CHAPTER - 4

AGRICULTURE

Introduction

The recurring occurrence of localised droughts raise concerns of crop failure even in good monsoon years. There is a growing recognition that agriculture is becoming increasingly unstable from the point of view of environmental balance due to natural calamities and trade balance due to global liberalisation and regional trade agreements. Being the major cash crop producing state in the country, Kerala is perhaps the most affected by agriculture related trade policies adopted by Government of India.

4.2 The rise in international prices of some of the commodities since the second half of 2002 onwards was reflected in the domestic prices also. However, long run series of international prices show cyclical movements. The prices have a tendency to rise for 4-5 years and thereafter decline for about same number of years. Such behavior implies that high level of international prices could largely be a part of cyclical behavior. International prices of agricultural commodities are characterised by high volatility, which is the crucial factor for the trade policy and strategy. An appropriate and suitably strengthened mechanism in the state needs to be put in place urgently to influence Trade Policy formulation in the dynamic context.

4.3 The domestic agricultural products have to compete with cheaper imports due to increasing liberalisation of import regulations. Quality standards have several dimensions like adherence to global environmental and health standards and proper certification. A thorough review of adequacy of institutional arrangements in quality control, certification and trading in the agriculture sector should be a state priority to take advantage of global opportunities particularly in spices, marine products, organic agriculture, horticulture products and medicinal plants. The Sanitary and Phytosanitary (SPS) norms are gradually becoming a weapon of trade discrimination. Greater awareness on quality consciousness across the value chain through appropriate extension and infrastructure support and improved post harvest technology could help increase agricultural exports from the state.

4.4 Stabilisation and augmentation of productivity assume critical importance, given the limited scope for increasing area under cultivation of various crops. There has been a decline in land holding size and increase in costs of production. Increase in production would be possible mainly from improvements in productivity through the use of location specific technology and modernisation of agriculture.

4.5 Agricultural extension is the key to augment productivity of crops to a great extent and extension should begin to broad base its programmes by utilising a farming systems approach, and suitably address marketing and value addition. Wider use of electronic mass media and information technology through optimising the strengths of public-private sectors has to be adopted.

Agricultural Extension

4.6 It is becoming increasingly evident that public extension alone may not be able to respond to the multifarious demands of farming systems. In response to growing demand for knowledge in intensive agriculture in selected areas, organisations started payment based private extension in the states like Maharashtra, Tamil Nadu, Adhra Pradesh etc. A study was conducted to assess the willingness of farmers to pay for agricultural information nine districts from Maharashtra, Rajasthan and Kerala. In Kerala, 40 per cent of farmers in Kasaragod, 58 per cent in Kottayam and 48 per cent in Thiruvananthapuram were willing to pay for agricultural related information. Major findings of the study are shown in Box-4.1

BOX-4.1

Major findings of a study on willingness to pay for Agricultural Extension Services

- Out of the selected districts, farmers of Pune stood first in terms of their willingness to pay. On an average 58 per cent farmers in Maharashtra, 39 per cent in Rajasthan and 48 per cent in Kerala were willing to pay for agricultural related information.
- 41 per cent of the farmers in Kerala are highly satisfied with the existing source of information and another 43 per cent is moderately satisfied and 16 per cent is dissatisfied
- Higher the per acre agricultural income, farmers are more willing to pay for agricultural related information in Rajasthan and Kerala.
- In Kerala three categories of information were identified by the farmers for paid services. 37 per cent of farmers are willing to pay for Training programmes on new technologies, 36 per cent on all aspects of growing new crops and 27 per cent on proper plant protection advice.
- **Willingness** Conditions in Kerala -
  - 39% are willing to pay for advice based on field visits
  - 24% if charges are reasonable
  - 21% if firms to be brought under the purview of Consumer Court
  - 16% if the firms to provide receipts for the payment made.
- In all the States farmers expressed willingness to pay for Training programmes and plant protection aspects.
- Demand for paid service is more for horticulture crops. In Kerala 47 per cent are willing to pay for information related to vegetable cultivation, 29 per cent for flower cultivation and 24 per cent for spices.
- Around 30 per cent of the farmers are willing to pay upto Rs. 30. Another 10 per cent are willing to pay even Rs. 100

ICAR, 2003

Homesteads

4.7 The homesteads in the state are very diverse with respect to the commodities produced, the techniques used and the purpose they serve for households. The constraints and needs of homesteads differ considerably depending on the functions of the homesteads. A differentiated strategy has to be evolved for the development of homesteads of the state. Development of nutrient recommendation for the homestead systems, varietal screening for different shade levels and development of suitable enterprise mix should be given priorities for research and development. The challenges facing the homesteads are shown in Box-4.2.

4.8 The major strength of the diversified mixed cropping pattern traditionally followed in Kerala is the high degree of resilience for meeting the adverse conditions emerging from the loss in revenue as a result of the fall in prices of agricultural commodities. Fluctuations in the prices of agricultural commodities normally do not adversely affect a cross section of the commodities concurrently and the mixed cropping system thus acts as a cushion for absorbing the shock through cross subsidisation. Diversification of agriculture especially in homesteads needs to encompass subsidiary farm activities such as apiculture, dairy, agroforestry, piggery, fisheries and poultry and appropriate marketing strategies need to be designed to make these products internationally competitive. Diversified agriculture will need much more complex commercial linkages between the farm and the market. The diversification of the farming system also offers opportunities to boost nutritional security of the small holders. The major findings of a study on homestead farming in Kerala are shown in Box-4.3.

BOX-4.2

Homesteads - Challenges and Priorities

Homesteads are widely prevalent in South East Asia, Papua New Guivea, Zambia and Nigeria. Diversity in species and varieties are among the most shrinking features of homegardens. As many as 240 species have been reported in a single garden. In Sri Lanka it has been calculated that over 80% of the Staples, 60% of the leafy vegetables, 20% of all other vegetables, 80% of fruits and 40% of spices for family use are grown in homesteads. Various studies have projected 9 to 51 per cent of total income emerging from homesteads in Indonesia.

There is little understanding of the cropping systems in which these crops are produced in homesteads. Every effort to improve homegarden productivity must take into account the dynamic nature of homegardens and their adaptation to a changing world. Study of the agronomic aspects of homegardening is still very scanty.

Integrated nutrient management, Soil biology in gardens, integrated pest and disease management, water management and water use efficiencies, optimum annual/perennial crop combinations, integration of animals in gardens are the priorities identified for the development of homegardens. Any homegarden development programme should define its target groups and the probable development of their homegardens in the next decade. Homegardens are not only a low input form of land use, their survival may very well depend on increased but well balanced use of environmentally safe inputs of nutrients.

FAO, 2003

BOX-4.3

Homestead Farming in Kerala

- Average size of homestead is less than 0.44 ha. in 70 per cent of the homesteads. Coconut is the base crop in 67 per cent of homesteads.
- In the South Zone, the model developed could generate an additional net income of Rs. 37000 and employment to the tune of 110 man days from 0.4 ha homestead by integrating new crops, poultry, quail, rabbits, goats and ornamental fish culture.
- In the Problem zone the models generated an additional income of Rs. 15000/- and 188 man days of additional employment from an area of 0.7 ha.
- In the Central Zone, an additional income of Rs. 26680 and employment of 102 mandays were generated from a 0.25 ha homestead model and in the north zone, scientific interventions could raise the net farm income from Rs. 21908 to Rs. 53996 from a 0.34 ha. plot. Generated 52 man days of labour.
- The model developed for Andaman & Nicobar group of islands generated an additional income of Rs. 17000 and employment of 139 man days.
- The homesteads were found to be repositories of biodiversity. As much as 130 different species of plants were identified in a 0.4 ha homestead.
- 42 per cent of the homesteads had improved breeds of cow, mainly Jersey. Backyard poultry with less than 10 birds were seen in 71 per cent of the homesteads surveyed. Small scale goat units with one to two females were also common. Apiary in areas of rubber cultivation and sericulture in certain pockets were other income generating activities.
- Majority of the homesteads fall into either overcrowding or under utilisation resulting in low system productivity. The reason for this improper use of the farms were many - like Pest and disease problem affecting the base crop- coconut, unfavorable market conditions, the absence of family labours consequent to the migration of males, the unavailability and high cost of hired labour and lack of government support to the homesteads as ranked by the respondents.

KAU, 2005

4.9 It is important to explore frontiers in technology focusing on evolving location specific and economically viable technologies by utilising developments in the field of biotechnology, information technology, crop husbandry and water management. Effective linkages of production system with marketing, agro processing and other value added activities would play an increasingly important role in the diversification of agriculture.

Agricultural Biotechnology

4.10 FAO estimates that over the next 30 years, more than three quarters of the growth in crop production that is needed to satisfy the increasing food needs, will have to derive from increase in crop yield. This will only be possible if substantial technological innovations take place. Modern biotechnology tools of recombinant DNA including genetic engineering, offer some opportunities for generating such innovations. In the agricultural arena, biotechnology tools have been used for animal and plant disease diagnostics, for production of recombinant vaccines against animal diseases and for the improvement of livestock and crops. The cultivation of Genetically Modified (GM) crops has grown from two million ha. in 1996 to 68 million ha in 2003, with bulk of the transgenic acreage in three countries, viz., The USA, Canada and Argentina. Global value of GM crops is estimated to be $ 4.5 billion.

4.11 India made a significant step earlier this year towards the adoption of biotechnology in agriculture. Genetically altered cotton varieties, which carry the insecticidal protein gene of the soil bacterium, ***Bacillus thuringiensis(Bt)*** were approved for commercial cultivation and about 40,000 ha has been planted with the new varieties (Bt cotton). While creditable data on the performance of this crop is not yet available, it has been showed that the Bt cotton technology has many advantages like savings in pesticides.

4.12 Responsible use of biotechnology requires an efficient regulatory mechanism. Good set of rules and regulations are in place governing the research and commercialisation of genetically altered organisms. However, the present mechanisms have several deficiencies leading to uncertainties and delays. The development of bio safety is important.

4.13 A task force on Application of Agricultural Biotechnology was constituted by Government of India to formulate a long term policy on Agricultural Biotechnology under the Chairmanship of Prof. M.S. Swaminathan. The task force report was submitted in May 2004. The major recommendations are shown in Box-4.4

BOX-4.4

Major recommendations of the Task force on Agricultural Biotechnology

1. There is a need for setting up National Biotechnology Regulatory Authority with a Wing for Agricultural Biotechnology. At the State level State Agricultural Biotechnology Regulatory Advisory Board and at the district level with Biotechnology risk assessment and communication Committees to be constituted. At the National level Agricultural Biotechnology Regulatory Authority will be largely concerned with genetically modified crops, animals and fishes resulting from recombinant DNA technology. The State and district level structures should also promote the non-GM application of biotechnology like the manufacture and sale by SHGs on biofertilizers, biopesticides etc. District level committees can promote genome clubs in Schools, Colleges, KVKs and promote genetic literacy in Panchayats. The institutional structure should maintain correlation with National Bio diversity Authority, State Bio diversity Boards and local level Bio diversity Management Committees.
2. Extensive bio safety guidelines should be developed for undertaking of DNA work on transgenic animals including bio safety aspects for consumption.
3. Prioritized targets in crop plants include insect pest resistance, disease tolerance, abiotic stress tolerance (drought, salinity, excessive moisture and water logging), quality improvement, enhancing shelf life, engineering male sterility and development of apomictic hybrids where farmers can save seeds and plant.

4 Biotechnology application should be viewed comprehensively. Both of DNA and non DNA application such as fermentation, bio processing, bio pesticides, bio fertilizers, tissue culture, micro propagation and related technological components which are important for Indian Agriculture including animal husbandry and fisheries should be viewed as integral components.

5 There should be equal thrust to develop both GM varieties and GM hybrids in priority crops. The varieties in contrast to hybrids are preferred by small farmers because they can save their own farm seeds. In the case of hybrids, introduction of genetic factors for apomixis should be supported for saving crop seeds.

6 In fisheries prioritized target traits are auto transgenesis in commercially important species with growth hormone genes, production of pharmaceuticals and fish 'biosensers' for monitoring aquatic pollution.

7 Government of India should prepare 'bio security Compact' comprising precise action plans to face invasive Alien species introduced with the import of food grains and seeds, SPS measures to avoid mycotoxins and Salmonella in food, environment and bio safety relating to GMOs and bio ethical consideration in research.

8 Areas rich in agro bio diversity should be earmarked as Agro bio diversity sanctuaries similar, to Wild life sanctuaries. In such areas, the cultivation of GM crops should be prohibited.

9 The existing extension personnel should be retrained and retooled to equip them to enter the age of functional genomics, proteomics, recombinant DNA technology and Nano biotechnology.

10 Farmers should have complete information on the benefits and risks associated with GM Crops. The evaluation procedure should include farmer participatory assessments as in the case of non-GM crop varieties.

11 Setting up of venture capital fund to help commercialise research breakthrough in the development of GM crops.

12 Establishment of Agri-Biotech Parks.

Source: Ministry of Agriculture, 2004

4.14 Adequate bio safety regulations, risk assessment of biotechnology products, mechanism and instruments for monitoring use and compliance are required in order to ensure that biotechnology and its products do not have harmful effects on the environment or people.

4.15 Rapid propagation with tissue culture technology, disease free plantlets, predictability through genetic mapping, reduced pesticide application through induction of disease resistant genes, varieties with higher productivity etc are some of the potential areas of applications of the technology in the State. Biotechnology provides an opportunity to convert bio resources into economic wealth. There is a need to prioritise and reorient research programmes relating to transgenic research in crops, animals and fishes in order to maximise benefits. Some of the ongoing biotechnological research in Kerala in agriculture are shown in BOX-4.5. Instead of inviting isolated projects at institute level, State level prioritization based on the recommendations of the task force and preparation of impact projects is needed to reap the benefits.

BOX-4.5

Some of the ongoing biotechnological research in Kerala in agriculture

- Tissue culture of coconut, arecanut, rubber, fruits, species and flowers.
- Virus indexing.
- Induction of diseases/insect tolerance/resistance.
- Tissue culture for rapid multiplication of elite genotypes of coconut.
- Another culture studies in coconut, rubber
- Development of molecular markers to finger print accessions.
- Molecular studies for tagging root wilt resistance genes in coconut
- Production of Somaclonal variants in tuber crops
- Nutrient enhancement in crops like cassava and Sweet potato using protein genes isolated from Amaranthus
- Molecular diagnosis of sweet potato virus diseases
- Development of transgenic cassava resistant to cassava mosaic disease.

Agricultural Income

4.16 The trends in agricultural income in Kerala during the last eight years is shown in Table 4.1. Eventhough the sector has recorded positive trend in growth performance in nineties, it has not been consistent. Food crops in general have suffered a set back in area and production despite a sizeable investment. The earlier indication as per the provisional estimate by the Department of Economics and Statistics was that the growth rate in agricultural income would be around -5.54 per cent in 2002-03. However, the final figures indicated increase of 1.28 per cent in growth. The provisional figure for 2003-04 shows a decline of 4.00 per cent. The dismal performance could be attributed to decline in crop production coupled with low prices of major agricultural commodities. The deficient rainfall especially SW monsoon in 2002 and 2003 also had contributed to the decline in crop production. The contribution of agriculture to State income has been on the decline as the other sectors registered higher rates of growth.

Table 4.1

Growth of Agricultural Income in Kerala (at 1993-94 prices)

Sl. No.	Year	Agricultural Income (Rs. In Crores)	Rate of change over previous year	Percentage Contribution to State Income
1	1993-94	6256	-	26.23
2	1994-95	6897	10.25	26.62
3	1995-96	6947	0.72	25.78
4	1996-97	7115	2.42	25.39
5	1997-98	6777	-4.75	23.67
6	1998-99	6900	1.81	22.52
7	1999-00	7017	1.70	21.45
8	2000-01	5448	-22.36	16.23
9	2001-02	5312	-2.50	15.39
10	2002-03	5380	1.28	14.53
11	2003-04	5165	-4.00	13.00

(Source: Directorate of Economics and Statistics)

Rainfall

4.17 The South West monsoon of 2003 was marked by near normal rainfall over the country in general and the total South West rainfall in India was 102 per cent of its long period average. However, in Kerala, the rainfall was only 2369.2 mm in 2003, against the normal of 2953.9 mm. in this period, indicating a deviation of 20 per cent from the normal. Highest deviation from normal was recorded in July and shortage of Southwest Monsoon was to the extent of 24 per cent from the normal (Table-4.2). In Kerala the highest departure from the normal in the last two decades was recorded during the Southwest Monsoon of 2002. This adversely affected agricultural production in the state. However North East Monsoon was above normal (32%) in 2002. The figures are -24 and -4 per cent respectively in 2003. The deviation in rainfall, apart from affecting production and productivity of annual crops, also affects the productivity of perennial crops such as coconut, rubber and pepper in the long run. Spatial and monthly pattern of rainfall and related data are shown in Appendix 4.3, 4.4. and 4.5.Maximum deviation from the normal was observed in Wayanad (-46%) followed by Kozhikode (-34%) during 2003. During the South West Monsoon of 2003, deficient rainfall was recorded in 10 districts.

4.18 Deficient rainfall was recorded in eight districts during South West Monsoon and five districts during North East monsoon of 2004. Wayanad district alone recorded deficient rainfall to the extent of 35 per cent and 29 per cent respectively during both SW and NE rainfall of 2004. Drought monitoring using remote sensing in selected districts, development of contingency plans and popularization of watershed management through local governments are to be given thrust to minimise the effects of drought.

Table 4.2

Percentage Departure of Rainfall from Normal (1990 to 2004)

Sl. No.	Year	Annual	South West Monsoon	North East Monsoon
1	1990	-28	-25	-4
2	1991	-39	18	-21
3	1992	-37	15	35
4	1993	-8	-12	32
5	1994	11	15	13
6	1995	-6	-6	-22
7	1996	-13	-8	2
8	1997	3	6	31
9	1998	0	2	30
10	1999	-8	-25	23
11	2000	-21	-18	-27
12	2001	-6	-13	0
13	2002	-14	-33	32
14	2003	-14	-24	5
15	*2004	1	-19	14

** Figures up to October 31*

Fig 4.1
District wise Normal and Actual Rainfall - 2004
(up to 31st October)

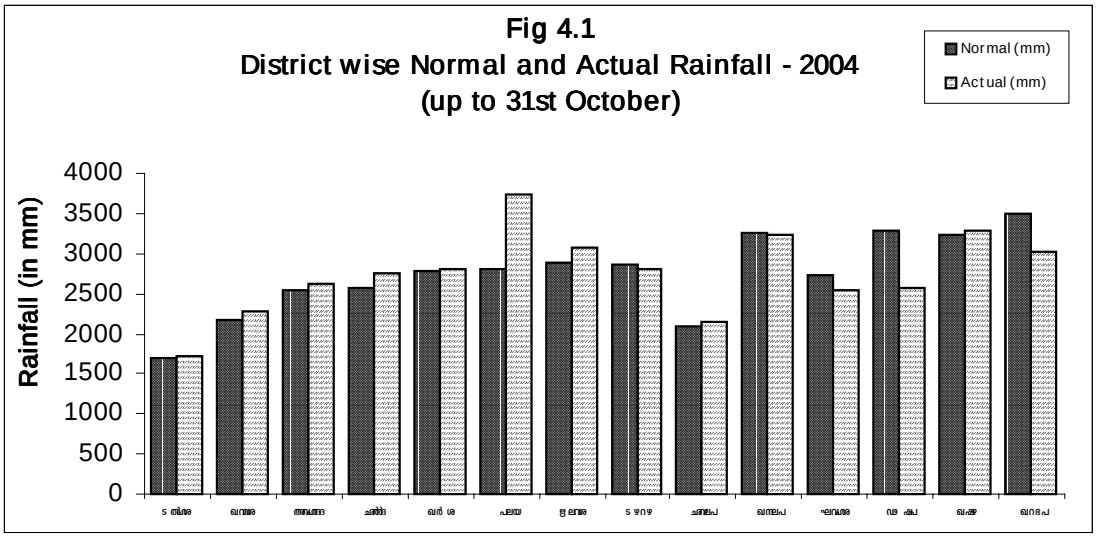
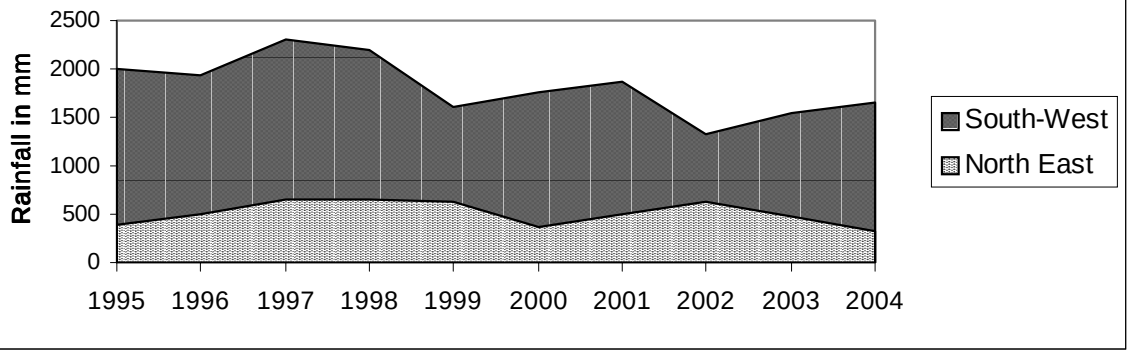
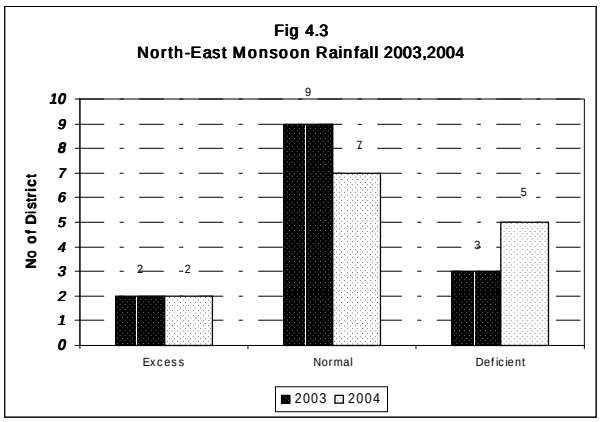
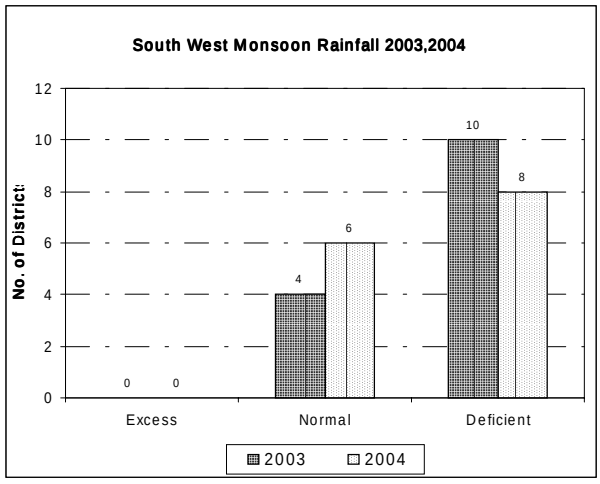


Fig 4.2
South West & North East monsoon in kerala for the last 10 years







Land Use

4.19 Data on land use pattern of Kerala for the year 2003-04 is given in Table 4.3. Out of a total geographical area of 38.85 lakh ha. net sown area is about 56 per cent. Forest occupies around 28 per cent. Agriculture and forest sectors together account for over 84 per cent of the land area (see Fig. 4.4). There was no perceptible improvement in the extent of land use for agriculture. Land under non-agricultural uses was 9.10 percent in 1999-2000 and has increased to 9.98 per cent in 2003-04. There was decline in the area under current fallow (263 ha) and an increase in the area under fallow other than current

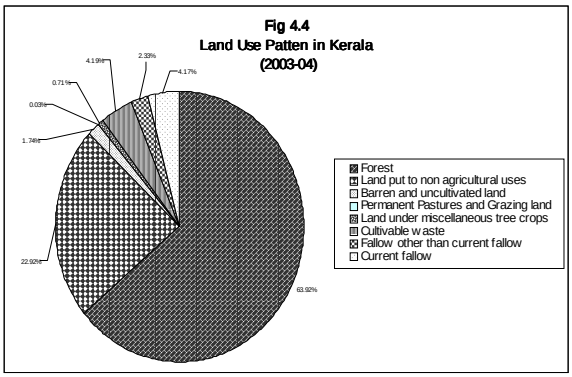


Table 4.3
Land Use Pattern in Kerala

(in Ha.)

Sl. No.	Classification of Land	2001-02	2002-03	2003-04 Actual	% of Geographical Area	Change in Area between 2002-03 and 2003-04 Actual	
1	Total Geographical Area	3885497	3885497	3885497	-	-	-
2	Forest	1081509	1081509	1081509	27.83	-	-
3	Land put to non agricultural uses	392352	393341	387848	9.98	-5493	-1.40
4	Barren and uncultivated land	29728	29580	29510	0.76	-70	-0.24
5	Permanent Pastures and Grazing land	233	263	447	0.01	184	69.96
6	Land under miscellaneous tree crops	13613	13022	11939	0.31	-1083	-8.32
7	Cultivable waste	63771	69266	70823	1.82	1557	2.25
8	Fallow other than current fallow	34331	39181	39376	1.01	195	0.50
9	Current fallow	79270	70798	70535	1.82	-263	-0.37
10	Net area sown	2190690	2188537	2193510	56.45	4973	0.23
11	Area sown more than once	801562	781847	782892	20.15	1045	0.13
12	Total Cropped area	2992252	2970384	2976402	76.60	6018	0.20
13	Cropping intensity	137	136	136			

(Source: Directorate of Economics and Statistics)

fallow (195 ha). during 2003-04 over 2002-03. The area under cultivable waste also increased by 1557 ha. and barren and uncultivated land declined by 70 ha.

4.20 In the light of the newly prepared Bill on promotion of tree growth in non-forest areas based on the recommendations of Law Reforms Committee, more focussed action plan is needed to promote farm forestry to utilise the homesteads and other available land for the promotion of tree growth.

Trend in Area, Production and Productivity of Crops

4.21 Data regarding the area, production and productivity of important crops grown in Kerala are shown in Table 4.4 and Appendix 4.6. Out of a gross cropped area of 29.76 lakh ha. in 2003-04, food crops including tapioca occupy only13.7 per cent. Kerala state which had a low base in food production is facing serious challenges in retaining even this meagre area. Kerala agricultural economy is undergoing structural transformation from the mid seventies by switching over a large proportion of its traditional crop area which was devoted to subsistence crops like rice and tapioca to more remunerative crops like coconut and rubber.

4.22 The area under rice has come down from 3.11 lakh ha. in 2002-03 to 2.87 lakh ha. in 2003-04. In the case of tapioca the area has increased from 1.04 lakh ha. to 1.11 lakh ha during this period. The area under commercial crops in general and rubber in particular has increased considerably during the last two decades. The trend seems to have slowed down recently. During Ninth plan average annual increase in area under rubber was 1951 ha while during 2003-04 area increased by 2355 ha compared to previous year and the increase was mainly due to upsurge in prices.

4.23 In the case of coconut, area was at its peak during 2000-01. During the year 2003-04 area increased by 7009 ha. over 2002-03. Major commercial crops which had recorded expansion of area during 2003-04 from previous year apart from coconut include cardamom (370 ha). tapioca (7169 ha) and coffee (1571ha). The major crops with considerable loss in area include cashewnut (110 ha) ginger (75 ha) and turmeric (93 ha), pepper (1705 ha), arecanut (4105 ha), tea (124 ha) and banana (3776 ha).

4.24 Crops which have failed to sustain the production level in 2003-04 compared to previeous year include rice (-118814 MT), cashewnut (-892 MT), ginger (-2698 MT), turmeric (-285 MT), arecanut (-23530 MT), coconut (-225 m. nuts), Pepper (-10516 MT) Banana (-35427 MT) and Plantains (-20248 MT). Increase in production reported during this period include rubber (60833 MT), Tapioca (90341 MT), Coffee (528 MT), Cardamom (29 MT), and Tea (539 MT)

4.25 The index of area, production, productivity of crops in Kerala for the year 2001-02 to 2003-04 with the base of triennium ending 1993-94 is shown in Appendix-4.7. The index of food grain production declined by 11.71 points and non-food grains increased slightly by 1.57 points. Similarly index of area as well as productivity of foodgrains declined by 4.57 points and 12.27 points respectively. Food grains which include both rice and pulses suffered a severe set back. However non-food grains showed a slight improvement in area, production and productivity and the indices improved by 0.11, 1.57 and 1.42 respectively. The production of plantation crops showed slight improvement during the year by 13.12 points. (Appendix-4.7)

Table 4.4

Area, Production and Productivity of Principal crops

Sl. No	Crops	Area (ha)		Production (MT)		Productivity (kg./Ha.)	
		2002-03	2003-04	2002-03	2003-04	2002-03	2003-04
1	Rice	310521	287340	688859	570045	2218	1984
2	Pulses	5764	5604	4615	4272	801	762
3	Pepper	208607	206902	67358	56842	323	275
4	Ginger	8998	8923	32412	29714	3602	3330
5	Turmeric	3140	3047	6938	6653	2210	2183
6	Cardamom	41412	41782	8680	8709	210	208
7	Arecanut	97485	93380	107279	83749	1100	897
8	Banana	55668	51892	421809	386382	7577	7446
9	Other Plantains	54811	55258	409282	389034	7467	7040
10	Cashewnut	88548	88438	66087	65195	746	737
11	Tapioca	104179	111348	2413217	2503558	23164	22484
12	Coconut *	899198	906207	5709	5484	6349	6052
13	Coffee	83113	84684	63322	63850	762	754
14	Tea	37068	36944	55348	55887	1493	1513
15	Rubber	476047	476047	594917	655750	1250	1377

** Production million nuts and Productivity in nuts/ha.*

Source: Directorate of Economics and Statistics and UPASI

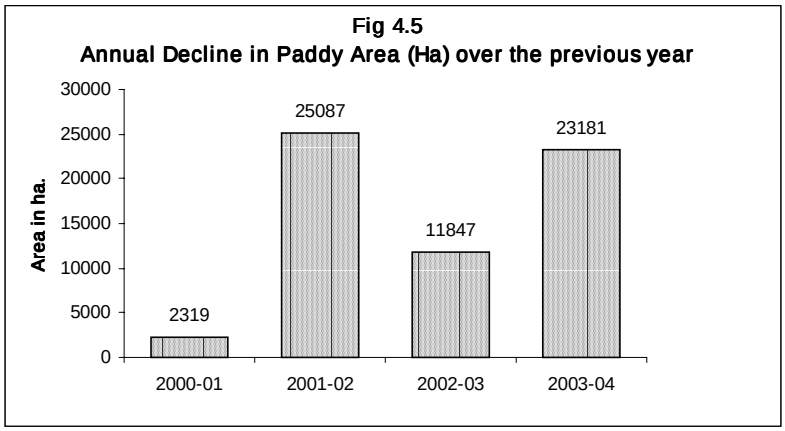
Crop wise analysis

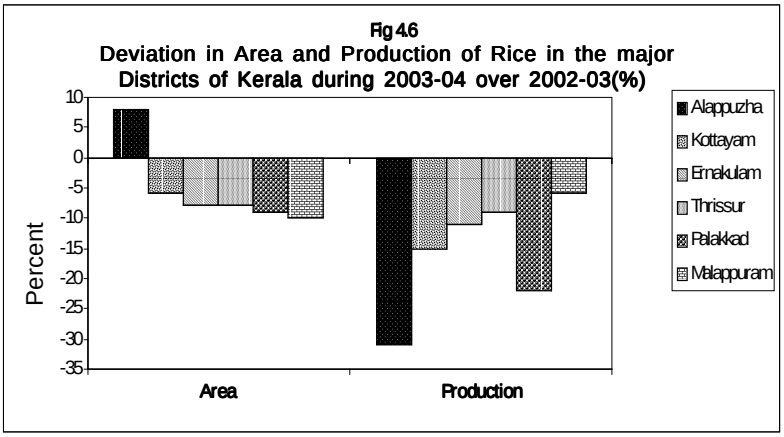
Rice

4.26 The area and production of rice which was steadily increasing till the mid seventies had to succumb to economic pressure emanating from other remunerative crops like banana and coconut and the growth of the construction sector. This resulted in the decline of more than 5 lakh ha of area under paddy cultivation during the last two decades. The twenty five year period from the mid seventies witnessed large scale shift in area under the crop. Rice production touched its peak level of around 14 lakh MT in mid seventies with a coverage of 8.81 lakh ha. The gap in meeting the internal demand of food grains was estimated to be around 50 percent during that period. The increasing cost of cultivation and the disproportionately small rise in price has acted as a deterrent in rice production.

