package of practices
   iii. Adoption of IPNM technologies.
   iv. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Quality improvement .
5. Value addition.

CORRIENDER

Broad objective :

i. Large scale commercial adoption in reverine tracts
ii. Better price to growers.
iii. Processing .

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	19.90	27.60	31.50
Production (lakh MT)	0.17	0.33	0.66
Productivity (Ton / ha)	0.83	1.20	2.10

B. **Present Scenario** :

Coriander is a neglected but potential crop in Assam. Small scale house hold production is common in Rabi season but the reverine tract produces substantial quantity annually as seeds but not processed locally. Competition with other field spices like cumin, flannel, fenugreek etc. restricting its expansion.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 19.90 thousand Ha to potential 31.50 thousand Ha by the year 2020 with an annual growth rate of 3.42%
2. Thrust districts identified are : Barpeta, Nalbari, Morigaon, Dhubri, Darrang, Goalpara, nagaon, Bongaigaon and all the districts have potentiality to cultivate corriandar.
3. Hike in productivity and commercialization to be achieved by :-

   i. Identification of potential belts & organization of growers and their training/ awareness / exposure.
   ii. Development of commercial cultivation with commercial varieties.
   iii. Adoption of package of practices.
   iv. Facilitate marketing / market information/ market tie-up / for domestic and export market.

4. Value addition.

GINGER

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	17.97	25.00	35.70
Production (lakh MT)	1.15	2.50	4.50
Productivity (Ton / ha)	6.41	10.00	14.00

B. **Present Scenario** :

Inspike of being a major spice crop commercial cultivation is mostly confined to two hill district and in Sadia sub-division of Tinsukia district. Local varieties dominated in most districts. Moran Ada is admired for high oleoresin content; while Rio –de- generio dominates in Sadia area. Mizo lange variety is predominantly grown in Karbi anglong and N.C. Hills. Both these varieties have export potential and also well fitted for processing and value addition. The fore most obstacle in commercialization of this sector is poor communication to the centers of production and as such paving the way for middleman exploitation and lack of processing units.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 19.97 thousand Ha to potential 35.70 thousand Ha with an annual growth rate of 5.80%
2. Thrust districts identified are : KarbiAnglong, Tinsukia, N.C. Hills, Darrang, Kamrup, Goalpara, Nagaon, Cachar.
3. Hike in productivity and commercialization to be achieved by :-

   i. Identification of potential belts & organization of Ginger growers to from Growers societies and their training / awareness
   ii. Development of commercial plantation with commercial varieties
   iii. Adoption of package of practices
   iv. Agronomic manipulation/ mechanization
   v. Adoption of IPNM technologies.
   vi. Reduction in post harvest losses with appropriate technologies including proper harvest, grading, packaging , storage & processing.
   vii. Facilitate marketing / market information/ market tie-up / for domestic and export market.

4. Quality improvement .
5. Value addition like Ginger sticks, pastes, oil, oleoresins etc.

GARLIC

Broad objective :

a) Development of commercial plantation in potential pocket.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	66.69	8.70	12.40
Production (lakh MT)	0.22	0.44	0.87
Productivity (Ton / ha)	3.28	5.00	7.00

B. **Present Scenario** :

Though the garlic is a suitable crop for Nagaon, Morigaon, Jorhat, Kamrup, Darrang, Sonitpur, Goalpara, Bongaigaon and Dhubri district it is not cultivated widely. The local cultivars are dominating the area. The crop is yet to be cultivated commercially.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 6.69 thousand Ha to potential12.40 thousand Ha by the year 2020 with an annual growth rate of 5.02%
2. Thrust districts identified are Goalpara, Jorhat (Majuli area), Barpeta, Dhubri, Bongaigaon, Goalpara,Darrang and Kamrup.
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts & villages and organization of training /awareness/ exposure for farmers.
   ii. Development of commercial plantation with commercial varieties.
   iii. Adoption of package of practices
   iv. Facilitate marketing.
4. Quality improvement .
5. Value addition.

