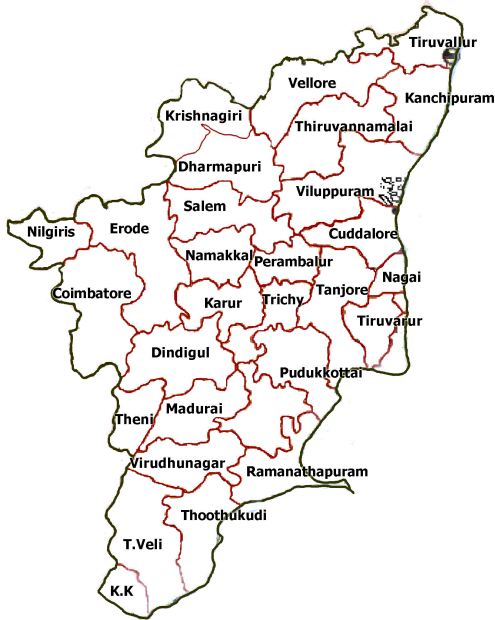


National Horticulture Mission

Action Plan for Tamil Nadu



Prepared by
Rabo India Finance Pvt. Ltd

for

Ministry of Agriculture
Government of India

September 2005

Table of Contents

1. Introduction.....	3
2. Potential of Horticulture in Tamil Nadu	5
3. Existing and Potential Market Linkages.....	12
• Food Parks	
• AEZs	
• Mandis	
• Processing units	
• Cold storages and pack houses	
4. Selection of Crops for intervention and rationale.....	18
5. Prioritization of crop clusters	21
6. Recommended Action Plan for 2005–06 for Tamil Nadu.....	26
7. Summary plans for three years	40
Annexure.....	47

Chapter 1

Introduction

1.1 Background

Rabo India was appointed by Ministry of Agriculture to review action plan submitted by the state. Ministry of Agriculture circulated operational guidelines to the States detailing Mission objectives, structure, procedures for approval and implementation, ongoing schemes, mission intervention and management and Overall targets under NHM. Based on the guidelines, states have submitted their reports.

The objective of the review is to develop a demand –driven approach for horticultural products. The review included the following:

- Identification of Market linkages of production areas in each of the states with
 - Agri Export Zones
 - Food Parks
 - Existing processing facilities
 - Terminal Markets
 - Existing mandis
 - Ports
- Mapping of production clusters of various horticultural crops with markets
- Prioritization of crops and clusters
- Identification of quality and varietal issues as per the market needs
- Identify missing links between farmers and processors, traders and retailers

1.2 Methodology

Rabo discussed the initial plan with state horticulture department. It was followed by collection of data for mapping market linkages (Food Parks, AEZs, Processing facilities, pack houses, cold storages, mandis). Rabo held discussions with other stakeholders including processors with facilities in the state and traders in mandis. Rabo also used its existing databases and international network.

1.3 Guiding Principals under NHM

The horticulture sector has contributed significantly to GDP in agriculture (28.5 per cent from 8.5 per cent area). The objective of the National Horticulture Mission is to double the horticulture production, i.e. to achieve a production of 300 million tonnes by 2011-12.

The Mission would adopt an end-to-end approach covering production, post harvest management, processing and marketing to assure appropriate returns to growers/producers; promote Research and Development (R&D) of technologies for production, post-harvest management and processing in potential belts/clusters; Enhance acreage, coverage, and productivity in potential belts/clusters; Adopt a coordinated approach and promote partnership, convergence and synergy among R&D, processing and marketing agencies in public as well as private sectors, at all levels; promote, where appropriate, National Dairy Development Board model of cooperatives to ensure support and adequate returns to farmers; Facilitate capacity-building and Human Resource Development. State and sub-state level structures will be evolved, keeping in view the need for getting adequate returns for the produce of the farmers and eliminating middlemen to the extent possible.

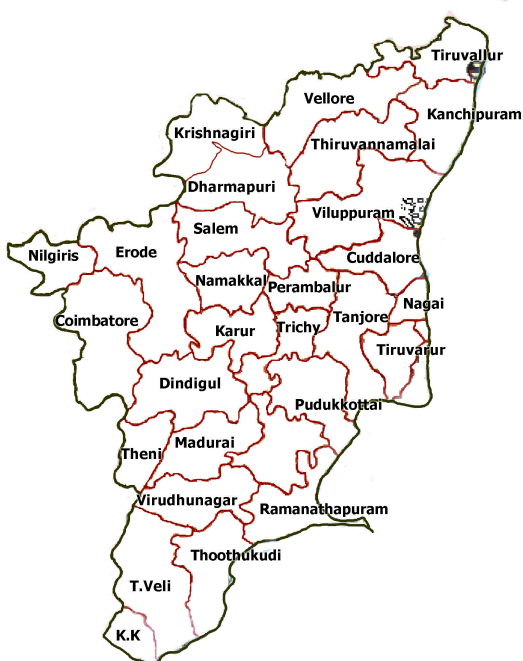
Chapter 2

Potential of Horticulture in Tamil Nadu

2.1 Background

Tamil Nadu state is situated at the South-eastern extremity of the Indian peninsula and comprises 30 districts (including Chennai) as shown in Exhibit 2.1

Exhibit 2.1 District-wise map of Tamil Nadu



The state can be divided into seven agro climatic zones viz., Western, Southern, North Eastern, North Western, Delta, High Rainfall, and Hilly and Tribal zones. Tamil Nadu has a rich diversity of horticultural crops viz., tropical, subtropical and temperate crops due to the presence of seven agro ecological regions each having a unique microclimate suitable for select crops. Moreover, there are areas with temperate climate (above 2000m), subtropical climate (1000 – 2000m), humid tropical climate (500–

1000m) and tropical climate (upto 500 m) thereby making it possible for the production of various horticultural crops. Nearness to the equator and the presence of long stretch of Western Ghats, discontinuous Eastern Ghats and presence of hills and hillocks in the plains help moderation of climate to ensure the required temperature for growing different kinds of horticultural crops.

Agriculture contributes 12% of the State GDP, while the share of Horticulture to State GDP is estimated at 3.5%. The net sown area is 36% of the total Geographic area (National average of 46%). The Gross cropped area is 53.2 lakh ha with a cropping intensity of 119. Irrigation covers 46% of the cropped area and the remaining 54% is rainfed.

The area under Horticulture is 8.24 lakh Ha (15.5% of the total cultivable area in the State), with an annual production of 99.47 lakh tonnes.

2.2 Production strengths of Tamil Nadu in Horticulture

Tamil Nadu accounts for nearly 6% of the area under fruits and 4% of the area under vegetables in the country. In terms of production, the State's share is nearly 10% in fruits and 6% in vegetables. Tamil Nadu is also a leading state in production of flowers. The total production of horticultural crops is 99.47 Lakh ha during 2003-04 (Refer Exhibit 2.2).

Exhibit 2.2 Area, Production and Productivity of Horticultural crops

Crop	Area (Lakh ha.)			Production (Lakh MT)			Productivity (MT/Ha.)		
	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04	2001-02	2002-03	2003-04
Fruits	2.29	2.23	2.21	43.74	40.14	36.09	19.09	17.96	16.33
Vegetables	2.18	1.62	1.91	57.53	35.99	46.73	26.37	22.25	24.47
Spices	1.61	1.46	1.54	6.37	5.65	6.93	3.96	3.86	4.49
Flowers	0.19	0.18	0.20	1.44	1.35	1.62	7.52	7.65	7.97
Medicinal & Aromatic Plants	0.001	0.0008	0.04	0.02	0.02	0.08	20.00	20.00	19.00
Plantation Crops	2.25	2.28	2.34	8.01	7.44	8.02	3.56	3.27	3.43
Total	8.53	7.77	8.24	117.12	90.59	99.47	13.74	11.66	12.06

Source – Tamil Nadu state horticultural department

The state ranks first in the production of flowers and tapioca, second in the production of mango and third in the production of Sapota.

Exhibit 2.3 – Production strengths of Tamil Nadu

Fruit	Area ('000 Ha)	Production ('000 tonnes)	Share of All India		All India Rank	
			Area	Prodn	Area	Prodn
Total Fruit	228	4342	6%	10%	7	3
Mango	111	439	7%	4%	6	8
Banana	85	3544	18%	25%	1	2
Sapota	3	72	5%	12%	5	3
Vegetables	214	5445	4%	6%	10	5
Tapioca	102	3835	43%	59%	2	1
Onion	32	282	6%	5%	4	5
Tomato	27	258	6%	4%	7	10

Source – NHM Database 2003

2.3 Production of various Horticultural crops

A) Fruits

Mango and Banana are the leading fruit crops in Tamil Nadu accounting for over 84% of the area under fruit and over 87% of the total fruit production. Off-season production of mango and round the year production of grapes is unique to Tamil Nadu.

Exhibit 2.3 (A) – Fruit (Area and Production)

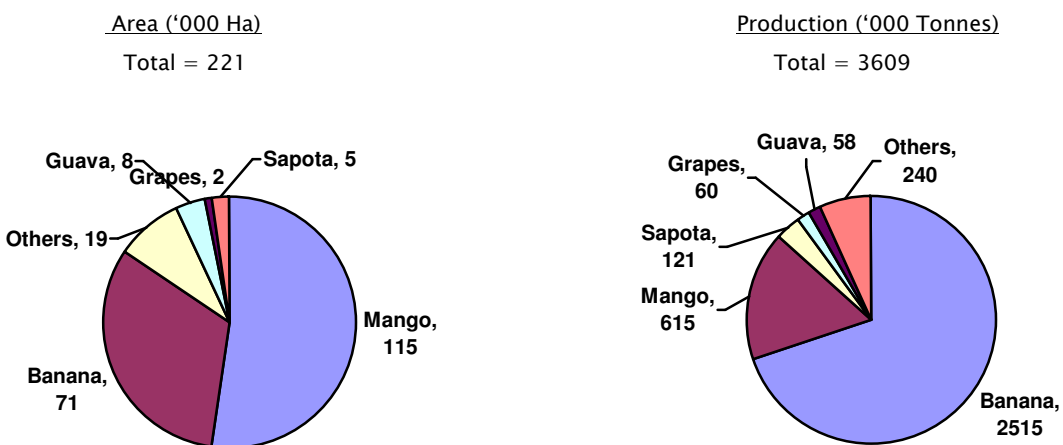


Exhibit 2.3 (B) – Fruit (Main Production areas)

FRUIT	MAIN PRODUCTION AREAS
Banana	Thiruchirapalli, Thoothukudi, Thirunelveli, Pudukottai, Thanjavur
Mango	Krishnagiri, Vellore, Dindigul, Theni, Dharmapuri, Madurai
Sapota	Thirunelveli, Erode, Karur
Grapes	Theni, Coimbatore
Guava	Madurai, Dindigul, Vellore, Virudhunagar
Aonla	Thirunelveli, Sivagangai, Thoothukudi, Coimbatore, Dindigul, Erode

B) Vegetables

The main vegetables grown in Tamil Nadu are Tapioca, Tomato, Onion, Brinjal and Drumstick. These account for over 85% of the total area as well as the production of vegetables.