4.27 The average annual decline in area under rice during the Eighth Five year Plan was around 22000 ha, whereas it has come down to an average of 13000 ha. during the Ninth Plan period. During 2003-04, the reduction was to the tune of 23181 ha. from 3.11 lakh ha. in 2002-03 to 2.87 lakh ha and rice production declined from 6.89 lakh MT to 5.70 lakh MT, a reduction of 17 per cent during this period compared to a reduction

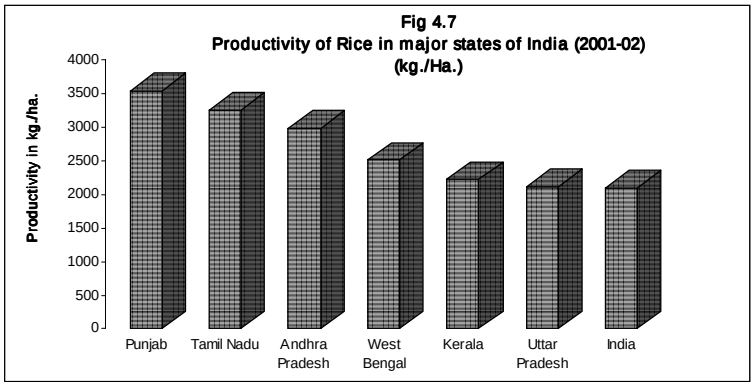
of 2.1 per cent in 2002-03 with that of 2001-02. The unprecedented drought in recent years has contributed to this further decline of paddy production. Around 44 per cent of rice production is concentrated in Alappuzha and Palakkad districts. During 2003-04 maximum reduction in rice production was recorded in Alappuzha (-31%) and Palakkad (-22%) compared to previous year mainly due to the severe drought affected in these districts.





at any cost. The sharp increase in the prices of fertilizers and wages and non-availability of labour in peak seasons in certain locations, the failure of the irrigation system to serve the areas to the extent desired etc. are problems to be tackled to sustain this crop. The future of rice production in the state lies in improving productivity through promotion of high yielding varieties under scientific management in single potential areas. Strengthening of group farming samithies with the required facilities and gradually raising them to the level of self supporting institutions is perhaps one way to circumvent these problems. However past experience with the group farming programme suggests that neither input subsidies nor infrastructure support *per se* can bring about substantial change in area and production. Instead of pumping in more money by way of additional incentives, appropriate institutional arrangements for organising common services coupled with participatory irrigation management, local water resources development and selective mechanisation could improve the situation. Applied research on emerging technologies and participatory technology development are also equally important. **The recommendations of the expert committee constituted by the Government of Kerala have to be seriously considered in promoting rice cultivation in the state.**

4.28 The average productivity which was stagnant at around 2.2 MT/ha for the last four years has come down to less than two tones during 2003-04.(Table-4.4). Maximum reduction in productivity during the year to the tune of 36 per cent was recorded in Alappuzha district. Rice productivity at current level is sub optimal. The productivity in major rice producing states are shown in (Fig 4.7). Instead of providing area based subsidies , suitably designed incentive system is essential to promote productivity of rice in the state. The consistent failure of the crop to rise to the expectations has raised series of questions about the policy to sustain rice production



4.29 Concerted efforts are needed to promote scented rice cultivation in Wayanad, organic rice production in Pokkali lands and medicinal rice in identified potential panchayats with necessary brand promotion and marketing support in association with LSGs. Adequate processing facilities have to be established before launching a major project for the development of scented rice in Wayanad district. Value added products from medicinal rice could also be promoted on SHG basis in collaboration with ayurvedic industry.

Season wise performance

4.30 Season wise data on the performance of rice during the last three years is shown in Appendix 4.8 Data shows decline in area in all three seasons with relatively less reduction in Mundakan season. There was nine per cent reduction in area during Virippu season in 2003-04 compared to previous year and nine per cent reduction in Punja season. Area under Virippu is gradually shrinking and about 45000 ha out of double cropped land are remaining fallow during Virippu season. Group farming samithies should concentrate their efforts in such areas with a view to bringing such areas under double cropping. Mundakan season accounts for highest share in production with 46 per cent followed by 39 per cent in Virippu and 15 per cent in Punja season. The productivity recorded in Punja is the highest with 2238 kg. per ha. which is 18 per cent lower than that in 2002-03. The effect of drought could be attributed for the decline in productivity of rice in Mundakan and Punja seasons during 2003-04.

High Yielding Varieties

4.31 The coverage with high yielding varieties is given season wise in Appendix.4.9 Inspite of sharp decline in the area under rice, the coverage under high yielding varieties remains steady and is increasing. The coverage which was stagnating in the range of 1.65 to 1.77 lakh ha during the last decade, has registered marked improvement in the last five years. However during 2003-04, a slight reduction of 4.9 per cent in area compared to previous year was recorded. This is part of larger reduction in area under rice in 2003-04 (17%). It increased from 1.77 lakh ha in 1998-99 to 2.38 lakh ha in 2003-04. Maximum high yielding variety coverage was in Punja season with 98 percent. followed by Virippu (90%) Mundakan (74%)and overall coverage was 83 percent. (Appendix-4.9). The average productivity of high yielding varieties during 2003-04 was 2050 kg/ha. The productivity of high yielding varieties recorded 12 per cent decline during the year.

Table 4.5

Area, Production and Productivity of Rice in Kerala and India

	Year	Area (000' ha.)		Production (000'MT)		Productivity (kg./ha.)	
		Kerala	India	Kerala	India	Kerala	India
1	1999-00	350	44972	771	89680	2203	1994
2	2000-01	347	44710	751	84980	2162	1901
3	2001-02	322	44620	704	93080	2182	2086
4	2002-03	311	40410	689	75720	2218	1874
5	2003-04	287	42410*	570	87000*	1984	2051*

- *Provisional*

4.32 Eventhough Mundakan season accounts for the largest share in coverage of area under rice its share in high yielding varieties is lower compared to Virippu season. This is mainly because of inadequate research support to evolve varieties with multiple disease resistance suitable for cultivation in different localities in Kerala during Mundakan season.

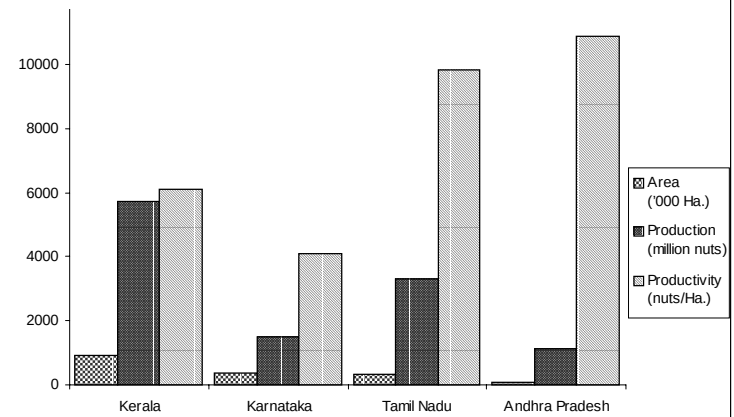
Coconut

4.33 Coconut is cultivated in 12.8 million hectares world wide with a production of 10.9 million tonnes of copra equivalent. Coconut is

grown in over 93 countries. Indonesia is the largest producer (27%) followed by Philippines (23%) and India's share in world production is 22 per cent , fourth being Sri Lanka with 5 per cent share. Countries of the Asia-Pacific region produce 86 per cent of the coconut in the world. The major producers and exporters of copra in the world are Philippines, Indonesia and Sri Lanka. Although the share of India in world production of coconut is 22 percent, the production of milling copra is around 12 per cent of the world output, while Philippines accounts for 42 per cent and Indonesia 24 per cent.

4.34 In India, coconut is grown in an area of 1.87 million ha. producing 11986 million nuts with a per hectare productivity of 6422 nuts. (Table 4.6) Kerala's share in area as well as production of coconut in the country is declining over a period. The share of area declined from 56 per cent in 1991-92 to 48 per cent in 2002-03 with a corresponding decline in share of production from 46 per cent to 48 per cent, while share of area in Karnataka and Tamil Nadu together increased from 29 per cent in 1992-93 to 38 per cent in 2001-02.

Fig 4.8
Area, Production and Productivity of Coconut in major states of India (2001-02)



4.35 With a coverage of 9 lakh ha, coconut occupies 41 per cent of the net cropped area and provides livelihood to over 3.5 million families in Kerala. Production increased by 4.2 percent in 2002-03 compared to the previous year and declined by 3.9 per cent in 2003-04 compared to previous year. The widespread attack of Mandari pest and the consecutive droughts during SW monsoon of 2002 and 2003 could perhaps be the factors responsible for the decline in production. The average productivity has also slightly declined in 2003-04 by 4.7 per cent to 6052 nuts/ha compared to 2002-03. (Table 4.6) The productivity levels in Kerala are also lower than other major producing states.

4.36 Apart from sizeable percentage of senile and unproductive palms and the higher incidence of root wilt affected palms, the share of younger non-bearing palms is around 25 per cent as reported in the survey of Department of Economics and Statistics. Over population of palms in holdings (231 Nos. per ha) is another reason for low productivity of palms.

4.37 Though India is among the leading producers of coconut in the world, its relative share in the international trade of value added products is insignificant as compared to other major producing countries like Philippines, Indonesia and Sri Lanka. The value of coconut products exported from the Philippines was US$ 1028 million, followed by Indonesia (US$ 525 million) and Sri Lanka US $ 121 million) in 2001. Apart from the traditional products, technologies are available with different institutions for desiccated coconut, coconut cream, spray dried milk powder, pastured tender coconut water etc. More concerted efforts are needed to promote value addition in coconut. Promotion of Hitech ventures in cooperative sector as well as micro enterprises offer scope in the state.

4.38 However it should be recognised that mere diversification and value addition will not make the Indian coconut economy internationally competitive, unless the cost of production of coconut is contained and brought down in real terms over time. For this the primary task is to raise the yield of coconuts. In a survey conducted by CPCRI, it was revealed that basin opening and application of organic manures are widely adopted while plant protection, spacing for optimum plant density and cultivation of high yielding varieties were the items with low level of adoption. The present level of adoption suggests the need for further intervention to

enhance technology adoption. Generation of technologies for different agro ecologic situations may improve the level of adoption. Integrated farming system with due emphasis on multi tier cropping systems needs to be promoted in different agro ecological situations.

interests of pepper farmers of the State. The Indo Sri Lankan Free Trade Agreement allowing free import of pepper has to be modified to safeguard the interests of Kerala farmers.

Table 4.6

Area, Production and Productivity of Coconut in Kerala and India

Sl. No	Year	Area (000'Ha.)		Production (Million Nuts)		Productivity (Nuts/ha.)	
		Kerala	India	Kerala	India	Kerala	India
1	1999-00	925	1768	5680	12129	6140	6860
2	2000-01	926	1840	5536	12597	5980	6847
3	2001-02	906	1890	5479	12822	6049	6776
4	2002-03	899	1870 (p)	5709	11986 (p)	6349	6422 (p)
5	2003-04	906	-	5484	-	6052	-

P Provisional

Source: Directorate of Economics and Statistics

Pepper

4.39 Vietnam is the largest producer with a share of 26 per cent followed by Indonesia (21%) and India (20%) in 2003. India became the third largest producer from the first position in 2002. A 19 per cent decline in production was recorded in India while 13 per cent increased in Vietnam**.** World pepper production had registered a four per cent decline during 2003. In 1991, Vietnam was in seventh position with a share of just 3.8 per cent of world production. There is concurrent increase in area, production and productivity in Vietnam over the period and productivity in Vietnam is around 1.3 MT /ha.

4.40 The state continues to enjoy a near monopoly in area and production of pepper, accounting for 95 per cent each in the country. The productivity achieved its peak level of 376 kg. per ha during 1998-99. The productivity of pepper recorded during 2003-04 was only 275 kg, per ha. The production declined from 67358 MT during 2002-03 to 56842 MT in 2003-04. Pepper produced in Kerala fetches a premium price in international market in view of its intrinsic quality. However consequent to the liberalisation of imports, there are reports of low quality pepper arriving from other producing countries. The import of pepper has increased from 4028 MT in 2000-01 to 15750 MT in 2002-03 affecting the

4.41 India could export 42806 MT of pepper in 1999-00, which declined to 21609 MT in 2002-03. Export performance dissipated further and quantum of exports declined to 16700 MT in 2003-04. The value realization was also lower at Rs. 143.51 crores compared to Rs. 178.88 crores in 2002-03 and unit value realization increased from Rs. 82.78 per kg to Rs. 85.93 per kg. in the corresponding period. USA is the major export market for India accounting for 45 per cent followed by Canada (11%) in 2002-03. Vietnam is the leading exporter with 35 per cent followed by Brazil with 16 per cent, Indonesia 10 per cent and India 10 per cent. Vietnam exports around 91 per cent of its production, while Indian exports account for only 27 per cent of its production.

4.42 Government of India could build in adequate safety mechanism and monitoring system to see that the issue of certification of origin and the condition relating to origin of the goods are not violated. A quantitative limit has to be prescribed in respect of import under the concessional duty route similar to the one fixed for tea under the same agreement. Similarly in respect of import for re-export of pepper which enjoys duty free status, a minimum value addition needs to be prescribed.

4.43 Price of pepper moved consistently upwards from early nineties and reached a peak level in 1999-00 with Rs. 215 per kg. Since then declined to Rs. 174 per kg. in 2000-01, further down to Rs. 80 per kg. in 2001-02 and slightly improved to Rs. 88/kg. in 2002-03 and declined to Rs. 74/kg. in 2003-04. Pepper prices continued its declining trend since 2000.

4.44 The state has to bestow specialised attention for upgrading the productivity through an organised replanting programme. The productivity in India is the lowest among the major producing countries. It is the highest in Thailand with 4.3 MT/ha. followed by Malaysia with 2 MT/ha in 2001. Application of soil conditioners, plant nutrients including micronutrients and biofertilizers under a framework of yield targeting in combination with plant growth promoting bacteria and Trichoderma as demonstrated by Indian Institute of Spices Research (IISR)could be adopted for enhancing productivity of pepper. The varietal selection and improvement through genetic upgradation is also important for stabilizing and retaining its lead share in global trade.

4.45 The quality issues reported in consignments exported from India include presence of pesticide residues, mycotoxins and microbial contaminations. In the liberalised policy regime, exporters with the status of trading house, star trading house or with in process quality control system can export spices without preshipment inspection and certification. Quality control is very important in the post WTO context to retain the market share and the SPS norms are gradually becoming a weapon to discriminate trade, and the role of Spices Board assumes crucial, in enforcing quality control norms. Spices Board may take further initiatives to fix maximum pesticide residue limits at the Codex level.

4.46 The pattern of global demand for the crop is undergoing changes. The consumer preference is for value added form of pepper such as white pepper, pepper in brine, oleoresin etc. Kerala could not take full advantage of the emerging opportunities for want of raw material of desired quality.

4.47 Emerging trends and market potential indicate that both supply and demand for organic spices are growing throughout the world. India has developed the national standards for organic production and prescribed the guidelines for production of organic spices. Accreditation criteria for inspection and certification agencies are stipulated. Production programmes for promotion of organic spices in collaboration with Spices Board can go a long way in exploiting the world organic spice market. A major portion of Wayanad and Idukki could be brought under organic production of pepper.

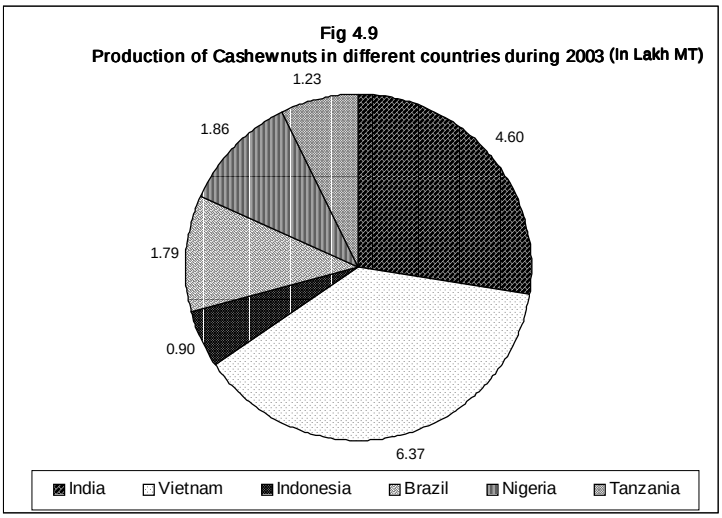
Cashew

4.48 India is the 2nd largest producer and exporter of cashew in the world. India's share in world production is 23 per cent with a production of 4.6 lakh MT in 2003. (Table 4.7)

Table 4.7:
Production of Cashewnuts
in different Countries during 2003

Sl.No	Country	Production (in Lakh MT)
1.	India	4.60
2.	Vietnam	6.37
3.	Indonesia	0.90
4.	Brazil	1.79
5.	Nigeria	1.86
6.	Tanzania	1.23
7.	Others	3.58
	World	**20.33**

Source: FAO



4.49 Area under the crop in Kerala, has been declining steadily from 1.25 lakh ha. in 1988-89 to 0.88 lakh ha. in 2003-04 and the production declined from 1.08 lakh MT to 0.65 lakh MT during the period. The share of Kerala in the area under cashew in the country has come down from 23 per cent in 1987-88 to 11 percent in 2002-03 and the corresponding decline in share of production from 31 per cent to 13 per cent. Area and production are increasing steadily in other producing states in the country. Maharashtra is the leading producer with 22.43 percent share in production during 2003-04, whose share was only 10 per cent in 1990-91.

4.51 India exported cashew kernels worth Rs. 1804.43 crore during 2003-04 and imported raw nuts worth Rs. 1400.90 crore resulting in a net foreign exchange earning of Rs. 410.56 crore indicating 42 per cent decline in value terms compared to 2002-03. Three per cent decline in quantity of cashew kernals exported and 13 per cent increase in the quantity of raw nuts imported resulted in shrinking net value realisation from cashew export. U.S.A. is the major export market with 48 per cent export share followed by Netherlands (12%). The unit export price of cashew kernels went down during the year 2003-04 by 3.59 per cent compared to 2002-03. The total raw nuts imported into India during 2003-04 was 4.52 lakh MT. Around 18.45 per cent of total raw nuts imported is from ivory cost followed by Tanzania (17.84%). Indonesia has emerged as another supplier of raw cashew nuts with a share of 9.98 per cent of total imports. Out of imported nuts 65 per cent of imported raw nuts is bought to Kerala during 2003-04 which was 46 per cent in 1998-99. Cashew processing industry is finding it extremely difficult even to maintain the present level of capacity utilization because of the lower availability of local raw cashew nuts. Concerted efforts are needed to nurture this crop in the state with programmes to promote high density planting with high yielding cashew grafts. The decision of Government to include cashew in the list of plantation crops will help in area expansion under this crop.

Table 4.8

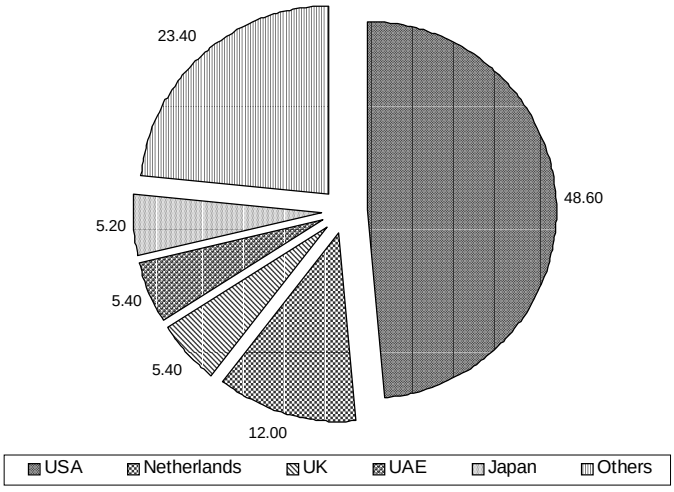
Area, Production and Productivity of Cashew in Kerala and India

Sl. No	Year	Area (000'Ha.)		Production (000'MT)		Productivity (kg./ha.)	
		Kerala	India	Kerala	India	Kerala	India
1	1999-00	89.4	686	65.5	520	733	758
2	2000-01	92.1	720	66.2	450	718	625
3	2001-02	89.7	750	65.8	470	734	710
4	2001-03	88.5	770	66.1	500	746	760
5	2003-04	88.4	-	65.2	535	737	-

(Source: Directorate of Economics and Statistics and Directorate of Cashewnut)

4.50 In spite of operating special schemes for expansion of area under cashew, the coverage has been steadily declining during the last two decades. The decline in area from 1980-81 to 2003-04 was to the tune of 52832 ha. Productivity of the crop, which was around 900 kg. per ha. during late eighties has also started declining from 1995-96 onwards, reaching 562 kg. per ha. during 1998-99 which improved to 734 kg. per ha. during 2001-02 (Table 4.4). and to 737 kg/ha during 2003-04.

Fig 4.10
Export of Cashew from India during 2003-04 (by value) (%)



Organic Agriculture

4.52 The size of global organic market is estimated at US$25-30 billion. The most important organic product groups in the EU market are vegetables, fruit, potatoes, beverages, spices, milk products and cereals. While the demand for organic foods is increasing, supply continues to lag behind. Around 70 percent of organic food sold in the UK is imported. The shortfall in supplies of organic products against growing demand in OECD countries provides opportunities for developing country exporters. There are particular opportunities for tea, coffee, cocoa, spices, tropical fruits, meat and dairy products. Organic produce imported by the EU originates from atleast 60 countries. In 2000, agricultural land under certified organic agriculture averaged 2.4 percent of total agricultural land in Western Europe, 1.7 percent in Australia, 0.25 per cent in Canada and 0.22 per cent in US. In most developing countries, agricultural land reported under organic agriculture is minimal and less than 0.5 per cent of agricultural lands. UK has increased budget of the organic farming scheme to support conversion of organic agriculture to 20 million pounds per year. With 3 million ha, Argentina accounts for more than 90 per cent of certified organic land in Latin American countries and has the second largest area of organically managed land in the world after Australia. The organic food sales in Germany is 3-4 per cent of total sales while organic milk have covered 10per cent market share. Organic coffee which accounts for 0.2 per cent of world coffee consumption, accounts for 5 per cent of US coffee market.

4.53 However, developing countries face a number of obstacles in trying to penetrate these markets. The most talked about problem facing exporters is the need for Certification and accreditation. Certification is costly where international agencies are involved and few developing countries have established their non accredited agencies. Argentina has made enormous efforts into this area. A multitude of difficult national standards in importing countries and lack of transparency constitute a practical barrier. The size of the price premium varies between countries, level of market development and product, but a premium of 20-30% is common. Now organic agriculture is moving into the economic main stream and many large food companies are developing organic products as an element of their business. A portion of the price premium alone are reaching to farmers, but the down stream supply chain typically accounts for a large share of higher price.

4.54 The efforts of IFOAM and Codex Alimentarius commission to harmonize the international guidelines and Certification have been laudable. A Survey by the international Accreditation assistance shows that 56 countries are at some stage of regulating the organic sectors, 32 countries have fully implemented regulation and 15 countries have draft guidelines.

4.55 Kerala could exploit the growing international markets especially in pepper, tea, coffee etc. Detailed action plan to promote organic agriculture in collaboration with Commodity Boards and Non-Governmental organizations would help in exploiting the emerging international markets. It should be ensured that the price benefits of the premium reach the farmers so that they are motivated to take to organic farming.

Plantation crops

4.56 Plantation crops in general are either export oriented or import substituting and therefore assume special significance from the national point of view. It is estimated that nearly 14 lakh families are dependent on the plantation sector

for livelihood. Each of the four plantation crops of South India has its distinct characteristics and economic problems. Consequent to the removal of quantitative restrictions on import , plantation crops in general are facing the threat of low quality imports.

4.57 Kerala has a substantial share in the four plantation crops of rubber, tea, coffee and cardamom. These four crops together occupy 6.40 lakh ha, accounting for 29 per cent of the net cropped area in the state and 42 per cent of the area under these crops in the country. Kerala's share in the national production of rubber is 92 per cent, cardamom 73 per cent, coffee 24 per cent and tea 7 per cent.

Rubber

4.58 Global production recorded 8 million tonnes in 2003, which was about 9 percent higher than the record production of 7.34 million tonnes in 2002. Production in Thailand, the world's largest producer, reached another new record of 2.87 million tonnes after reaching 2.62 million tonnes in 2002, reflecting about 13 percent rise in output. Higher prices have been the major factor to induce intensive tapping. The two leading producers, Thailand and Indonesia continue to dominate the market, accounting for 36 and 23 per cent each, followed by Malaysia and India with 12 and 9 per cent. After declining for several years in the late 1990s, production in Malaysia recovered to reach nearly 1 million tonnes in 2003, about 28 percent higher than that in 1999. The higher price of natural rubber resulted in a shift in the comparative advantage of rubber production against other crops, in particular palm oil, which attracted small holders to revive rubber tapping. Indonesia also experienced a significant increase in production in the past few years. In 2003, total output reached 1.79 million tonnes, which was 10 percent more than in 2002. Production growth in Vietnam has apparently slowed down after expanding rapidly in the late 1990s. It reached 384 000 tonnes in 2003 only 3 percent more than the previous year. Production remained static in Sri Lanka, as higher production costs compared with those of other rubber producing countries deterred increases in production. Notable growth in production occurred in Brazil and India, largely driven by increases in domestic demand for vehicles. In 2003, production in Brazil increased by 6 percent to reach 94 000 tonnes while India increased its production by more than 10 percent. Although demand has increased significantly over the past few years, China has not experienced any significant increase in production given the limited land area allocated to rubber production. World natural rubber production in 2004 is expected to continue to increase to reach 8.4 million tonnes, a rise of 5 percent. Developments in the first half of 2004 suggest that production in most major producing countries would remain around 2003 levels. The most significant increase was expected to be from Malaysia, where production in 2004 is expected to reach 1.24 million tonnes, about 25 percent higher than in 2003.

4.59 Consumption of natural rubber was around 7.88 million tonnes in 2003, about 5 percent higher than the level of the previous year but nearly 18 per cent higher than in 1999. Nearly half the natural rubber used globally is for tyre production. Higher demand for motor vehicles, and hence for tyres, stimulated by the stronger economic growth in several key markets, especially in China and Asian countries, together with the spike of oil prices which resulted in higher price for synthetic rubber, contributed to the stronger demand for natural rubber. China continued to experience strong growth over the past few years. In 2003, natural rubber consumption in China reached nearly 1.49 million tonnes, 14 per cent more than the previous year and nearly 74 percent higher than in 1999. Other major consuming countries, including India, Japan, the Republic of Korea and Malaysia, also registered increased consumption in 2003. North America (the United States and Canada), has seen consumption range between 1.13 and 1.20 million tonnes for the past few years largely to supply its mature automobile markets.

4.60 China became the world's largest natural rubber importer in 2003, importing 1.2 million tonnes, nearly 26 percent more than in 2002. This increase was fuelled by ongoing growth in demand for automobiles coupled with stagnation in domestic natural rubber production. China's net imports increased by 428000 tonnes between the average of 1999-2001 and 2003, 60 percent of the global increase in this period. Brazil also experienced high growth in imports over the past few years. In 2003, its imports reached 162 000 tonnes, about 13 percent more than the previous

year and 33 percent more than the average of 1999-2001. Most other major importers such as the United States, Japan and EU have seen little change in their imports since 2001.

4.61 India is the fourth largest producer of natural rubber with a share of nine per cent in the world after Thailand and Indonesia and Malaysia. The production of natural rubber in the country was 7.12 lakh MT in 2003-04, registering a 9.6 per cent growth compared to the previous year while it was 2.9 per cent growth over the previous year during 2002-03. India is at the same time the fourth largest consumer of natural rubber after China, USA and Japan. The annual growth rate in production in 2001-02 was the lowest (0.08 %) after 1982-83 while annual growth rate of consumption was the lowest in 2000-01 after 1980-81, which recovered to 1.07 per cent in 2001-02 and to 3.5 per cent in 2003-04. Indian industry comprising 29 tyre manufacturing units and 250 medium scale and 5500 small scale units in the organised sector offers 35,000 diversified products, but over 95 per cent of the industry is outside Kerala. The long experience in the manufacture of such a large number of diversified products and the low cost man power available have to be considered as the relative advantages the country possesses on the promotion of rubber based industries for export purposes and steps should be taken to attract such units to Kerala.

4.62 Kerala accounts for 83 percent of the area under rubber in the country. The coverage under the crop in 2003-04 was 4.78 lakh ha, higher by 2355 ha. over the previous year. The production of natural rubber in Kerala during the year was 6.56 lakh tonnes. The increase in production registered during the year was 10.2 per cent over the previous year. Being predominantly a small holder plantation crop in Kerala, the size of a small rubber holding is as low as 0.50 ha. The increasing trend in productivity continued during 2003-04. It was 1190 kg. per ha in 1998-99, which rose to 1371 kg. during 2003-04. In terms of tapping area, productivity recorded was 1635 kg. per ha during the year 2002-03.

4.63 Even though the domestic prices of natural rubber were more or less comparable to international prices during 2003-04 (See Appendx-4.17 and Appendix-4.18) the industrial sector still resorts to imports in bulk quantities since the import duty is only 25 per cent. The total quantity imported was 26229 MT in 2002-03 which increased to 44199 MT in 2003-04. The annual average growth of the domestic natural rubber industry for the period 1996-97 to 2003-04, showed an annual average increase of 3.3 per cent in production where as consumption had increased at 3.1 per cent per annum while import of natural rubber increased by 10.6 per cent.

Table 4.9

Consumption of Rubber during 2002-03 and 2003-04

Sl. No	Item	Consumption (in MT)		Growth %
		2002-03	2003-04	
	Natural Rubber			
1	Auto Tyres and Tubes	353032	378185	7.1
2	Others	342393	341415	-0.3
	Total NR	***695425***	***719600***	***3.5***
	Synthetic Rubber (SR)			
3	Auto Tyres and Tubes	107483	119367	11.1
4	Others	87367	90823	4.0
	Total SR	***194850***	***210190***	***7.9***
	NR and SR			
5	Auto Tyres and Tubes	460515	497552	8.0
6	Others	429760	432238	0.6
	Total of NR and SR	***890275***	***929790***	***4.4***

4.64 The higher prices in the international market is reflected in the domestic market also. The average price of RSS4 in the domestic market at Kottayam was Rs. 39.19 per kg. in 2002-03 which increased to Rs. 50.40 in 2003-04. The international price of RSS3, equivalent of RSS4 of India, increased from Rs. 41.11 to Rs. 52.78 in the corresponding period. The price of RSS 4 in Kottayam reached Rs.65.60 during July 2004 and then declined to Rs.52.77 in October 2004. The Indian price (RSS4) which was higher than the international price till June 2003 started moving below the international price during the remaining months of the year owing to the sharp increase in the international price.