ONION

Broad objective :

a) Self –sufficiency and market exploration and commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	7.50	9.98	12.70
Production (lakh MT)	0.17	0.35	0.70
Productivity (Ton / ha)	2.33	3.50	5.50

B. **Present Scenario** :

Onion is a back yard cultivation in Assam & could hardly meet even the seasonal requirement. Rabi Onion is the only crop while Kharif onion, as per preliminery studies, is promising but in sloppy lands and foot hills

C. **Strategies for increasing production and quality** :

1. Increase in area from present 7.50 thousand Ha to potential 12.70 thousand Ha with an annual growth rate of 4.07%
2. Thrust districts identified are : Barpeta, Bongaigaon, Darrang, Dhubri, Kamrup, Nagaon.
3. Hike in productivity and commercialization to be achieved by :-

   i. Identification of potential belts and villages & organization of farmers for large scale cultivation and their training, awarness/ exposure
   ii. Introduction of commercial varieties
   iii. Adoption of package of practices
   iv. Adoption of IPNM technologies.
   v. Facilitate marketing
4. Quality improvement .

OTHER SPICES

Broad objective

a) Self –sufficiency and market exploration and commercialization.
b) Introduction of better varieties.
c) Better price to growers.
d) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	2.12	3.50	4.70
Production (lakh MT)	0.02	0.03	0.05
Productivity (Ton / ha)	0.72	0.95	1.15

B. **Present Scenario** :

In Assam there are some areas under other spices like Cumin, Black Cumin, Flannel, Fenugreek etc. but it has not yet been commercialized in spite of great demand and lucrative market . The area is mostly confined to revirine tract and product is exclusively handled by middleman. The post harvest aspects are neglected and quality of product needs improvement.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 2.12 thousand Ha to potential 4.70 thousand Ha by the year 2020 with an annual growth rate of 7.15%.
2. Thrust districts identified are Goalpara, Kamrup, Nagaon, Morigaon, Darrang, Sonitpur, Dhubri and Barpeta.
3. Hike in productivity and commercialization to be achieved by :-
   i. Identification of potential belts and their training /awareness/ exposure.
   ii. Development of commercial plantation with commercial varieties
   iii. Adoption of package of practices
   iv. Reduction in post harvest losses with appropriate technologies .
   v. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Quality improvement .
5. Value addition.

TURMERIC

Broad objective:

a) Commercialization.
b) Better price to growers.
c) Value addition.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (000 Ha)	14.88	21.00	27.00
Production (lakh MT)	0.10	0.19	0.38
Productivity (Ton / ha)	0.66	0.90	1.40

B. **Present Scenario** :

Though Turmeric is a house hold crop in Assam , commercial cultivation has started only in small scale. The present productivity is very low and whatever produced is utilized for mere local consumption.

C. **Strategies for increasing production and quality** :

1. Increase in area from present 14.88 thousand Ha to potential 27.00 thousand Ha by the year 2020 with an annual growth rate of 4.79%
2. Thrust districts identified are : KarbiAnglong, N.C. Hill, Kamrup, Golaghat, Nagaon, Morigaon, Lakhimpur, Sonitpur, Kokrajhar.
3. Hike in productivity and commercialization to be achieved by :-

   i. Large-scale establishment of commercial plantation also as intercrop.
   ii. Saturation with commercial varieties.
   iii. Adoption of package of practices
   iv. Intercropping with Banana, Arecanut, Coconut.
   v. Adoption of IPNM technologies and organic production.
   vi. Adoption of appropriate technologies for post harvest processing, packaging , storage .
   vii. Facilitate marketing / market information/ market tie-up / for domestic and export market.
4. Quality improvement .
5. Value addition.

MEDICINAL & AROMATIC PLANTS

Broad objective:

a) Evaluation of local germ plasm and introduction of potential exotics
b) Prioritization on commercial outlook.
c) Systematic cultivation / contractual farming/forest village exploration.
d) Processing of final or semi processed product
e) Exploring markets/ market information / market tie-up.

A. **Status and Targets**

Component	Present Status	Future Target	
	2002-03	2011-12	2019-20
Area (Ha)	5,000 (Estimated)	10,000	20,000
Production (MT)	15,000 (Estimated)	40,000	1,00,000

B. **Present Scenario** :

Assam being one of the 14 bio diversity hot spots of the world, it is the natural depository of many valuable medicinal and aromatic plant partially explored or still to be explored commercially. As reported, many valuable items are going out of the state informally by traders. There is no systematic production of

marketing or any processing unit on MAP. Recently, contractual farming is being encouraged by private sector,. Research support wanting.