Exhibit 2.3 (C) – Vegetables (Area and Production)

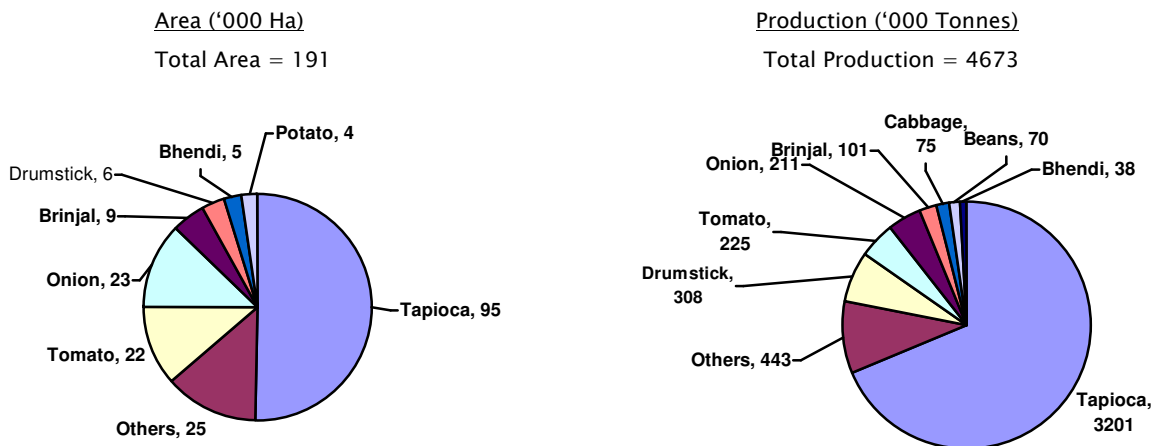


Exhibit 2.3 (D) – Vegetables (Main Production areas)

VEGETABLE	MAIN PRODUCTION AREAS
Tapioca	Namakkal, Salem, Dharmapuri
Drumstick	Thoothukudi, Dindigul, Karur
Tomato	Coimbatore, Dharmapuri, Salem, Krishnagiri
Onion	Perambalur, Thiruchirapalli, Namakkal, Dindidul
Brinjal	Vellore, Kanchipuram, Theni, Coimbatore
Cabbage	Nilgiris, Krishnagiri, Dindigul
Potato	Nilgiris, Dindigul
Bhendi	Kancheepuram, Vellore, Dindigul

C) Spices

The main spices grown are Chillies, Coriander, Tamarind, Turmeric and Curry leaves

Exhibit 2.3 (E) – Spices (Area and Production)

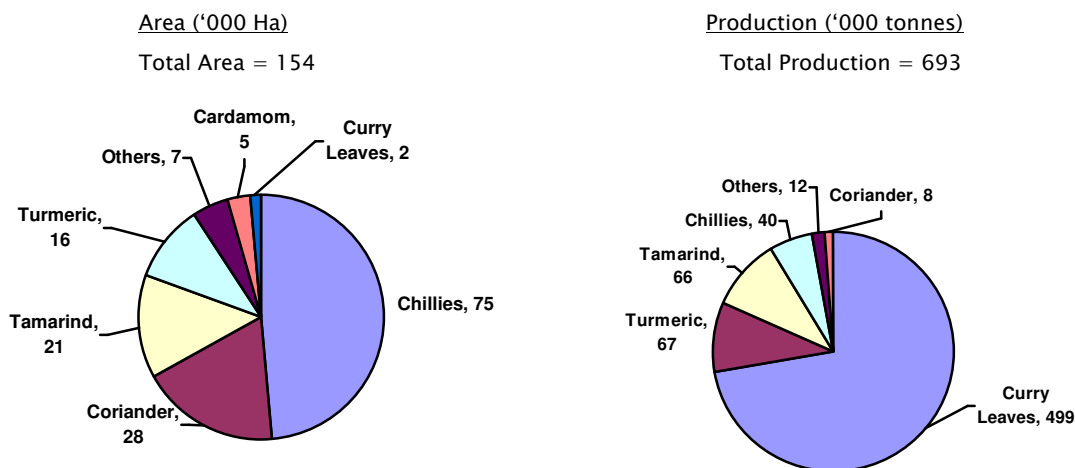


Exhibit 2.3 (F) – Spices (Main Production areas)

SPICES	MAIN PRODUCTION AREAS
Curry Leaves	Coimbatore, Salem, Thoothukudi
Turmeric	Erode, Coimbatore, Salem
Coriander	Cuddalore, Perambalur, Virudhunagar
Chillies	Ramanathapuram, Thoothuukudi
Tamarind	Dindigul, Theni, Coimbatore, Madurai

C) Flowers

The main flowers grown in Tamil Nadu are Jasmine, Mullai, Chrysanthemum, Marigold and Rose

Exhibit 2.3 (G) – Flowers (Area and Production)

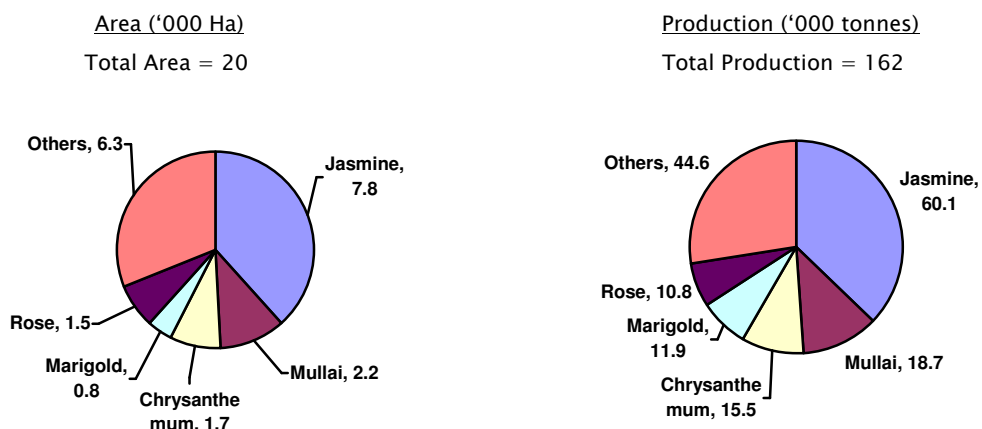


Exhibit 2.3 (H) – Flowers (Main production areas)

FLOWER	MAIN PRODUCTION AREAS
Jasmine	Madurai, Thirunelveli, Erode, Dindigul
Mullai	Vellore, Coimbatore, Cuddalore
Marigold	Thiruchirapalli. Theni, Dindigul, Karur
Rose	Krishnagiri, Dindigul, Dharmapuri
Chrysanthemum	Krishnagiri, Dharmapuri, Salem

2.4 Consumption of Horticultural products in Tamil Nadu

The consumption of Fruits and Vegetables is growing at a faster rate as compared to other food products as seen in Exhibit 2.4

Exhibit 2.4 – Consumption of Food Products in Tamil Nadu (Rs. Crores) – at 1993–94 prices

	1996	1997	1998	1999	2000	2001	2002	CAGR (%)
Cereals, gram	6289	7130	6626	7243	7293	7259	7212	2%
Pulses	1189	1379	1453	1868	1720	1749	1748	7%
Milk & milk products	1561	2372	2305	2727	2728	2626	2880	11%
Edible oil	1134	1240	1189	1379	1306	1483	1725	7%
Meat, egg, fish	1225	1619	1555	2068	2246	2268	2247	11%
Vegetables	1514	1922	1921	2771	2501	2692	2846	11%
Fruits(fresh)	466	719	621	1047	921	902	994	13%
Fruits(dry)	17	40	21	53	73	82	73	28%
Sugar	377	514	496	599	609	582	605	8%
Salt	57	70	62	90	86	83	88	8%
Spices	927	1163	1092	2512	1465	1460	1493	8%
Beverage etc.	1997	2453	2556	3604	4003	4435	4364	14%
FOOD TOTAL	16752	20623	19900	25962	24950	25622	26274	8%

Source – NSSO data

2.5 SWOT analysis – Horticultural Scenario in Tamil Nadu

<p>Strengths</p> <ul style="list-style-type: none"> • The state is ideally suited for exports given the strategic location of airports and sea ports • Prevalence of off-season cropping (e.g. mango, grapes, etc.) is unique to Tamil Nadu. • Presence of leading institutions like Tamil Nadu Agricultural University (TNAU) and other Research Institutions. • State Government policies facilitate growth of the sector (TANFLORA, AEZ's). 	<p>Weaknesses</p> <ul style="list-style-type: none"> • There is a lack of awareness on Hi-tech horticulture / quality consciousness among growers • Lack of Adherence to phyto-sanitary standards hinders acceptance in foreign markets. • The presence of small land holdings hampers adoption of best practices. • Lack of price discovery mechanism often leads to wide fluctuation in market prices. • There is low focus on post harvest management and facilities like cold storage, pre-cooling and waxing centers, processing units etc. • The marketing channels are not well developed
<p>Opportunities</p> <ul style="list-style-type: none"> • Large tracts of drylands / rainfed areas / wastelands can be utilized for promotion of horticulture. • There is an opportunity to set up processing industries for horticultural crops on the back of improved post harvest practices • There are export opportunities to the Far East which can be tapped (Tamarind, Chillies, Mango etc) • There is an increasing demand in developed countries for Green foods / Organic foods. • There is a growing trend in contract farming initiatives which needs to be encouraged through supportive policies. 	<p>Threats</p> <ul style="list-style-type: none"> • The dwindling water resources could pose a serious issue in the coming years • Non-availability of work force for agriculture during season.

Chapter 3

Existing and Potential Market Linkages

Horticultural crops being perishable in nature are subject to post harvest losses. Factors like respiration, ethylene production, evaporation, temperature and relative humidity affects the keeping quality of these products. Post harvest facilities from production linking to the market and consumption points help in the reduction of losses due to wastage. The existing market infrastructure in post harvest facilities like cold storage and the avenues for sale in terms of market and mandi linkages are discussed in detail in this chapter. Agri Export Zones (AEZs) are promoted with the objective of promoting exports of agricultural produce from selected areas of productivity prominence, while food parks provide an opportunity of increasing processing capabilities in the state. The AEZs and the Food Parks are two important linkage points which helps in absorption of Fruits and Vegetables for further value addition.