4.65 World rubber prices should continue to show some strength in the near future largely due to the high oil price and continuing global economic growth. If global economic growth, especially in developed countries such as the EU, Japan and the United States and large developing countries such as China and India continues at the current pace, further price strengthening could be expected. It would, however, be limited in the long run by the good potential to increase supply by more intensive tapping and by increasing yield in the major producing countries. It was estimated that global consumption in 2004 would be slightly higher than in 2003 largely due to higher economic growth rate in both developed and developing countries. However, the magnitude of the growth in rubber consumption depends considerably on the growth in China.

Coffee

4.66 The estimated production of 2004-05 is 7.1 million tonnes recording an increase of 10 per cent. The reason for increased crop is due to increase in expected production in Brazil by 33 per cent, followed by 12 per cent increase in India. There was substantial reduction of crop in 2003-04 in Brazil by 38 percent, due to unfavorable weather conditions. India is the sixth largest producer of coffee in the world with a share of 4.1 per cent. The top producers being Brazil (28%), Vietnam (20%) and Columbia (10%), during 2003. The share of Robusta production increased from 53.7 per cent in 1995-96 to 62.9 per cent in 2002-03 indicating a 6.1 per cent annual growth while Arabica production remained more or less static.

4.67 The area under coffee in Kerala was 0.847 lakh ha out of 3.55 lakh ha in the country during 2003-04, which works out to 24 per cent. The share of Kerala in production is 23.60 per cent during 2003-04. Major variety grown in Kerala is Robusta with a share of 95 per cent in planted area. Production of coffee during the year was only 0.64 lakh MT against 2.71 lakh MT for the country. Productivity of the crop in Kerala (754 kg/ha) is lower than the national level of 761 kg./ha. Area under coffee registered substantial increase during the last two decades with an annual growth rate of over 2 per cent. The increase in production recorded during the period was much higher and registered an annual average growth rate of nearly nine per cent. Coffee provides opportunities for livelihood to nearly one lakh families including agricultural labourers. In Kerala, coffee is also one of the small holder plantation crops with nearly 76,000 holdings coming under the category with an average size of 1.1 ha. Consumption of coffee has remained more or less static at around 55,000 tonnes for the past one and half decades till 1999 and then slightly improved to 70,000 tonnes in 2003.

4.68 Coffee is a highly export dependent crop and more than 80 per cent of domestic production is exported. The unit value realization has declined drastically from Rs. 95.37 per kg. in 1997-98 to Rs. 50.71 per kg. in 2002-03 which again slightly declined to Rs. 49.78 per kg in 2003-04. The quantity of coffee exported from India increased in 2003-04 to 2.32 lakh tonnes from 2.07 lakh tonnes in 2002-03. Increasing stocks in consuming countries more than offset the contraction in stocks of producing countries in 2002. Coffee stocks declined in producing and consuming countries by 4 per cent in 2002 and already there is a decline of 24 per cent in stocks in producing countries during 2003-04.

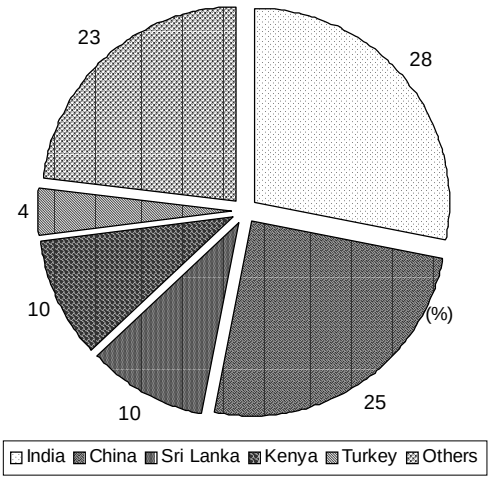
4.69 World coffee prices had fallen to the lowest level since 1973 in nominal terms. The fall in Robusta prices has been particularly pronounced and it declined from 67.53 US cents per lb in 1999 to 27.30 cents in 2001. However since October 2002 ICO indicator prices showed an increasing trend and reached 38.39 cents in 2003. During the latter half of 2004 it again declined slightly to 32 cents in October 2004.

4.70 The pilot project of Coffee Board on price insurance under implementation in collaboration with the World Bank's commodity group could be one of the effective interventions in the liberalized economy.

Tea

4.71 World tea production increased at an annual growth rate of 2.8 per cent between 1970 and 2000 expanding from 1.27 million MT to 2.91 million MT. During the period 1997 to 2003, the annual growth rate of world production was 1.75 per cent while the world consumption was 1.31 per cent. The gap had increased from 5 million kg. to 97 million kgs. during the period resulting in price crisis. Most of the growth was due to the increase in productivity rather than expansion in area. Estimates indicate that world tea production in 2003 reached 3.1 million MT showing 1.3 per cent increase over the previous year. Black tea accounts for more than 70 per cent of world tea production and 22 per cent by green tea. India is the leading producer and accounts for 28 per cent of global production followed by China with 25 per cent production. All the major producing countries realized increased output in 2003 except Sri Lanka and Indonesia largely as a result of favourable climate. The output in India is estimated to have increased by 3.7 per cent in 2003 to 857M. kgs.

Fig 4.11
Share of Tea production in the world (2003) (%)



4.72 A declining trend in production in the State was observed for the last three years from 68.9 m. kgs. in 2000 to 56.6 m. kg. in 2003. Against the total area of 5.11lakh ha under tea in the country Kerala accounts for only 0.37 lakh ha. In respect of production the share of Kerala declined slightly to seven per cent in 2003 from eight per cent in the previous year. Tea plantations owned by big companies employ a labour force of over 84,000 in the organised sector. There is fluctuation in production and it ranged from 64.8 M. kgs. in 1995-96, reaching to 69.1 M.kgs. in 2000-01 which declined to 65.8 M kgs. in 2002-03.

4.73 After the removal of quantitative restrictions in April 2001, one of the major threats faced by the tea industry is the increased import of inferior quality teas into India particularly from Indonesia resulting in further depression in prices. Imports increased from 13.4 M. kg. in 2000 to 16.6 M. kg. in 2001 and further increased to 22 M kg. in 2002. However during 2003 the import declined substantially to 6.8 M. kgs. The maximum quantity of tea was imported from Indonesia (34%), followed by Kenya (18%) and Vietnam (16%). The unit value of imported tea was the lowest from Vietnam (Rs. 32/kg) while the average being Rs. 63/kg. However import from Vietnam has declined substantially in 2003 from 12025MT. to 1107MT. The disturbing fact is that most of the countries are exporting to India at low prices.

4.74 The average auction prices for 1999 at Kochi was Rs. 62 per kg. which declined to Rs. 47 per kg. in 2002. The price of tea in south India during January-July 2004 has slightly improved to Rs. 43.83 per kg from the Rs.42.44 during the corresponding period during 2003. The FAO composite price averaged US$ 1.48 / kg. during 2002, being 6 per cent lower compared to 2001 level. The price fall is because of increase in supply as well as due to large carry over stocks. Prices of tea were buoyant during 1998 but started declining from 1999.

4.75 On the types of tea imported by major countries the orthodox tea accounted for 51 per cent and CTC accounted for 39 per cent and the rest by green tea and others. The CTC market is shrinking. In South India orthodox tea production had declined from 94 per cent in 1961 to 25 per cent in 1991 and to 16 per cent in 2003. There is a need to correct this, especially in the context of the global demand for orthodox teas.

4.76 The Indian Bank Association has introduced financial rehabilitation package for tea

sector with effect from February 2004. The South Indian Tea industry has not taken full advantage of the scheme.

4.77 A separate fund for modernization, development and rehabilitation of the tea plantation sector was created in 2003 by abolition of the excise duty of Re 1/kg on tea and its replacement by an additional excise duty of Re 1/kg by way of surcharge. The fund would be used for revival and rehabilitation of closed tea gardens and assistance for encouraging production of orthodox tea for export.

Cardamom

4.78 The total production from India and Guatemala was estimated at 22500 MT in 2002. The production in Guatemala improved by 14.4 per cent in 2002 over the previous year while it declined by 21 per cent in India and estimated at 9000 MT in 2002. On an average, Guatemala exported around 73 per cent of its production, where as India's share of export in total production is only 8 per cent.

4.79 Productivity which was more or less stagnant around 50 kg./ha. in the 1980s has improved to the level of around 203 kg. per ha by 2001 but declined to 208 kg/ha in 2003-04. Kerala was lagging behind the national level till 1992-93 but has improved its position by raising its productivity from 50 kg. to 203 kg. per ha over the last five years. Consequently, the share of Kerala in production at the All India level also increased from 28 per cent to 75 per cent in 2003-04. While area under cardamom in the country has declined from 0.96 lakh ha to 0.73 lakh ha. in the period. In Kerala it has come down from 65,000 ha to 41782 ha. On the export front cardamom has been facing competition from Guatemala although the quality of Guatemala cardamom is inferior. The country could tide over the challenge by expanding domestic market through market promotion. The average auction price during 2000-01 was Rs. 570 per kg. which improved to Rs. 622.96 in 2001-02 and declined to Rs. 561.13 in 2002-03 and further declined to Rs. 361.02 in 2003-04. The Indian export of cardamom has increased from early nineties and reached a peak level of 1545 MT in 2000-01 and then declined by more than 50 percent in 2003-04 to reach 690 MT. The unit price realised increased steadily to Rs. 690 per kg. in 2002-03 from Rs. 548 per kg. in 2000-01. It declined to Rs. 370 per kg. in April-May 2004. However the market for cardamom is largely domestic as could be seen from the declining share of exports and the share of exports is only 6 per cent of the production.

Price Stabilisation Fund Scheme

4.80 Price Stabilisation Fund Scheme was launched by the Government of India in April 2003. The scheme is being operationalised through the Price Stabilisation Fund Trust, New Delhi. The Price Spectrum Band for the year 2003 has been finalized by the Trust. The scheme was launched by the Department of Commerce, GOI with a view to providing sustained long term support to the small growers of Tea, Coffee, Rubber and Tobacco. The scheme provides Rs. 1000/- as financial assistance to enrolled growers in the event of price decline below the Price Spectrum band. The Price Spectrum band is estimated on the basis of international price of each commodity. Except for international price for coffee, which is based on futures prices, international price for other commodities would be with reference to auction prices. Seven years moving average is calculated on the basis of international price of seven calendar years. The Price Spectrum band means plus or minus 20 per cent of seven years moving average of international price. If average domestic price is within the price spectrum band, the year would be categorized as normal year.

4.81 During 2003-04, Rs. 200.00 crores and during 2004-05 Rs. 232.88 crores have been made to the PSF Corpus fund by GOI and the entry fee deposit of members were Rs. 1.16 crores and Rs. 0.28 crores respectively. At the end of March 2004, 1643 coffee growers, 11 tea growers and 14358 rubber growers were enrolled from Kerala against a total of 26327 numbers in the country. Of the total, 65 per cent is enrolled from Kerala.

4.82 At present growers upto 4 ha are eligible for support. However instead of fixing a fixed amount of Rs. 1000, different slab system could be tried out. GOI have appointed a committee to review the scheme as it has not helped the vast majorities of cultivators.

Medicinal Plants

4.83 The world trade in medicinal and aromatic plants is currently valued at US $ 60 billion and India accounts for a negligible share valued at about US $ 100 million only where as China accounts for about 40 per cent of world trade. One of the major benefits of globalisation has been the growing awareness about herbal and aromatic plants. Global market for medicinal plants has been growing at a healthy 7 per cent annually. Now the potential for exploitation of this market has been recognized

4.84 USA is the single largest export destination for Indian medicinal plants/products accounting for almost 50 per cent of total exports. Country's exports to individual EU member countries are small, but as a region, the EU represents a sizeable market for India. India's over all export performance with respect to the US market has been encouraging since 1998. India's share in US imports of pharmaceutical preparations was less than 20% of that of China in 1998, but by the year 2002, its export has increased five-fold to become almost at par with China.

4.85 At the national level, the National Medicinal Plants Board has prioritized 32 medicinal plants for development. The Board has formulated schemes and guidelines for financial assistance in different areas of medicinal plants sector covered under promotional and commercial schemes applicable both for government and non government organisations.

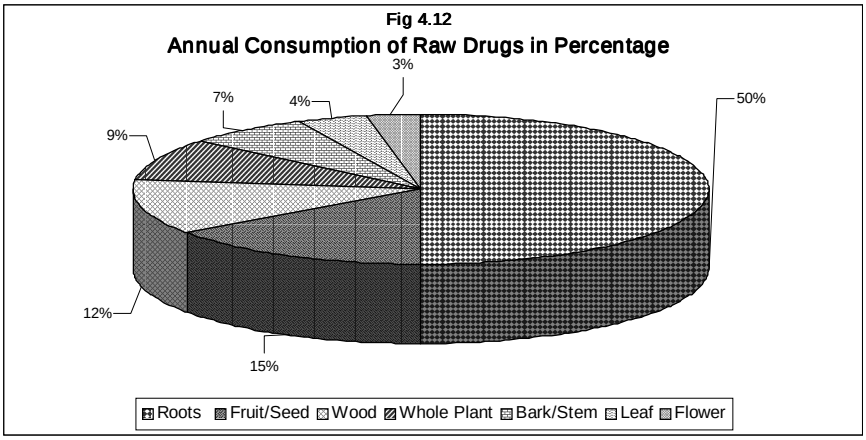
4.86 The annual consumption of raw drugs is about 25,000 MT. A market analysis of major medicinal plants in Kerala is given in Table: 4.10

4.87 Though the industry is in need of large quantity of raw materials, large scale commercial cultivation is yet to catch up. Now only about 7% of raw materials is obtained from cultivated sources. Almost 70% of the collections of medicinal plants involve destructive harvesting. Pharmaceutical companies are also responsible for inefficient, imperfect, informal and opportunistic marketing of medicinal plants. Out of the annual consumption of raw drugs, 50% are from roots, followed by fruit/seed (15%), wood (12%), whole plant (9%), bark/stem (7%) leaf (4%) and flower (3%) as depicted in Fig: 4.12

Table: 4.10
Market Analysis of major Medicinal Plants in Kerala

Name of the Plant	Common Name in Malayalam	Quantity Demanded (estimate) Tonnes	Compound growth rate (%)	Coefficient of variation (%)	Price elasticity of demand (%)	Scarcity ratio
Sida spp	Kurunthotty	908	9.2	29.87	0.54	2.79
Tinospora cordifolia	Chittamruth	282	5.7	20.76	0.35	0.00
Terminalia chibula	Kadukka	164	6.8	29.89	3.31	-3.20
Withania somnifera	Amukkuram	149	6.3	12.93	0.6	-4.02
Adhatoda sp	Adalotakam	141	5.3	29.33	1.46	-1.60
Cedrus deodara	Devahtaram	\\138	8.8	27.00	1.98	-3.80
Cyperus rotundus	Muthanga	131	9.12	13.48	2.23	-0.59
Woodfordia fruiticosa	Thathiri	123	8.47	22.15	0.42	-5.16
Boerhavia diffusa	Thauthama	100	4.19	8.62	0.33	6.82
Aegle marmelos	Koovalam	87	9.31	28.15	0.98	0.49

Fig 4.12
Annual Consumption of Raw Drugs in Percentage



4.88 Destructive harvesting practices have led to the depletion of certain wild growing plants. The private cultivation is mainly confined to annuals only. Widely used medicinal trees like Saraca Asoca, Aegle marmelose, Pterocarpus santalinus, Orxylum indicum, Salacia oblonga, Garcinia gummigutta, Terminaliz arjuna, Santalum album, Symplococos racemosa etc. are in the Red Listed Category. Though the long gestations period for tree crops make it unattractive to individual farmers, large scale tree cultivation must be made sustainable for the survival of Ayurveda industry in its present status. High yielding fast growing species have to be identified through intensive research. Introduction of techniques to encourage growth of roots, thick foliage etc. have to be tried through appropriate soil conditioning. Feasibility of harvesting roots by rotation through trench methods may also be explored.

4.89 The Government of Kerala, considering the market demand and global opportunities on medicinal herbs has now decided to establish an Agri Eport Zone (AEZ) in the state for promotion of exports of herbs and its preparations/herbal medicines, with a total project cost of Rs.26.2415 crore. The AEZ in the State would cover a contiguous area in the Western Ghats of Kerala, over nine districts viz. Wayanad, Malappuram, Palakkad, Thrissur, Ernakulam, Idukki, Pathanamthitta, Kollam and Thiruvananthapuram. The major activities proposed in the project are given in Box: 4.6

BOX-4.6

Activities proposed under the Agri-Export Zones (AEZ) on Medicinal Plants in Kerala

The AEZ for medicinal plants in Kerala aims to enhance the total export by 65 percent in 5 years. To achieve the export potential, the following major activities are proposed.

- Training and education of persons/groups engaged in collection of medicinal plants from wild sources with the involvement of NGOs and other social/environmental development organisations.
- Conservation of medicinal plants by adopting replantation
- *Insitu* conservation through herbal gardens
- Promotion of area expansion under cultivation by extension services and free distribution of planting materials
- Formation of co-operatives for farmer mobilisation
- Establishing nursery centres for meeting the growing demand of planting materials
- Establishing laboratories for quality testing
- Establishing collection centres/pack houses and processing units for value added products
- Adoption and implementation of quality systems as per international standards like Codex, etc.
- Development of data bank and information centre
- Export promotion and marketing through brand equity
- Research and Development for good organic packages, etc

(Source: Project Report on AEZ, Department of Agriculture)

4.90 Coordination of agencies involved in the promotion of medicinal plants in the state like forest Department and Agricultural department is needed. Instead of promoting individual plants, a product oriented approach by promoting the group of plants needed for various products would be better from the commercial angle.

4.91 Quality control is critical in this business. The herbal and medicinal market in India is still unorganised but has great potential if made systematic and organised. Along with export market, domestic market also could be exploited.

Energy use in Agriculture

4.92 The supply of electric power to agricultural consumers is often regarded as the root of the crisis of the power sector in India. The tariffs changed to agriculture are estimated to represent a fraction of the increasing cost of power supply and in some states it is free of change.

4.93 The power sector exerts a critical influence on the performance of the agricultural sector as it affects farmer access to and use of power for a variety of agricultural operations, but most importantly for pumping groundwater for irrigation purposes.

4.94 The per cent share of consumption for agricultural purposes is the lowest in Kerala at 2 per cent. Annually about Rs. 3.00 crore is the budgeted amount for free supply of electricity to the farmers in the State. The assistance is provided for all crops upto 2 ha. The total number of beneficiaries is 2.11 lakh with a maximum number of 0.95 lakh in Trissur district followed by 0.23 lakh in Ernakulam. However the reported pending payment to the State Electricity Board excluding the budgeted amount of 2004-05 is to the tune of Rs. 39.61 crores.

Table - 4.11

Consumption of Electricity for Agricultural Purposes - 2001-02

(Million KWH)

States	Consumption for Agricultural purpose	% share of consumption for Agricultural purposes
Andhra Pradesh	12828.92	40.75
Karnataka	7541.34	38.01
Kerala	187.48	2.17
Tamil Nadu	9622.46	26.79
All India	81673.39	25.33

Source: Ministry of Agriculture, 2004

Women in Agriculture

4.95 Extension and training support has been viewed as the central focus of the policy approach for women in agriculture. A recent study examining the impact of Training of Farm Women in Agriculture (TWA) in Gujarat and Andhra Pradesh suggest tangible results in terms of increased yield, reduced pest attacks and improved quality of crops besides increased participation in decision making and self-confidence among women. The major observations in the study are given in the Box-4.7

BOX-4.7

Major achievements of the 'Training of Women Farmers in Agriculture' programme in Gujarat and Andhra Pradesh:

- About 40-45 per cent of the trained women practiced some of the improved practices
- The women farmers who had never visited the block officers, FTCs, line departments etc. have started visiting them for equipping themselves with better services and technical guidance
- The women have developed confidence and self-esteem as they participate in *krishi melas* along with the men farmers. They often are seen occupying the front row seats and interacting with men farmers, scientists, officials with great confidence. Sometimes, they even come out with new ideas and learning and share them with the men farmers
- The women farmers also win prizes in the quiz competition held in *melas*
- The WF are practicing the skills which are relevant to them
- They have started using nutrients like zinc, sulpher, iron which they never used before attending the training
- They have started spreading the technical skills and knowledge to other WF in their village as well as in the surrounding areas
- The trained WF are using hybrid and improved varieties of wheat, castor, cotton groundnut etc.

Source:'State of Indian Farmer', millenium study, Ministry of Agriculture, GoI, 2004

4.96 With the growing feminisation of farm labour due to more rural to urban migration, women are forced to carry our work previously done by men. In one hectare farm in one year, in the Himalayan regions of India, bullocks contribute one thousand hours, men give a thousand hours and women spend three thousand five hundred hours. It is still an underestimate of their actual share in women's employment and wages in agriculture. The real issues pertaining to the quality of their work and their status as workers are yet to be addressed. A micro level study conducted as part of the Kerala Research Programme on Local Development, reveals that the better social development indicators in the State are not necessarily indicative of the social status of women workers in Kerala. The salient findings of the study are shown in Box-4.8.

BOX-4.8

Salient findings of the study under Kerala Research Programme on Local Level Development on "Women workers in Agriculture: Gender discrimination Work conditions and Health status".

The study has been conducted in Kudumba Panchayat in Palakkad district during 2000-01. Base-line survey followed by in-depth survey on selected households have revealed the following.

- Majority of agricultural labour force is constituted by the lowest sections of the social order and they live in appallingly poor conditions with high levels of illiteracy
- More that 57 percent of the sample households rely on public sources and nearly 36 percent depends on neighbor's well for drinking water
- The small size of the landholdings, lack of common grazing lands, shortage of water, fodder and other difficulties in providing adequate care, make dairy or poultry farming nearly impossible for poor agricultural labour households
- An overwhelming proportion of the agricultural workers under study (66 percent) were illiterate. Agricultural works remain largely the major occupation of the scheduled caste women, irrespective of their educational levels and age
- Employment opportunities are diminishing quite rapidly due to change in land use and cropping patterns associated with commercialisation of agriculture. On an average, a woman gets three and half months of work in a year, with an average annual income of Rs.5250/- only.
- The number of full work days available during the previous crop season ranged for 10-100. More than 11 percent of the women workers did not get even a single day's full time work during the previous season.
- Tedious manual activities such as transplanting of seedling, weeding, harvesting, transporting harvest, threshing, drying of hay etc were seen mainly done by women, leaving behind only mechanical operations such as making of field boundaries and setting up of field barriers to the male worker.
- Gender discrimination in wage rates makes women's position more vulnerable.
- In addition to attending paid work, women perform an overwhelming proportion of the various items of the unremunerated domestic work.
- Majority of the women workers have developed some degree of indifference in the recent years to trade union activities.

(Source: Discussion Paper Series, KRPLLD, 2004)

4.97 A major initiative in terms of capacity building and mainstreaming of women in agricultural activities is to involve them in the on-farm participatory research for agricultural technology. Guided by these considerations, the ICAR had undertaken special schemes for designing and disseminating appropriate farm implements, which can reduce drudgery. More recently, women have also been involved in on-farm research experiments, conservation of biodiversity and promotion of sustainable farm practices, most of them being carried out by NGOs. M.S. Swaminathan Foundation has taken up an initiative for developing 'Eco-villages' by involving women as key actors.

4.98 The future growth of agriculture depends significantly on the sub sectors where women have a larger presence, such as in horticulture, livestock and fisheries. Conscious efforts are to be made to recognize and consolidate the rightful share of women in these sub sectors. Structural and institutional reforms are needed to recognize that women are stakeholders.

4.99 The State Department of Agriculture has been implementing the "Women in Agriculture Programme' under Macro management Scheme in the districts of Alappuzha, Kollam, Pathanamthitta Thrissur, Wayanad, Malappuram and Kannur. The activities include promotion of micro enterprises such as agro-processing, tissue culture hardening units, vegetable cultivation, Vanilla cultivation, nursery for fruits and ornamental plants, medicinal plants, mushroom cultivation, vermi compost production, jasmine, anthurium and banana cultivation and bee keeping. The programme provide adequate organisational and financial support to women groups to make them 'Self Help Groups' and provide technical training in agriculture and allied areas and in increasing managerial, organisational, entrepreneurial and decision making skills. The scheme is now proposed to all the districts other than Palakkad. The 100 per cent central sector scheme on women in Agriculture is now in the 3rd phase of implementation in Palakkad District..

4.100 'Harithashree', the lease land farming promoted by the State Poverty Eradication Mission, Kerala, through 'Kudumbasree', has helped women farmers to stay on in agriculture for their livelihood. The number of Grama Panchayats involved in the programme has increased to 712, with 91 more Grama Panchayats got involved, compared to the previous year. There are about 20394 NHGs and 244198 families presently involved in the 'Harithashree' programme covering an area of 17575.29 ha. The details are given in Table: 4.12

Table: 4.12

District wise Details of Farming undertaken by Kudumbasree

Sl. No.	Name of District	No. of GPs	No. of NHGs	No. of Families	Area in Ha.
1	Thiruvananthapuram	54	649	7668	217.98
2	Kollam	52	520	10225	245.75
3	Pathanamthitta	28	727	16300	4919.00
4	Alappuzha	64	3028	38626	1661.88
5	Kottayam	44	680	7609	324.85
6	Idukki	49	5536	58541	2719.80
7	Ernakulam	75	3085	29057	2466.00
8	Thrissur	84	674	7335	345.00
9	Palakkad	42	926	16215	371.37
10	Malappuram	37	74	2072	145.16
11	Kozhikode	57	943	9230	319.17
12	Wayanad	25	737	10593	2902.00
13	Kannur	64	1797	22020	611.00
14	Kasaragod	37	1018	8707	326.33
	Total	**712**	**20394**	**244198**	**17575.29**

4.101 Paddy, Tapioca, other tuber crops, vegetables etc. are the major crops cultivated under lease land farming. Certain innovative groups are experimenting fewer other crops such as water melon in Pathanamthitta district and Basumathi rice in Wayanad district. Many Grama panchayats are also promoting organic farming through their women groups.

Crop Development Programme - Review of Annual Plan 2003-04 : Crop Husbandry

4.102 During the Annual plan 2003-04 an amount of Rs. 9610.01 lakhs was provided to crop husbandry which include Rs. 15.00 lakhs for partially aided schemes and Rs. 5495.01 lakhs under 100 per cent Centrally sponsored including MOU schemes. The State sector schemes incurred an expenditure of Rs. 6367.21 lakh (66.26 per cent.)

Table 4.13:
Financial Performance of Crop Husbandry during 2003-04

(Rs. in Lakhs)

Sl.No.	Item	Outlay	Expenditure	% of Expdr. to outlay
1.	State Plan Schemes	4100.00	3350.33	81.72
2.	Partially Assisted Central schemes	15.00	5.90	39.33
3.	100% Centrally Sponsored Schemes including MOU	5495.01	3011.00	54.79
	Total	**9610.01**	**6367.23**	**66.26**

4.103 Specific strategies are formulated for different crops during Tenth Plan. A number of programmes were implemented for the development of agriculture during the year 2003-04. Major crop wise achievements made during the period is furnished below.

Rice

4.104 Rice development activities in the State were carried through State schemes and Centrally sponsored schemes. The ultimate objective of rice development programme during the Tenth Plan period is to sustain rice cultivation in 4 lakh ha and to augment the average productivity to more than 2.8 tonnes per ha. Revitalisation of group farming samithies in predominant rice growing areas like Palakkad, Thrissur, Ernakulam and Alappuzha, assistance to paddy development agencies and assistance to seed development agencies were continued under State plan for attaining the targeted level of rice production and productivity. During the year 2003-04, it was targeted to introduce revitalisation activities in 0.75 lakh ha and attained progress in 0.68 lakh ha.

4.105 Major items implemented for rice development through MOU schemes were seed production programme, cultivation of HYV, green manure seed, scented rice development etc. During the year seed production programme was implemented in 3192 ha. against the target of 3500 ha. cultivation of HYV seed production achieved 2211 MT against the target of 6000 MT and green manure seed production achieved 77.93 MT against the target of 100 MT.

Coconut Development

4.106 During the year 1182 ha. was brought under integrated pest management against the target of 1236 ha. Under integrated nutrient management programme fertilizer was applied to 33.14 lakh palms against the target of 64 lakhs and 716 pump sets were distributed and 313 wells were constructed for irrigating coconut palms during the year.

4.107 As per the Centrally sponsored scheme the Coconut Development Board provides assistance for production and distribution of quality hybrid coconut seedlings. During the year 0.46 lakh coconut hybrid seedlings were produced and distributed against the target of 0.94 lakh seedlings.

Pepper

4.108 Pepper development programme include production and distribution of pepper cuttings, area expansion, rehabilitation of old pepper gardens, promotion of organic pepper, integrated pest management for pepper and promotion of soil conservation measures. During the year 48.10 lakh pepper cuttings were produced and distributed, Pepper rehabilitation was introduced in 4142 ha. Promotion of organic pepper was introduced in 1564 ha and IPM demonstration was done in 323 ha. Along with pepper other spices such as ginger, turmeric, chillies and tree spices also received support during this period.

Vegetable development

4.110 Vegetable promotion programmes are implemented through State and Centrally sponsored schemes which include promotion of commercial cultivation, seed multiplication programme, providing irrigation facilities, promoting vegetable cultivation in educational and public institutions, infrastructure support for marketing etc.

4.111 During the year 2003-04, 978 ha was brought under vegetable cultivation through 'Haritha Sanghom', 500 of vegetable gardens were established in educational institutions through State schemes. Under Centrally sponsored scheme 194 ha. was brought under cool season vegetable cultivation. Financial assistance was given for promoting vegetable cultivation in 655 ha. during 2003-04. Vegetable development programme received priority in local level planning of panchayats also.

Table 4.14:
Major Scheme wise Expenditure during 2003-04

(Rs. in Lakhs)

Sl.No.	Schemes	Expenditure
1.	Rice development	1072.36
2.	Coconut development	1001.03
3.	Pepper development	385.51
4.	Cashew development	124.03
5.	Vegetable and Fruit Production Council	195.50
6.	Vegetable development	229.82
7.	Fruit development	96.48
8.	Women development	47.51
9.	AEZ	287.00

Cashew

4.109 In the case of cashew development, rehabilitation, plant protection and establishment of cashew nurseries were given importance during the Annual plan 2003-04. Through Centrally Sponsored programme an area of 985 ha was brought under rehabilitation programme against the annual target of 5500 ha. Plant protection measures were implemented in 355 ha.

Vegetable and Fruit Promotion Council's Programme

4.112 Vegetable and Fruit Production Council, Keralam, was also involved in the implementation of vegetable and Fruit Promotion Programme. It is the successor organisation of Kerala Horticulture Development Programme. The

programme has been initiated to improve the livelihood security and thereby enhance and sustain the income of fruit and vegetable farmers of Kerala. KHDP has successfully implemented the programme in seven districts and the same model has been extended to Kollam , Alappuzha, Pathanathitta, Wayanad, Idukki and Kannur during the first three years of Tenth five year plan. The programme covers production, formation of SHGs, credit management and marketing.

4.113 During the year Rs. 378.4 lakh was disbursed as crop loan to 1768 farmers. An area of 6522 ha and 5885 ha were brought under vegetables and banana respectively.