C. **Strategies to boost up this sector** :

1. Prioritization of commercially important crops/ varieties/ Specis with research support.
2. Organized cultivation with systematic approach
3. Exploring Joint Forest Management Committee and others to venture into commercial production/ processing / semi processed product manufacture/ value addition etc.
4. Market access / market information
5. Linking private sector and contractual farming.

BAMBOO

Bamboo; No longer an woody grass but a glamorous crop

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A. **Present Scenario** :

Time has come to rediscover bamboo. It is no longer a "orphan specis" or poor men's timber. Pondits in World Bamboo Congress (27.02.2004 to 04.03.04 at New Delhi) have projected this crop as 'green gold' and referred it as vital for social, ecological and economical security. No other crop has more than 1500 application such as – Bamboo pulp & paper, laser printer and photocopy paper, floor boards, panels , ceiling, medicinal, receipies, cloths, land scaping, eco tourism, building, furniture etc. The annual turnover on bamboo sector projected as Rs. 25 billion, against the market potential of Rs. 45 billion and it is expected to go beyond Rs. 250 billion in near future. India posses 140 specis i.e. just next to China but the productivity is less. Bamboo is reported to be a gold mine for gene tagging. Estimate says that out of 9 million Ha, 1 million ha of bamboo is in Assam. It is revealed that 66% of the total area under Bamboo in India is in the North East and Mizoram share is 33% .

The present world market is dominated by china with its products like Flavonoid of Bamboo leaves, Bamboo juice, panel, veneer container bamboo fabric- proof ceiling (fire proof), Bamboo charcoal, vinegar, soil fungicide, cosmetics, soaps, handicrafts, musical instruments, bonsai, Bamboo garden etc.

It is suggested that there should be primary processing in N.E. India prefarbly Assam, the gateway of Northeast while the final product industries may be anywhere else.

Against this back drop, time has come to outline modelities to develop bamboo sector in Assam. Bamboo is being declared as horticultural crop, the department has to adopt strategies and it is proposed as below :

1. Package of practice for bamboo and its economics is to be finalized and circulated targeting homestead areas.
2. Massive training / awareness Programme
3. Exposure of farmers/ entrepreneurs on recent value addition of bamboo for development of bamboo based industries.
4. Nursery development and Area expansion.

MUSHROOM

Broad objective:

a. Developing mushroom as a major component for self employment, dietary and augment farmer's income.
b. Explore market demand for oyster & Button mushroom.
c. Value addition.

A. **Present Scenario :** In Assam mushroom is known to many but there is very limited commercial production and lacking systematic approach**.** The Departmental mushroom spawn production laboratory now being run by private entrepreneurs could develop mushroom owner network under buy back system and the unit is gradually picking up. At present the annual production of fresh mushroom is 2000 tones only against a projected demand of 12,000 tones besides export potential. The total no. of mushroom entrepreneur in the state is about 60 nos but they are mostly seasonal. The most common edible mushroom which is in practice is Oyster mushroom.

B. **Strategy for increasing production & Quality :**

i) Involving more farmers / SHG/Women SHG to venture in the commercial mushroom production.
ii) Easy availability of spawn.
iii) Satellites farming
iv) Processing and value addition.

Processing , value addition and Marketing of horticultural products of Assam

PROCESSING

Assam will have to be more fast in this sector in years to come . The crops that can be immediately targeted are various spices like Ginger, Black pepper, Field Spices, Fruits like Banana, Pineapple, Satkara (Cmarcroptera), Citrus crops, Vegetables, Medicinals and Aromatics, Bamboo etc. Before that it must address vital problems of volume and quality of its produce.

The strategy to boost up this sector will be –

a) Strengthen production base
b) Improvement in quality of produce
c) Maximum possible extension of harvesting period
d) Cultivation of product specific varieties
e) Setting up of multi-product processing units – incorporating – Spice products, fruits, vegetable and even medicinal & aromatics.
f) Setting up of packaging unit and exploring bio packaging & bio preservatives.
g) Exploring possibility for setting up large or medium scale processing unit with tie-up with satellite processing units (Mini units) at interiors in pockets of production of raw materials.
h) Adoption of cultivation & processing in accordance with domestic market demand and also visualizing emerging external markets, more particularly South East Asian markets through border trade due to phasing out of trade barriers amongst these countries and easy surface communication to be made as outcome of latest ASEAN & SAARC declarations.
i) Entrepreneurship friendly rules, regulations policies and pattern of assistance.