3.1 Food Parks

Indian Food Park

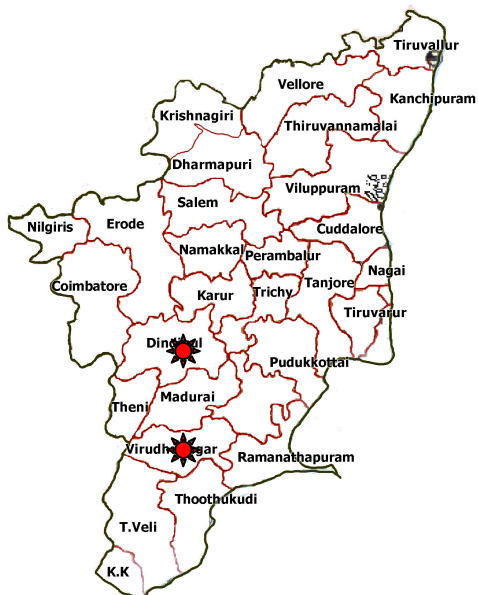
The food park is a private sector unit situated at Palavanatham (Virudhunagar) has an area of 68 acres of land, with a pilot plant for food processing, four cold storage units and a quality control lab. The total cost of the project is Rs 11.1 Cr of which a grant of Rs 4 Crore was received from Ministry of Food Processing Industries. At present, one processing unit is operating in the Food Park. There is potential for processing of Chilli, Coriander, Turmeric and Tamarind which is yet to be exploited.

Nilakottai Food park (Dindigul Dist) – Proposed

Facilities like pack house, fruits and vegetables dehydration unit and fruits and vegetables processing unit are proposed

The locations of the above mentioned food parks are shown in Exhibit 3.1

Exhibit 3.1 Location of Food parks



3.2 AEZs

3.2.1 AEZ for Mango : Theni, Dindigul, Madurai, Virudhunagar, Tirunelveli and Kanyakumari

Infrastructure facilities such as refrigeration equipment, insulated panels, washing, treatment and grading line, ripening chambers, pack house, pickle unit have been established. The current exports are 5 tonnes of processed mango and 10 tonnes of fresh mango per year

3.2.2 Cashew AEZ (proposed) : Cuddalore, Thanjavur, Pudukottai and Sivaganga

In the AEZ activities like Specialized Nursery, Demonstration plot and Extension Service would be undertaken. A Cashew juice concentration unit, Cashew processing units, Cold Storage, Godown and Lab facilities will also be created

3.2.3 AEZ Cut flowers : Krishnagiri, Dharmapuri

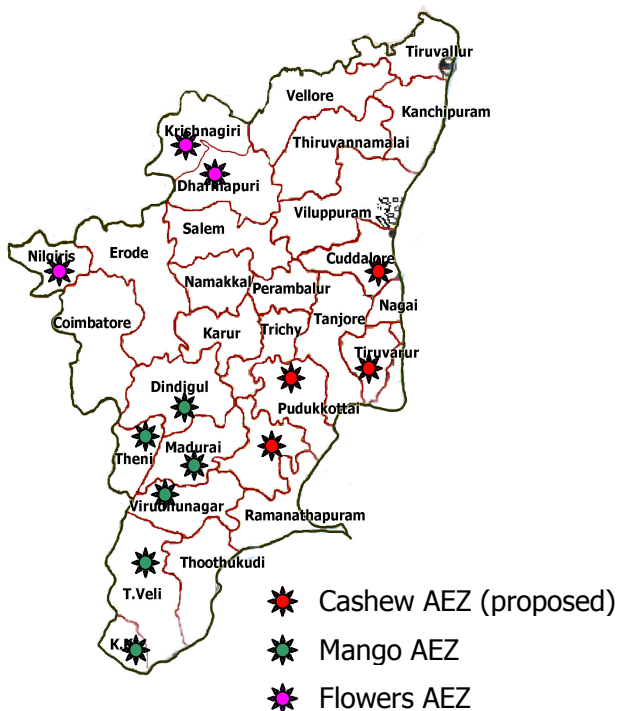
20 cut flower units are currently operating within this AEZ with focus on fresh cut roses, gerbera, carnation etc., Approximately 50 hectares of area is under production of these cut flowers. Nearly 170 lakh stems (Rs 8.5 Cr) are produced for export and it is expected to double in the current year.

3.2.4 AEZ for Flowers – Nilgiris

An AEZ for Flowers at a cost Rs.15.89 crores has been established at the Nilgiris. Facilities such as packhouses, information centres, cold storage, model floriculture units are being set up. The current exports are 0.5 Lakh stems per year from 60 units. The estimated exports in 2005–06 is 5 Lakh stems (300 units)

The location of the various AEZs is shown in Exhibit 3.2

Exhibit 3.2 – Location of various AEZs



Farmers have organized themselves into crop based associations like Adhiaman Precision Farmers Association, Grape Growers Association, Mango Growers federation etc to take up organized cultivation and marketing of the produce. Similarly the banana growers associations (12 in Tamil Nadu) have formed a federation to link the banana production to the export market. Such farmers associations need to be supported for maximizing the productivity and ensure sanitary and phytosanitary standards. The farmer associations are planning to brand the produce as TAN

MANGO / TAN BANANA and market the same in the domestic and international markets (on the lines of Mahagrape and Mahabanana in Maharashtra)

Issues with export from the state

a) Lack of market intelligence

Information of production estimates is required at a district level at a quarterly level.

b) Lack of a transparent price discovery mechanism

This has been discussed in detail in Section 6.10 where three Electronic Auction markets have been proposed

c) Lack of adequate post harvest infrastructure

There is a clear need to increase the focus on post harvest infrastructure, especially pack houses, cold stores, refrigerated vans and market infrastructure

3.3 Mandis

The major markets for leading horticultural crops as shown in Exhibit 3.3. These are located in the major production areas for each crop.

Exhibit 3.3 Major markets for horticulture produce



3.4 Processing units

61 fruit processing centres in the state are currently processing approximately 1,50,000 tonnes of fruit per annum, while 25 vegetable processing centres are processing around 20,000 tonnes of vegetables per annum. Mango is the main fruit for processing with 1,20,000 tonnes of the fruit being processed.

Jain Irrigation has established a vegetable dehydration unit at Udumulpet and is undertaking contract farming for production of white onion in about 1500 ha. Similarly Magritta Pvt Limited has established a vegetable processing unit at Nilakottai and has entered into contract arrangement with farmers. There are eleven firms growing gherkins under contract system.

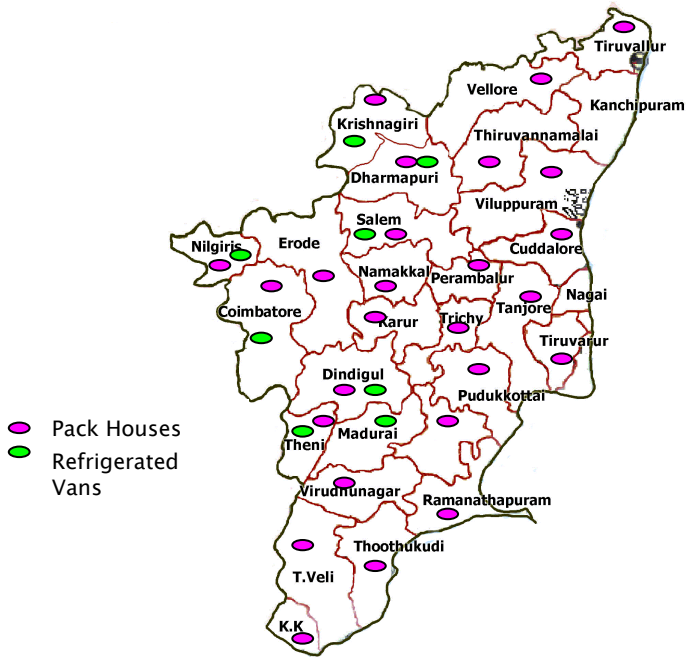
There are 800 sago factories, involved in the processing of cassava tubers in the districts of Salem, Namakkal, Dharmapuri and Villupuram. Approximately 10% of the tubers are used for culinary purpose / chips making and the remaining 90% are used for sago and starch manufacture. A quantity of approximately 29 lakh tonnes of tubers are being processed currently

3.5 Cold storages and pack houses

The State has only one cold storage designated for fruits. This is located in Kancheepuram district and has a capacity of 2500 tonnes. There are about 135 cold storage units in the state with a combined capacity of 2 lakh tonnes, of which 41 cold storages are multi-purpose and have a capacity of 1.44 lakh tonns.

Under the Action plan for 2005-06, 40 Multi-purpose pack houses are proposed to be set up across 27 districts. Similarly, a total of 10 Refrigerated vans are proposed in 8 districts. The proposed locations for pack houses and refrigerated vans are shown in Exhibit 3.5.

Exhibit 3.5 Proposed locations for pack houses and refrigerated vans



Chapter 4

Selection of Crops for intervention and rationale

The focus crops were selected on the basis of the following parameters

- ❖ Market linkages (existing and potential)
- ❖ Production advantage – potential in the domestic market
- ❖ Export potential

Exhibit 4.1 Market linkages and potential for potential crops

Products	Market Linkages					Domestic Market Potential	Export Potential
	Food Parks	AEZ/ Export	Mandis	Processing Units	Cold Storage / Ref. vans /Pack houses		
Mango	✓	✓	✓	✓	✓	H	H
Banana		✓	✓	✓	✓	H	H
Aonla			✓	✓	✓	H	M
Sapota			✓	✓		M	M
Grapes			✓	✓		M	M
Guava			✓	✓	✓	M	M
Chilli	✓	✓	✓	✓	✓	H	H
Turmeric	✓	✓	✓	✓	✓	H	H
Curry leaves			✓	✓		M	L
Coriander	✓		✓	✓		M	M
Tamarind	✓		✓	✓	✓	H	M
Flowers		✓	✓	✓	✓	H	H
Aromatic Crops		✓		✓		H	H
Cashew		✓	✓	✓	✓	H	H

Focus crops for NHM

Based on the above the following crops were shortlisted as focus crops under NHM:-

- Mango, Banana, Aonla, Chilli, Turmeric, Flowers, Aromatic Crops, Cashew

Exhibit 4.2 Focus crops and rationale

Focus Crop	Share of All India Production (Rank)	Rationale
Banana	25% (Rank 2)	<ul style="list-style-type: none"> ▪ Target the export market by improving post harvest practices /thrust on tissue culture ▪ Increase focus on processing <ul style="list-style-type: none"> - banana powder, banana puree, banana chips, banana fibre
Mango	4% (Rank 8)	<ul style="list-style-type: none"> ▪ Increase exports (fresh and processed) – link to AEZs <ul style="list-style-type: none"> - Leverage early season arrivals (unique to TN) - Introduce varieties such as Alphonso, Jawari and Imampasand for augmenting exports - Reduce dependence on other states for processing varieties
Aonla	n.a	<ul style="list-style-type: none"> ▪ Aonla requires minimal water, ideally suited for fallow land ▪ The present production of 30000 tonnes needs to be augmented to meet the growing demand in the food, nutraceutical and ayurvedic sectors.
Cashew	9 % (Rank 5)	<ul style="list-style-type: none"> ▪ Increase domestic production (reduce dependence on imports) to cater to the increasing demand for the processing industry ▪ Link to AEZ – Processed cashew kernels have great demand in international markets
Turmeric	13% (Rank 2)	<ul style="list-style-type: none"> ▪ Improve post harvest technology and quality upgradation thereby increasing TN's share of exports to Middle East, USA, UK and Japan ▪ Consolidate presence in domestic market (linked to food park)
Chilli	3% (Rank 7)	<ul style="list-style-type: none"> ▪ Potential for export of dried chillies ▪ Potential for extraction of oleoresins and other high value derivatives from chillies.
Flowers	28% (Rank 1)	<ul style="list-style-type: none"> ▪ Increase focus on exports through high value flowers (Link to AEZ) ▪ Adopt integrated crop management / thrust on high-tech floriculture
Aromatic Crops	n.a	<ul style="list-style-type: none"> ▪ Focus on select crops (lemon grass, citronella, palmarosa, geranium, patchouli etc) for export of value added products like aromatic oils