Fruit development

4.114 The agro climatic endowments and topographical features of Kerala offers excellent prospects for fruit production. The total area under fruit crops in Kerala comes to 3.2 lakh ha. Tenth plan gave thrust on the production and distribution of sufficient quantity of planting materials, improving the productivity by replanting with superior varieties, commercial cultivation of fruits like Pineapple, Pappaya and Mango in well established pockets, training to farmers and post harvest handling of fruits etc.

4.115 Through Centrally Sponsored programme Banana cultivation was done in 360.0 ha against the target of 600 ha, pineapple and other fruits in 120 ha against 100 ha and mango and papaya in 30.35 ha. during the year 2003-04.

Supplies and Services

4.116 The State has a strong network for supplies and services. This include Krishi Bhavans in all the Grama panchayats for transfer of technology and organising agricultural services. Planting material delivery system has been developed which includes 33 state seed farms, 10 district farms, 10 special farms and 8 coconut nurseries. The paddy seed farms and the District Agricultural Farms are under the control of the District Panchayats for facilitating appropriate seed planning at the grass root level. Inspite of such elaborate progeny support, supply of quality seeds of paddy and other seasonal crops remain as a weak link in the production front.

4.117 During 2001-02, the consumption of fertilisers increased from 1.73 lakh tonnes from the previous year to 1.77 lakh tonnes and by 2002-03 increased to 2.05 lakh tonnes. The trend of fertilizer consumption shows fluctuations and it reached a peak level during 1997-98 and reached lowest level during 2000-01. The per hectare consumption is the lowest during 2000-01 at 58 kg/ha. (see Appendix 4.20). The State average is lower than the national average (86 kg.). The necessary steps are to be taken to reverse the situation so as to augment the productivity of major crops..

4.118 In plant protection, the strategy was one of need-based adoption of chemical control. The mite attack on coconut which emerged as a very serious threat for coconut warranted chemical intervention. With the active involvement of the local bodies, state government organised massive control programme for coconut mite and the menace could be contained to a great extent. However, a long term solution lies in evolving biological control measures. Selected indicators of progress are given in Appendix 4.21.

Laboratories in Agriculture

4.119 Agricultural department is having a number of laboratories under its control. Altogether 48 laboratories including mobile soil testing laboratories, parasite breeding stations are functioning under the department. A number of problems are reported about the functioning of the laboratories like inadequate training for the staff in reputed institutions, insufficient supply of chemicals, absence of proper supply management, lack of qualified staff etc. An action plan has to be prepared for the proper use of the infrastructure created by the department. This should form as the base for the modernisation of

agriculture in the state. Restructuring of administrative set up also to be considered.

Kissan Kerala

4.120 Kissan Kerala, a television based agricultural information dissemination system has been initiated in the state. The objective of the project is to disseminate information of regional relevance regarding best farming practices, soil and water conservation, forecast and precaution on pest and disease incidence ,weather and market information etc in an interactive mode.

Agricultural Insurance

4.121 A survey conducted by FAO in the early 1990s revealed that various types of crop insurance programmes are present in more than 140 countries. Low insurance penetration despite high premium subsidies, mostly captured by large farmers, poor financial performance with claims consisting exceeding to premiums, inappropriate pricing methodologies are few of the key endemic problems that plague national insurance programmes worldwide.

4.122 Two crop insurance schemes are currently in operation in the State, viz., The State Crop Insurance Scheme and The National Agricultural Insurance Scheme. The State Crop Insurance Scheme, being implemented since 1995, provides insurance cover to 24 major crops against crop loss due to natural calamities like drought, storm, cyclone, flood, landslip, forest fire, sea erosion, earth quake and lightening. The National Agricultural Insurance Scheme (NAIS), was introduced from 1999-2000, replacing the Comprehensive Crop Insurance Scheme (CCIS) which was in operation since 1985. NAIS is implemented in the State through the GIC of India, and provides insurance cover to Paddy, Banana, Tapioca, Pineapple, Ginger and Turmeric against risks such as natural fire and lightening, storm, hailstorm, cyclone, typhoon, tempest, hurricane, tornado, flood, inundation and land slide, drought, dry spells, pests and diseases. Small and marginal farmers are eligible for 50 per cent subsidy on premium, which is equally shared by the State and Central Governments. The scheme is being implemented in 23 States and 2 Union Territories.

4.123 The State Crop Insurance Scheme, has so far enrolled 124315 farmers. Out of this 54255 farmers have benefitted, with a total sanctioned relief assistance of Rs. 1149.00 lakhs, against the collected premium of Rs. 310.16 lakhs. This has necessitated to seek alternatives for making the Crop Insurance Fund, self-sustainable. It is also required to include more perennial crops like, Coconut, Rubber, Pepper etc. in the National Agricultural Insurance Scheme, and withdraw these crops from the State Insurance Scheme. An amount of Rs.75.00 lakhs, provided under the State budget has been credited to the Crop Insurance Fund during 2004-05

4.124 The NAIS implementation since Rabi, 1999 has made an enrollment of 1,61,309 farmers till Rabi, 2004 and 35704 farmers have so far made claims, amounting to Rs.1252.96 lakhs. Since the insurance charges being Rs. 342.66 lakhs only, the claim ratio comes to about 349 per cent. The perennial crops are not included in this scheme.

Weather based insurance

4.125 Recently Private insurers have executed Pilot projects to sell rainfall insurance to farmers as a substitute for or complement to Crop insurance provided by government. ICICI Lombard has designed rainfall insurance policies with support from the World Bank and IFC. The pilot project was carried out in Andhra Pradesh through a Local Area Bank. The pilot scheme was launched in June 2003 for the kharif season of 2003-04. The insurance policy makes payment if the cumulative rainfall during the season falls below the historical average. This is implemented through a rainfall index. The Agriculture Insurance Company of India is planning the introduction of Varsha Bhima as Pilot project in about 25 rainguage stations across four states.

4.126 The State has to generate reliable rainfall data from different locations within the districts to address variations in microclimates. Satellite based automatic weather stations could be established on a pilot basis in selected districts.

BOX-4.9

Weather based insurance

Weather based index insurance is a relatively new insurance instrument whose payments are based on the occurrence of a weather event, rather than on actual crop losses. In the case of drought, insurance contracts would be written against severe rainfall shortfalls (Say 30% or more below normal) measured at agreed regional weather station. The insurance would be sold in standard units and all buyers would pay the same premium and would receive the same indemnity payment per unit of insurance if the pre defined rain shortfall happens.

There are yet only few applications of weather based index insurance in the World. There is an insurance plan in Canada in the province of Ontario that uses rainfall indices and another one in Alberta for maize that uses temperature - heat units. One insurance Company in Argentina is offering a rainfall insurance producing co-operative. There is strong positive correlation between rainfall and milk yields.

There are certain challenges in developing weather insurance, particularly in developing countries. First there is a need for reliable historic data that would allow accurate pricing of the insurance. Automated weather stations and increasingly remote sensing could reduce the risk of tampering with weather observations at local weather stations. Farmers may face basis risk. That is if rainfall at the weather station is not highly correlated with rainfall at the individual farms. This may be a problem in areas with diverse microclimates. World Bank is examining ways to facilitate the use of weather insurance markets by developing countries. The IFC of the World Bank Group is working toward developing weather indices in developing countries. Results from the World Bank Project study indicate that local rainfall observations and yields showed a correlation of around 60-90% in parts of Mexico, Morocco and Tunisia.

World Bank, 2004

Simultaneously meteorological studies also to be initiated to analyse the rainfall yield relationship in various crops.

Agricultural Research and Education

4.127 The Kerala Agricultural University is the principal institution in the state providing human resources and technology required for the sustainable development of agriculture, encompassing all production activities based on land and water, including crop production, animal husbandry, forestry and fisheries. The University fulfils its obligations and commitments through a network of 36 big and small campuses spread through out the state consisting of ten colleges, six regional agricultural research stations, twenty six research stations, five Krishi Vigyan Kendras (KVK) and three centres of advanced studies. The Central Training Institute, the Centre of Excellence in Training for Plantation Crops and the Communication Centre support the training and research activities. The University has a strong technical manpower consisting of 1,000 academics and over 800 technical staff.

4.128 Research initiatives undertaken in the university are focussed on increasing the productivity of crops, livestock and fish currently raised in the state through manipulation of the genetic base; improvements in the management practices; control and management of pests; diseases and parasites; increasing the efficiency of the bio-physical and human resources, and inputs used in production; the introduction of new crops, animals, and machines; evaluating and designing policies, programmers, institutions and infrastructure; and analysis and appraisal of the value systems and gender equation which are conducive or inhibitory to the adoption of technologies and innovations evolved through research. The research support for the sustainable

development of the agriculture sector of the state is rendered in a partnership mode in close association with the research institutions managed by ICAR, Commodity Boards and Departments of the State and Central Government. Over 700 research projects are currently in operation, under the different research faculties of the University.

4.129 The extension network, for the transfer of latest technological innovations of the University is operationalised through the Agricultural Technology Information Centre (ATIC), University Communication Centre, KAU Press, Central Training Institute and the Centre of Excellence for Training in Plantation Crops. Extension activities are also taken up through the 10 teaching institutions, 6 zonal research stations and 26 other research stations of the University. The ATIC envisages to provide a single window delivery system for products and technologies developed by the University, to strengthen farm advisory services, to provide a mechanism for feedback and to function as a repository of agricultural information. During the financial year 2003-04, the transactions through ATIC has exceeded one crore. The communication centre, apart from its farm advisory services and media publications, is instrumental in brining out the 2 research journals and publication of many books and periodicals. The KVKs located in the major-agro-ecological zones of the state cater to the specific technology and socio-economic requirements of the respective regions.

4.130 A number of research stations were established under the KAU decades back and a restructuring of the stations with changes in mandate as well as incorporation of new courses in agricultural education are needed if they have to play any useful role in the changed and changing agricultural scenario.

4.131 A number of research institutions funded both by Government of Kerala as well as Government of India are located in the state. The contributions made by these institutions over a period of time are substantial. However in the changing scenario of post WTO context and shrinking financial support to these institutions a consortium approach has to be adopted for the identification of research problems and recommendations especially in farming systems research. Institutional synergies in transfer of technologies also have to be implemented for realising the maximum benefits to the farmers.

Seed Authority

4.132 The National Seeds Policy 2002 provides the framework for growth of the seed sector. It seeks to provide the farmers with a wide range of superior quality seeds and planting materials. As a part of TRIPS Agreement, the protection of plant varieties and Farmers Rights Act 2003 was enacted to protect the intellectual property rights of plant breeders and to stimulate investments in R&D for the development of new plant varieties. The Act involves setting up of an Authority for implementing the provisions of the Act. Necessary rules and regulations under the Act have been notified. A draft Seeds Bill 2004 has been formulated to replace the Seeds Act, 1966. The Bill provides for compulsory registration of seeds. The salient features of the Bill are shown in Box-4.10

BOX-4.10

The Seeds Bill, 2004

- To provide for regulating the quality of seeds for sale, import and export and to facilitate production and supply of quality seeds
- Government of India shall constitute a Central Seed Committee for implementing the Act. The authority shall advise the GOI and State governments in matters related to seed programming and Planning, Seed development and production, export and import of seeds, registration, certification and seed testing.
- Every State government shall establish a State Seed Committee to advise on registration of regional or local seeds, registration of seed producing units, , seed processing units, seed dealers and horticulture nurseries . In each district, a list of seed dealers, seed producers, seed processing units and horticulture nurseries to be maintained.
- National Register of Seeds shall be maintained. Registration shall be valid for 15 years for annuals and biennials and 18 years of perennials. Transgenic varieties to be registered after obtaining clearance as required under EPA, 1986.
- Every seed producing and processing units shall furnish periodic returns to the Seed Certification Agency.
- The Central Committee in consultation with the State Government establish a State Seed Certification Agency.
- The Central Government establish a Central Seed testing laboratory and State Government establish one or more State seed testing laboratories. Seed analysis and seed inspectors to be appointed.
- All import and export of seeds to be regulated as per the existing provisions and as per the advises of the Committee.
- The Committee in consultation with State committees accredit organisation/individuals/ to carry out Certification
- If registered seed fails to provide the expected performance under given conditions, the farmer may claim compensation from the producer, distributor or vendor under the Consumer Protection Act 1986.

Ministry of Agriculture, 2004

4.133 The Kerala State Seed Development Authority was established in June 2000 with its Headquarters at Thrissur. The objective of the Authority is to make available seeds and planting materials in time to the farmers. APC is the Chairman of the governing body of the authority. At present the functioning of the authority is limited to activities related to Paddy Seed alone. The seed authority has to be strengthened suitably so as to evolve a seed plan for other crops also. Paddy seeds distributed during 2003-04 under general sale are shown in Table-4.15

Table: 4.15
Paddy Seeds distributed during 2003-04

Sl.No.	Variety	Qty.(Kg.)
1.	Kairaly	37550
2.	Red Triveni	71910
3.	Harsha	14790
4.	Aiswarya	80640
5.	Kanchana	278100
6.	Jyothi	539490
7.	**Total**	**1022480**

4.134 During 2003-04, 2,392.35 MT. seeds were procured and 3390.56 MT were distributed under drought relief programme including the carry over stock. Registered seed growers programmes was implemented in six districts achieving an area of 3207.3 ha. in three seasons against a target of 3550 ha.

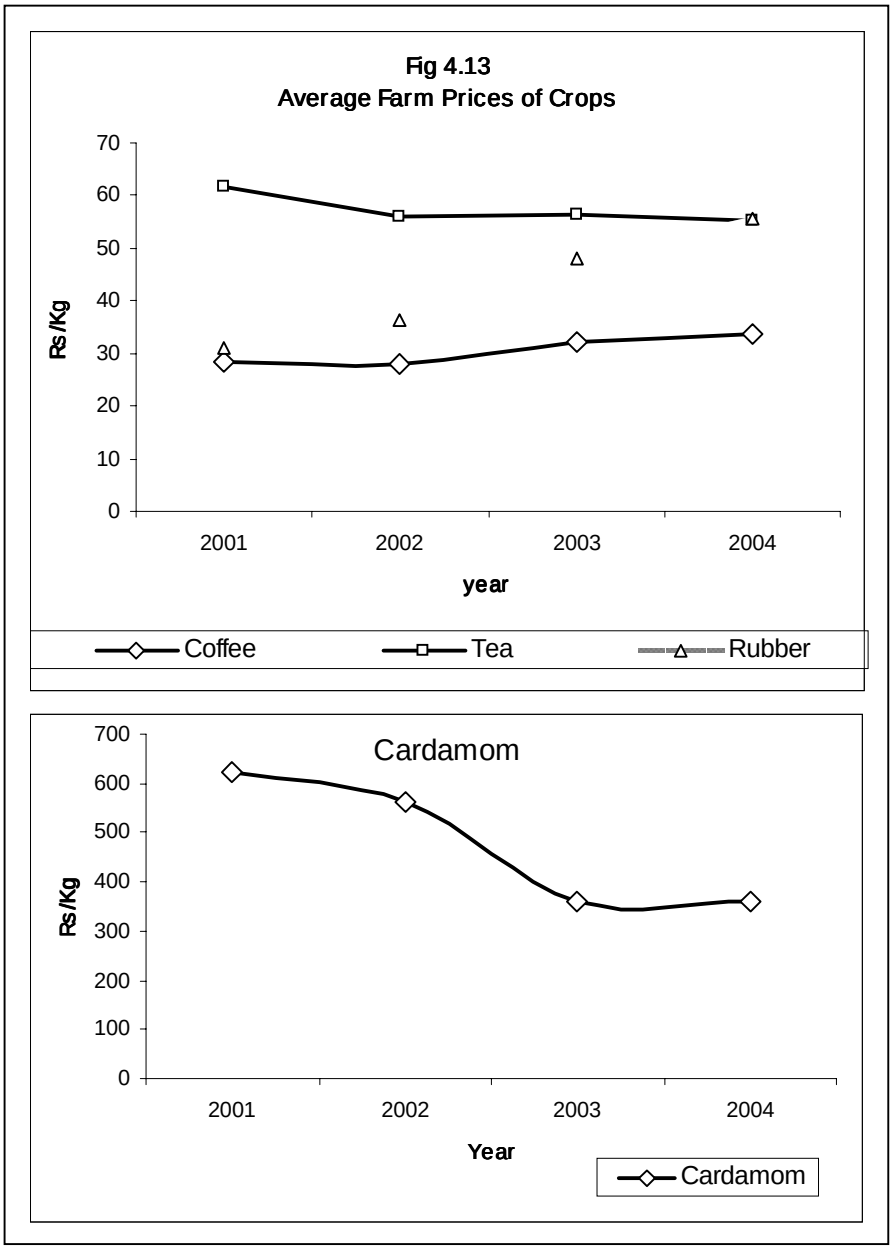
Farm Commodity Price

4.135 Data on average farm price of principal crops grown in Kerala are shown in Table 4.16. The table shows increase in 2003-04 compared to previous year in respect of most of the commodities, namely paddy (7%), coconut (23%), ginger (117%) and banana (20%). Decline was reported to tapioca (-1.18%) and Pepper (-12%). Global agricultural prices have also indicated a recovery path from the later half of 2002. Data on month-wise prices of the commodities during 2003-04 are shown in Appendix 4.25

Table 4.16

Average Farm Price of Important Agricultural Commodities

Year	Paddy (qtl.)	Coconut with husk (in 00' nos.)	Arecanut (00' nos.)	Cashewnut (qtl.)	Banana (00' nos.)	Tapioca (qtl.)	Ginger dry (qtl.)	Pepper (qtl.)	Rubber (qtl)
2000-01	646.36	281.43	41.88	2368.81	1042.51	397.24	4809.33	12401.24	3036
2001-02	600.27	340.64	32.81	2569.33	949.51	321.01	3041.72	6745.43	3228
2002-03	649.76	475.63	32.11	2730.30	971.34	394.01	3304.66	7692.17	3919
2003-04	694.69	582.73	34.62	2831.75	1167.00	389.36	7175.13	6802.46	5040
% change in 2003-04 over 2002-03	6.91	22.52	7.82	3.72	20.14	-1.18	117.12	-11.57	28.6



The prices of plantation crops for the last three years are shown in Fig. 4.13

4.136 The recent study conducted in 2004 by Purdue University (USA) on major commodities in Kerala explained the dynamics of integration of domestic market with the world market. The study pertains to the last three decades beginning from 1970 which was divided into pre reform and post reform period. The entire period of analysis revealed that highest level of market integration was in the case of pepper, followed by rubber and coffee. With reforms the extent of market integration got accentuated as is evident from the increase in the value of the estimated coefficient. The study examined four crops in Kerala using co-integration and error correction models. The post reform period varied from one crop to another as the reform measures were initiated at different time points in different crops. In the case of rubber long run elasticity coefficient was high as compared to the short run which implies that supply conditions are more relevant than demand conditions. The study showed increased transmission of world prices to domestic markets leading to increased market integration. The major findings are shown in Box-4.11.

BOX-4.11

Major findings of a Study on Prices of Perennial Crops in Kerala

Coffee

➢ The estimated short run elasticity coefficient of Arabica Coffee is 0.54 and that of robusta 0.58 in the post reform period (1996-2002) as compared to 0.22 and 0.17 respectively for pre reform period. This shows that integration of coffee market with that of world market increased substantially in the post liberalization period. Three fold increase in elasticity coefficient was observed. The short run transmission of price changes in the World market substantially influenced the current period price of the commodity in the domestic market. The improvement in market integration is mainly attributed to substantial improvement in short run elasticity rather than long run indicating substantial influence in liberalization of coffee market by the world coffee market.

Pepper

The results of the empirical analysis of co integration between prices of pepper in Cochin and New York market, shows that markets were integrated even in the pre reform period. The estimates of short run and long run elasticity in the pre reform period were 0.46 and -0.13 respectively. The short run elasticity indicates that immediate transmission of world price change to the domestic market in the pre reform period itself. In the post reform period, the estimated short run elasticity coefficient is 0.88, indicating further increase in transmission of world prices to domestic markets. The estimate of long run elasticity or the speed of convergence in the post reform period (-0.24) implies that effectiveness of reform measures on the extent of integration of black pepper in domestic market and New York market. The extent of integration has increased with liberalization and the importance was mainly on account of short run transmission rather than the effect of long run cointegration.

Cardamom

The Cardamom market during the pre reform period behaved differently as compared to other crops studied. The result showed existence of market integration in the pre reform period. Short and long elasticities were not statistically significant. The estimation of both long run (-0.36) and short run coefficient (0.64) are found to be highly significant leading to the conclusion that the reform measures seems to have had the effect of making the domestic market highly integrated with the world market.

Rubber

The price of rubber in Kottayam market and Kuala Lumpur market has been integrated. The estimated short run and long run elasticity were 0.37 and -0.42 respectively. Even if the domestic price is above the price in Kuala Lumpur, two price series converge at the rate of 42 per cent every year. Moreover the high value of short run elasticity coefficient implies that any change in price of rubber in Kuala Lumpur market would be reflected immediately on the price of rubber in Kottayam.

Domestic and World Prices of all the four crops are co integrated for the whole period of analysis

Purdue University, 2004

Agricultural Marketing

4.137 An efficient agricultural marketing system is indispensable for the overall development of the economy. In the changing scenario, the nature of marketing support required for safeguarding the interest of the small and marginal farmers is different. In an increasingly globalised market arising out of trade liberalisation, *inter alia* through WTO Agreement, impact on Kerala agriculture needs to be analysed in the context of both exports from Kerala and imports into Kerala especially spices and plantation crops.

4.138 Government of India has recognised the importance of streamlining agriculture marketing in the wake of the World Trade Agreement (WTA). The removal of QRs on imports has several adverse implications for the sustainability of cash crops of Kerala. In the liberalised context, marketing and marketing studies assume paramount importance in future agricultural development of the state.

4.139 With the issue of notification dated 1.4.2003, Futures Trading is not prohibited in any commodity. Futures Trading can be conducted in any commodity subject to the approval and recognition of the Government of India.. 91 commodities are in the regulated list.

4.140 Futures trading is taking place in 78 commodities through 25 exchanges/associations. In principle approval was given to another three exchanges includes for Tea also.

4.141 In enhancing the institutional capability for futures trading the idea of setting up of National Commodity Exchanges has been pursued since 1999. Three such exchanges viz., National Multi Commodity Exchange of India Ltd, Ahmedabad, National Commodity and Derivatives Exchange, Mumbai and Multi Commodity Exchange, Mumbai have become operational. While the NMCE Ahmedabad commenced futures trading in November 2002, MCD and NCDEX Mumbai commenced operation in October/December 2003 respectively.

4.142 The Government has proposed to initiate steps to integrate commodities markets and securities markets. A working group has submitted its report to Government indicating the convergence of securities and commodities derivatives markets and their regulatory system.

4.143 There are at present 22 exchanges in the country. International futures market in pepper and castor oil were developed by upgrading the existing exchanges at Kochi and Mumbai. A multi commodity Nationwide exchange has also been started in Ahmedabad.

4.144 Indian Commodity futures markets are still at a nascent stage. They are dispersed and fragmented with small turnover and catering to separate trading commodities in different regions. Apart from physical infrastructural constraints such as limited online trading, online surveillance and monitoring, the non availability of a fool proof legal system of contracts relating to the warehouse receipt system is impeding the development of futures markets in India. Furthermore, the hawala markets, which have been operating since decades, trade 20-30 times the volume of official with low transaction costs and hence attract many speculators and small hedgers. Efforts are being made to bring informal forward trading into the ambit of the Forward Markets Commission to ensure their orderly integration with the formal marketing structure. Effective co-ordination and interface between the exchanges, banks and the warehousing agencies is crucial in evolving the necessary framework for a mature warehousing system based on legally enforceable contracts and supporting transferability and negotiability.

4.145 As proposed in the National Agricultural Policy, 2000, more agro commodities are being identified and added to the list of permitted commodities for futures trading.

4.146 The overall level of trading in all exchanges is indeed marginal compared to the production levels and value added remains abysmally low. In order to succeed in futures market, quality certification and related procedures along with availability of quality warehouses, transparency and professionalism are essential. Professional methods have to be followed in predicting prices of futures for which marketing wing of department of Agriculture should be strengthened with specialists, to facilitate dissemination of information which may form as a base in price fixation. Conventional practices may lead to exploitation also.

Agri Export Zone

4.147 The EXIM Policy 2001 introduced the concept of Agri Export Zones to give primacy to promotion of agricultural exports and effect a reorganisation of export efforts on the basis of specific products and specific geographical areas. Till December 2003, the Central Government has sanctioned and notified 48 AEZs in 17 states. These 48 AEZs will entail an estimated investment of around Rs. 1142.53 crore, out of which around Rs. 333.68 crore will flow from various central government agencies, Rs. 168.61 crore from State Governments and Rs. 640.24 crore from Private sector. The projected export from these AEZs is Rs. 3000 crore during the next five years. The measures envisaged to promote exports from such zones include financial assistance by dovetailing and extending existing financial assistance to various agricultural export related activities and fiscal incentives. The Agri Export Zone covering nine districts from Thiruvananthapuram to Palakkad was established. The commodities identified for export are vegetables, banana, pineapple and banana chips. Considering the relative advantage for Kerala, steps are to be taken to establish separate Agri Export Zones for spices and medicinal plants in association with Commodity Boards and other agencies involved in the production and marketing of these commodities. Private investment is the crucial factor determining the level of exports and measures need to be taken to tolerate maximum such investment.

Agriculture Supply Chain Management

4.148 Trade liberation and increasing consumer demanded in developed countries offer attractive opportunities for agricultural exporters from developing countries. International market standards are stringent and consumers demand safe food. The supply chain management assumes critical in realising the objectives of AEZ projects. A range of supply chain management tools have been developed over the past decade. The development of supply chains requires knowledge and expertise about chains and within chains.

4.149 Through supply chains, producers in developing countries can assess market information to market their produce. Developing cross border supply chains is complex. The advantages of supply chain management are numerous like the reduction of product losses, increase in sales, reduction of transaction costs, a better control of product quality and safety and the dissemination of technology, capital and knowledge among the chain partners. Supply chain management tools have been developed and implemented throughout the chain to guarantee optimal chain performance. some international experiences are shown in Box-4.12

BOX-4.12

Agri supply Chain Management: Some international Experience

1. Fresh food supply chain in Thailand

In 1996 the Thani Central Retail Corporation started to operate more than 30 supermarkets for quality fresh food. In 1998 a supply chain project was initiated to provide high quality, safe, fresh produce with reliable availability at affordable prices to consumers. The outputs include establishment of the fresh distribution centre, provision of training to quality control managers, development of a value chain analysis model, reduction of the lead time from farm to fork, reduction of post harvest and shrinking losses and introduction of standardised crates.

2. South Africa - The Netherlands' Fresh Fruit Supply Chain

South Africa's fresh fruit industry has experienced tough times recently due to the deregulation of the export system.. Competition increased and prices dropped. This promoted the stake holders to undertake a feasibility study on optimisation of the cold fruit supply chain between South Africa and the Netherlands, a major trading partner. The study was conducted with farmers, fruit co-operatives, private companies and knowledge institutes from both countries.

It found that lack of accurate information on logistics flows and quality aspects of the fruit was problem common among all the chain partners from farmer to retailer. To address this problem, the partners initiated the information system development project to enable them to monitor product flow from country of origin to market.

The outputs include collection of data to extend the Agri information system for each of the three chains, modeling of a supply chain information system, improving information exchange between chain partners, suggestions for farmer level improvements concerning harvest and post harvest activities, improvements in quality control practices, standardization, government level investments in infrastructure (Packing houses, transport etc), quality control and research facilities.

3. The Ghanaian Processed Fruit supply chain

A Company was formed in 1997 and started to produce processed tropical fruits for the international market in Ghana. Shortly thereafter the Company initiated a supply chain management project aimed at improving the quality of its processed fruit. The result of the analysis was to move some processing activities to Ghana. The move brought more value added activities to the country, quality of the produce also improved. The output of the analysis include implemention of code of practice for all chain partners, development of a trusted third party certification scheme, signed agreements of fruit suppliers on farm audits and approved pesticides for each crop, training on HACCP principle and development of a quality manual for certification.

Source: World Bank 2002

4.150 Best practices from other regions on agri supply chain management can provide inputs into best approaches for solving particular problems for capitalizing the new opportunities. A pilot project on agri supply chain management needs to be initiated immediately, considering the investments proposed for establishing three AEZs in the state.

Outlook

Tea

4.151 In 2004-05, the auction average price is expected to rise by nine per cent to 166 cents. The upturn reflects a reduced harvest in India and increased imports to Pakistan, Afghanistan and in particular Iraq. The recovery in tea prices is expected to extend into 2005 with improved demand from middle East and Russia, a result of higher oil export revenues and income. The price upswing is also consistent with the expected cycling pattern of production with respect to plantings. The long term outlook to prices is less favourable. The declining trend in global consumption growth and continuation of growth in output is expected to result in over supply conditions in general.

Coffee

4.152 Global coffee production for the season 2004-05 is expected to reach 117.7 million bags arising that weather condition in Brazil is normal. World Coffee production fell to 107 million 60 Kgs. bags in 2003-04 almost 16 million kg. lower than the 2002-03 crop. Coffee consumption is expected to register a modest increase of about 2 per cent during 2004 and 2005. Most of the increase is expected in the form of speciality and instant coffee. The scope for further increase in coffee prices for even sustaining the current price level is limited. Although arabica prices have weakened recently, they are expected to average $ 1.65/kg. during 2004-05 but are expected to decline to $ 1.59/kg. during 2005-06. Robusta prices are expected to average $ 0.84/kg. during 2004 and are likely to experience a noticeable increase in 2005-06.

Rubber

4.153 International rubber prices are expected to average $ 1.28/kg. during 2004-05, but are expected to decline to $ 1.15/kg. during 2005-06 as the growth in demand for tires is expected to soften, especially in China. A major uncertainty however is the price of crude oil. If current high oil prices persist, then the costs of production of synthetic rubber will increase and consumer may partially switch over to natural rubber.

Livestock Sub Sector

The livestock sub sector has emerged as one of the key components of agricultural growth in developing countries in recent years. An analysis of trends over the last two decades indicates that growth in poultry and milk production has far exceeded the growth in cereal production mainly due to rapid urbanisation, population growth, rise in levels of income and falling prices of livestock products. The projections suggest that the demand led livestock growth is expected to continue and by 2020, over 60 per cent of meat and 50 per cent of milk will be produced in the developing countries. China and India are likely to emerge as the primary producers of meat and milk respectively.

4.155 The Indian livestock system is the endeavor of small holders and it is a centuries old tradition. As a result of gradual transition from subsistence to market system, the economic dimensions of livestock keeping have assumed increasing significance in house hold behaviour. Over 70 percentage of the rural households in India depend on livestock farming for supplementary income. The sector is highly gender sensitive and over 90 per cent of activities related to care and management of livestock are carried out by family's women folk.

4.156 However, employment has been going down as in the case of agriculture sector as a whole. As per NSS reports of the sectoral growth in employment at all India level, the contribution of livestock sector declined from 4.45 per cent in 1983 to 2.52 per cent in 1999 –00 and at rural level from 4.88 per cent to 2.90 per cent. During the period, the number of persons employed in the sector at all India level declined from 11973 to 8475 and at rural level from 10436 to 7567

4.157 In Kerala majority of livestock owning farmers are either small and marginal or even land less. In view of its suitability for combining with crop sub sector and sustainability as a household enterprise with the active involvement of women, it is emerging as a very popular supplementary avocation in the small farms. The observations of a study on homesteads are shown in Box 4.13

BOX-4.13

Livestock in Homesteads of Kerala

- 42 per cent of Homestead had improved breeds of Cow mainly Jersey
- Small scale goat units are common
- Backyard poultry with less than 10 birds in 71 per cent of Homesteads
- Pig rearing is rare
- Duck rearing was in problem zone (Alappuzha, Ernakulam) where back waters are common
- Out of 300 Homesteads selected for intervention by the multi disciplinary team, the following subsidiary enterprises were introduced:

Goat Rearing	- 3 Homesteads
Rabbit rearing	- 2 Homesteads
Backyard Poultry	- 40 Homesteads
Japanese Quail	- 10 Homesteads

KAU, 2005

4.158 Regarding breeding support, out of 3002 artificial insemination centers 2538 have been established by the Animal Husbandry Department, 11 by Dairy Development department, 211 by Voluntary Agencies and 185 by APCOS. The embryo transfer technology introduced in the recent past is yet another step towards livestock development. Of the total adult female cattle population in the State 83.4 per cent is cross bred and if the cattle in milk is taken into consideration, it will increase to 85 per cent and this was made possible by the Indo-Swiss Project and the expanded health care facilities and veterinary services.