ANNEXURE- I

THE STATUS AND PROJECTION'S AT A GLANCE :

Crop	Present Status			Future Target					
	2002-03			2011-12			2019-20		
	Area ('000 Ha)	Production (Lakh MT)	Productivity (MT/Ha)	Area ('000 Ha)	Production (Lakh MT)	Productivity (MT/Ha)	Area ('000 Ha)	Production (Lakh MT)	Productivity (MT/Ha)
Fruits	102.23	11.79	11.53	138.25	23.39	16.90	172.49	39.37	22.82
Kharif Vegetables	67.31	7.03	10.45	115.00	13.22	11.50	184.00	24.84	13.50
Rabi Vegetables	142.62	21.42	15.02	223.00	36.79	16.50	356.80	69.58	19.50
Spices	83.83	1.95	2.32	118.63	4.09	3.44	153.50	7.64	4.97
Root & Tuber Crops	86.56	6.31	11.50	132.00	10.76	14.30	164.73	17.73	21.00
Floriculture	0.80	--	--	1.20	--	--	2.00	--	--
Medicinal & Aromatic Plants	5.00	0.15	--	10.00	0.40	--	20.00	1.00	--

Annexure -II

Fruits at a glance :

Present status				Future Target					
2002-03				**2011-12**			**2019-20**		
Crop	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha
Banana	42.63	5.89	13.83	60.00	12.00	20.00	70.00	21.00	30.00
Pineapple	13.89	2.12	15.30	16.60	4.15	25.00	22.50	9.00	40.00
Orange	5.96	0.66	11.22	8.20	1.23	15.00	10.00	2.20	22.00
Assam Lemon	8.80	0.51	5.83	12.50	1.02	8.20	17.50	2.10	12.00
Jack Fruit	17.40	1.56	8.96	21.00	2.94	14.00	25.00	5.05	20.20
Guava	3.78	0.50	13.15	5.28	0.95	18.00	6.77	1.56	23.00
Litchi	4.12	0.19	4.57	5.77	0.38	6.50	6.77	0.61	8.92
Mango	3.70	0.29	7.81	6.40	0.58	9.00	10.95	1.15	10.50
Other Fruits	1.95	0.07	3.59	2.50	0.14	5.50	3.00	0.20	6.67
Total	**102.23**	**11.79**	**11.53**	**138.25**	**23.39**	**16.91**	**172.49**	**39.37**	**22.82**

Annexure -III

Vegetable at a glance :

Present status				Future Target					
2002-03				**2011-12**			**2019-20**		
Crop	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha
Potao	75.48	5.90	3.70	115.23	9.79	8.50	140.23	17.53	12.50
Rabi Vegetable	142.62	21.42	15.02	223.00	36.79	16.50	356.80	69.58	19.50
Kharif Vegetable	67.31	7.03	10.45	115.00	13.22	11.50	184.00	24.84	13.50
Total	**285.41**	**34.35**	**29.17**	**453.23**	**59.80**	**36.50**	**681.03**	**111.95**	**45.50**

Spices at a glance :

Present status				Future Target					
(2002-03)				**2011-12**			**2019-20**		
Crop	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha	Area (000 ha)	Production Lakh/MT	Productivity MT/ ha
Ginger	17.97	1.15	6.41	25.00	2.50	10.00	35.70	4.50	14.00
Turmeric	14.88	0.10	0.66	21.00	0.19	0.90	27.00	0.38	1.40
Black Pepper	2.70	0.04	1.34	4.35	0.08	1.89	6.80	0.15	2.20
Onion	7.50	0.17	2.33	9.98	0.35	3.50	12.70	0.70	5.50
Coriander	19.90	0.17	0.83	27.60	0.33	1.20	31.50	0.66	2.10
Chilly	14.88	0.10	0.66	21.00	0.19	0.90	27.00	0.38	1.40
Garlic	66.69	0.22	3.28	8.70	0.44	5.00	12.40	0.87	7.00
Other spices	2.12	0.02	0.72	3.50	0.03	0.95	4.70	0.05	1.15
Total	**146.64**	**1.97**	**16.23**	**121.13**	**4.11**	**24.34**	**157.8**	**7.69**	**34.75**