Exhibit 4.3 Focus crops and districts

		Mango	Aonla	Banana	Flowers	Turmeric	Chilli	Aromatic Crops	Cashew	Total
1	Coimbatore		✓		✓		✓			3
2	Erode				✓	✓				2
3	Dindigul	✓	✓	✓	✓		✓	✓		6
4	Karur									
5	Theni	✓	✓	✓						3
6	Madurai	✓	✓					✓		3
7	Ramanathapuram						✓			1
8	Virudhunagar									
9	Tirunelveli		✓	✓				✓		3
10	Thoothukudi									
11	Pudukottai									
12	Sivagangai						✓		✓	2
13	Kancheepuram									
14	Thiruvallur									
15	Vellore									
16	Thiruvannamalai									
17	Villupuram									
18	Cuddalore								✓	1
19	Dharmapuri	✓			✓	✓				3
20	Krishnagiri	✓			✓					2
21	Salem	✓			✓	✓		✓		4
22	Namakkal									
23	Perambalur									
24	Tiruchirapalli			✓			✓			2
25	Thiruvarur									
26	Nagapattinam									
27	Thanjavur									
28	Kanyakumari									
29	The Nilgiris									
	Total	6	5	4	6	3	5	4	2	

Focus NHM Districts

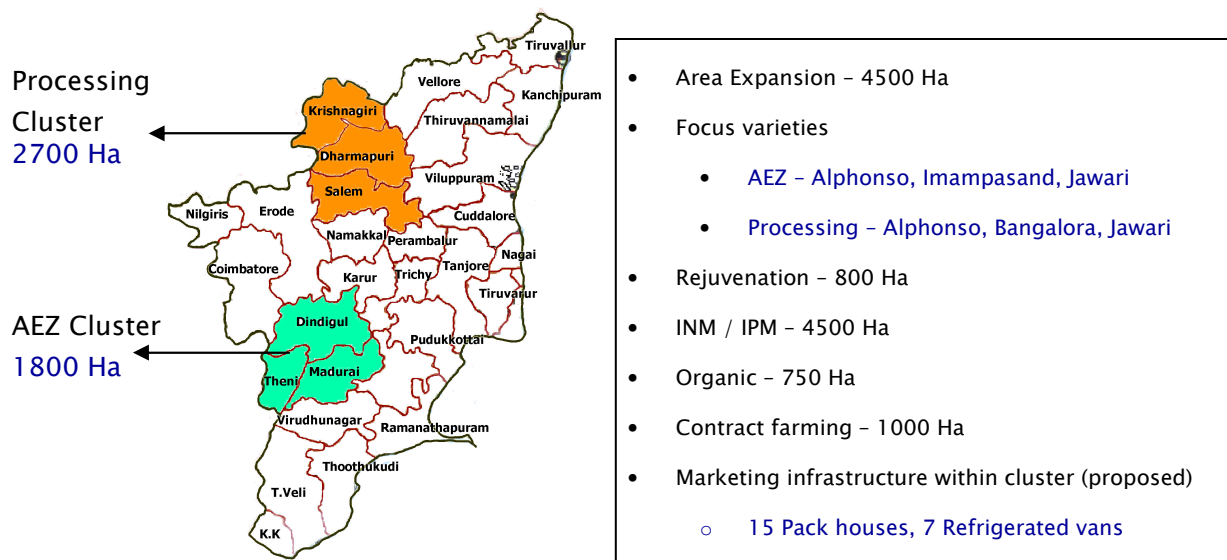
As seen in Exhibit 4.3, 13 districts (out of 29) have been shortlisted for under the National Horticulture Mission based on their respective production strengths and potential for further development.

Chapter 5 Prioritization of crop clusters

5.1 Focus Crops and Clusters

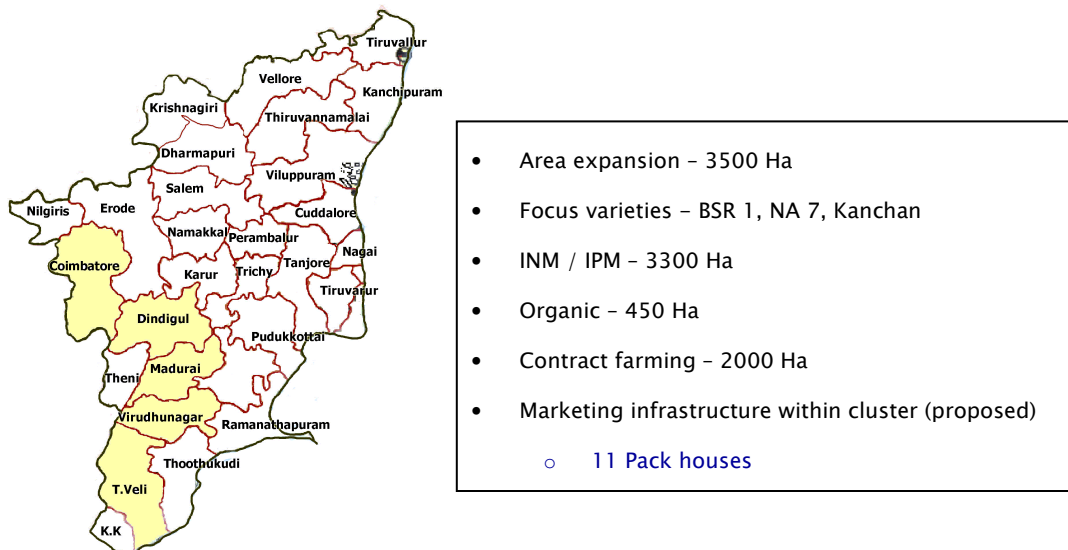
a) Mango cluster

– Krishnagiri, Dharmapuri, Salem, Dindigul, Theni, Madurai



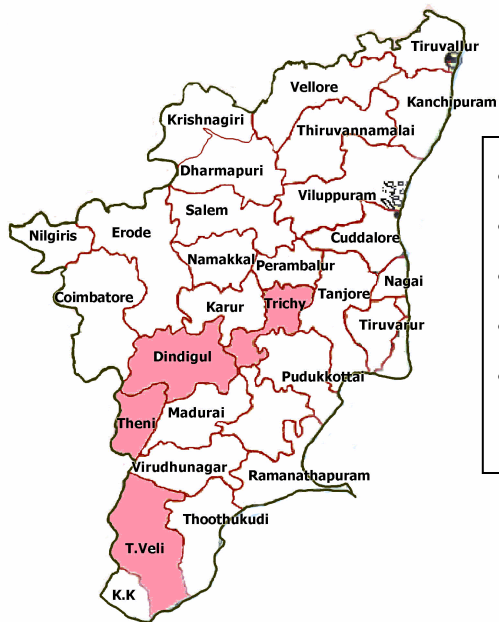
b) Aonla cluster

– Coimbatore, Madurai, Dindigul, Virudhunagar, Tirunelveli



c) Banana cluster

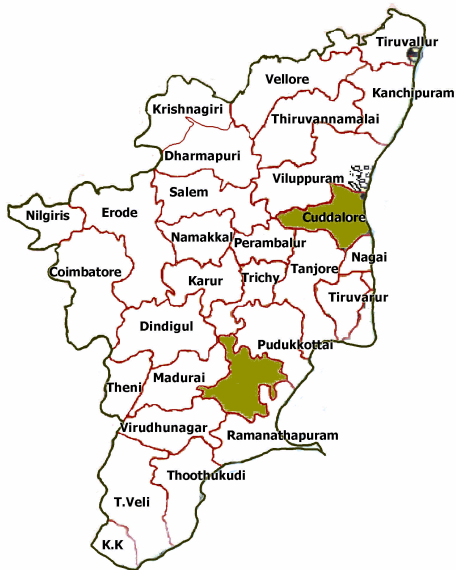
– Dindigul, Theni, Tirunelveli, Tiruchirapalli



- Area Expansion – 675 Ha
- Focus varieties – Nendran, G9, Hill Banana, Robusta
- INM / IPM – 675 Ha
- Organic – 100 Ha
- Marketing infrastructure within cluster (proposed)
 - 9 Pack houses, 3 Refrigerated vans

d) Cashew cluster

– Cuddalore, Sivagangai

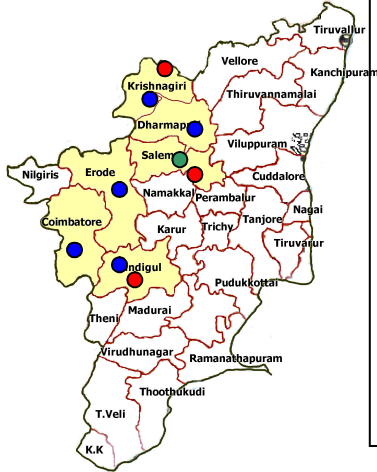


- Area Expansion – 800 Ha
- Rejuvenation – 200 Ha
- Varieties – VRI 2 AND VRI 3
- INM / IPM – 800 Ha
- Marketing infrastructure within cluster (proposed)
 - 2 Pack houses

e) Flowers cluster

– Dharmapuri, Krishnagiri, Coimbatore, Erode, Dindigul. Salem

- Bulbous
- Loose
- Cut

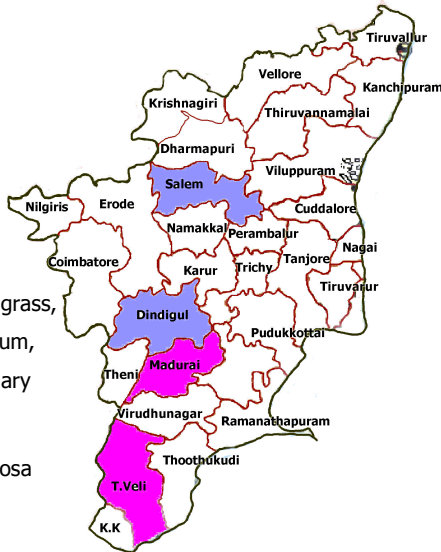


- Area Expansion
 - Cut flowers for exports – 50 Ha
 - Bulbous flowers – 100 Ha (Gladiolus, Tuberose)
 - High value loose flowers – 700 Ha (Jasmine, Marigold)
- Contract farming – 150 Ha (Loose flowers)
- Marketing infrastructure within cluster (proposed)
 - 13 pack houses, 6 Refrigerated vans, 1 Electronic Auction centre

f) Aromatic Crop cluster

– Salem, Dindigul, Madurai, Tirunelveli

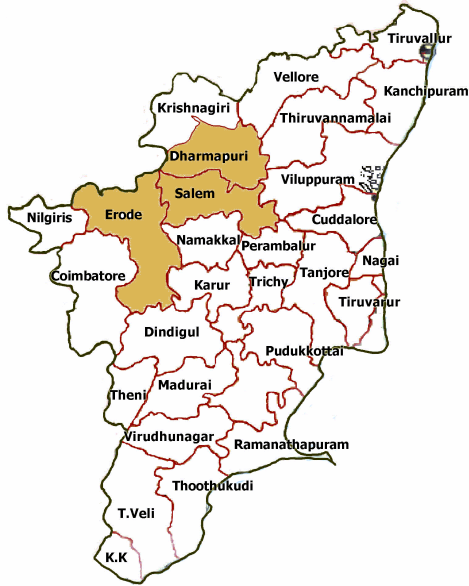
- Lemongrass, Geranium, Rosemary
- Palma Rosa