4.159 Though livestock sub sector makes significant contribution to the State's economy, it is facing serious constraints due to inadequate fodder base as a result of sharp and continuous decline in the area under livestock-supporting seasonal crops especially paddy and the limited scope for fodder cultivation in the State. The biggest challenge faced by the State in the livestock sector is the threat of foot and mouth disease because of large scale inflow of cattle from the adjoining states.

4.160 Tenth Plan strategy of Kerala is framed in consonance with the national strategy with due adaptation to the Kerala context giving due importance for Upgradation of standards of veterinary institutions and services, establishment of disease free zones, extending health cover and stock upgradation and increasing production through scientific and better management . Enhancing fodder availability and fodder seed/ planting material, promotion of farming system approach, development of micro enterprises for poverty reduction are also given importance.

Trend in Livestock Population

4.161 As per the report of FAO, the World's livestock population in 2000 comprised of 1350 millions of cattle, 165 millions of buffaloes, 1058 million sheep, 720 million goats and 908 million pigs. During 2000 the poultry population was estimated at 14.4 million and duck population 0.9 million. An analysis of the figures from 1990 to 2000 reveals that over the period a continuous declining trend was noticed in sheep population alone. Over 1992, the worlds' cattle population increased by 5.36 per cent during 2000. During the same period buffalo population increased by 11.86 per cent, goat population by 24 per cent and pig by 5.01 per cent and sheep population declined by 6.66 per cent.

4.162 As per the provisional figures of 2003 livestock census, India has 187.38 million cattle which is about 15 per cent of the world cattle population. Out of the 187.38 million cattle, 22.63 million were crossbred, which is 12.07 per cent of the total cattle population. Between 1997 and 2003, crossbred population increased by 12.6 per cent. The states of Tamilnadu, Maharashtra, Kerala, Uttar Pradesh, Karnataka and Punjab account for about 60 per cent of the crossbred cattle population. The country has 96.62 million buffalo population, which is about 56 per cent of the world buffalo population. Between 1997 and 2003, the buffalo population increased by 7.5 per cent. In spite of India's position as highest producer of milk, productivity per animal is very poor. It is only 987 Kgs/lactation as compared to the world average of 2038 Kgs/lactation. This is mainly due to poor level of nutrition as well as low genetic potential for milk production and health care.

4.163 The trend in livestock population of India and Kerala has been examined on the basis of quinquennial livestock Census data. A Comparison of data from 1987 to 2003 (Prov.) is given in Appendix 4.24 . All types of livestock have been showing a declining trend in Kerala after 1996, while in India (1992 on wards) cattle population alone is declining. The may be due to the preference of people for high yielding cross bred varieties. To add to the remarkable status India has in the world cattle and buffalo population there are 181.88 million small ruminants in the country in 2003 consisting of 61.78 million sheep and 120.10 million goat. In terms of population India ranks second in world in goats and third in sheep. More than 70 per cent of them are reared by small/marginal farmers and land less labourers. Contribution of sub sector to the economy is estimated at Rs.2400 Crores per annum. The pig population increased from 13.29 million in 1997 to 14.14 million in 2002-03 with an annual growth rate of 1.25 per cent. and during 1951 – 2003 period it increased from 4.40 million to14.14 million registering a growth of 219 per cent.

4.164 In Kerala, nearly 94 per cent of the

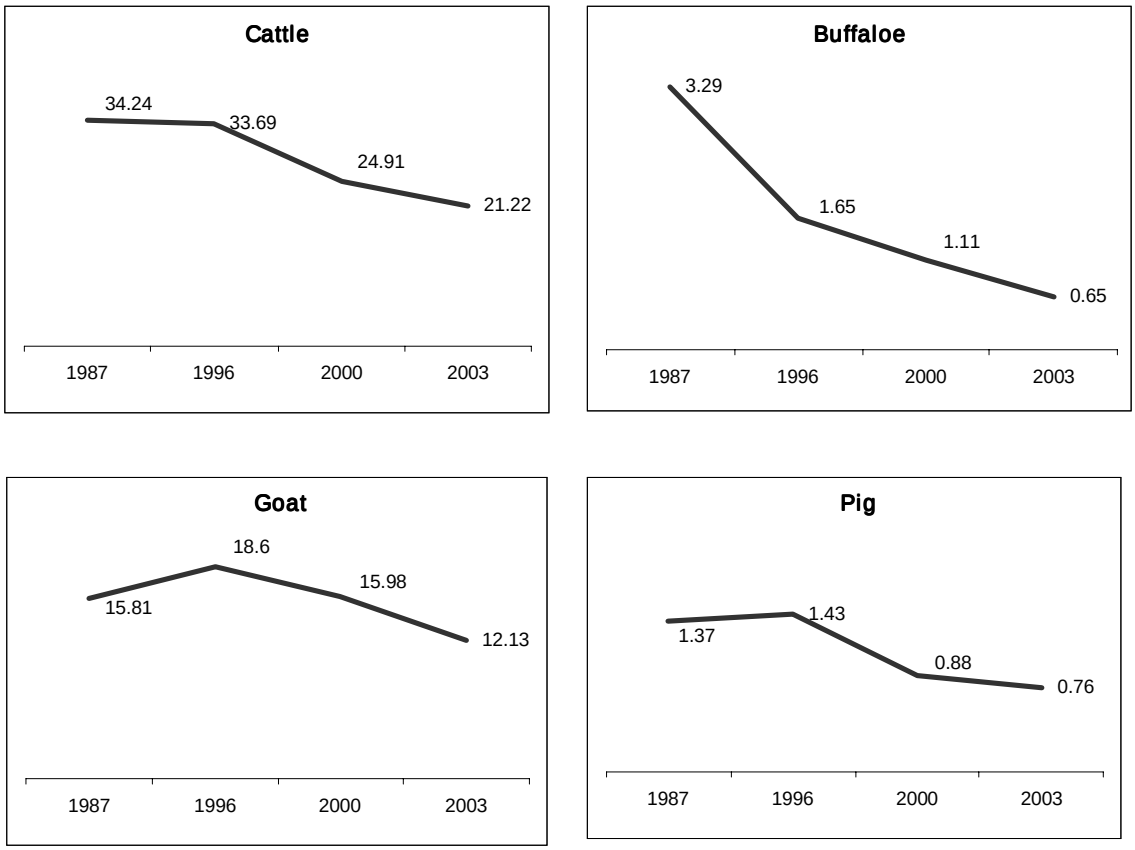
livestock population is concentrated in rural areas, 80 per cent of the livestock farmers are marginal farmers and agricultural labourers. Women constitute 60 per cent of the workforce in this sector. Most of the cattle holdings are one cow farms. Nearly 65 per cent of the meat required is met from animals of neighbouring States.

4.165 The last two Census periods witnessed a drastic decline in the livestock and poultry population n the State. Trend in livestock population during 1987-2003 is shown in Fig 4.14.

4.167 As per 2003 figures, Kerals's share in all India cattle population is 1.13 per cent. Buffalo population accounts only for 0.07 per cent, goats 1.01 per cent and pigs 0.54 per cent. The distribution trend of livestock and poultry during 1966 – 2003 is presented in the Appendix 4.25. Livestock and Poultry Population in Kerala during last 3 Census are given in Table 4.17.

4.168 According to 2003 livestock census figures the cattle population in the State was 21.22

Fig 4.14
Trend in Livestock Population 1987-2003 (In lakh nos)



4.166 It is assumed that the factors attributed to the decline are scarcity of cheap and quality fodder, rapid increase in the price of feed and feed ingredients, inflow of cheap and low quality livestock products from neighbouring states, indiscriminate slaughter of animals, under exploitation of production potential of animals, non availability of good germplasm and threat from contagious diseases like FMD etc.

lakhs of which 17.35 lakhs were crossbred (ie., 81.8% of the total cattle population) (See Appendix 4..23). Trend in crossbred and indigenous cattle population is given in Fig. 4.15

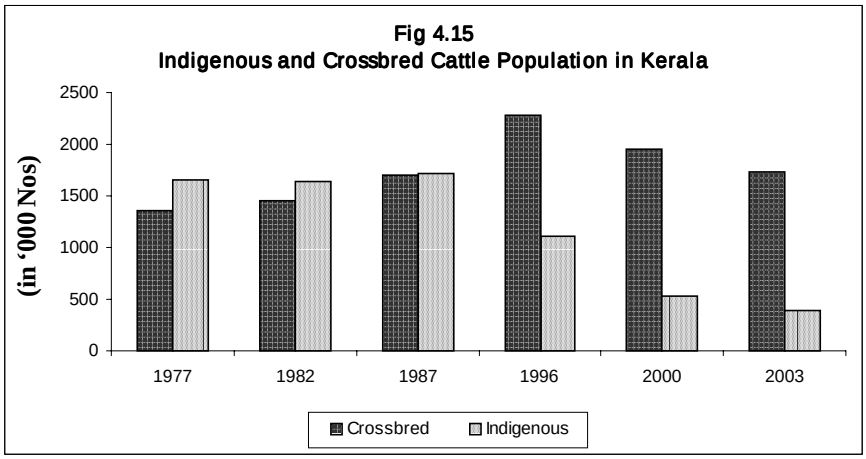
4.169 Concerted efforts are to be undertaken for implementing buffalo development programme. KLD Board has been producing frozen buffalo semen and the same is made

Table- 4.17

Livestock and Poultry Population in Kerala during last 3 Census
(Lakh Nos)

Species	1996	2000	2003
Cattle	33.96	24.91	21.22
Buffalo	3.29	1.10	0.65
Goat	18.61	15.98	12.13
Pig	1.43	0.88	0.76
Poultry	295.25	169.08	131.89
Duck	11.87	10.43	6.61

available through AI units for artificial insemination. Goat population is also on the decline mainly due to indiscriminate slaughter, shrinking of grazing lands and urbanisation.



4.170 Even though some efforts were made by KLD board and MPI to foster swine industry, it could not attain any fruitful results.

4.171 The spatial distribution of the different categories of livestock in Kerala shows a regional pattern. While dairy activity is popular in almost all districts, poultry rearing is concentrated in Idukki and Pathanamthitta, goats in Malappuram and duck in Alappuzha and Kottayam districts. The emerging trend also reveals a shift in the population of dairy cattle from the coastal districts to midland and high land regions.

Weak Feed and Fodder Base

4.172 Most of the reports regarding the availability of fodder in the country project an alarming gap between demand and supply. The National Commission on Agriculture (1976) estimated the demand of fodder in the country for the year 2000 AD at 256.8 million ton dry fodder and 575 million ton green fodder. The future scenario of demand and supply position as shown in Tenth Plan Working Group Report of the Planning Commission on Animal Husbandry and dairying reveals a huge deficit in green fodder in the country. The available fodder can meet the demand of only 46.7 percent of the total livestock .The deficit in 2000 in green and dry fodder in the country was 61.10 per cent and 21.93 per cent respectively.

Demand and Supply of Fodder

4.173 Likely future scenario of demand and supply position in relation to forages in the country is given in Table-4.18. It reveals a huge deficit in green fodder in the country.

4.174 Projected gap between demand and supply of green and dry fodder presents a challenge for fodder production in the coming years. The situation appears grim in case of green

Table – 4.18
Supply and Demand of Green and Dry Fodder Estimated – 1995 to 2025
(in million MT)

Sl.No.	Year	Supply		Demand		Deficit as % of Demand	
		Green	Dry	Green	Dry	Green	Dry
1	1995	379.3	421	947	526	59.95	19.95
2	2000	384.5	428	988	549	61.10	21.93
3	2005	389.9	443	1025	569	61.96	22.08
4	2010	395.2	451	1061	589	62.76	23.46
5	2015	400.6	466	1097	609	63.50	23.56
6	2020	405.9	473	1134	630	64.21	24.81
7	2025	411.3	488	1170	650	64.87	24.92

Source: Study Report of KLDB

fodder. Focussed strategies and concerted efforts are the need of the hour to face this challenge.

4.175 With the shift in cropping pattern of Kerala**,** the area under rice has come down by 50 per cent over the last two decades leading to drastic reduction in the availability of straw for feeding cattle. It is estimated that the state produces only 60 per cent of the roughage requirement for cattle in Kerala. Total dry matter available in the State as per KLD Board study report is only 16.76 lakh MT during 2002-03. Availability of dry matter in Kerala for the period 1997-98 to 2002-03 is given in Table 4.19

Table - 4.19
Details of Dry Matter Availability in Kerala
(in lakh MT **)**

Sl. No.	Year	Paddy Straw	Cultivated Fodder	Sugarcane Top	Pineapple Waste	Tapioca Leaf and Stem	Others	Total
1	1997-98	11.46	0.498	0.1641	0.3778	3.69	2	18.1899
2	1998-99	10.9	0.6948	0.2028	0.3778	3.95	2	18.1254
3	1999-00	11.55	0.6528	0.1734	0.4986	3.4	2	18.2748
4	2000-01	11.26	0.6522	0.101	0.5394	3.49	2	18.0426
5	2001-02	10.55	0.659	0.9801	0.5045	3.38	2	18.0736
6	2002-03	9.4	0.4866	0.9366	0.5781	3.36	2	16.7613

4.176 Regarding the cattle feed concentrate, State does not produce even half the requirement. Now KCMMF and Kerala Feeds Ltd., are taking conscious steps for facing this challenge. Cheap and quality feed and fodder are scarce in Kerala. Shift to animal unfriendly cropping pattern, increased labour cost, scarcity of input for cattle feed etc., are forcing the cattle sector of Kerala to heavily depend on "imported cattle feed".

4.177 Kerala farmers have adjusted to the situation by restricting the number of cattle and that too by preferring high yielding cross breds. This is evident from the steady increase in the proportion of crossbred animals, which Kerala could achieve during the last three decades. The proportion of crossbred female cattle population which stood at 50.5 per cent during 1977 increased to 82 percentage during 2003(see Appendix 4.23). There is a drastic reduction in other categories of livestock such as bullocks, indigenous female cattle, male calves etc. **(** Appendix 4.28 & 4.29). The recent trend reveals that the farmers are reluctant to maintain even high yielding crossbred cows during their dry period.

Trend in Production of Major Livestock Products

4.178 As per CSO estimates the value of output from livestock sector to Indian economy during 2001-02 contributes Rs.150240 crores., which is about 23.65 percentage of the value of output

of Rs.635395 crores from agriculture and allied Sectors. The contribution of this Sector to GDP during 1999-00 was 5.5 percent. A comparison of contribution of livestock sub sector to GDP over the period 1980-81 to 1999-00 shows steady increase from Rs. 59 billion to 984 billion. On percentage terms its share in total GDP increased from 4.82 per cent in 1980-81 to 6.85 per cent in 1992-93 and then declined to 5.51 per cent by 1999-00.

4.179 Other than milk, meat, egg etc., it also provides raw material/by products such as hides and skins, blood, bone, fat etc. During 2001-02, the contribution of milk alone was Rs. 103804 crores. The value of output from meat group at current price was Rs.4438 crores during 2001-02 compared to Rs.2834 crores during 1995-96 (an increase of 71%).

4.180 As per a study conducted by NDDB, based on milk production in 1999, of the total milk produced 45 percent is consumed as liquid milk followed by ghee (28 %) butter and Khoa (6 %), dahi (7 %) and milk powder (2.6%). In general the monthly private consumption expenditure on milk and milk products is next to cereals and is rising steadily over years. Milk and milk products are both income and price elastic in India (more so in rural) and the demand elasticity estimates of the Indian dairy industry for milk and milk products combined are 1.65 in rural and 1.15 in urban India (Datta and Ganguly 2002). Expenditure elasticity of demand for milk and milk products for lower income class is considerably greater. Therefore rising income will maintain a robust demand growth in the dairy sector. Demand forecasts based on differential growth rates of GDP up to 2020 are given in Table 4.20

Table 4.20
Demand forecasts for milk 2000-2020
(million tonnes)

GDP growth%	2000	2010	2020
4	72.40	95.60	126
5	75.30<sup>2	103.70	142.70
7	81.30	122.00	182.80

Source: Study, NDDB

4.181 Trends in requirement and availability of major livestock products in Kerala are given in Table 4.21. The per capita availability of milk based on production during 2003-04 was only 176gm/day compared to 205g/day during the previous year. Compared to this all India availability of milk is 228g/day during 2002-03. In the case of egg, the internal production is sufficient to meet only 29 per cent of the requirement. The state is largely dependent on external sources for maintaining the supply of meat. The internal availability is more or less around 15 gm per capita per day.

Table 4.21
Requirement and Availability (based on internal production) of Livestock Products in Kerala

Sl. No.	Year	Milk (Lakh MT)		Egg (Million Nos.)		Meat ('000 MT)	
		Requirement	Availability	Requirement	Availability	Requirement	Availability*
1	1981	18.62	9.82	2952	1618	177	50.81
2	1991	21.24	17.85	3471	1710	208	120.65
3	2001	23.20	27.18	4230	2002	249	172.80
4	2002**	23.74	24.19	4301	1347	253	181.02
5	2003**	24.16	21.11	4395	1277	260	182.32

Source:Animal Husbandry Department
*including unauthorised sector ** Provisional based on projected population figures

4.182 The average annual growth rates of milk and egg production in Kerala & India for the period from 1950-51 to 2001-02 are given in Table -4.22

Milk

4.183 Government of India's efforts to increase

Table 4.22
Average Annual Growth Rate of Milk & Egg Production
(Per cent)

Sl.No.	Year	Milk		Egg	
		Kerala	India	Kerala	India
1	1950-51 to 1960-61	2.50	1.64	NA	4.63
2	1960-61 to 1970-71	2.52	1.15	NA	7.91
3	1970-71 to 1980-81	12.52	4.51	NA	3.79
4	1980-81 to 1990-91	6.41	5.50	4.89	7.70
5	1990-91 to 2000-01	4.24	4.16	2.75	4.59
6	**1996-97 to 2001-02**	**3.78**	**4.37**	**(-) 0.22**	**4.09**

the productivity of livestock resulted in significant increase in milk production to the level 84.8 million tonnes at the end of 2001-02 (terminal year of 9th Plan) compared to 17 million tonnes in 1950.51. As per the estimates India's milk production reached 91.1 million tonnes during 2003-04. Even though India is the largest milk producer in the world the per capita availability of milk is low at 228g/day and is below the world average of 285gm/ day. It is because the production /animal in India is very poor. It is only 987 kg/lactation compared to the worlds' average of 2038kg/ lactation. This is mainly due to poor level of nutrition, health care as well as low genetic potential for milk production.

4.184 There are significant inter state differences in productivity of cows and buffaloes. The milk yields of indigenous cows were highest in Gujarat (7.5 kg. per day), followed by Punjab (7.4 kg. per day) and Maharashtra (6.6 kg. per day). the average yield of buffaloes was highest in Punjab (5.7 kg. per day). In general, the milk yields of both cows and buffaloes were lowest in Orissa.

4.185 In spite of a shrinking fodder base, the dairy sector in Kerala could maintain a growth rate of 4.24 per cent in the early 1990 s, compared to India (4.16 %). But during the Ninth Plan period (1996-97 - 2001-02) it came down to 3.78 per cent while that of India increased to 4.37 per cent. Despite considerable increase in the proportion of high yielding crossbred cattle, average milk yield per animal per day remains low at 6 litres compared to its potential of 8-10 litres. However, the average productivity attained by Kerala is higher than the national average (2.78 litres) and has been increasing. Index of milk production of Kerala and India from 1984-85 to 2003-04 is given in Appendix-4.33. Trend in Year-wise milk production for the period from 1996-97 to 2003-04 is given in fig.4.16

4.186 Regarding the per capita availability of milk based on 2001-02 figures Karnataka ranks first with an availability of 296 gm/day and Kerala ranks second with 234 gm/day. Andhra Pradesh has the lowest figure of 186 gm/day. (See Appendix-4.31)

4.187 The total milk production of the State declined from 27.18 lakh tonnes to 24.20 lakh tonnes in 2002-03 showing a decline of 10.96 percent and to 21.11 lakh tonnes in 2003-04 with a further decline of 12.76 per cent compared to previous year. At the same time at national level the milk production increased by 2.95 per cent during 2002-03 and 4.35 per cent during 2003-04. Kerala's contribution to national milk production which stagnated around 3.25 per cent during 1993-94 to 2001-02 declined to 2.8 per cent during 2002-03 and 2.3 per cent during 2003-04.

Egg and Meat

4.188 In a country like India where the average level of nutrition is very low chicken and eggs which are not expensive can contribute considerably towards improving diet as a source of animal protein. As per estimates available, the per capita availability of egg is very low at 41 eggs/year and poultry meat is 0.9 kg/year against

the world average of 147 eggs and 11 kg poultry meat /year. The Government of India has set a target for achieving production over 52 billion eggs by 2011-12, at a growth rate of 4.3 percent.

4.189 Poultry farming for egg production relying on purchased feed is uneconomic in Kerala. Poultry rearing on commercial lines is therefore largely confined to broiler production. The egg production which reached 2054 million in 1999-2000 is now showing declining tendency and in 2003-04 it reached a lower level of 1277 million recording a drastic fall of 37.83per cent. The per capita availability of egg based on production during 2002-03 is 42/ year and during 2003-04 it further declined to 39/year. The average annual growth rate of egg production was even negative (-) 0.22 per cent in Kerala during 1996-2002 period while that of India was 4.09 per cent (See Table – 4.22). Index of egg production of Kerala and India over the years 1984-85 to 2003-04 is given in Appendix 4.33. Trend in egg production during the period from 1996-97 to 2003-04 is given Fig 4.16

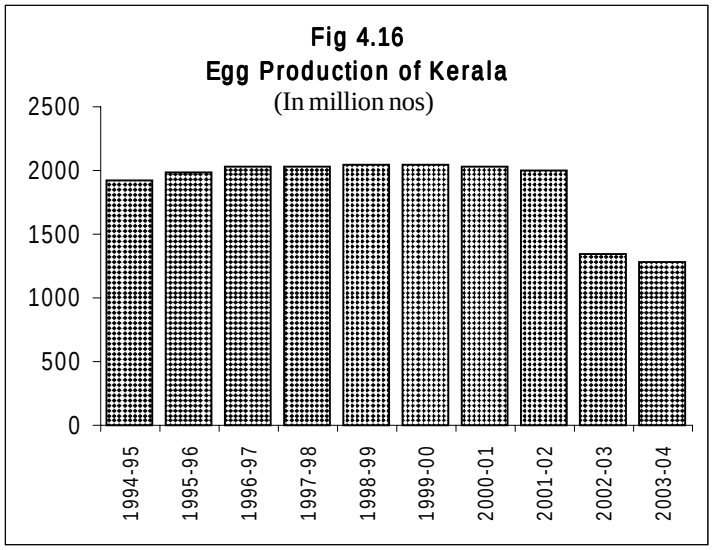
4.190 Of the total egg production, the higher contribution is of desi fowls 717 million (56 per cent). Contribution of improved fowls is only 36 per cent and duck 8 per cent. At the same time the yield per layer per annum (estimated) for desi fowls is only 120 Nos but for improved fowls is 226 per annum. This points to the necessity of propagation and promotion of rearing of improved fowls in the State for increasing egg production.

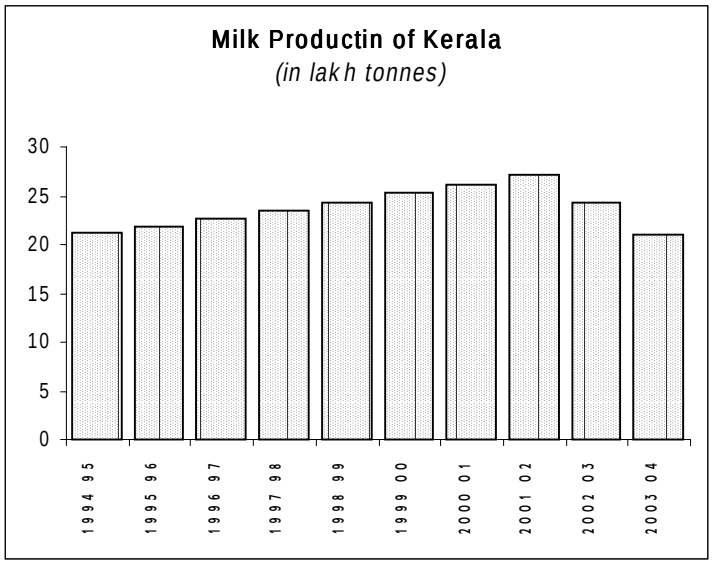
4.191 As per the Sample Survey report of AH Department during 2002-03, 2003-04 560 million eggs and in 2003-04, 662 million eggs were imported from neighbouring states increasing the per capita availability to 59/year.

Table 4.23
Year-wise Estimate of Milk, Egg and Meat production

Year	*Milk Production (lakh tonnes)*				*% contribution of Kerala*	*Egg Production (million numbers)*				*% contribution of Kerala*	*Kerala*	
	India	*% change over previous year*	*Kerala*	*% change over previous year*		*India*	*% change over previous year*	*Kerala*	*% change over previous year*		*Poultry Meat (tonnes)*	*Meat other than Poultry Meat (tonnes)@*
(2)	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*
1993-94	606	-	20.01	-	3.3	24167	-	1844	-	7.3	28000	101223
1994-95	638	5.28	21.18	5.84	3.3	25975	7.40	1916	3.90	7.2	30000	103551
1995-96	663	3.91	21.92	3.49	3.3	27284	5.03	1987	3.70	7.3	32000	105933
1996-97	683	3.02	22.58	3.01	3.3	27492	0.76	2024	1.86	7.4	34000	108336
1997-98	705	3.22	23.43	3.76	3.3	28400	3.30	2033	0.44	7.2	31688	114306
1998-99	752	6.67	24.20	3.29	3.2	29476	3.79	2044	0.54	6.9	32480	117840
1999-00	781	3.86	25.25	4.34	3.2	30449	3.30	2054	0.48	6.7	33204	121875
2000-01	810	3.71	26.05	3.17	3.2	36633	20.31	2034	-0.97	5.6	41515	122808
2001-02	848	4.69	27.18	4.34	3.2	39100	6.73	2002	-1.57	5.1	47693	125100
2002-03	873	2.95	24.20	- 10.96	2.8	40300	3.07	1347	-32.7	3.3	52611	125130
2003-04	911	4.35	21.11	- 12.76	2.3	43100	6.94	1277	- 5.20	3.0	39327	142992

Source: Economic Survey and Department of Animal Husbandry
Figures relating to India for 2002-03 is provisional and 2003-04 is Anticipatedl
@ including unauthorised sector





Meat Products of India Limited

4.192 Meat Products of India Ltd, Koothattukulam was registered in 1973 under Indian Companies Act(1956) with the objective of establishing an export oriented buffalo meat processing unit with an authorised capital of Rs.300.00 lakhs and paid up capital Rs.180.00 lakhs. Its' installed capacity is 300 MT/annum. At present the Company is producing meat products derived from pork, cattle buffalo, poultry, rabbit, quail etc. and produces feed for the poultry and pig farms of AH dept. Recently, the Company developed a pet food, 'Meat Ind's Dog Chow'. During 2003-04, the Company procured 212 MT of live pork worth Rs.63.39 lakhs and 89 MT of broiler birds worth Rs.27.00 Lakhs from farmers at remunerative prices and sold 316 MT of meat products and 1700 piglets. It also produced 1435 MT and sold 1153 MT of livestock feed.

Poultry Rearing and Kerala State Poultry Development Corporation

4.193 Kerala State Poultry Development Corporation was established in 1989 to give special attention for the revival of poultry farming. The Corporation had built up a broiler breeding farm and hatchery at Kudappanakunnu in Thiruvananthapuram District with a total investment of Rs.5.95 crore. The Corporation has partially commissioned a project to rear 15,000 parent stock with a target of 25,000 and to hatch 28 lakh day-old chicks with a target of 58 lakh by utilising financial assistance from the State Government and commercial banks. Now the Corporation is producing and supplying 45000 day old chicks per week for distributing to the farmers.

1. Backyard Poultry Rearing

4.194 Backyard poultry system has good potential in the state. As per the information available 8-10 lakh chicks are being introduced every year in the State. Animal Husbandry Department and KSPDC are involved in this activity. Apart from this few NGOs and private farms are also involved. It has been estimated that around 1 lakh families are benefitted and around 10000-15000 direct employment opportunities generated.

4.195 During 2003-04, KSPDC distributed about 6 lakh chicks(30 to 40 days old) to the farmers of the State.

II. Broiler Production

4.196 There is steady increase in the broiler production and demand for the chicken meat in the State. The total broiler chicken production in the state is around 36000-42000 MT/year. Nearly 10-15 Private hatcheries, working as satellite hatcheries also contribute to this local production of chicks and chicken meat. Approximately 40000-50000 direct employment is generated through broiler production.

4.197 Apart from this around 30000-40000 MT of chicken meat which includes broilers, layer chicks, broiler and layer parent culls etc. is being imported from neighbouring states.

Poultry Feed

4.198 There is need of broiler feed to the extent of 2000-3000 MT per month which is being catered to by 6-7 private feed manufactures. Average price of the feed is Rs. 10000/- to Rs. 11000/- per MT.

Meat production

4.199 India is endowed with more than 11% of worlds' livestock population comprising variety of meat animals such as buffaloes, goat, sheep, pigs, cattle and poultry, The per capita animal protein availability is about 10 gm against world average of 25gm. The minimum requirement targeted is 20gm per capita/day of animal protein of which 4gm will come from meat. The estimated demand for meat would be 7.7 million tonnes against the present production of 5.7 million tonnes. Meat production in Kerala comprises of beef, mutton, pork and broiler chicken. Out of this, beef is almost entirely from the culled animals brought from the neighbouring states. The rearing of goat and pig is concentrated in selected pockets. As in the case of poultry, meat production under stall-fed condition in general is not economical in Kerala. However, there is scope for fostering this activity in selected areas largely by utilising the bio wastes available.

4.200 In Kerala beef' is the cheapest meat costing only 50 per cent of the prices elsewhere. This is because of the migration of large number of cattle and buffalo from the neighbouring states for slaughter. As per the study by the Swiss Agency for Development and Co-operation (1998) the number of animals migrating to Kerala is of the order of 11 lakh per annum.