- Area Expansion – 150 Ha
- Additional production of aromatic oil – 4250 kg

g) Turmeric cluster

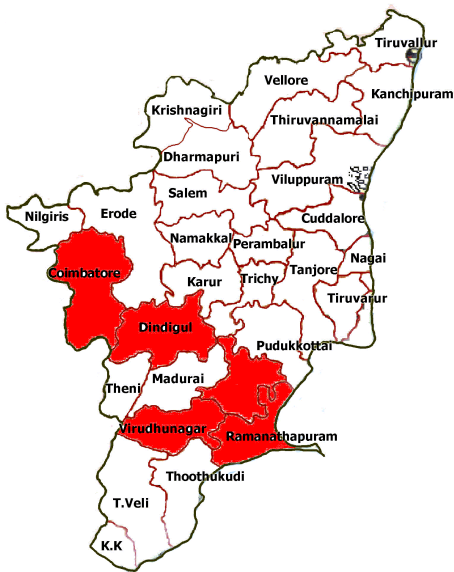
– Erode, Dharmapuri, Salem



- Area Expansion – 400 Ha
- Varieties – BSR 1, BSR 2
- INM / IPM – 400 Ha
- Organic farming – 100 Ha
- Marketing infrastructure within cluster (proposed)
 - 1 Electronic Auction centre (Erode)

h) Chilli cluster

– Coimbatore, Dindigul, Virudhunagar, Ramanathapuram, Sivagangai



- Area Expansion – 400 Ha
- Varieties – K 1, K 2, Co 2, PMK 1
- INM / IPM – 400 Ha
- Marketing infrastructure within cluster (proposed)
 - 8 pack houses

5.2 Summary of Investments required along the chain

	Area Expansion (Ha)	Requirement of planting material	Arrangement of planting material (Nurseries)	IPM /INM (Ha)	Organic (Ha)	Contract farming	Post harvest infrastructure within cluster	Demand
Mango	4500	4.5 L*	State Horticultural farms	4500	600	1000	15 Pack houses, 7 Ref. vans	Processing – 10% Domestic market –80% Exports (Raw) – 10%
Aonla	3500	10.5 L		3330	600	2000	11 pack houses	Processing – 90% Domestic market –10%
Banana	675	18.9 L	Dharmapuri and Hosur TC units (private)	675	100	--	9 pack houses 3 Ref. vans	Processing – 10% Domestic market –80% Exports (Raw) – 10%
Turmeric	400	800 MT	TNAU – Coimbatore and Periyakulam	400	100	--	1 Electronic Auction centre (Erode)	Pri Processing –70% Sec processing – 20% Dry rhizome export – 10%
Chilli	400	800 kg		400	--	--	8 pack houses	Pri Processing – 50% Sec Processing – 10% Exports – 40%
Cashew	800	1.6 Lakh	State Horticultural farms	800	--	--	2 pack houses	Domestic market – 60% Exports – 40%
Aromatic crops	150	325 kg seed, 17.5 Lakh cuttings	State Horticultural farms, TNAU – Coimbatore and Periyakulam	--	--	--	--	Processing – 50% Exports – 50%
Cut flowers	50	-	Private Nurseries	--	--	--	13 pack houses, 6 Refrigerated vans, 1 Electronic Auction centre (Nilgiris)	Domestic market 70% Exports – 30%
Loose flowers	700	450kg seed & 18.1 Lakh plants	State Horticultural farms, TNAU – Coimbatore and Periyakulam	--	--	100		Processing –40% Export (Raw) – 10% Domestic market 50%
Bulbous flowers	100	120 Lakh carmius rhizomes	TNAU – Coimbatore and Periyakulam	--	--	--		Processing – 40% Domestic market –60%

Chapter 6

Recommended Action Plan for 2005–06 for Tamil Nadu

6.1 Plantation infrastructure and development

In order to ensure adequate quantity of planting materials, 20 Model and 20 small Nurseries (Public sector), 20 Model and 40 small nurseries (Private sector) are proposed to be set up in 2005–06. In addition rehabilitation of 4 Tissue culture units will be undertaken both in the Public and Private sector. The focus crops are indicated in Exhibit 6.1

Exhibit 6.1 – Focus crops for various Nurseries and Tissue Culture units

S. No	Clusters	Model Nursery		Small Nursery		Tissue Culture Units	
		Public	Private	Public	Private	Public	Private
1	Mango	5	5	5	10	--	--
2	Banana	--	--	--	--	3	4
3	Aonla	4	4	4	8	--	--
4	Cashew	4	4	4	8	--	--
5	Spices	4	4	4	8	--	--
6	Flowers	3	3	3	6	--	--
	Total	20	20	20	40	3	4

Infrastructure facilities like drying yard, storage units, bins, packaging units and equipment are required in order to augment the vegetable and spices seed production. Currently the seed production of vegetables and spices is being promoted in districts such as Pudukottai, Coimbatore, Theni and Nilgiris Districts. The infrastructure facilities, when provided to all such existing areas of seed production, could help enhance seed production by 30% in the first year and 40% in second year.

The total financial assistance sought for Production and distribution of planting material and seed infrastructure (all components) in 2005–06 is Rs 948 lakhs.

6.2 Establishment of new gardens

It is proposed to undertake area expansion in 11275 Ha in 2005–06, across 8 horticultural crops in Tamil Nadu. The district wise break up is provided in Exhibit 6.2 (A) and (B). **The total financial assistance sought for establishment of new gardens in 2005–06 is Rs 1241 Lakhs**

Exhibit 6.2 (A)- Summary of Area Expansion (District wise)

		Mango	Aonla	Banana	Flowers	Turmeric	Chilli	Aromatic Crops	Cashew	Total
1	Coimbatore		400		120		25			545
2	Erode				170	250				420
3	Dindigul	600	700	150	205		25	65		1745
4	Theni	600	700	150						1450
5	Madurai	600	700					25		1325
6	Ramanathapuram						250			250
7	Tirunelveli		1000	150				25		1175
8	Cuddalore								600	600
9	Dharmapuri	900			150	75				1125
10	Krishnagiri	900			190					1090
11	Salem	900			15	75		35		1025
12	Tiruchirapalli			225			50			275
13	Sivagangai						50		200	250
	Total	4500	3500	675	850	400	400	150	800	11275

Exhibit 6.2 (B) – Summary of Area Expansion of Flowers (District wise)

		Flowers			Total
		Cut	Bulbous	Loose	
1	Coimbatore			120	120
2	Erode			170	170
3	Dindigul		45	160	205
4	Dharmapuri			150	150
5	Krishnagiri	50	40	100	190
6	Salem		15		15
	Total	50	100	700	850

6.3 Rejuvenation and Replacement of senile plantation

Many of the fruit orchards, especially those in the traditional areas, are more than 40 years of age resulting in low productivity. These senile orchards need to be rejuvenated with latest high yielding varieties by adopting top working method. Considering the total area, 1000 Ha is proposed under rejuvenation as indicated in Exhibit 6.3. **The total financial assistance sought for Rejuvenation and Replacement of senile gardens in 2005–06 is Rs 150 Lakhs**

Exhibit 6.3 – Rejuvenation of senile plantations

District	Rejuvenation (Ha)		
	Mango	Cashew	Total
Coimbatore	100		100
Dindigul	100		100
Theni	200		200
Madurai	100		100
Cuddalore		200	200
Dharmapuri	100		100
Krishnagiri	100		100
Salem	100		100
TOTAL	800	200	1000

6.4 Creation of water resources

Over 8800 farm ponds are already in existence throughout the state, both in irrigated and rain fed areas. The water source in most districts is predominantly small reservoirs, community tanks, farm ponds with or without plastic lining. Further, micro irrigation methods are followed to economize the water use. The additional provision of community tanks and farm ponds are required in each cluster to augment the water resources so as to sustain the productivity and to enhance the area under horticulture crops. The Community ponds with Diversion Structures are designed to arrest the high velocity run off from the nearest streams. This ensures that the pond is full of water and the water is allowed to remain in the pond for a longer period so that the farmers can utilise the water collected, for irrigation at critical periods. The cost of the each structure is approximately Rs. 10 lakhs and 100 such structures are proposed for 2005–06, as shown in Exhibit 6.4. **The total financial assistance sought in 2005–06 is Rs 1000 Lakhs**

Exhibit 6.4 – Creation of water resources

District	Creation of water resources (Nos.)
Coimbatore	8
Erode	8
Dindigul	10
Theni	10
Madurai	9
Ramanathapuram	4
Tirunelveli	10
Cuddalore	4

District	Creation of water resources (Nos.)
Dharmapuri	9
Krishnagiri	8
Salem	9
Tiruchirapalli	8
Sivagangai	3
TOTAL	100

6.5 Protected Cultivation

During recent years, many of the farmers are becoming entrepreneurs and venture into Green House cultivation making use of the existing schemes like TANFLORA, AEZ for Floriculture, programmes of NHB, APEDA in Hosur, Sheveroy, Nilgiris and Kodaikanal. They progressive farmers need to be supported so that they can successfully tap the export market. Hence, there is a proposal to provide nearly 55,000 sqm of Green House and 20,000 ha of Net Houses to sustain the floriculture industry in Tamil Nadu. High value flowers like rose, carnation, gerbera and anthurium, lilioms shall be grown. **The total financial assistance sought in 2005–06 for all initiatives under protected cultivation is Rs 120.7 Lakhs (Refer Exhibit 6.5)**

Exhibit 6.5 – Initiatives under protected cultivation

	Units	Rs Lakhs
1. Green House		
(a) Small & Marginal farmers		
i. Cut flowers Hi Tech	12000	39
ii. Cut flowers – Normal	8000	10
(b) Other farmers		
i. Cut flowers – Hi Tech	30000	64.5
ii. Cut flowers – Normal	5000	3.4
Sub Total		116.9
2. Mulching	35	2.45
3. Shade net (Flowers)	20000	1.4
Protected cultivation		120.7

6.6 Promotion of IPM /INM

The field losses, due to pest, diseases and inadequate nutrient management, is estimated to be around 30 to 40%. The present mind-set of the farmers to go for independent pesticides/ fungicide application in fact aggravates the pest and disease load thereby doubling the number of

sprays per crop. Further, residual toxic pollution occurs in the soil, water and also in horticultural produce. Hence there is an immediate need to promote INM/ IPM practices with the objective of reducing the expenses of plant protection operation, toxic load in soil and water besides ensuring food safety through toxic free horticultural produce. **Hence, there is a proposal to promote INM/IPM practices in an area of 10105 Ha.** The Sanitary and Phyto sanitary laboratories, leaf analysis and disease forecasting units are proposed to be located at TNAU centres (Coimbatore and Periyakulam). (Refer Exhibit 6.6 (A) and 6.6 (B)) **The total financial assistance sought in 2005-06 for all initiatives under IPM /INM is Rs 359 Lakhs**

Exhibit 6.6 A – Area under INM /IPM (Ha)

District	Mango	Aonla	Banana	Cashew	Chilli	Turmeric	Total
Coimbatore		400			25		425
Cuddalore				600			600
Dharmapuri	900					75	975
Dindigul	600	700	150		25		1475
Tiruchirapalli			225		50		275
Erode						250	250
Krishnagiri	900						900
Madurai	600	700					1300
Ramanathapuram					250		250
Salem	900					75	975
Sivagangai				200	50		250
Theni	600	700	150				1450
Thirunelveli		830	150				980
Total	4500	3330	675	800	400	400	10105

Exhibit 6.6 B – Summary of initiatives under INM /IPM

	Units	Rs. Lakhs
(i) Sanitary and phytosanitary (public sector- SAU's)	2 units (Rs 25 lakhs / unit)	50
(ii) Promotion of IPM / INM	10105	101.1
(iii) Disease forecasting units (SAU's)	2	8
(iv) Bio-Control Labs		
– Public Sector(SAU"s)	2	160
(v) Leaf / Tissue analysis lab		
– Public Sector (SAU's)	2	40
Promotion of INM/IPM		359.1

6.7 Organic Farming

Many corporate houses require a regular supply of organic foods and all the polyclinics in the major cities demand toxin free fruits and vegetables for inmates. The retailers of metropolitan cities and exporters of vegetable to the Middle East / Far East require small quantities of organic produce on a continuous basis throughout the year. Correspondingly substantial area in Erode, Thirunelvi, Sivagangai, Coimbatore and Madurai districts have been converted into organic horticultural production systems. APEDA has accredited Spices Board and OASIS, an NGO to certify the organic farms. The Tamil Nadu Agricultural University is also certifying the organic farms of small scale.

Importing regions such as the EU are insisting on adherence to Sanitary and Phyto Sanitary standards (SPS) and Traceability norms on the import of food products. The WTO also has developed norms for Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP) in line with EurepGap to ensure food safety. In this context, it is imperative to promote organic farming in places like Nilgiris, Sathyamangalam, Sivagangai, Tirunelveli, Theni etc., so as to enable the farmers to get certified by agencies like INDOCERT, SKAL, and IFOAM. **Hence, there is a proposal to provide 1400 ha of organic gardens, 42 vermi-compost units and Organic certification (cluster of 50 Ha) during 2005-06.** The organic producers are to be trained on GAP, SPS and traceability issues.

Currently, there is no institutional mechanism to link the production base with the retail sector. District level collection centers and retail sales centers at Urban areas are proposed to be established under Tamil Nadu Horticultural Produces Co-operative Enterprises, primarily a farmers co-operative, so that a steady flow of organic produce is ensured between the producers and consumers. This model is proposed to be implemented in two production centers during 2005-06 and scaled up to all major horticultural clusters in the next couple of years. **The total financial assistance sought in 2005-06 for all initiatives under Organic farming (all components) is Rs 157.6 Lakhs**

Exhibit 6.7 (A) – Summary of initiatives under Organic farming

	Units	Rs. Lakhs
(I) Adoption of organic farming	1400 Ha	140
(ii) Vermi-compost Units	42	12.6
(iii) Certification	50	5
Sub Total		157.6

Exhibit 6.7 (B) – Organic farming (Crop wise) – Area in Ha

District	Mango	Aonla	Banana	Turmeric	Total
Theni	450	450			900
Dharmapuri	300				300
Tiruchirapalli			100		100
Erode				100	100
Total	750	450	100	100	1400

6.8 HRD including Horticulture Institute

6.8.1 Training

With the onset of WTO regime from 2005 January, horticulture production needs to be reorganized taking into account the market forces and consumer preference. The aspect of supply chain management needs to be understood by the producers, processors, marketers and retailers. Hence, there is immediate necessity to sensitize the minds of the farmers, the department officers both in the domestic management of horticultural produce as well as the export management of horticultural producers. **Hence, a proposal has been made to train a total of 7345 personnel (technical officers and farmers) during 2005–2006.**

6.8.2 Information and Communication Technology

The regional and district officers besides the head quarters have to be provided with computers and on-line connectivity. **Hence, it is proposed to provide 42 units (computers and related accessories) @ Rs 80000 per unit.**

6.8.3 Modernization of Horticulture Training Centre

A mini Horticulture Training Centre was established at Thalli, Krishnagiri District during 2004 - 05, with the mandate of imparting training to the horticultural growers. This centre needs to be modernized to cater the needs of growers of Horticultural crops. In Krishnagiri district, horticultural crops are grown widely in Hosur, Denkanikottai, Krishnagiri, Uttangari and Pochampalli taluks. Hosur has been declared as an AEZ for Floriculture. Mango is a predominant fruit crop in this district catering to the needs of processing industries. The Tamil Nadu Precision Farming Project is also in operation covering an area of 200 ha under Hi-tech horticultural System. Hence, modernization of a HTC at Thalli would further intensify hi-tech horticulture in Tamil Nadu.

The Horticultural Training Centre will provide required skills to all entrepreneurs desirous of setting up processing units and also link them to financial Institutions and prospective buyers.

The developmental workers and scientists of the TNAU are required to update their knowledge on latest state-of-art technologies and get exposed to the latest trends in the International market. The Horticultural Training Centre shall organize interactive sessions of the scientists and developmental workers with International specialists and consultants. Further, training will be organized on various courses for the interested farmers and entrepreneurs. (Refer Annexure 1 for detailed list of courses).

A sum of Rs. 140.5 lakhs has been proposed to provide audio visual aids, equipments and accessories for the training centre. In addition a sum of Rs. 75 lakhs has been provided to there existing Horticulture Training Centre and to meet the expenses towards audio visual aids, equipments and accessories @ Rs.25 lakhs each. **The total financial assistance sought in 2005–06 for all initiatives under HRM is Rs. 611.98 Lakhs. (Refer Exhibit 6.8)**

Exhibit 6.8 – Summary of initiatives under HRD

Intervention	Physical Target	Financial Target – Rs Lakhs
a) Training to Technical Officers	120 Nos (@ Rs 50000)	60
❖ Training on Hi-tech horticulture on latest developments and communication skills to be given to Horticultural Officers, Assistant Agricultural Officers and Assistant Director of Horticulture at various state, National level institutes		
b) Training to Farmers		
i) Outside the state	1450 (@Rs 2500)	36.25
❖ Farmers to be taken on tour cum training to various National level Research Institutes like NRC Banana, NRC Cashew, NRC Grapes, NRC Onion, HTC Pune, IIHR, IARI etc.,		
ii) Inside the state	5775 (@Rs 1500)	86.63
❖ The farmers to be taken on tour cum training to various crop specific Research Stations of Tamil Nadu Agriculture University and improved nurseries etc.,		
c) Establishment of Horticulture Training Centre in Krishnagiri District	1Nos @140.5 Lakhs	140.5
A recently proposed training centre at Thali, Krishnagiri district is to be provided with various Technological equipments as follows :-		
<ul style="list-style-type: none"> • Provision of ultra modern communication hall with all equipments, devices, furniture etc – Rs 30 Lakhs • Computer and accessories with latest configuration (20 Nos @ Rs 1 Lakh each) – Rs 20 Lakhs • Ultra modern van fitted with communication devices, meeting equipments in rural areas – Rs 20 Lakhs • Purchase of books /CDs on latest horticulture techniques – Rs 26 Lakhs • Creation of green house, Glass house, Mist chamber, Conservatory etc – Rs 20 Lakhs 		

Intervention	Physical Target	Financial Target – Rs Lakhs
<ul style="list-style-type: none"> • Preparation of Training materials for Trainees (2000 Nos @ Rs 200 each) – Rs 4 Lakhs • Cost of preparation of Training charts / Video programmes – Rs 5 Lakhs • Purchase of specimen, inputs, chemicals etc – Rs 2 Lakhs • Purchase of equipments – Rs 2 Lakhs • Preparation of vinyl boards, charts, photographs – Rs 5.5 Lakhs • Honorarium for Guest lectures – Rs 6 Lakhs 		
d) Modernisation of existing HTC at Mathavaram, Kudumianmalai and Udthagamandalam	3 @ Rs 25 Lakhs	75
Total of Rs 25 Lakhs for each centre as follows <ul style="list-style-type: none"> ❖ Communication van with all equipments – Rs 10 Lakhs ❖ Purchasing / Preparation of Audio Visual aids like Photos, Charts, Board – Rs 5 Lakhs ❖ Purchase of specimens (inputs) – Rs 2 Lakhs ❖ Purchase of books /CDs – Rs 2 Lakhs ❖ Purchase of computer related devices – Rs 6 Lakhs 		
e) Information and communication technology	42 Nos @ 0.80 lakhs	33.6
<ul style="list-style-type: none"> - Provision of e–devices and equipments including telephones for 42 offices (30 – Assistant Directors of Horticulture, 9 – Deputy Director of Horticulture, 3 – State Head office). - This would enable speedier networking of Regional and District Officers and the Head quarters 		
f) Information and publicity vehicles with modern devices for communication	30 vehicles @ 6 lakhs	180
Sub Total		611.98

6.9 Pollination support including bee keeping

Effective pollination is a vital factor for maximizing the productivity in horticultural crops and particularly in hybrids. Besides, bee keeping by itself is a commercial activity generating employment to self help groups and rural population. There are synergies between organic farming and bee keeping in sustaining the productivity of horticultural produce. The horticultural estates provide ample environment for such organized bee keeping in all zones of Tamil Nadu. **Financial assistance of Rs 10.24 Lakhs has been sought for 1280 colonies.**

6.10 Post Harvest Management (PHM)

The total financial assistance sought in 2005–06 for all initiatives under Post Harvest Management is Rs. 2305 Lakhs as highlighted in Exhibit 6.10 (A)

Exhibit 6.10 (A) – Summary of initiatives under Post Harvest Management

	Proposed plan	Financial outlay Rs Lakhs
Pack Houses	▪ 40 pack houses across the state	25
Refrigerated Vans	▪ 10 nos of 5MT capacity each across the state	60
Market intelligence	▪ 100 Computers for networking (@ Rs 80,000 each)	80
Buy back intervention through Contract Farming	▪ Training /workshops (6 Nos)	30
Extension, quality awareness and market led extension activities for fresh processed products. (Project Based)	▪ Participation in international trade fairs - 1 Nos (Flowers)	10
	▪ Equipment for 15 District Information Centres	90
	▪ Transport vehicles - 15 Nos	90
	▪ Strengthening of State Agmark Grade laboratories - 2 nos	930
	▪ Strengthening of rural markets - 20 markets	300
	▪ Strengthening of rural market infrastructure - 20 markets	300
	▪ Electronic Auction Centres - 3 Nos	390
TOTAL		2305