4.201 There are 774 authorised slaughter houses in the State as on 2003-04 Category wise number of animals slaughtered and quantity of meat produced during 2001-02 to 2003-04 are given in Table 4.24

Table 4.24
Meat Production under Authorised Sector in Kerala

Sl. No	Category	Period	Numbers (000' Nos)	Qty. of meat produced (MT)
1	Cattle	2001-02	483.29	24278
		2002-03	524.25	25897
		2003-04	598.30	29864
2	Buffalo	2001-02	180.30	10394
		2002-03	151.53	8637
		2003-04	162.99	8620
3	Goat	2001-02	553.56	5202
		2002-03	665.74	6276
		2003-04	748.92	6696
4	Pig	2001-02	40.70	1830
		2002-03	44.50	1994
		2003-04	53.14	2484
	Total(1-4)	**2001-02**	**1257.85**	**41710**
		2002-03	**1386.02**	**42804**
		2003-04	**1563.35**	**47664**
5	a)Spent Chicken	2001-02	18525.00	17228
		2002-03	15064.50	13859
	b)Broiler Chicken	2001-02	23841.70	30465
		2002-03	26176.90	38752
	Chicken-Total *	**2001-02**	**42366.70**	**47693**
		2002-03	**41241.40**	**52611**
		2003-04	**28091.00**	**39327**

Source: Integrated Sample Survey for Estimation of Production of Milk, Meat & Egg
* data for spent chicken was not collected

4.202 Compared to previous year's meat production under authorised sector, share of beef increased from 60% to 63%, buffaloe meat declined from 20 per cent to 18 per cent, mutton to 14 per cent from 15 per cent , and pork remained at 5 per cent

4.203 Details of meat production in the unauthorised sector is not available. It is estimated that about 2/3rd of the meat production in the State is from unauthorised sector.

4.204 The production of poultry meat including broilers is on the increase till 2002-03. It reached 52611 MT in 2002-03 as against 42693 MT in 2001-02 recording an increase of of 23%. As per sample survey, the poultry meat production during 2003-04 is 39327 M/T. Data of spent chicken meat was not collected during 2003-04 and if this is also taken into consideration (nearly 15 per cent), the decline in meat production compared to previous year is 12.06 per cent. The outbreak of bird flu in other countries also had an adverse impact on the consumption of poultry meat and thereby affected production. Details of milk, egg and meat production are furnished in Table 4.23.

Import and export of Milk and Milk products

4.204 The Export of Milk Products Rules (Quality control, Inspection and Monitoring) 2000 sets out the requirements related to quality of milk products destined for export and mechanisms to ensure pre shipment inspection as well as approval of establishment for export. Quality requirements include animal health at farm level and hygiene requirements at farm, collection centre, processing establishments, storage and transportation. As at the end of March 2003, 38 establishments had obtained certification from the authority for undertaking exports.

4.206 GOI have amended the Livestock Importation Act, 1898 under which import of all livestock products are allowed against Sanitary Import Permits(SIP) which are issued after conducting risk analysis with regard to the disease status of the exporting country in accordance to the International Scientific Principles and Guidelines of OIE.

4.207 Number of SIPs issued are 218 during 2001, 1002 in 2002, 1514 in 2003 and 327 in 2004 (up to March).

4.208 Details of exports and imports of milk and milk products from India are given in Table - 4.25.

4.209 During 2002-03 India exported livestock, poultry and related products worth Rs.4226 crores of which leather sector contributed Rs.2470 crores. (58 per cent). It is estimated that sheep and goat meat export is registering a growth of 5 per cent. These formed 4.9 per cent in quantity terms and 9.7 per cent in value terms of total meat exports.

Table – 4.25
Export and Import of Dairy Products

Sl.No.	Category	2000-01	2001-02
	Exports ('000 MT)		
1	Skimmed Milk Powder	7.3	14.4
2	Whole Milk Powder	1.5	2.1
3	Other Milk Powder	1.0	1.5
4	Butter	0.1	0.2
5	Butter oil/melted butter	1.0	1.5
6	**Imports ('000 MT)**	0	0.6
7	Skimmed milk Powder	0	0.6
8	Butter oil	1	3.2

Source: NDDB, 2003

4.210 During 2003-04 it was estimated that 25.80 lakh eggs, 41.886 MT of meat and 2006 Kg., of butter were exported from Kerala against 14.74 lakh eggs, 28.734 MT of meat and 2114 kg butter during 2002-03.

4.211 With the establishment of the WTO, the global trade in the food sector is increasingly being governed by quality and safety aspects. There is a likelihood that countries may impose standards and regulations not only for protection of consumers but also as non-tariff trade barriers. Under the Sanitary and Phyto Sanitary Agreement Agreement(SPS), developed countries are imposing stringent standards.

4.212 It is essential to strengthen the animal health and product certification laboratories in the state not only to provide certification but also to ensure quality of raw materials across value chains.

Animal Health Care

Indian Scenario

4.213 With the introduction of extensive cross breeding programmes and improvement of quality of cross bred cattle, the susceptibility of these to various diseases including exotic diseases has increased. In order to reduce morbidity and mortality, efforts are being made by the State/UT Governments to provide better health care. For it, a network of 26,540 polyclinics/hospitals/ dispensaries and 25430 veterinary aid centres (including stockmen centres/mobile dispensaries), supported by about 250 disease diagnostic laboratories are functioning in the country. These institutions employ some 36000 professional staff and over 70000 para veterinarians. For the production of vaccines, there are 26 veterinary vaccine production units. The primary emphasis is on clinical services and as a result, endemic diseases such as Foot and Mouth Diseases (FMD) are still prevalent in India. The limited emphasis on preventive services contributes to India's inability to eradicate animal disease epidemics, which limits the country's competitive advantage in the global market place. Due to the prevalence of some diseases, the Sanitary and Phyto Sanitary regulations of many OECD countries deny entry of Indian livestock products.

4.214 The efforts of States/UTs for preventing/ controlling of various animal diseases are being supplemented by way of providing central assistance during the Tenth Five Year Plan through the following components of the scheme on "Livestock Health and Disease Control":

(i) Assistance to States for Control of Animal diseases (ASCAD)

(ii) National Project on Rinderpest Eradication (NPRE) and

(iii) Foot and Mouth Disease Control Programme (FMD-CP)

Kerala

4.215 At the end of Ninth Plan period all but 23 village panchayats in the State had a veterinary institution (hospital/dispensary). There is a strong network for veterinary health care now in the State comprising 200 Veterinary hospitals, 938 veterinary dispensaries and 14 District Veterinary Centres and other related health care institutions.

4.216 The state is implementing a programme for Foot and Mouth disease control with the assistance of Government of India. Also Brucellosis has now emerged as a new threat to the livestock wealth of the State. Helminthiasis control also needs attention. Worms and other internal parasites cause considerable economic loss to the farmers. Data regarding outbreaks, attacks and deaths of major contagious diseases of animals in Kerala for the period from 1993 to 2002 are given in Table 4.26

Table 4.26
Outbreaks, Attacks and Deaths due to Major Contagious Diseases

(Unit in Nos)

Sl. No.	Disease	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
1	*Anthrax*										
	Outbreaks	3	4	0	0	0	11	10	0	2	3
	Attacks	4	52	0	0	0	463	463	0	6	4
	Deaths	4	3	0	0	0	22	21	0	5	4
2	*Black Quarter*										
	Outbreaks	2	5	3	3	1	2	0	0	1	1
	Attacks	24	124	300	3	1	2	0	0	1	1
	Deaths	22	5	22	3	1	1	0	0	1	1
3	Haemorrhagic Septicemia										
	Outbreaks	4	9	3	8	4	9	9	2	4	8
	Attacks	265	123	5	29	308	121	56	27	170	23
	Deaths	214	38	5	10	22	10	64	0	31	12
4	*Foot & Mouth Disease*										
	Outbreaks	149	481	159	79	232	475	804	48	49	470
	Attacks	3072	8713	3714	2253	189	14214	19205	212	1026	9918
	Deaths	241	164	31	17	6753	0	1178	0	344	814
5	*Rinderpest*										
	Outbreaks	2	2	0	0	0	0	0	0	0	0
	Attacks	15	19	0	0	0	0	0	0	0	0
	Deaths	13	4	0	0	0	0	0	0	0	0

Source: Animal Disease Surveillance Programme 1998 and A H Dept.

4.217 Even though vaccinations were carried out, frequent outbreaks were reported which lead to production loss to farmers. During 2002-03, 470 Foot and Mouth disease outbreaks, 9918 attacks and 814 deaths were reported.

4.218 A project for the creation of disease free zone with assistance from NDDB has already been launched in the State The State has already eradicated the dreadful disease of Rinderpest and the reports of major diseases like Anthrax, Black Quarter and Hemorrhagic Septicemia are very rare.

Production of Vaccine in Veterinary Biological Institute, Palode

4.219 The Veterinary Biological Institute, Palode is the sole agency engaged in the production and distribution of animal vaccine in the State. The following viral vaccines viz. ,Ranikhet Disease Vaccine (K), (Freeze Dried Komorov Strain),Ranikhet Disease Vaccine (F),Fowl Pox Vaccine,Freeze dried Duck Plague vaccine,Tissue culture Rinderpest Vaccine and Bacterial Vaccines viz.,Haemorrhagic Septicemia broth Vaccine, Haemorrhagic Septicemia oil adjuvant Vaccine, Black Quarter Vaccine and Anthrax Spore vaccine are manufactured here. The production details are shown in Table 4.27

Table 4.27
Production of Vaccine by Veterinary Biological Institute (1999-00 to 2004-05)

(lakh doses)

Sl. No.	Name of Vaccine	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05*
1	RDVK	13.32	21.02	26.65	54.45	120.06	32.71
2	RDVF	20.66	5.13	12.87	17.61	31.16	14.37
3	FPV	8.66	1.00	3.12	0.45	0.20	5.08
4	DPV	12.97	9.11	11.46	10.64	28.25	11.87
5	HS Oil adjuvant	0.33	0.39	0.13	0.41	1.14	2.11
6	HS Broth	0.76	0.73	0.73	0.67	2.67	7.81
7	BQ	0.84	0.47	0.59	0.67	1.39	1.49
8	Anthrax	0.57	0.43	0.84	0.28	0.14	0.45
9	FMD Vaccine**	NA	2.19	8.30	12.15	NA	NA

Source: Animal Husbandry Department * till December 2004
**Supply from Other Sources

4.220 Apart from the production of vaccines, the institute is engaged in the manufacture of diagnostic reagents and other animal health products. During 2004, they produced and distributed Californea Mastitis Reagent, Salmonella Pullorum Antigen, Brucella Abortus coloured antigen. Also developed oil adjuvant duck pasteurella vaccine and combined oil adjuvant vaccine for HS and BQ.

4.221 Compared to previous year poultry vaccine production during 2003-04 increased by 116 per cent to 179.67 lakh doses and live stock vaccine increased by 163 per cent to 5.34 lakh doses. Number of vaccinations done during the year was 44.14 lakh for livestock and 45.54 lakh doses for poultry recording an increase of 264 per cent and 42.58 per cent respectively.. Details are given in Appendix 4.34. Modernisation and upgradation of the Institute to produce vaccines according to GMP standards is essential to face the challenges in animal health in the State.

Breeding Support

4.222 Regarding breeding infrastructure, India is the largest in the world with 64 frozen semen bull stations and more than 54000 AI Centres. AI conducted increased from 20 million in 1999-00 to 28 million Nos. in 2003-04. Due to poor quality semen produced by most of the semen stations in the country, the conception rate ranges from 20 per cent to 45 per cent only where as in the developed countries the rate is more than 50 per cent.

4.223 By the end of 2000 there were about 4.2 AI Centres/10000 breedable bovines in the country with Kerala appearing on the top of the list with 10.3 AI Centres and comparable figures of Gujarat and Rajasthan were 7.2 and 2.4 respectively. Total artificial inseminations done in Kerala during 1999-04 was 30 lakh.(as per NABARD Report)

4.224 Kerala Livestock Development Board (KLDB) is involved in the production and distribution of frozen semen and maintains three bull stations at Mattupetty, Dhoni and Kulathupuzha for the production of crossbred and purebred cattle and buffalo bulls. Compared to 2001-02, when semen production was 28.94 lakh doses, it declined by 16 per cent to 24.33 lakh doses (nearly 8.4 per cent of all India Production) during 2003-04. During the period while distribution of semen inside the State remained more or less stagnant, distribution outside the State declined by 77 per cent from 5.5 lakh doses to 1.24 lakh doses. Details are furnished in Appendix 4.35

4.225 The number of AI centres under Animal Husbandry Department increased from 2505 in 2001-02 to 2523 in 2002-03 and to 2538 in 2003-04. Along with 464 centres operated by other agencies the total number of AI centres operational is 3002. (Appendix-4.36).

4.226 The number of inseminations done during 2003-04 was 12.31 lakhs and calvings recorded was 3.54 lakh. This is against 4.02 lakh calvings

recorded out of 13.69 lakh AI during 2002-03. The average number of insemination done by one centre declined from 543 in 2002-03 to 485 in 2003-04. The average number of inseminations needed for producing one calf is four which remained stagnant over the last seven years, is showing signs of improvement by declining to three during 2002-03 and 2003-04 (Table 4.28).

Table – 4.28

Number of Artificial Inseminations Conducted and recorded Calving

Sl.No.	*Year*	*No. of artificial Insemination Centres*	*No. of Artificial Inseminations done*	*No of AI Done Per centre*	*Recorded Calving*	*No of inseminations per calving*
1	*2*	*3*	*4*	*5*	*6*	*7*
1	1993-94	2037	1353058	664	299358	5
2	1994-95	2097	1464941	698	306975	5
3	1995-96	2298	1240116	540	323958	4
4	1996-97	2293	1151189	502	332962	4
5	1997-98	2393	1259419	526	327365	4
6	1998-99	2408	1251119	520	313859	4
7	1999-00	2440	1391495	570	348834	4
8	2000-01	2537	1371655	542	360645	4
9	2001-02	2505	1248996	499	332967	4
10	2002-03	2523	1369112	543	402173	3
	2003-04	2538	1231407	485	353764	3

4.227 Apart from the frozen semen technology, KLD Board is also engaged in research and development activities like progeny testing, embryo transfer, production of liquid nitrogen, fodder seed and training programmes. The Board has an embryo transfer centre at Mattupetty, a goat farm at Dhoni for production of frozen semen and kids, a pig breeding centre at Puthur etc. During the year, the Board has produced 256 Malabari kids, 8508 piglets, collected 38 embryos and trained 1502 personnel. Other activities of the Board are given in Appendix 4.37

4.228 Under herd book scheme implemented by KLD Board the female progeny born to the test bulls are identified and recorded. They are followed up at half yearly intervals by way of girth measurements. A total of 106113 animals have so far been identified and registered under the programme. During 2003-04 against the target of registering 5000 calves, 3520 calves were registered under the programme. The Scheme covers a breedable population of about 60000 cross bred females spread around 83 AI Centres.

4.229 Another notable achievement of KLD Board is the introduction of Boer goats which are considered superior to any other goats for meat production. The breed is known for rapid weight gain and heavy muscling and has high fertility. Boers typically give birth to twins. Crosses of local goats with Boer goats have proved to be a suitable genotype for the goat production system. Further studies are needed to assess the field performance.

4.230 During 2004 KLD Board has launched a project for conservation of dissemination of Malabari Germ plasm aiming at genetic improvement of goat herd of the State.

Cattle Feed

4.231 As per available estimates the potential daily requirement for concentrated cattle feed in Kerala has been estimated at 5372 MT. At present the State has three cattle feed plants functioning at Pattanakkad (300 MT/day capacity) and Malampuzha (200MT /day capacity) and a custom packing arrangement at Erode are under KCMMF and Kerala Feeds Ltd. Kallettumkara (500 MT/day) operating under a separate management. The production of two Cattle Feed Units under KCMMF and Kerala Feeds Ltd. is insufficient to meet the internal demand.

4.232 Due to the heavy demand of the pellet feed from farmers a custom packing arrangement

has been setup at Erode and about 1000MT/ Month of Cattle Feed is being catered from here. The project to augment the capacity of Malampuzha plant from 200 MT to 300 MT and to introduce pelletization facility was approved by NDDB and the implementation of project is in progress. Process upgradation, automation and modernisation projects of Pattanacaud Plant are in progress. During 2003-04, the two plants and custom packing operations under KCMMF produced and sold 1.07 lakh MT of cattle feed. Of the total sales, nearly 73 percent is to APCOs and 9 per cent is to government and Farms. Also a mineral mixture plant was set up at Cattle Feed Plant, Malampuzha with technical support from NDDB and was commissioned in 2003. The mineral supplement produced is marketed as feed supplement under the brand name "Milmamin".

4.233 Production and sales details of the above cattle feed plants are given in Table 4.29

Table 4.29.
Production and Sales of Cattle Feed

(in lakh MT)

Factory	Production				Sales			
	2000-01	2001-02	2002-03	2003-04	2000-01	2001-02	2002-03	2003-04
Pattanacaud (KCMMF)	0.71	1.17	1.08	1.07	0.67	0.71	0.68	0.64
Malampuzha (KCMMF)	0.55				0.57	0.45	0.40	0.33
Erode CPA	-	-	-	-				0.10
Kerala Feeds Ltd.	0.72	0.82	1.06	1.16	0.71	0.83	1.07	1.16
Total	1.98	1.99	2.15	2.23	1.95	1.99	2.15	2.23

4.234 The production of cattle feed by Kerala Feeds Ltd., increased from 1.06 lakh MT in 2002-03 to 1.16 lakh MT in 2003-04 showing a growth of 9.15 percent and sales from 1.07 lakh MT to 1.16 lakh MT showing a growth of 8.13 percent . The KFL have received ISO 9001:2000 quality system certification and is the only cattle feed manufacturing facility in India which has received the above certification. The Company has a good marketing network which includes 400 dealers and 450 Co-operatives. KFL has also launched a mineral food supplement during March 2004 under the brand name "Keramin"

Better Management of Young Calves

4.235 Bringing down the age at first calving and reduction in the inter calving period of cross-breds have been recognized as the most effective measures for augmenting milk production. With this objective, a 'calf rearing programme by subsidising cattle feed for rearing cattle up to 32 months along with health cover and insurance has been under implementation from Eighth Plan. It has helped in reducing the age at maturity and inter calving period and improving milk production. During 2002-03, 6700 calves and during 2003-04, 23683 Calves (the highest achievement during 1998 - 04) enrolled under the Programme. Details are furnished in Table 4.30.

4.236 A study, "Evaluation of Status of Production Performance of Crossbred Cows in Selected Districts of Kerala", conducted in three districts of Kerala by KLD Board, identified a trend in peak yield to increase with percentage of enrollment. According to the study enrolment under the scheme ensures a better calf hood and heifer management resulting better yielding cows.

Table 4.30.
Year-wise Details of Calves Enrolled under Special Livestock Breeding Programme

Sl.No.	Year	No. of calves enrolled under SLBP
1	1997-98	30000
2	1998-99	10000
3	1999-00	8917
4	2000-01	7339
5	2001-02	4485
6	2002-03	6700
7	2003-04	23683
8	2004-05*	5000

Source: Animal Husbandry Department
** Till October 2004*

Kamadhenu Insurance Scheme

4.237 The Animal Husbandry Department in collaboration with United Insurance Company has formulated a Kamadhenu Insurance Scheme to insure the family of the farmers and their crossbred milch cows. The scheme is under implementation from 1998-99 onwards with the target of covering 400 crossbred cows per panchayat. The number of cows insured during 2002-03 was 6245 and during 2003-04 was 5058. An amount of Rs.13.27 lakhs on medical reimbursement, Rs. 9.90 lakhs on accident death claim and Rs. 45.34 lakhs towards cattle insurance was distributed during 2003-04. Details of number of farmers insured, amount of premium remitted and claims settled are given in Table 4.31. The Scheme couldn't be implemented to the desired level during 2003-04 due to disagreement between the Company and the government regarding the terms and conditions of the scheme.

Table 4.31
Kamadhenu Insurance Scheme
Progress of Implementation

Sl.No.	*Year*	*Progress of Implementation*			*Claims settled (cum)*					
		No. of cows insured	*No. of farmers insured*	*Amount of premium (Rs. lakh)*	*Cattle Insurance*		*Accident death*		*Medical Re-imbursement*	
					No.	*Amount (Rs. lakh)*	*No.*	*Amount (Rs. lakh)*	*No.*	*Amount (Rs. lakh)*
1	1998-99	42583	69003	339.99	NA	NA	NA	NA	NA	NA
2	1999-00	37008	61288	277.24						
3	2000-01	28677	45607	160.25	754	52.86	16	12.36	781	12.20
4	2001-02	3037	3796	70.62	1009	70.55	16	8.41	761	20.32
5	2002-03*	6245	8838	58.25	875	73.58	52	5.60	746	25.55
6	2003-04*	5058	8220	34.76	475	45.34	139	9.90	295	13.27

Source: Animal Husbandry Department

* Provisional

Prices

4.238 Average price of important inputs and products of livestock sector for the last seven years is presented in Appendix 4.38. Compared to 2002-03 there was an increase in the price of all products other than broiler during 2003-04. The highest increase was in the case of mutton (12.17%). During the year, price of cow milk recorded a increase of 2.3 per cent and buffalo milk 2.6 per cent, fowl-white egg 6.6 per cent, fowl- brown egg 8.2 percent and duck egg 10.9 per cent. On the input side, highest increase over 2002-03 was in the case of coconut cake ie., 23.7 per cent an all time increase over 7 years, fodder by 15.6 per cent, ground nut cake by 12.42 per cent and gingely oil cake by 9.09 per cent.

Dairy Development

4.239 Dairy industry in India has made significant progress from 8th plan onwards. Today, India is the largest producer of milk in the world. The milk production in the country has risen to 84.8 million tons during 2001-02 from 17.17 million tons in 1950-51 and is expected to reach 91.1 million tons in 2003-04. A substantial increase in the per capita availability of milk and attainment of near self sufficiency in milk and milk products has been achieved mainly on account of the tremendous amount of marketing support and technical inputs provided and the infrastructure developed in the country through the cooperative network. More than 50 per cent of the milk in the country is produced by small and marginal farmers and landless labourers, producing about one to three litres of milk per day.

4.240 1971 was the turning point in India's dairy sector since it was the launching year of Operation Flood Programme with the assistance

of World Food Programme by providing assistance in the form of skimmed milk powder and butter oil. This programme was implemented in three phases -1971-81, 1981-87 and 1987-1996. By the end of third phase, about 72,700 dairy cooperative societies with 93 million farmer members were organised. In OF areas, the country has at present about 1 lakh organized primary village dairy cooperatives with an aggregate membership of 1.1 crore producers. These primaries are federated into 170 district cooperative milk unions and further to state cooperative dairy federations. The dairy cooperative network collects about 170 lakh kg milk per day (LKPD) and pays an aggregate amount of about Rs.7000 crores to the milk producers in an year. These cooperatives form part of the National Milk Grid which today links the milk producers through out India with consumers over 700 towns and cities, bridging the gap between the seasonal and regional variation in the availability of milk while at the same time ensuring a remunerative price to the producers and a reasonable price for quality milk and milk products to the consumers. For the five years ending March, 2003, the average milk procurement by dairy cooperatives grew at 7.3 percent whereas the marketing of milk by cooperatives grew at 3.2 per cent.

4.241 The responsibility for carrying on developmental activities in the Operation Flood areas have been entrusted to National Dairy Development Board, established by an Act.

4.242 As per the NDDB Annual Report, 2003-04, the number of Dairy Co-operatives under organised sector in India is nearly 1.09 Lakhs of which the southern area accounts for 0.25 Lakhs (23%). During the period 1980-81 to 2003-04 strength of Societies increased by 8 fold at all India level, while in southern region the increase was 6 fold, in northern region by 14 fold, eastern region by 13 fold and in western region by nearly 6 fold. In Kerala the increase from 1990-91 to 2003-04 was 3 fold (Appendix 4.39).

4.243 In Kerala there are 3243 dairy co-operatives including 2341 Anand pattern societies functioning under KCMMF. It is also significant that while at the national level milk procurement of Dairy Co-operatives rose by 2.9 percent, in Kerala there has been an increase of 7 percent on account of increase in local sale by Primary dairy Co-operatives and their ability to make better payments to its members.

4.244 Besides the societies functioning under the Co-operative Sector, 4 Societies viz., Malanadu, Nirmalgram, PDDP, Perambra and PDDP, Kalady are working under Charitable Institutions.

4.245 Realising the importance of fodder development in optimising economic return from the dairy activity, the KLD Board and Dairy Development department have taken up fodder development as an important activity right from the beginning. KLD Board produced 10.80 MT of fodder seeds during 2003-04 against 13.51 MT of seeds during 2002-03. The quantity of seeds supplied by KLD Board during the period is 15.65 against 12.57 during 2002-03 (see Table 4.32).

4.246 The Dairy Development Department is implementing a fodder cultivation promotion programme using root slips/stem cuttings of high yielding perennial fodder varieties like Hybrid Napier and Guinea which is widely acceptable by farmers. During the year, Dairy Development Department procured and supplied only 4.80 MT of fodder seeds against 51.30 MT during 2001-02 and 60 MT fodder seeds during 2002-03. The Department also supplied 282.5 lakh root slips/ stem cuttings during 2003-04 against 160 lakh during the previous year. The total area covered under fodder cultivation is 3210.50 ha. against 2800 ha during the previous year (Table 4.33). The area brought under fodder cultivation during April to December 2004 is approximately 1875 ha.

Table – 4.32
Production and Sale of fodder seeds by KLD Board

Sl.No.	*Year*	*Quantity of Seeds Produced (MT)*	*Quantity of Seeds Supplied* (MT)*
1	1996-97	28.42	29.35
2	1997-98	31.64	28.96
3	1998-99	26.50	30.48
4	1999-00	30.21	28.36
5	2000-01	16.20	35.09
6	2001-02	15.98	20.68
7	2002-03	13.51	12.57
8	2003-04	10.80	15.65

Source: KLD Board Annual Reports
** Including sales to outside agencies and used for KLDB programme*

Table 4.33
Procurement & Supply of Fodder seeds / Root Slips and Area Covered under Fodder Cultivation

Sl.No.	*Year*	*Procurement of seeds*	*Total quantity of seeds supplied to farmers*	*Area covered*	*Fodder root slips/stem cuttings supplied*	*Area covered*	*Total area covered under fodder cultivation*
		(in MT)	*(in MT)*	*(in Ha)*	*(in lakh)*	*(in Ha)*	*(in Ha)*
1	1996-97	196.49	196.49	5932	546	2182	8114
2	1997-98	310.45	310.45	9326	200	799	10125
3	1998-99	307.40	307.40	9026	250	1000	10026
4	1999-00	91.00	91.00	3560	460	1840	5400
5	2000-01	72.80	72.80	2820	400	2000	4820
6	2001-02	51.30	51.30	2315	400	2000	4315
7	2002-03	60.00	60.00	2000	160	800	2800
8	2003-04	4.80	4.48	1798	282.5	1412.5	3210.5
9	2004 *	Nil	Nil	Nil	375	1875	1875

Source: Dairy Development Department
* as on December 2004

Milk Marketing

4.247 With the advent of Operation Flood Programme, under the aegis of the KCMMF, a well established system for regular procurement of milk from farmers and distribution to regular consumers became a reality. It has helped in ensuring better returns to the dairy farmers. With the implementation of North Kerala Dairy project supported by Swiss Development Agency, the entire state is under the network of Anand pattern dairy co-operatives (APCOs). As on Sept 2004, the federation was operating through 2577 APCOs with a total membership of 7.28 lakh. It also represents10 dairies handling 9.96 lakh litres of milk/day, 14 chilling plants, two cattle feed plants, a milk powder plant, an established training centre and 8000 distribution outlets Of the total Apcos registered, only 2341 are functional. The average milk procured per day by APCOs during the year was 7.05 lakh litres against the previous year average of 6.72 lakh litres. The procurement /day/society is 301 litres. The performance of KCMMF is presented in Appendix 4.40.

4.248 In Kerala, where the production of milk is concentrated in the small farm sector and ultimate supply is dependent on seasonal factors, maintaining uninterrupted supply particularly during lean period is very difficult. The federation

is thus forced to import milk from the neighbouring States. The periods August-September and January-May are considered to be lean periods when the internal supplies used to shrink. To bridge the supply demand gap and to cater the demand for making value added products they have to rely on outside States. The total import during 2003-04 was 604 lakh litres against 230 lakh litres during 2002-03. Season-wise milk production in Kerala is given in Table 4.34. The

Table 4.34
Season wise Estimated Production of Milk

(Lakh MT)

Sl.No.	Year	Summer		Rainy		Winter		Total
		Quantity	% to total	Quantity	% to total	Quantity	% to total	
1	1996-97	7.49	33.17	7.71	34.15	7.38	32.68	22.58
2	1997-98	7.81	33.33	7.94	33.89	7.68	32.78	23.43
3	1998-99	8.14	33.64	8.26	34.13	7.80	32.23	24.20
4	1999-00	7.83	31.01	9.48	37.54	7.94	31.43	25.25
5	2000-01	8.21	31.52	9.39	36.05	8.45	32.43	26.05
6	2001-02	8.43	31.02	9.74	35.84	9.01	33.14	27.18
7	2002-03	7.77	32.12	8.59	35.51	7.83	32.37	24.19
8	2003-04	6.88	32.59	7.46	35.34	6.77	32.07	21.11

Source: Integrated Sample Survey

procurement of milk by KCMMF stood at 2484, 2412 and 2121 lakh litres respectively against the sale of 2080, 2479 and 2650 lakh litres during 2001, 2002 and 2003. Procurement and sale of milk by KCMMF stood at 1611 and 2098 lakh litres respectively as on Sept 2004. Data on procurement and sale of milk by different dairies of KCMMF during 2001 to 2004 is presented in Appendix 4.41.

4.249 The veterinary services rendered by KCMMF are noteworthy. They have a well established Veterinary Wing at Thiruvananthapuram and Ernakulam Regional Milk Unions. During 2004 (as on Sept 2004 , services were provided through 12 regular and 39 emergency routes and 0.36 lakh animals were treated. KCMMF has sold 0.84 lakh MT of cattle feed during2004 (as on Sept 2004) . It also produced 1883 MT of ghee and sold 1710 MTs of ghee during the year. Year wise details for the period from 1997 to 2004 are furnished in Appendix 4.40.

4.250 Besides milk , a variety of milk products are manufactured by KCMMF. A comparison of sales by KCMMF from 2001-02 to 2003-04 is given in Appendix 4.45. Among the products, sale of milk, ghee ('milma ghee' and 'Samrudhi Ghee'), ice cream, sambharam, curd and Milma Plus recorded a steady increase. The sale of Milma Plus in disposable glass bottles created good response and chocolate flavor was the most in demand and sale increased from 0 .23 lakh bottles in 2001-02 to 11.08 lakh bottles in 2002-03 and to 7.56 lakh bottles in 2003-04. The sale of Sambharam also increased from 15.331 lakh litres in 2001-02 to 72.99 lakh litres in 2003-04. During 2003-04 Central Products Dairy maintained ISO 9002 Certification for all its products and switched over to the 2000 version.

4.251 Production of quality products and marketing them outside the State are essential for further growth of the industry in Kerala. However, the experiment of starting a joint venture for this purpose with NDDB's Mother Dairy, New Delhi did not take off for a variety of reasons.

Annual Plan 2003 -04 : A Review

4.252 The total outlay approved for the livestock sub sector under Annual Plan (2003-04) was Rs.44.99 crores. This included Rs.43 crores for Animal Husbandry and Rs.1.99 crores for Dairy Development (Table – 4.35). Against this actual expenditure in AH sub sector amounts to Rs.22.61 crores (52.60 %) and Dairy Development sub sector amounts to Rs.1.84 crores (92.50%). The short fall in Animal Husbandry sector was due to less expenditure

Table-4.35
Financial Performance of Livestock sub Sector during Annual Plan 2003-04
(Rs. in lakhs)

Sl. No	Sub Sector	Approved Outlay	Expenditure	Expenditure as % to total outlay
1	Animal Husbandry	4300	2261	52.60
2	Dairy Development	199	184	92.50
Total :Livestock sub sector		**4499**	**2445**	**54.35**

Table: 4. 36
Outlays and Expenditure for Major Schemes under Annual Plan 2003-04
(Rs. lakhs)

Sl. No.	Name of Scheme	Approved Outlay	Actual expenditure
1	Strengthening of Veterinary Service	1755	484.07
2	Expansion of Cross Breeding facilities	650	620.29
3	Special Livestock Breeding Programme	739	612.08
4	Assistance to Public Sector undertaking viz., KLD Board, KCMMF, KSPDC and MPI	250	-
5	Commercial Fodder Production Programme	170	170
	Total	3564	1886.44

incurred on Veterinary Services (only 27.6 %). During the year, an amount of Rs. 337 lakhs was also invested against an outlay of Rs.434 lakhs as central share of Centrally Sponsored Schemes in the Sub Sector .