(Refer Annexure 2 for district wise break up of PHM facilities and Annexure 3-A and 3-B for strengthening of Rural markets and infrastructure)

Some of the key initiatives include:-

a) Pack Houses and Refrigerated vans

It is proposed to set up 40 multi-product pack houses (across 27 districts) and 10 Refrigerated vans /containers (across 8 districts). Of these 4 nos. of refrigerated vans (5 MT capacity each) will cater to the requirements of the Flower growers associations of The Nilgiris, Kodaikanal, Yercaud and Hosur.

b) Market Intelligence

Under this, it is proposed to have **100 computers for networking (including server) at a cost of Rs. 80.00 Lakhs**

c) Buy back intervention

Contract farming is being implemented at present in crops like Gherkin, Coleus, Senna, Gloriosa and Marigold. There is a growing awareness of contract farming, with specific interest in mechanisms providing linkage to insurance and also bank finance. Such system needs to be extended to other horticultural crops predominantly grown for the farmers. In recent times, new processing industries are being established to process fruits and vegetables particularly mango in Dharmapuri and Krishnagiri Districts, vegetables in Dindigul Districts and flowers in Coimbatore and Dindigul districts. The expansion of contract farming will in turn ensure better prospects for farmers and opportunities for developing the rural market. It is proposed to organize 6 large scale workshop /seminars for educating farmers about the benefits of contract farming in specific crops and establishing linkages with potential offtakers.

d) Electronic Auction centres

It is proposed to set up 3 Electronic Auction centres in 2005–06. The details are as follows

▪ Turmeric – Erode District

Erode district is number one in production, processing and export of turmeric powder. Nearly 90 % of the curry powder units are located in Erode district and there is equal number of business houses supplying raw turmeric to other states in India. Though there is a regulated market there is wide fluctuation in the prices (Rs. 900 to 4000/quintal), largely governed by the commission agents. Establishment of EAC will help the farming community in the long run, facilitate increase in area under turmeric and cater to the export market (link to proposed AEZ in Erode)

▪ Horticulture Crops – Dindigul District

Dindigul is a key district for horticulture produce in Tamilnadu (produces mango, banana, aonla besides loose and bulbous flowers). The Oddanchatram market in Dindigul district handles 90% of the produce from neighbouring districts and acts as a sourcing hub for domestic/export markets at Cochin and Trivandrum. The current infrastructure is not adequate for systematic handling of horticultural produce. Moreover, there is no transparency in the price discovery mechanism. The establishment of EAC in Dindigul will help ensure transparency of prices to the advantage of all the players.

▪ **Flowers – Nilgiris District**

The Nilgiris district is endowed with climatic conditions suitable for growing cut flowers like carnation, gerbera, liliun, anthurium and bird of paradise.

- Poly greenhouses are being established from 1500 to 2500 m above MSL
- The carnation of the Nilgiris (best in India), is being exported to Japan commanding the premium price.
- The Flower Growers Association of Nilgiris, TNAU and flower breeders of Holland are establishing an R&D and Training center as public-private partnership to facilitate exports.

Currently, the flowers are being transacted through the unauthorized commission agents and traders for want of proper auction facility at Nilgiris. The establishment of EAC at Nilgiris will help ensure transparency of prices to the advantage of all the players.

6.11. Mission Management

Adequate provision has been made for the management of the NHM at State level in terms of man power, infrastructure, internet, mission strengthening, hire purchase of vehicles, hardware, software, consultancy charges to TNAU at State Level and International agencies like FAO, World Bank etc.

State and district level mission structures will be established as per the norms prescribed. Infrastructure facilities for establishing the Tamil Nadu Horticultural Producers Cooperative Enterprises will be created to strengthen the production and processing and marketing of the horticultural produce. For effective functioning of the scheme, hardware, software and information vans are proposed under mission management. Computers shall be provided to all districts headquarters with internet connectivity. The programmes of the NHM of Tamil Nadu will be forward integrated with on going programmes and horizontally integrated with commodity boards, financial institutions and district administration of the State for better implementation of the mission programmes.

Tamil Nadu has 30 districts (including Chennai) and 385 blocks well provided with administrative structure to implement the programmes stipulated under NHM of the State. The district administration will be fully supported by the development workers of the Department of

Horticulture, Agriculture, Agricultural Engineering, Agricultural Marketing, Seed Certification, Animal Husbandry and Sericulture. The manpower is adequate in all the Departments and the programmes of the NHM will be appropriately linked with the existing programmes so as to avoid duplication. The technical support from all 36 centres of Tamil Nadu Agricultural University and ICAR institutions available in the Tamil Nadu State shall strengthen the NHM programme. **The total financial assistance sought in 2005–06 for all initiatives under Mission Management is Rs. 549.2 Lakhs**

Exhibit 6.11 – Summary of initiatives under Mission Management

Component		Financial assistance Rs. Lakhs
State and District Mission structure including additional manpower & project preparation cost.	State Mission structure – Refer Annexure 4A for details	345
	District Mission Structure – Refer Annexure 4B for details	
Support to Co-Operatives for infrastructural requirement (TANHOPE)	5 centres proposed in the major horticultural districts viz., Tirunelveli, Dindigul, Tiruchirapalli, Salem and Vellore	20
Institutional strengthening, hire /purchase of vehicle, hardware/ software	Total of 19 jeeps for 19 districts	114
Technical Support Group (TNAU)	Preparation and presentation of the NHM project apart from extending technical support during implementation.	20
Collaboration with international agencies like FAO, World Bank etc.	Exchange of resource persons between international organizations and Commissionerate of Horticulture & Plantation Crops/ TNAU	50
Total		549.2

6.12 Additional proposal

a) Introduction of new high yielding tapioca varieties

Tamil Nadu is the leading producer of tapioca in the country. In Tamil Nadu, tapioca is cultivated in an area of 95000 Ha with an annual production of 32 lakh tonnes. The average productivity is 33.7 tonnes/ha. There are 800 sago factories, involved in the processing of cassava tubers in the districts of Salem, Namakkal, Dharmapuri and Villupuram. Out of the total production, approximately 10% of the tubers are used for culinary purpose and for production of tapioca chips

while the remaining 90% of the tubers are used for sago and starch manufacture. The annual production on sago and starch is approximately 5.8 Lakh tonnes. **An area of 1000 ha has been proposed for introducing new high yielding tapioca varieties.**

b) Exotic fruits

In order to meet the steady increase in the demand for exotic fruits like Mangosteen, Kiwi, Persimmon, Avocado, Strawberry, Passion fruit etc., it is proposed to undertake production of these fruits in a total of **65 Ha** as follows – Mangosteen (10 ha), Kiwi (5 ha), Persimmon (10 ha), Avocado (25 ha), Strawberry (5 ha), Passion fruit (5 ha) and Macadamia (5 ha).

The total financial assistance sought in 2005–06 for all initiatives under Additional schemes is Rs. 119.8 Lakhs

Chapter 7

Summary plans for three years

		2005-06	2006-07	2007-08
1	Plantation Infrastructure and Development	948	1043	1118
2	Establishment of new gardens / Area Expansion	1241	1886	2061
2A	Maintenance for the gardens developed-2005-06 and 2006-07	0	398	1224
3	Rejuvenation / Replacement of senile orchards	150	195	225
4	Creation of water resources	1000	1000	1000
5	Protected Cultivation	121	146	167
6	IPM / INM	359	309	254
7	Organic Farming	158	195	233
8	Human Resource Management	612	592	511
9	Pollination support through beekeeping	10	12	14
10	Post Harvest Management	2305	1270	863
11	Mission Management	549	587	659
	<i>Additional proposal</i>			
12	Establishment of new gardens	120	160	189
		7572	7794	8518

		2005-06		2006-07		2007-08	
Sl. No.	Intervention	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs
1	Production of planting material						
	a) Public Sector						
	(i) Model Nursery (4 Ha.)	20	360	5	360	5	360
	(ii) Small - Nursery (1 Ha.)	20	60	5	15	5	15
	(iii) Rehabilitation of existing Tissue culture units (State Depts.)	1	8	0	0	0	0
	(iv) Rehabilitation of existing Tissue culture units including SAU's.	3	24	0	0	0	0
	Sub Total		452		375		375
	[b]Private Sector						
	(I) Model Nursery (4 Ha.)	20	180	30	270	30	270
	(ii) Small - Nursery	40	60	50	75	50	75
	(iii) Rehabilitation of existing Tissue culture units	4	16	2	8	2	8
	Sub Total		256		353		353
	Seed Infrastructure						
	(a) Public Sector						
	(I) Drying platform, storage bin, packaging unit, equipment (State Dept. and SAU)	16	240	21	315	26	390
	Sub Total		240		315		390
	Production of Planting Material	TOTAL	948	TOTAL	1043	TOTAL	1118

Sl. No.	Intervention	2005-06		2006-07		2007-08	
		Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs
2	Establishment of New Gardens						
	(i) Fruits (Perennials)	8000	900.00	13000	1462.5	14000	1575.00
	(ii) Fruits (Non-Perennials)	675	50.63	800	60	1000	75.00
	Sub Total	8675	950.63	13800	1522.5	15000	1650
	(iii) Flowers						
	(A) Cut Flowers						
	(a) Small & Marginal farmers	40	14	60	21	80	28
	(b) Other farmers	10	2.3	20	4.6	30	6.93
	(B) Bulbous Flowers						
	(a) Small & Marginal farmers	80	36	150	67.5	200	90
	(b) Other farmers	20	5.9	20	5.9	30	8.91
	(C) Loose Flowers						
	(a) Small & Marginal farmers	600	72.0	800	96	900	108
	(b) Other farmers	100	7.9	0	0	0	0
	Sub Total	850	138.2	1050	195.1	1240	241.84
(iv) Spices & Aromatic Plants							
950	106.9	1100	123.8	1100	123.75		
Sub Total	950	106.9	1100	123.8	1100	123.75	
(v) Plantation crops including horticulture coastal							
800	45	800	45	800	45		
Sub Total	800	45	800	45	800	45	
	Establishment of New Gardens	11275	1241	16750	1886	18140	2061
2A	Maintenance for the gardens developed in 2005-06 and 2006-07						
	Fruits Perennials				360.0		1125.0
	Fruits Non Perennials				20.3		54.4
	Plantation crops				18.0		45.0
	Sub Total				398		1224