4.253 Also substantial outlay have been earmarked by the local governments for livestock development. During the year Rs. 22.89 crores was earmarked in the sub sector by the local governments.

FISHERIES DEVELOPMENT

Around 60 per cent of the major fish resources in the world are mature and these resources are in urgent need of conservation. FAO has concluded that 44 per cent of the stocks for which formal assessments are available are intensively or fully exploited, 16 per cent were over fished, 6 per cent of the known stocks were in need of urgent management. Demersal high value species were overfished and that a reduction of at least 30 per cent of fishing effort was required to rebuild the resources.

Comprehensive Marine Fishing Policy

4.255 A Comprehensive Marine Fishing Policy has been formulated by Government of India in November 2004. The marine fishing policy announced in the past focused only on the development of the deep sea sector, leaving aside similar issues pertaining to the coastal sector to the respective marine states. However in the present policy the government seeks to bring the traditional and coastal fisherman also into the focus to achieve harmonized development of marine fishing both in the territorial and extra territorial waters of the country. The salient features of the policy are shown in Box-4.14

BOX-4.14

Salient Features of the Marine Fishing Policy

- Harvesting of marine fish resources is categorised into Subsistence, Small scale and industrial fishing. Protection and encouragement of subsistence level fisherman, technology transfer to small scale sector and infrastructure support to industrial sector would be promoted.
- There would be exclusive area in terms of depth and or distance earmarked for non-mechanised traditional crafts. Demarcation of the area for traditional motorised and small scale mechanised vessels is in the purview of coastal states.
- The principle of code of conduct for Responsible Fishing operations would be incorporated into every component activity.
- Implementation of international quality regimes for food safety would be carried out through the nodal agency.
- Hygiene in fishing harbour/pre processing and processing centres would be streamlined through legislation.
- MFRAs of coastal states to be reviewed and a fresh model bill on coastal fisheries development and management would be prepared.
- There will be closed season on both the coasts, the duration of which would be decided by a designated Authority.
- There should be ban on all types of destructive fishing.
- Resource enhancement programme would be taken up. Open sea cage culture would be promoted to rear commercially important species.
- Co-operative movement of fishermen would be strengthened.
- Artisanal fisheries deploying OBMS and small mechanised boats upto 12 m would be treated at par with agriculture.
- Contribution towards insurance coverage and saving cum relief scheme would be restricted to the fishermen who do not own a boat.
- Fishermen housing scheme of various descriptions would be verified and implemented through a national agency.
- Programmes to improve safety at sea and also to have a early weather warning system would be chalked out.
- Coastal area protection though mangrove planting to be promoted.
- The Zonation under CRZ would be reviewed.
- A Master Plan for the development of infrastructure for the next ten years would be drawn up.

Ministry of Agriculture, 2004

4.256 The state government also formulated a fisheries policy in 2004 covering all the areas related to the development of fisheries in the state. Some of the salient features of the policy are shown in Box-4.15. It is intended to integrate various agencies working in the fisheries sub sector, promotion of inland fisheries, resource conservation measures, sea safety, welfare programmes for traditional fishermen, promotion of export, upgration of infrastructure and implementation of quality control programmes across value chain are visualized in the policy document.

BOX-4.15

Some of the salient features of the Kerala Fisheries Policy 2004

- Continuation of implementation for monsoon trawling for the conservation of marine fish resources. Appropriate conservation measures would be designed for implementation.
- Group farming concept would be promoted through cooperatives for the development of inland fisheries. In order to increase production of fish in the state , deep sea fishing and inland fishing would be promoted mainly through traditional fishermen.
- Implementation of Protected fisheries zone, legal measure to protect fishery resources from pollution, gene pool protection. development of coastal fisheries development and management programmes, protection of mangrove forests, participatory resource enhancement programme through local self governments, regulation of destructive nets, steps for implementing ban on fishing by foreign vessels in territorial sea with the support of GOI etc are envisaged.
- Compulsory registration for crafts, prevention of unauthorised fishing, overfishing and destructive fishing and develop package programme for registered fishing, declaration of fishing zone, measures to reduce the number of motorized boats in coastal sea and strict enforcement of KMFR Act
- Promotion of inland fisheries
- Preparation of master plan for development of aquaculture in Kerala
- Establishment of quality control laboratories
- Modernisation of fishing markets, promotion of activities of cooperatives in marketing, implementation of right for first sale, promotion of value added export without affecting the domestic industry
- Promotion of social security measures for traditional fishermen.
- Implementation of coastal family health care programme, community health care, total housing programme, special projects for supply of drinking water, education programmes
- Implementation of anti sea erosion projects
- Implementation of quality control across value chain, establishment of Export oriented units
- Promotion of ornamental fisheries, Establishment of more Matsyabhavans
- Integration of various agencies in the fisheries sub sector like FFDA, BFFDA and ADAK are proposed to be implemented and ADAK would be entrused with the task of coordinating the inland fisheries development programmes
- Promotion of fisheries development programmes through local self governments
- Implementation of micro credit programmes
- Implementation of various sea safety and rescue operations
- Development of selected infrastructure facilities through private participation

4.257 In the marine sector, organising resource conservation measures under a participatory approach combined with regulatory measures has been given the major thrust, as part of the implementation of the strategy and to oversee the conservation measures.

4.258 The state has all the requisite natural endowments for building a strong and vibrant fisheries economy in tune with the national strategy. They include a stretch of coastal belt extending over 590 km. and an extensive inland waterspread of around 4 lakh hectares. The exclusive economic zone (sea spread upto 200 metres) lying adjacent to Kerala coast is spread over 36000 square kilometres which is almost equivalent to the land area of the state.

4.259 The state is endowed with rich inland water bodies consisting of 44 rivers (having an area of 0.85lakh ha) 30 major reservoirs (0.30 lakh ha) fresh water ponds and tanks (0.25 lakh ha) 45 backwater and extensive brackish water area (2.43lakh ha). But the inland fish production accounts for only about 11.50% of the total production. Eventhough the state is endowed with extensive waterspreads offering tremendous potential for the development of inland fisheries, this opportunity has not been tapped to the desired extent.

4.260 There are 222 fishing villages in the marine and 113 fishing villages in the inland sector, where fishing and related activities provide livelihood to a vast majority of the population. The estimated fisher folk population in Kerala during 2003-04 was 10.95 lakh, which included 8.43 lakh in marine and 2.52 lakh in the inland sector. The number of active fishermen during the period was 2.20 lakh which comprises of 1.79 lakh in marine and 0.41 lakh in inland sector. Alappuzha district is in the first place in the number of fisher folk with a population of 1.85 lakh followed by Thiruvananthapuram (1.79 lakh). The district-wise details of fisher folk population are presented in Appendix 4.46.

Resource Potential

4.261 The 200 mile Indian EEZ covers an area of nearly 2.02 million sq.kms. with an estimated harvestible potential of 3.93 million tonnes per annum. Of this, nearly 50% is reported to be available in in-shore waters and the balance in the offshore and deep sea areas. Installation of Fish Finder, Global Positioning System, Radio Telephone and Fish hold has induced mechanised vessels to extend their activity to offshore regions. The Government of India constituted a Working Group to revalidate the potential yield estimates of marine fishery resources made in 1991 and to estimate the additional harvestible yield that could be obtained on a sustainable basis for different depth zones/region of the Indian EEZ. The Salient findings of the Working group report are shown in Box-4.16.

BOX-4.16

Salient findings of the working group on fishing resources

- The total potential yield of the marine fishing resources of the Indian EEZ is revalidated as 39,34,417 MT constituting 20,17,072 tonnes of demersal, 1673545 tonnes of Pelagic and 243800 tonnes of oceanic resources.
- A disturbing trend seen is the substantial reduction of some of the important convential resources namely, elasmobranchs (-97000 t), Catfishes (-72000 t), Other Clupecoidsa (-33000 t) ribbon fishes (-17000 t) and Carangids (-209000 t). Research be directed towards such species in order to develop strategies for reviving and managing the resources.
- Since collection of data on marine fish resources including population characteristics is a continuous process, the present coverage of catch and effort statistics, adopted by the CMFRI to be strengthened to make it to a 5% coverage and the states adopt the same methodology for a 5% coverage.
- Short terms forecasts based on Satellite imageries help in minimising searching time and institutional capabilities to be developed.
- Steps taken for formulation of natural and state level regulation and legislation in Maritine fisheries should conform to the objectives of the code of conduct for Responsible Fisheries.

Ministry of Agriculture, GOI

4.262 Although the total potential available for inland fish production in the State has not been quantified precisely, it can be roughly projected at 1.5 to 2.0 lakh tonnes. Past performance of the sector reveals that the state could tap only around 50 percent of the total fisheries potential. In the marine sector, the activity is largely concentrated in the inshore areas without any serious effort for tapping the potential available in the off shore and deep sea areas. Against the maximum sustainable yield of 5.7 lakh tonnes, the fish landing from the inshore area is around 6.0 lakh tonnes thus leading to a resource depletion crisis. Marine resource potential is shown in the Table-4.37. The species wise marine fisheries potential estimated in the depth range of 0-50 m. in the state is shown in Table-4.38

Species-wise Composition of Fish Landing

4.263 The marine fish landings in India during 2002 have been estimated at 2.64 million tones. An increasing trend was noticed in the landings of shark , oil sardine, Bombay duck,ribbon fishes, carangide, seer fishes, tunas, penaeid prawns and cephalopods. Landings of petches and non penaeid prawns declined.

4.264 Although the fish catches from the Kerala coast include more than 300 different species, the commercially important number about forty only. The high value species among the fish catches are still few, prominent among them are seer fish, pomfret and prawn. Ribbonfishes are also now a target group and nearly 60-70 percent

Table: 4.37
Marine Resource Potential in Kerala and India

(Lakh tonnes)

Sl.No.	Area	Demersal Resources		Pelagic Resources		Total
		0-50m Depth	Beyond 50m Depth	0-50m Depth	Beyond 50m Depth	
1	India	10.36	6.49	11.74	7.42	26.01
2	S.W.C. of India	3.60	1.12	5.89	2.49	13.2
3	Kerala	2.29	0.56	3.42	1.24	7.50

Source: Fisheries Survey of India.

Table - 4.38

Estimated Annual Catchable Potential in 0-50 m depth in Kerala

Sl.No.	Category	Potential (Tonnes)
1	Oil Sardines	111274
2	Other Sardines	12637
3	Pomfrets	2226
4	Mackerels	48686
5	Ribbon fishes	18580
6	Penaeid Prawns	64482
7	Cephalopods	18852
8	Others	294580
9	**Total**	**571317**

Source: CMFRI, Department of Fisheries.

of the landings in frozen form are exported to China, Japan and other South East Asian countries. The quantity of these high value species in the total catch ultimately decides the income of the fishermen. Unfortunately the share of these high value varieties in the total marine fish catch has been remaining stagnant. The annual potential of prawn is estimated at 64482 tonnes while the average catch during 2003-04 was 53361 tonnes. The catch of oil sardine, the most important variety consumed mainly by the poorer sections of the society exceeded the potential in recent years. The species wise landings are shown in Appendix: 4.47.

Fishing Crafts

4.265 There was enormous increase in the number of fishing crafts operating in Kerala during the last decade. The total number of mechanised and non-mechanised crafts has increased from 34007 in 1988-89 to 55501 in 2003-04. The increase was mainly in the case of motorised crafts which rose from 9914 to 29395. The department has initiated a detailed survey of fishing crafts in the state. The published figures on the number of crafts from different sources are slightly different.

4.266 However the permissible limits as estimated by Kalawar Committee in 1985 were 20,000 non-motorised crafts, 2960 Motorised crafts and 1145 mechanised boats. The enormous increase in the number of crafts does not appear to have helped in boosting the marine fish production proportionately. With the increase in the number of mechanised crafts the share of traditional crafts in the total fish landings has considerably eroded over the years. Kerala coastal waters had been witnessing continuous confrontation between traditional fishermen and trawler operators. Active fishing with synthetic fibres, propulsion with outboard motors and modification of craft and gears including indigenization of fishing techniques such as mini purse seine and mini trawling have contributed to over fishing. Increase in fishing by the mechanised sector which has led to large scale destruction of egg bearing and juvenile fishes. The Salient findings of a study on over fishing and loss due to juvenile fishing are shown in Box-4.17

BOX-4.17

Economic loss due to over fishing

- The economic loss due to over fishing estimated in terms of the Net present value of MSY for 30 years was Rs. 160.6 crores for catfishes, Rs. 458.5 crores for elassmobranchs and Rs. 3.9 crore for goat fishes.
- Among the different centres the highest economic loss due to juvenile fishing was at Neendakara harbour followed by Cochin and Munambham Fishing Harbours.

Source: CMFRI, 2002-03

4.267 The state has enacted the Kerala Marine Fishing Regulation Act for enforcing strict regulatory measures for restricting the number of crafts and their operational areas and monsoon trawling has been banned as a conservative measure. The ban on monsoon trawling has been in force from 1989 onwards.

4.268 In 1998, 55737 fishing gears were in use, of which trawl nets (9261) and gill nets (36552) accounted for more than two-third and the rest being ring seine (2277), boat seine (2394) shore seine (1115), hooks line (4295) and others (25). Although the recommended number of ring seines is 300, there are about 2227 ring seines in operation in the state. The proliferation of the mechanised boats and trawlers along the coastal line of the State and the indiscriminate use of gears and nets in violation of the Marine Fisheries Regulation Act need effective regulatory measures.

BOX-4.18

Findings of a study in Fuel Utilization Pattern

- A study conducted by CIFT on fuel utilisation pattern estimated the fuel consumption by mechanised crafts operated at Cochin region during 2002-03 at 37482 KL and for Kerala as a whole at 97204 KL.
- The fuel consumption per trip was between 1200 and 1400 litres depending on the duration of operation.
- The average number of fishing days per trip was 6.5 and average number of days/year was 248.

Source: CIFT 2003

Trend in Production

4.269 The global pattern of fish production owes much to the activities of China, which accounts for 32 per cent of world production. India is the fourth largest fish producing country next to China, Peru and Japan accounting for more than 4 per cent of the total world fish production in terms of catch volume. High fish prices have led to an increase in fishing efforts in Asian fishing countries.

4.270 In 2001, India's total production was 5.65 million metric tonnes of which nearly half was from Marine Fisheries (about 44 species) and the other half from inland fisheries (Indian carp followed by cat fish)

4.271 The marine fish production in Kerala is stagnant and seems to have achieved a saturation level whereas the inland fish production showed signs of improvement from 1999-00 followed by slight decline. During 2003-04, marine production increased to 6.08 lakh tonnes from 6.03 lakh tonnes in 2002-03 and inland fish production to 0.79 lakh tonnes from 0.75 lakh tonnes. (Table - 4.39) & (Fig 4.17)

Aquaculture

4.272 India is the fourth largest producer of shrimp through aquaculture. Aquaculture of shrimp in India has made an impact as a commercial venture in recent times, and contributes substantially to the export of the country. The share of aquaculture shrimp in the total shrimp exports has grown from 33 per cent in 1988-89 in quantitative terms to 60 per cent in 2002-03 and 49 per cent and 82 per cent respectively in value terms.

4.273 The potential area suitable for brackish shrimp aquaculture has been estimated at 1.2 million ha, but only 1.56 lakh ha. alone was utilised for shrimp culture. Out of this nearly 50,000 ha. are under traditional culture with an average yield of 300 kg./ha per year and the reaming area under extensive farming with an average production of 750 to 1500 kg/ha per year. In addition, 35870T of fresh water prawn (scampi) is produced from an area of 41870 ha. of inland freshwater area. Around 49 percent of total area under culture is coming in the size class of 0-2 ha, 22 per cent in 2-5 ha, 13 per cent in 5-10 ha and 16 per cent above 10 ha size. State wise details of shrimp and scampi culture are shown in Tables 4.40 and 4.41. Kerala accounts for 5.7 per cent and 0.66 per cent of aquaculture production of shrimp and scampi respectively during 2003-04. The lowest productivity for shrimp culture was recorded for Kerala.

Table -4.39

Fish Production in Kerala during the last 6 years

(lakh tonnes)

Year	Marine	Inland	Total
1998-99	5.82	0.66	6.48
1999-00	5.94	0.74	6.68
2000-01	5.67	0.85	6.52
2001-02	5.94	0.78	6.72
2002-03	6.03	0.75	6.78
2003-04	6.08	0.79	6.87

Fig. 4.17
Fish Production in Kerala

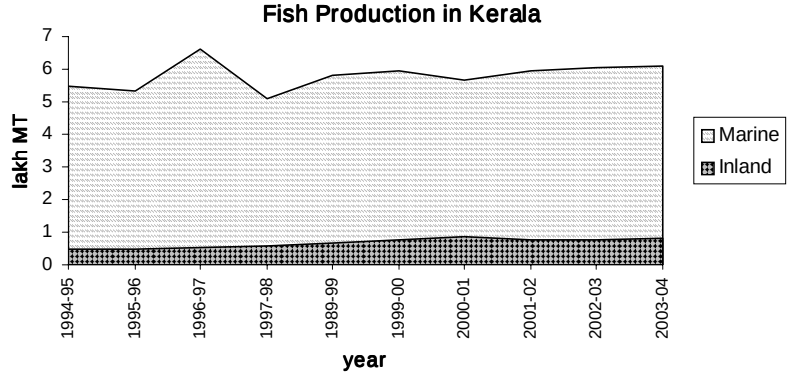


Table :4.40
State wise details on Shrimp culture during 2003-04

Sl. No,.	State	Area under Culture (ha)	Production (MT)	Productivity (Mt/ha.Yr)
1.	West Bengal	49925	29714	0.60
2.	Orissa	12116	12390	1.02
3.	Andhra Pradesh	69638	53124	0.76
4.	Tamil Nadu	3214	6070	1.89
5.	Kerala	14029	6461	0.46
6.	Karnataka	3085	1830	0.59
7.	Goa	963	700	0.73
8.	Maharashtra	615	981	1.60
9.	Gujarat	1013	1510	1.49
	Total	**154600**	**112780**	**0.73**

Table :4.41
State wise details on Scampi culture during 2003-04

Sl. No,.	State	Area under Culture (ha)	Production (MT)	Productivity (Mt/ha.Yr)
1.	West Bengal	4550	2435	0.55
2.	Orissa	470	450	0.96
3.	Andhra Pradesh	27286	32085	1.18
4.	Tamil Nadu	159	133	0.84
5.	Kerala	886	238	0.27
6.	Karnataka	206	113	0.55
7.	Goa	0	0	0
8.	Maharashtra	6981	306	0.04
9.	Gujarat	1430	106	0.07
0	**Total**	**41870**	**35870**	**0.86**

Reservoir Fisheries

4.274 Under the Pilot project assisted by Germany, culture fisheries was taken up in Kerala on an organised scale during Eighth Five Year Plan. Although the module developed is worth emulating in all the reservoirs, it is adopted only in 10 reservoirs with an area of 5743 ha. There are 30 reservoirs with waterspread area of 43,000 ha. in the state suitable for taking up fish culture.

4.275 During 2003-04, a total of 7.04 lakh catla, 9.94 lakh rohu, 6.93 lakh of mrigal and 8.51 lakh of Labea were stocked in these reservoirs. Total catch recorded was 195.77 tonnes valued at Rs. 78.06 lakhs. The average productivity is 34.09. (Table 4.42)

4.276 The Indo-German Project has estimated an annual potential fish supply of 850 tonnes from the five reservoirs and 1700 tonnes from all reservoirs of Kerala. The present production from the ten reservoirs is very low and the average yield range from 4.30 kg/ha in Walayar reservoir to 304 kg/ha tonnes in Meenkara in 2003-04. The low productivity in most reservoirs can be attributed to undesirable species mix as revealed in studies and fast growing species do not get the desired level of representation.

4.277 Reservoirs offer good potential for fisheries development in the state and forms one of the most important inland fishery resources. Detailed action plan has to be prepared to exploit the potential with the involvement of SHGs.

Table: 4. 42
Reservoirs in Kerala with average fish productivity (2003-04)

Sl. No.	Name of Reservoir	Area (ha)	Production (Kg)	Productivity (Kg/ha)
1.	Pothundy Reservoir	363	9616	26.49
2.	Mangalam Reservoir	393	40189	102.26
3.	Walayar Reservoir	289	1244	4.30
4.	Kanhirapuzha Reservoir	512	6787	13.26
5.	Chulliar Reservoir	159	12274	77.19
6.	Meenkara Reservoir	259	78679	303.78
7.	Malampuzha Reservoir	2313	-	-
8.	Peechi Reservoir	1200	12642	10.54
9.	Vazhani Reservoir	255	34334	134.64
10	Peruvannamozhi	-	-	-
	Total	**5743**	**195765**	**34.09**

Ornamental Fisheries

4.278 Annual world export in ornamental fisheries is around US $ 200 million. Asia supplies more than 50 per cent of world supply of ornamental fisheries. New players like Czech Republic and Malaysia are now emerging as suppliers. The major importers are US (28%), Japan (14%), Germany (9%), France (8%) and UK (8%). In value terms fresh water species account for 90 per cent of trade. The state has good potential to exploit the ornamental trade both in the domestic and export markets.

Demand and Supply Projections of fish in India

4.279 A study was conducted to project the supply, demand and export of fish by species group in India and generated the projections for 2015. The major findings are shown in Box-4.19.

BOX-4.19

Major Findings of a study conducted to project supply, demand and export of Fish by Species Group in India

1. Aquaculture fish supply elasticity were estimated to be 1.56 for Indian Major carps, 1.72 for other fresh water fish and 0.73 for shrimp with respect to own fish price. The effect of input prices to fish supply were negative and inelastic. In case of marine fish, the own fish price elasticity were found to be highly inelastic for all the fish species ranging from 0.28 to 0.50

2. The share of IMC in total fish production will increase to 30 per cent in 2015 from 25 per cent in 2000 and of other fresh water fish to 22 per cent from 19 per cent. The share of pelagic, dimersal and mollusks will decline from 24 to 20 per cent, 11 to 9 per cent and 9 to 7 per cent respectively during this period.

3. Domestic demand of fish is likely to grow at an annual rate of 2.4 per cent between 2000 and 2015. Highest growth in demand is projected for IMC (3.9 %).

ICAR, 2004

Export

4.280 The total value of marine products export from the country was Rs. 6091.95 crores during 2003-04 indicating a decline of 11.83 per cent in rupee realization and 6.61 per cent in US $ realization compared to 2002-03.

4.281 The marine products export from the state during 2003-04 was 76627 MT valued at Rs. 1099.13 crores constituting 19 per cent in terms of volume and 18 per cent in terms of value to Indian marine products export. The export of marine products from the state during the year declined by 6 per cent in quantity terms while in value terms increased by 12 per cent in rupee terms and 8 per cent in dollar terms compared to

the previous year. Inspite of muddy moldy smell issue in Japan and anti dumping petition filed against Indian Exporters in USA, the foreign exchange earnings from the State has increased.

4.282 The major export item is frozen shrimp which constitutes 54 per cent in value term of total export from the State during 2003-04 while at national level the corresponding share is 66 per cent. But the declining export share of frozen shrimp from the State is a cause for concern and it declined by 1.88 per cent in quantity terms and 1.15 per cent in value terms over the previous year while at the national level it increased by 11per cent in value terms in 2002-03.

4.283 The State's share in all India exports has been declining in recent years. The share declined from 27 per cent in quantity terms in 1999-00 to 19 percent in 2003-04 and the share in value declined to 18 per cent from 22 per cent. However during 2003-04, a slight improvement was recorded compared to the previous year. (Table 4.43). European Union continues to be the major market for the marine products exported from Kerala with a share of 48 per cent in value during 2003-04 followed by Japan (19%) relegating USA to the third position (13%). (Fig. 4.18) During 2002-03, USA was in the second position while during 2001-02, USA was again in the third position.

4.284 There was a declining trend in exports due to the adverse market situation prevailing in major markets like USA, Japan and European Union. The Antidumping procedure initiated by the US government affected the Indian shrimp exports to USA from February 2004 onwards. The US department of Commerce has imposed a final antidumping duty of an average of 9.45 per cent on shrimp imports from India (Box 4.20). The final ruling of the International Trade Commission was released in January 2005 confirming the antidumping for imports of non canned shrimp and prawns from Brazil, China,Ecuador, India,Thailand and Vietnam.

BOX-4.20

Antidumping case : USA - South East Asia, South Asia and South America

There is a new antidumping threat that may have a major impact on developing country sea food producers. This is the challenge made by US Gulf of Mexico Shrimp fishermen that a number of developing countries are dumping farmed shrimp in the USA market. The challengers are the Southern Shrimp Alliance (SSA) who fish the Gulf from the South Eastern States of the USA. Their petition to the US International Trade Commission names six developing countries who are significant low cost shrimp producers proposing that duties between 30% and 267% be levied on imports.

Antidumping tariff levels suggested by the SSA.

Brazil	- 40-72%
China	- 119-267%
Ecuador	- 104-207%
India	- 102-130 %
Thailand	- 57%
Vietnam	- 30-99%

These countries produce 75 percent of the global total of farmed shrimp and 26% of all global shrimp supplies. If duties of these levels were to be applied, it would effectively close the USA market for many of these producers. US domestic industry provides only 12% of the total US supply and this comes from a heavily exploited wild fishery. The USA will then inevitably be hugely dependent upon shrimp imports irrespective of this action.

In December 2004, US Commerce department imposed antidumping tariffs on Shrimps imported from the four countries ranging from 9.69% to 67.8% for Brazil, 2.35% to 4.48% for Ecuador, 5.02% - 13.4% for India and 5.79%- 6.82% for Thailand.

Table -4.43
Export of Marine Products from Kerala *vis-a-vis* India

Q: Quantity in Metric Tonnes
V: Value in Rs. crore

Year		India	Kerala	Share of Kerala (%)
1998-99	Q	302934	70641	23
	V	4627	817	18
1999-00	Q	343031	92148	27
	V	5117	1148	22
2000-01	Q	440473	88852	20
	V	6444	1046	16
2001-02	Q	424470	72756	17
	V	5957	951	16
2002-03	Q	467297	81393	17
	V	6881	1046	15
2003-04	Q	412017	76627	19
	V	6881	1099	15

Source: MPEDA

4.285 Kerala is exporting a major share to EU market. The average unit value of export from India to different countries is shown in Table 4.44. The EU market does not play a dominant role in fixing tropical shrimp prices, rather followed the price trend set by Japan.

4.286 In the EU, the appreciation of Euro vis-a-vis the dollar effectively reduced import prices for shrimp and prices normally are quoted in dollar terms. The depreciation of dollar was a moderating influence on upward price trends in European sea food markets, during 2004.

Table: 4.44
Average Unit Value Realisation of Frozen Shrimp exported from India for the period from 1997-98 to 2001-02

(Value in Rs. /Kg.)

Sl. No	Countries	Years				
		1997-98	1998-99	1999-00	2000-01	2001-02
1.	Japan	356.73	416.65	390.87	470.49	389.38
2.	USA	232.17	238.78	283.82	378.79	360.15
3.	UK	205.74	231.06	250.71	290.90	296.59
4.	China	213.39	216.80	275.85	251.86	221.62
5.	France	155.86	196.97	223.10	257.23	287.33
6.	Germany	221.64	231.95	275.29	286.46	309.88
7.	Kuwait	242.94	-	-	644.06	-
8.	Saudi Arabia	150.82	-	-	169.30	171.66

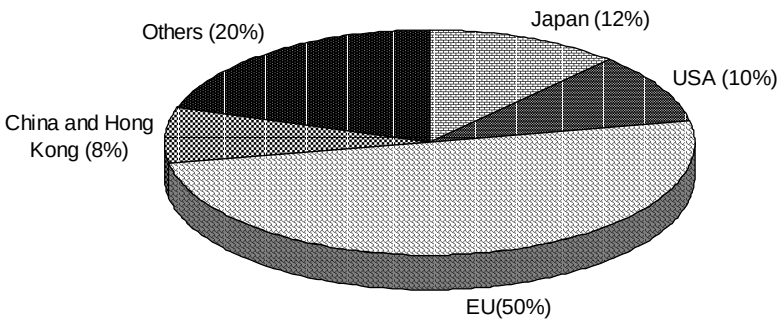
Infrastructure facilities

4.287 Out of the 359 freezing plants in the country. 98 units are located in Kerala alone, of which 54 units are having EU approval and 98 freezing plants having a capacity to process 1908 Mt of sea food items per day. Modernisation of processing facilities by the rest of the units for EU approval and production of value added items will increase the export of marine products from Kerala.

Quality Standards

4.288 Competition in the international market is increasing and Kerala has to keep the quality standards to retain the market share. The Sanitary and Phyto Sanitary (SPS) agreement under the World Trade Agreement stipulates maximum permissible chemicals residue, and other standards. The state has to move towards international standards of product hygiene in order to retain the market share in future. A large number of countries now have specific Hazard Analysis and Critical Control Point (HACCP) based regulations regarding the safety of fish products. USA was the first to adopt the HACCP based regulation of fish and fish products. All developed countries and a large number of developing countries have already shifted to HACCP based systems.

Fig.4.18
Export of Marine Products from Kerala



4.289 Variations in quality standards requirements among importing countries pose the biggest problem. Histamine in Canned Sardine is a good example. While the US allows for 50 ppm or less, it is as high as 150 ppm for EU. More advanced technologies such as the Zero tolerance residue are employed by EU. In addition to HACCP scheme, new requirements are also introduced like the residue monitoring requirements and heavy metal contamination monitoring in EU.

4.290 The quality control programmes across the value chain have to be strictly enforced to retain the export market share from the state. The Sanitary and Phytosanitary Agreement seems to threaten the sea food exports in the absence of stringent quality control systems. An action plan has to be prepared for the upgradation of quality control infrastructure. Awareness programmes about the quality standards in other countries and its implications for export from Kerala also have to be organised.

Major developmental Programmes

4.291 The major developmental programmes implemented during the Plan period include, inland fisheries development, development of Fishing harbours and landing centres and programmes ensuring social and livelihood security of fishermen population. The developmental programmes undertaken in the marine sector include modernisation of country crafts, popularisation of new generation crafts and distribution of suitable components of fishing gear.

Outlay and expenditure for 2003-04

4.292 The outlay and expenditure for various schemes implemented in the fisheries sub sector are shown in Table-4.45

Table : 4.45

Outlay and Expenditure for 2003-04

(Rs. lakhs)

Plan	**BE**	**Expenditure**
State Plan	2100	1716.92
Centrally Sponsored	1250	1363.73

1. FFDA and BFFDA

4.293 The Fish Farmers' Development Agencies are functioning in all the districts for promoting aquaculture. The FFDAs have established six fish seed farms. They have enrolled farmers, surveyed 9093 ha water area and organised fish culture in 1550 ha. in 2003-04. During the year 2825 farmers were benefited and fish production was 3146 tonnes from these activities. Also 1062 fishermen were financed during the year. However the development efforts initiated under FFDAs are yet to make any perceptible impact on the development of inland fisheries. The first FFDA was established in Palakkad district in 1976. Originally it was started as a 50% Centrally sponsored scheme and later in 2000-01 it was converted as a 75% Centrally Sponsored scheme. But there was no release of funds from Government of India from 1998-99 onwards. In some of the districts the functioning is inadequate and further strengthening is needed. During 2003-04 the expenditure was Rs. 25 lakh out of the BE of Rs. 25 lakh (100%)

4.294 Brackish Water Fish/Prawn Farmers' Development Agencies are functioning in six districts. An area of 455 ha. has been brought under Prawn culture through the promotional programmes implemented during 2003-04. During the year, 387 farmers were benefited. Also 455 farmers were trained. There is 100% achievement with an expenditure of Rs. 45 lakh during the year.