		2005-06		2006-07		2007-08	
Sl. No.	Intervention	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs
3	Rejuvenation/replacement of senile plantation. (Mango and Cashew)	1000	150	1300	195	1500	225
	Sub Total	1000	150	1300	195	1500	225
4	Creation of water resources - Community tanks or farm ponds or farm water reservoir with diversion structures - (No) with use of plastics.	100	1000	100	1000	100	1000
	Sub Total		1000		1000		1000
5	Protected Cultivation						
	1. Green House						
	(a) Small & Marginal farmers						
	i. Cut flowers Hi Tech	12000	39	15000	48.8	17000	55.25
	ii. Cut flowers - Normal	8000	10	11000	13.8	13000	16.25
	(b) Other farmers						
	i. Cut flowers - Hi Tech	30000	64.5	35000	75.3	40000	86
	ii. Cut flowers - Normal	5000	3.4	6000	4.0	7000	4.69
	Sub Total		116.9	67000	141.8	77000	162.19
	2. Mulching	35	2.45	40	2.8	45	3.15
	3. Shade net (Flowers)	20000	1.4	25000	1.8	30000	2.1
	Protected cultivation		120.7		146.3		167.44
6	Promotion of INM/IPM						
	(i) Sanitary and phytosanitary (public sector- SAU's)	2 units (Rs 25 lakhs / unit)	50	3 units (Rs 25 lakhs / unit)	75	4 units (Rs 25 lakhs / unit)	100
	(ii) Promotion of IPM / INM	10105	101.1	13000	130	15000	150
	(iii) Disease forecasting units (SAU's)	2	8	1	4	1	4
	(iv) Bio-Control Labs						
	- Public Sector(SAU's)	2	160	1	80	0	0
	(v) Leaf / Tissue analysis lab						
	- Public Sector (SAU's)	2	40	1	20	0	0
	Promotion of INM/IPM		359.1		309.0		254.0

		2005-06		2006-07		2007-08	
Sl. No.	Intervention	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs
7	Organic Farming						
	(I) Adoption of organic farming	1400	140	1700	170	2000	200
	(ii) Vermi-compost Units	42	12.6	50	15	60	18
	(iii) Certification	50	5	100	10	150	15
	Sub Total		157.6		195.0		233.0
8	HRD including horticulture institute						
	a) Training to Technical Officers	120 @ Rs 50000	60	150 @ Rs 50000	75	200 @ Rs 5000	100
	b) Training to Farmers						
	i) Outside the state	1450 (@Rs 2500)	36.3	2000 @Rs 2500	50	2500 @Rs 2500	62.5
	ii) Inside the state	5775 (@Rs 1500)	86.6	7500 @Rs 1500	112.5	9000 @ Rs1500	135.0
	c) Establishment of Horticulture Training Centre (only cost of Audio visual aids, equipments and accessories)	1 Thalli, Krishnagiri	140.5	1 140.5	140.5	0	0
	d) Modernisation of existing HTC (only cost of audio visual aids, equipments and accessories)	3 @ 25 lakhs Mathavaram, Kudumianmalai and Udhagamandalam	75	0	0	0	0
	e) Information and communication technology-e networking of Regional and District Officers and the Head quarters	42 @ 0.80 lakhs	33.6	42 @ 0.80 lakhs	33.6	42 @ 0.80 lakhs	33.6
	f) Information and publicity vehicles	30 @ 6 lakhs	180	30 @ 6 lakhs	180	30 @ 6 lakhs	180
		Sub Total		611.98		591.60	
9	Pollination support through beekeeping (@ 1 colony/10 ha for perennials, 1 colony/ 5 ha for annuals)	1280	10.2	1500	12	1800	14.4
	Sub Total		10.24		12.00		14.40

Sl. No.	Intervention	2005-06		2006-07		2007-08	
		Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs
10	Post Harvest Management						
	a) Pack House	40	25	40	25	40	25
	b) Ref Vans/ containers	10	60	15	90	20	120
	c) Market intelligence. Computers for networking including server.	100	80	120	96	130	104
	d) Buy back intervention. Training/seminar/workshop	6	30	10	50	12	60
	e) Establishment of marketing infrastructure to horticultural produce in Govt. /private/corporate sector.						
	f) Extension, quality awareness and market led extension activities for fresh processed products.						
	i. Participation in the international trade fairs to showcase the products	1	10	3	30	4	40
	ii. District Information Centres	15	90	7	42	7	42
	iii Transport vehicles	15	90	7	42	7	42
	iv - Strengthening of State Agmark grade laboratories	2	930	1	465	0	0
	v Strengthening of Rural Marketing	20	300	10	150	10	150
	vi Strengthening of Rural market infrastructure	20	300	10	150	10	150
	vii Electronic Auction Centre	3	390	1	130	1	130
	Sub Total		2305.0		1270.0		863.00

Sl. No.	Intervention	2005-06		2006-07		2007-08	
		Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs	Physical Target	Financial Target - Rs Lakhs
11	Mission Management (i) State & District Mission Structure including additional manpower & project preparation cost. (ii) Support to cooperatives for infrastructural requirement (TANHOPE / TANHODA) (iii) Institutional strengthening, hire / purchase of vehicle, hardware / software (iv) Technical Support Group (TNAU) (v) Collaboration with International agencies like FAO, World Bank etc. Sub Total		345		352		384
		-	20	-	25	-	30
			114		125		140
			20		25		30
			50		60		75
			549.2		587.3		658.5
12	ADDITIONAL PROPOSAL Establishment of new gardens [i] State specific a. Introduction of new high yielding tapioca crop [ii] Introduction of new crops / varieties in TN a. Fruits ADDITIONAL PROPOSAL						
		1000	112.5	1300	146.25	1500	168.75
		65	7.3	100	14.175	100	20.1375
			119.8		160.4		188.9
	GRAND TOTAL		7572		7794		8518

ANNEXURES

Annexure 1 – Course details in the Horticulture Training Institute

i) Courses

The residential practical training courses to be offered at the Center (5 days) are as following:

- a. General Greenhouse Management
- b. Automation in Protected Cultivation
- c. Cultivation on Open Field – Flowers, Fillers, Greens Vegetables and Fruits
- d. Plant Propagation & Nursery Management
- e. Marketing of Horticultural Produce

ii) Crops Specific Courses

- a. Rose cultivation
- b. Gerbera and Carnation Cultivation
- c. Aster and Orchid Cultivation
- d. Cultivation of Vegetables: Capsicum, Tomato, Cole crops.

iii) Objectives of the courses

- a. Provide overall insight in technical aspects of growing under protected and open field cultivation.
- b. Provide practical / technical insight in the effects of all cultural activities throughout the production chain and gain experience in accurate monitoring methods to assess the crop development.
- c. Upgrade managerial and technical skills in major aspects related to modern crop, pest, water and fertilizer management strategies.
- d. Gain techno-commercial insight for making investment decisions in protected cultivation

Annexure 2 – Detailed break up of Post Harvest facilities proposed

No	District	Reefer vans	Pack houses	Buy back Seminars/ Workshop (Crops)	Rural market	Rural Market - Infrastructure facilities	District info. Centres /Vehicles	Agmark labs.
1	Coimbatore	1	2		3	1	1	1
2	Erode		2	1 (Aonla, Flowers)	1	1	1	
3	Dindigul	2	3	1 (Aonla, Banana)		1	1	
4	Karur		1					
5	Theni	1	3			1	1	
6	Madurai	1	3				1	
7	Ramanathapuram		1		1		1	
8	Virudhunagar		1			1		
9	Tirunelveli		2			1	1	
10	Thoothukudi		1	1 (Aromatic Crops)	1	1		
11	Pudukottai		1					
12	Sivagangai		1		1			
13	Kancheepuram				2	1		
14	Thiruvallur		1			1		
15	Vellore		1			1		
16	Thiruvannamalai		1			1		
17	Villupuram		1			1		
18	Cuddalore		1		1		1	
19	Dharmapuri	1	2	1 (Mango)	1		1	
20	Krishnagiri	1	2			1	1	
21	Salem	1	2	1 (Aonla, Tapioca)	2		1	
22	Namakkal		1			1	1	
23	Perambalur		1					
24	Tiruchirapalli		1		1	2	1	
25	Thiruvarur		1		1			
26	Nagapattinam				1			
27	Thanjavur		1		3	3	1	
28	Kanyakumari		1		1	1		
29	The Nilgiris	2	2	1 (Cut flowers)			1	
30	Chennai							1
Total		10	40	6	20	20	15	2

Annexure 3 (A) – Development /Strengthening of Rural Markets

Sl. No.	Market	District
1	Guduvancherry	Kancheepuram
2	Uthiramerur	Kancheepuram
3	Sethiathoppu	Cuddalore
4	Thiruvaidaimaruthur	Thanjavur
5	Poompuhar	Nagapattinam
6	Muthupettai	Thiruvarur
7	Pappanadu	Thanjavur
8	Thirubuvanam	Thanjavur
9	Kinathukadavu	Coimbatore
10	Palladam	Coimbatore
11	Pongalur	Coimbatore
12	Thrichendur	Thoothukudi
13	Muthukulathur	Ramanathapuram
14	Musiri	Thiruchy
15	Palakode	Dharmapuri
16	Marthandam	Kanyakumari
17	Sivagangai	Sivagangai
18	Kunthadam	Erode
19	Tharamangalam	Salem
20	Omalur	Salem

Annexure 3 (B) – Development of infrastructural facilities for rural marketing

Sl.No.	Market	District
1	Sriperumpudur	Kancheepuram
2	Uthukottai	Thiruvellore
3	Polur	Thirvannamalai
4	Ulundurpettai	Villupuram
5	Pallikonda	Vellore
6	Thotium	Thiruchy
7	Athiramapattinam	Thanjavur
8	Vallam	Thanjavur
9	Papanasam	Thanjavur
10	Kutralam	Thirunelveli
11	Thondamuthur	Coimbatore
12	Lalgudi	Thiruchy
13	Kaveripattinam	Krishnagiri
14	Anthiur	Erode
15	Thovalai	Kanyakumari
16	Watrap	Vridhunagar
17	Nasreth	Thoothukudi
18	Vedasandur	Dindigul
19	Senthamangalam	Namakkal
20	Uthamapalayam	Theni

Facilities	Rs in Lakhs
Retail shops (Vegetables /others) – 50 Nos	7.0
Farmers and Traders Rest Room	2.0
Canteen facilities	1.0
Toilet facilities	1.0
Cement concrete roads	2.0
Drinking water and Sanitation	0.5
Solid Waste Management	0.5
Cleaning & Grading	0.5
Parking facilities	0.5
Total	15.0

Annexure 4(A) – Mission Management – State Mission Structure

Component detail	Rs. in lakhs
i. Additional Manpower (Including recruitment)	4.4
ii. Purchase of hardware / Software	22.0
iii. Networking, Internet and connected activities (including telephones)	2.1
iv. Structuring of State Mission’s Office (includes equipments)	50.0
v. Hiring of technical services for providing assistance to implement the NHM programme. (This service may be private / can be hired from any place in India)	20.5
vi. Maintenance (Payment of telephone bill, electricity, rent and attending to repair work in any equipments)	15.0
vii. Data base development A separate data base for horticulture in Tamil Nadu stating all details on horticulture scheme details	2.0
TOTAL	116

Annexure 4(B) – Mission Management – District Mission Structure

Hiring of personnel	109
Structuring of district mission office (including maintenance costs)	41
Information & Training hall Rs.6 lakhs x 13	78
Project preparation cost (Including next year)	1
TOTAL	229

Total Financial Assistance Sought

– State Mission Structure and District Mission Structure = Rs 345 Lakhs