4.295 Multiple agencies are involved in the promotion of aquaculture in the state, working for similar objectives and functional integration is needed to exploit the institutional synergies to maximise output from the sub sector.

2.(a) Integrated Development of aquaculture in Kuttanand

4.296 The project envisages augmentation of fish/prawn production by introducing eco friendly

culture and ranching practices in greater Kuttanad region covering 408.29 ha. of waterlogged areas during 2003-04 with the participation of local bodies, utilising an amount of Rs. 85.90 lakhs out of an allotment of Rs. 100 lakhs.

2.(b) Integrated Development of Pokkali fields

4.297 An amount of Rs. 90.02 lakhs is utilised from an allotment of Rs. 90 lakhs for the Integrated Development of Pokkali Fields for incurring shrimp production and 2626136 numbers of seeds are stocked.

3. Fishing Harbours and Landing Centres

4.298 Vizhinjam, Neendakara, Thankassery, Munambam, Puthiyappa, Mopla Bay and Chombal- have been completed and commissioned. The progress of work in respect of the ongoing Harbours and landing centres is given in Appendix.4.51 and Table 4.46. All the harbours are constructed with 50% Central assistance. The three projects Thankassery, Munambam and Neendakara, the central assistance has already been exhausted and the construction is progresssing with State Government share. The revised estimates of most of the harbours are pending with Government of India.

4.299 Work on Muthalapozhy, Ponnani, Thottappally and Kayamkulam are progressing. The total revenue collected during 2003-04 was Rs. 252.77 lakhs, out of which Neendakara contributed Rs. 114.75 lakhs about 50 per cent (Appendix 4.52).

4.300 There are 10 landing centres for mechanised boats and 15 for traditional fishermen. Out of the fish landing centres for traditional fishermen, eight have been completed. Work on Pollathai is progressing. Two centres at Poovar in Thiruvananthapuram and Kanjanhad at Kasargod could not be commenced due to the non availability of land and resistance from local

Table -4. 46

Fishing Harbours in Kerala

(Rs. lakhs)

Sl. No.	Name of Fishing Harbour	Total estimated cost (Rs. in Lakhs)		Year of starting	Expenditure upto March 2004
		Original	Revised		
1.	Vizhinjam	704.00	1583.00 *	1987	1501.988
2.	Muthalappozhi	1366.00	-	2000	495.822
3.	Thankasseri	1980.50	4385.50 *	1991	4041.401
4.	Neendakara	585.00	622	1982	821.989
5.	Kayamkulam	624.60	1770.00	1994	971.425
6.	Munambam	1167.20	1895.80 *	1988	1784.811
7.	Puthaiappa	527.00	962.50	1988	1185.112
8.	Chombal	556.00	975.00	1992	898.301
9.	Mopla Bay	564.00	816.00	1992	1055.048
10.	Ponnani	2759.40	-	2001	471.306
11.	Thalai	1370.00	1980 *	-	47.266
12.	Thottappally	1458.30	-	2004	

Source: Harbour Engineering Department

** Revised Estimates submitted to Government for sanction*

people. Proposed centre at Vizhinjam North has been abandoned and the one proposed at Quilon was dropped in view of the development of Thankassery Port.

4.301 The construction of fishing harbours and landing centres has to be done on a strict project mode with different methods of financing and participation. a prioritized action plan has to be prepared for the completion of all long pending infrastructure projects.

4. Social Security and livelihood support to fishermen Community

4.302 A number of programmes are under implementation for providing social security and livelihood support to the fishermen community. They include saving-cum-relief scheme, NFWF housing, HUDCO assisted housing, DANIDA model sanitation, Group insurance to fishermen etc. The major highlights are given in Appendix-4.49

4.303 Under NFWF assisted housing scheme, under the Model villages development Programme, 8729 houses were constructed spending Rs. 35.02 crores during Ninth Plan. During the first two years of Tenth Five year plan, 1945 houses were constructed spending Rs. 777.88 lakhs. All active fishermen are covered under group accident insurance scheme. About 2.2 lakh fishermen were insured under the scheme. Assistance is provided to accidental death/missing of fishermen while fishing, permanent and total disability and partial disability. During 2003-04 Group accident claims were availed by 138 fishermen.

4.304 The Kerala Fishermen Welfare Fund Board is the implementing agency for welfare and relief schemes to the fishermen in the state. The Board has 220279 registered contributing fisher folk and 43075 registered contributory allied workers. Besides there are 27488 fishermen and widow pensioners and 642 allied workers pensioners. Details are shown in Appendix. 4.50

4.305 The saving cum relief scheme is for providing assistance to fishermen during lean period by mobilizing their savings during the peak season. This is a 50% CSS and during 2003-04, 1.16 lakh beneficiaries were assisted and the total expenditure was Rs. 6.54 crores.

CO-OPERATION

The Co-operative Sector in India has emerged as one of the largest in the world with more than 5.45 lakh societies of various types with a membership of more than 23.62 crore as on 31st March 2002.

4.307 As co-operative movement is a people's movement, the restrictions imposed by government has affected the health of the sector. The Planning Commission constituted the Bhahma Perkash Committee towards the end of 1980s. The Report of the Committee (1991) is a landmark in co-operative reforms. Based on the report, Government of India has circulated to state governments suggestions for effecting necessary changes in the Co-operative Laws. The Law Reforms Committee in Kerala constituted under the chairmanship of the Law Minister has proposed the detailed draft of the Kerala Self-Reliant Co-operative Bill - 2002 which is under the consideration of the Government. Early enactment of the law will help to reform and revitalize the co-operative sector in the state.

4.308 In Kerala the co-operative movement had spread its wings in almost all walks of life. The spread and growth of co-operatives in different sectors were nurtured under development plans with government initiative and government finance. As stated above, this has had its negative aspects also. There are 12457 co-operatives under the Registrar of Co-operative Societies and 9342 co-operatives under other functional registrars like Director of Industries and Commerce, Director of Handloom, Director, Coir Development, Secretary, Khadi and Village Industries Board, Director of Fisheries and Director of Dairy Development. Out of the 12457, only 10236 are functional, 1671 are dormant and 550 are under liquidation. The total number of co-operatives are classified into nine categories and is given in Table-4.47

4.309 With large expansion of co-operatives in almost all the sectors, signs of structural and performance weaknesses and regional imbalances have become apparent. The reasons for such weaknesses could be attributed to the large percentage of dormant membership, heavy dependence on government assistance, political interference, lack of professional management, overdues etc. Concrete steps are necessary to revitalise the cooperatives to make them vibrant,

Table: 4.47
Co-operatives under the control of Registrar of Co-operative Societies

Sl. No.	Type of Societies	Total No.	Functional No.
1	Credit Co-operatives	1730	1668
2	Marketing Co-operatives	543	315
3	Consumer Co-operatives	4757	4197
4	Processing Co-operatives	8	5
5	Housing Co-operatives	369	294
6	SC/ST Co-operatives	797	575
7	Health Societies	172	94
8	Women Co-operatives	796	640
9	Other Co-operatives (miscellaneous)	3285	2448
	Total	**12457**	**10236**

democratic organisations with professional management and economic viability. In an increasingly competitive environment, cooperatives will cease to exist unless these can be ensured.

4.310 The Finance Ministry, Government of India constituted a Task force in 2004 under the Chairmanship of Prof. A Vaidyanathan to formulate a practical and implementable plan of action to rejuvenate the rural co-operative credit structure. The report was submitted on 30th December 2004. The major recommendations of the report are shown in Box-4.21

BOX-4.21

Major Recommendations of Task Force Report on Revival of Co-operative Credit Institutions

- Special financial assistance to wipe out accumulated losses and strengthen its capital base
- Institutional restructuring to make for democratic, autonomous and self reliant institutions.
- Radical changes in the legal framework to empower the RBI to take actions directly
- Qualitative improvement of personnel in all tiers and at all levels.
- Reengineering must cover all the tiers of the Co-operative credit structure. It meant include assistance for restoring the PACS to acceptable levels of financial health. Recapitalisation be limited to institutions that conform to the standards of eligibility.
- The accumulated losses of the CCS units, must be estimated afresh and in a transparent manner, by specially designated auditors.
- In view of the huge rates of default characterizing the CCS, it was recommended to bring all tiers of the CCS, under the Risk Weighted Asset Ration framework. All CCS units (PACs, DCCBs, SCBs) be initially supported with external resources wherever needed to achieve a minimum CRAR of 7%.
- In order to reduce governmental control over co-operatives, CC institutions shall return the equity received from the State governments over time. Soft loan support be provided to institutions that do not have the where withal to return state government equity.
- There is a need to standardize the training programmes and curricula across the country. A joint group be set up under the Chairmanship of NABARD to operationalise this.
- NABARD may be entrusted with the responsibility of implementing the recommendations of the report. Task force estimates a support of Rs. 360 crore to NABARD over a period

(Cont.....)

BOX-4.21

of 5 years to implement the technical assistance component. Total commitment for implementing the package is estimated at Rs. 10,839 crores with a share of 53% by GOI, 31% by States and 16% by CCS units. Apart from this Task force recommends a contingency amount of Rs. 4000 crores to implement the financial package. The sharing formula purposed is :

PACS - Government of India to bear for losses arising out of all the credit business of PACs. State Government to bear the losses on account of non-credit business of PACs.

DCBs - Accumulated losses from the loans for agriculture including the direct losses to individuals and units other than PACs would be borne by GOI. DCCBs would have to bear the losses arised out of any other loans. The accumulated losses from the loans of DCCBs to other co-operatives should be covered by the State governments. Similar method is proposed by SCBs.

- The criteria recommended for identifying institutions requiring resource support are PACs - Gross interest margin >=50% of operating expenses and recovery > = 50% of demand

DCCBS - Positive net worth and those with negative net worth with deposit erosion of less than 25%

SCBS - Positive net worth and those with negative net worth with deposit erosion of less than 25%

- The Quantum of assistance be based on audited balance sheet as at the end of March 2004.
- At the end of March 2004, State Governments had extended guarantee to the extent of Rs. 4495 crores in favor of DCCBs and SCBS for the loans issued by them. Guarantee aggregating Rs. 827 crores and Rs. 337 crores had been involved by the borrowing agencies. Considering the financial problem, of the State Governments, soft loans be extended to tate governments to pay these amount the cooperatives.
- Reforms - State Governments to make legislative amendments to enable RBI to exercise its regulating powers under the BR Act directly and not through Registrar of Co-operatives. Rural financial cooperatives should be dealt with as a distinct and separate class and recommends incorporation of a separate chapter in the extant co-operative Societies Act for the cooperative banks. A Model Bill also was proposed by the Task Force. State Government should agree to make a formal commitment to make specialized changes in their legal and administrative framework relating to the functioning of co-operatives.

  Release of funds will be linked to the progress to the following steps like retirement of contribution by State Government in such credit societies, reconstitution of elected Board of management, inclusion of Professionals as CEOs as per the qualifications prescribed by RBI, abolishing the cadre system of all employees, and operational freedom for CEOs
- All thrift and credit co-operatives be requested to increase owned capital to ensure a minimum of 7% CRAR.

Ministry of Finance, GoI, 2004

4.311 In deciding on the Report of the Task force, the question of Central and State Powers, the need for RBI Control etc. will come up for discussion. It is to be hoped that the issues will be settled in the larger interests of healthy and viable growth of cooperative credit structure.

Health Co-operatives

4.312 A United Nations Global Survey on Co-operative enterprises in the health and social care sectors found that co-operative health services operate in more than 50 developed and developing countries. In many industrialized countries health co-operatives came into existence as an alternative mechanism for the delivery of health services. Health co-operatives continued to grow in Japan as a response to the inadequacy of public as well as private for profit services. Italy has the most advanced and extensive co-operatives. In US and Canada also health co-operatives cater to a significant share of population. Health co-operatives exist in several developing countries such as Bolivia, Brazil, India, Panama, Philippines, South Africa, Sri Lanka and Tanzania. In Sri Lanka and India, the government financially supports the co-operatives.

4.313 In the developed countries health care co-operatives are expanding rapidly to take care of elderly people. There are about 40 care co-operatives in UK and the sector is expanding rapidly. In Japan 30,000 care helpers have been trained.

4.314 Kerala is one of the few states where medical co-operatives have been set up in large numbers under government patronage. The medical co-operatives developed during the early 1970s.

4.315 The salient observations of a study conducted by the Centre of Social medicine and Community health of JNU and published in the Croatian Medical Journal are shown in Box-4.22 In the coming years, of market oriented health sector reforms the role of professionally run medical Co-operatives assume greater importance in the State to enhance access by the poor.

BOX-4.22

Salient Observations of a study by Centre of Social Medicine and Community Health, JNU

- The decline of the medical co-operatives in Kerala started in the 1980s, after the coverage of Public sector health services, coupled with private sector coverage.
- Out of 8 cooperative dispensaries, 4 were functioning sub optimally due to lack of working capital and of committed staff.
- Employees perceived service conditions as unsatisfactory
- Most of the co-operatives lacked the decision making power due to over politization.
- Physicians and other technical staff were under represented in the governing body.
- Out of 77 Co-operative hospitals, 57 are functioning at an optimal level. These are profit oriented with sufficiently large catchment areas, and can afford high tech diagnostic and therapeutic facilities. They can even moderate the exploitation practices of the private hospitals.

(Croation Medical Journal, 2003 44 (5)

Support by NCDC

4.316 NCDC has emerged as a developmental financing institution for the co-operative sector in the country. The major objective of the Corporation is to promote strengthen and develop institutions of farmers co-operatives for incurring production and productivity and instituting post harvest facilities for augmenting income. The Corporation's focus is on the programmes of agricultural inputs for production, processing, storage and marketing of agricultural produce and supply of consumer goods. In the non-farm sector, the Corporation's endeavor is to equip co-operatives with facilities to promote income generating activities with special focus on weaker sections of the community and rural poor such as handloom, sericulture, poultry, fisheries etc.

4.317 As on March 2004, the Corporation has disbursed an amount of Rs. 641.06 crores comprising Rs. 612.90 crores as loan and Rs. 28.16 crores as subsidy to the Government of Kerala for various co-operative development programmes. This amounts to 8.33 per cent of the total amount released in the country. The major thrust areas of NCDC finance in Kerala are agro-

processing, agricultural marketing, integrated co-operative development projects focussing on micro level co-operatives, consumer, storage programmes, weaker section programmes covering fisheries, SC/ST Co-operatives, Coir etc. The amount released by NCDC from 1962-63 onwards is given in Table -4.48

Table 4.48
Year wise release of NCDC loans with interest rates

(Rs. Crores)

Year	Release of fund	Interest rate (%)
1962-63 to 92-93	122.08	
1993-94 to 98-99	195.47	
1999-00	56.07	13.75
2000-01	69.04	13.75
2001-02	51.64	13 – 12.25
2002-03	50.18	11.50 – 10.5
2003-04	96.58	7-9
Total	**641.06**	

4.318 The total amount disbursed in 2004 was Rs. 96.58 crores, out of which Rs. 63.77 crore (66%) was availed by the Co-operative department. In the disbursement, major share (Rs.16.10 crore) was for ICDP, followed by co-operatives of weaker sections like fisheries, handloom, coir, SC/ST co-operatives (Rs.15.21 crore), agro processing co-operatives (Rs.13.84 crore) and so on. The activity-wise and year-wise sanction and release of assistance from NCDC in 2002-03 and 03-04 are furnished in Appendix. 4.53 . and Appendix. 4.54

Primary Agricultural Credit Societies (PACS)

4.319 Kerala has an elaborate and efficient rural credit structure administered by 1655 Primary Agricultural Credit Societies (PACS) and 44 affiliated Primary Co-operative Agriculture and Rural Development Banks supported by the Central and Apex Co-operative banks. As on March 2004, there were 1655 PACS out of which 1600 are functional 26 are dormant and 29 are under liquidation. The 1600 PACS are functioning with a total membership of 2.30 crores, paid up share capital of Rs. 409.44 crores and reserves of Rs. 569.87crores. Out of 1600 functional PACS, 884 societies were on loss and 703 were on profit and 13 nos. without loss or profit.

4.320 The performance of the co-operatives during the year under report was encouraging. The total loan disbursed in 2003-04 was Rs.8984.90 crores against that of Rs.8750 crores in 2002-03. The disbursement for short and long term loans declined whereas the medium term loan increased. Out of total loan disbursement 65 per cent was for short term, 32 per cent for medium term and 4 percent for long-term purposes. The disbursement for agricultural purposes decreased substantially both in absolute and in percentage terms. In percentage terms, the short-term loan for agri purpose has decreased by 49 per cent and long term loan by 32 per cent over the previous year. Increase in the disbursement for non agricultural purposes indicates that the co-operatives are deviating from their prime objective and are looking for new areas for the growth of their business.

4.321 Even though the co-operatives are disbursing loans other than agricultural purposes for making good margin for their business, a good number of societies are working on loss. Out of the 1600 PACS, which are functional, 884 are on loss (55%), the loss amount being Rs.399.40 crores.

4.322 The credit operations of the Primary Agricultural Credit Societies indicate that, during the year under report, the average membership increased from 13882 to 14420, deposits from Rs.536.00 lakhs to Rs.579.00 lakhs, working capital to Rs.773.00 lakhs from Rs.653.00 lakhs, the average deposit per member to Rs.4012.00 from Rs.3870.00 . The increase in the average deposit per member and per society shows the strength of the movement. The percentage of borrowing members to total members declined which indicates that the deposits have not been deployed in a profitable manner. The recovery performance at the ground level was also not encouraging. The percentage of overdue to demand and overdue to outstanding stood at 34.8 per cent and 28.75 per cent respectively during the year under report where as the position in the previous year was 25.36 per cent in both the cases. Selected indicators and credit operations of PACS are given in Appendix 4.55 and Appendix 4.56.

4.323 A Working group was constituted by Government of Kerala to consider in detail issues and to suggest appropriate course of action covering strengthening of the cooperative credit system to enhance the flow of credit to agriculture, streamlining the implementation of the RIDF/ AICF and strengthening the coordination between NABARD and State government. The major recommendations of the working group pertaining to strengthening of the cooperative credit system to enhance the flow of credit to agriculture are given in Box-4.23.

BOX-4.23

Issues and major recommendations of the Working Group for strengthening of the cooperative credit system to enhance the flow of credit to agriculture

Issues identified	Recommendations
1. Decline in Agricultural lending The average lending by the cooperatives to the agriculture sector was as low as 23 percent in 2003-04. The co-operatives are not finding it profitable to invest their high cost of funds in the agriculture sector.	1. Co-operatives should adopt cost saving measures such as rationalization of interest rate on deposits, curtail of operating expenses. 2. Scale of finance for various crops should be fixed realistically. The scale should be indicative only. 3. All eligible borrowers of PACs must be issued Kissan Credit Cards. 4. State Government should provide all supporting measures such as creation of marketing infrastructure, price support, timely supply of seeds etc.
2. Decline in recovery rate and spiraling of Non-performing Assets (NPAs)	(i) Improve the quality of lending & strengthen the post disbursement supervision by the three tier credit structure. (ii) Government machinery should support banks in recovery by authorising the bank officers also to exercise powers of sale officers for the purpose of recovery of bank dues. (iii) Introduction of computerised information system linking all co-operative banks.
3. Increase in loss-making co-operatives	(i) The banks/PACs should be given the freedom to decide the interest rates on deposits/loans keeping in perspective their viability, affordability and profitability. (ii) Evolve suitable norms for share capital infusion in co-operatives by the State government. (iii) Enforcing & conducting of financial audit by Chartered Accountants. (iv) A diagnostic study by a external agency must be made mandatory for all DCBS & PACS which are making losses for more than two years.
4. High cost of management	(i) The cost of management in the co-operatives should be brought to a level of one to two percent of working funds over the next five years. (ii) The volume of business and productivity of staff have to be increased. (iii) Redeployment of additional staff, liquidation of unviable PACS, increasing the coverage of active members, enroll new members, diversify the loan portfolio, closing of the unviable branches etc. should be made
5. Reorganization of PACS	(i) PACS should be reorganized in the ratio of not more than one PACS for one Panchayat. The unviable PACS may be amalgamated/liquidated in a phased manner. (ii) The DCBS should have administrative control over all PACS and should be fully responsible for monitoring their operation.
6. Declining 'active membership' of co-operatives	(i) More active members may be brought into co-operative fold. (ii) Steps may be taken to improve client services and simplify loan procedures to enhance the share of borrowing members in the co-operative structure.

One Time Settlement Scheme (OTS)

4.324 The One Time Settlement Scheme was implemented for the first time in the co-operative sector with a view to reducing the overdue position of the co-operative institutions and extend some relief to the loanees who could not repay the loan in time due to drought/flood and consequent loss of agricultural products. The scheme was implemented in all the credit co-operative institutions. The benefit so far covered 4.61 lakh people. The scheme was extended to 31st March 20005. The societies were able to collect Rs. 954.67 crore of overdue amount under the scheme so far. The scheme has helped in reducing the overdues as well as NPAs of credit societies.

A Brief Review of Plan Schemes 2003-04

4.325 The budget provision for the year 2003-04 was Rs.15.00 crore and the expenditure was Rs.10.50 crores. Sub sector wise financial achievement during 2003-04 is shown in Table-4.49

Table:4.49
Financial Achievement during 2003-04

(Rs. lakhs)

Sl. No	Sub Sector	Financial Achievement
1	Credit Co-operatives	84.57
2	Processing Co-operatives	193.46
3	Consumer Co-operatives	78.15
4	Housing Co-operatives	100.00
5	Research, Education and Training	49.99
6	Administrative Reforms	163.76
7	Modernisation and Administrative Reforms	11.12
8	Other Co-operatives	369.00
	Total	**1050.05**

4.326 In order to strengthen the co-operative base through commercial operations 43 per cent of the total outlay (Rs.650.00 lakhs) was earmarked for rehabilitation programme and expansion and diversification of activities of co-operatives. Expenditure to the tune of Rs.325.00 lakhs had been incurred for providing assistance to the Co-operative Hospital Complex, Kannur. Under the Scheme 'assistance to PACS' share was given to 26 societies. So far, 10708 groups have been formed under 613 PACS. Out of them, 5341 groups are functioning with profit and 2043 groups are running with loss.

4.327 During 2003-04, seven Processing and Marketing Societies were assisted by way of share capital and loan. Financial assistance was availed from NCDC for promoting processing cooperatives. An amount of Rs.193.46 lakhs was spent on state share for availing the NCDC assistance. HOPCO, Pala Marketing Co-operative Society and Meenachal Rubber Markets, Kannur Cattlefeed Co-operative Society and Agreen Co, Mullankolly Vanitha Mutipurpose Co-operative Society etc. are the main processing units assisted under the scheme during 2003-04.

4.328 Financial assistance was provided to State Co-operative union by way of grant –in-aid for running Co-operative Training Centre and implementing schemes relating to co-operative education, training, research and for conducting examination. There are 9 co-operative training centres functioning under the control of State Co-operative Union. 4 of them are exclusively for SC/ST candidates. Two advanced management institutes of co-operatives ie. ICM, Thiruvananthapuram, ICM Kannur are under the control of National Council for Co-operative Training, New Delhi. During 2003-04 an amount of Rs. 49.99 lakhs expended out of Rs. 50.00 lakhs for imparting training. For the modernization and computerisation of Co-operative Department, Rs.11.12 lakhs has been spent. Government have sanctioned share capital contribution of Rs. 100.00 lakhs to Primary Housing Co-operatives during 2003-04.

4.329 In the State PACs are also involved in the promotion of Self Help Group (SHGs) scheme

for ensuring agriculture production and thereby providing employment and livelihood to poor farmers and artisans. 10,708 groups have been so far formed under selected 613 PACS. The main crops cultivated by the groups are paddy, vegetables, banana, tapioca etc. Poultry farming, dairy farming, pig farming, goat farming etc. have also been done under this scheme.

4.330 An important scheme implemented in the Consumer sector was 'Neethi Stores' and 'Neethi Medical Stores'. Both are running under the auspices of Kerala State Co-operative Consumer Federation. In the State, 901 Neethi Stores and 135 Neethi medical stores are functioning and 17 Neethi Stores are run directly by the Federation and the remaining stores are run by the PACS.

Deposit Mobilisation Campaign by Co-operative Societies

4.331 Deposit Mobilisation campaigns by co-operative credit institutions continued during the year under report also. During 2003-04, against the target of Rs.450.00 crore the co-operatives mobilised Rs. 920.00 crore. The achievement being 204 per cent.

4.332 Year wise target and achievement is given in Table 4.50

Table-4.50
Targets and Achievements of Deposit Mobilisation Programme of Co-operatives in Kerala

(Rs. in Crores)

Year	Target	Achievement	Achievement (%)
2000	200.00	775.78	387.89
2001	200.00	1026.86	513.43
2002	200.00	853.20	426.66
2003	400.00	909.61	226.00
2004	450.00	920.00	204.44

Miscellaneous types of Co-operatives

4.333 Miscellaneous types of co-operatives has been organised in the state mainly for the purpose or generating employment opportunities to the unemployed youth and the weaker sections. Co-operative Hospital and Dispensaries, Education Co-operatives, Vanitha Co-operative Societies, Motor Transport, Autorikshaw and Taxi Drivers Co-operative Societies, Tailors Co-operative Societies, Washermen Co-operative Societies, Chethuthozhilali Co-operative Societies etc. are some of the Co-operative Societies which are organised for the purpose of employment generation. There are also Social Welfare Co-operative Societies, Cultural Co-operative Societies, Farming Co-operative Societies, Leprosy Patient Co-operative Societies, Matsya Thozhilali Co-operative Societies, Photographers Co-operative Societies, Tailors Co-operative Societies etc. Government extend financial assistance to these societies by way of share capital contribution, grant, loan and subsidy. During 2003-04 assistance was given to 75 societies. An amount of Rs.44.00 lakhs has been given as assistance to the miscellaneous co-operatives during 2003-04.

Agricultural Marketing Co-operatives

4.334 Kerala's agricultural economy is dominated by cash crops like Rubber, Coconut, Arecanut, Spices etc. which are largely concentrated in the small farm sector and marketing support for the products is highly essential. In the liberalised economy the challenges in the marketing front has to be addressed through organised institutional support and the role of marketing cooperatives are important to address the new challenges.

Central Arecanut and Cocoa Marketing and Processing Co-operative Limited (CAMPCO)

4.335 Central Arecanut and Cocoa Marketing and Processing Co-operative Ltd. (CAMPCO) is a joint venture of the Governments of Kerala and Karnataka, registered under the Multi State Co-operative Societies Act of 1984. The area of operation of this co-operatives extends to the

entire states of Kerala and Karnataka. However the marketing of Arecanaut, Cocoa and their products cover the whole country. CAMPCO has 118 procurement centres and 13 sales depots all over India. In order to increase local consumption of cocoa based products CAMPCO has a chocolate manufacturing unit at Puttur, 50 kms. from Mangalore. A new Research and Development wing has also been opened to study pricing. During 2003-04, the procurement and sale of arecanut was 43877 tonnes and 43860 tonnes valued at Rs 291.46 crores and Rs.304.83 crores respectively. In the case of purchase of cocoa also, there was a slight increase in the purchase of wet beans and dry beans compared to the last year. Operations of CAMPCO is given in Appendix-4.57.

Kerala State Co-operative Consumer Federation (Consumer Fed.)

4.336 Kerala State Co-operative Consumer Federation Ltd. is the apex institution of consumer co-operatives in the state. It started to function in 1965 with 57 member societies. The main objective of the federation is to save the public from the exploitation of middlemen. The Federation has implemented many of the government sponsored welfare schemes like Neethi Medical Stores, Neethi Gas, Neethi Stores etc. The sales turnover of the Federation during 2003-4 was Rs.331.00 crores against that of Rs.306.00 crores during the previous year. The Federation is working on profit for the last few years but the profit earned is not sufficient to wipeout the accumulated loss of the previous years.

Kerala State Rubber Marketing Federation Limited (Rubber mark)

4.337 The federation was established in 1971, with 37 co-operative rubber marketing societies and Rubber Board and Government of Kerala as members. The activities of the Federation includes marketing and export of natural rubber, distribution of fertilizers and Agriculture inputs, and processing of natural rubber Product manufacturing etc. The pfederation has procured 77447 tonnes of rubber valued Rs.300.00 crores through different procurement channels during 2003-04. The total sales volume for the year was 75672 tonnes valued at Rs. 285.00 crores.

Integrated Co-operative Development Project (ICDP)

4.338 Integrated Co-operative Development Project (ICDP) focuses on over all development of selected districts through co-operative efforts in the area of agriculture and allied sectors with the financial assistance of NCDC. ICDP covers all the districts in the state by providing financial assistance to PACS, PAMS, SC/ST co-operatives for infrastructural facilities such as godown, retail outlet, cash counters, iron safe, strong room, furniture etc. Information Technology has received a big boost under the project through computerisation of societies. As on March 2004, NCDC sanctioned a total sum of Rs. 148.43 crores comprising Rs. 136.97 crores as term loan and Rs. 11.46 crores as subsidy for the implementation of ICDP in 14 districts. ICDP have already been implemented in 6 districts. Kannur, Malappuram, Kasaragod districts got extended the implementation period upto 31.3.05.

Co-operative Academy of Professional Education – CAPE

4.339 The prime objective of setting up of the Academy was to establish new institutions for professional education under Co-operative sector in the State. Under this Academy, a Co-operative Medical College at Kochi and Five Engineering Colleges at Vadakara, Thrikkaripur, Thalassery, Perumon and Kidangoor were established. The construction of main buildings for the five Engineering Colleges and Medical college is in progress. Essential items of machinery, equipment and material required for establishing various laboratories and workshops were installed in respective institutions.

Kerala State Co-operative Employees Welfare Board

4.340 Government of Kerala has constituted a welfare fund for the employees of co-operative societies including commission agents/salesman in the co-operative institutions. The main objective of the Welfare Board is to raise and administer funds for the welfare of the members of co-operative employees and to alleviate the distress of employees and their dependents. Till march 2003-04, 35263 employees from 4485 co-operative societies were admitted as the members of

Welfare Board. As on March 2004, an amount of Rs.16.41 crores was available under the welfare fund after the total disbursement of Rs.3.25 crores for various welfare activities.

Swarozgar Credit Card Scheme

4.341 NABARD in consultation with Government of India and RBI formulated the Swarozgar Credit Card (SCC) scheme for the benefit of small borrowers to take care of their investment and working capital requirement in the non farm and service sectors both in rural and urban areas. The scheme was circulated among commercial banks by RBI and to Co-operative banks and RRBs by NABARD in September 2003. As on 31st March 2004, 106 RRBs, 20 commercial banks and 21 co-operative banks had introduced the scheme and issued 28,925 cards involving credit limit of Rs. 64.26 crores.

Co-operative Development Fund

4.342 NABARD constituted a Co-operative Development Fund during 1992-93 with the objective of supporting various developmental initiatives of co-operative credit institutions to improve their functioning by way of grants or loans or grant-cum-loans depending upon the purpose. This fund augmented every year through contribution from NABARD's profits. The various activities assisted are training of personnel of co-operative banks, computersiation, establishment of business development cells, cost towards publicity of KCC scheme and other activities.

Kissan Credit Cards (KCC)

4.343 Kissan Credit Card scheme was introduced in 1998-99 as an innovative scheme for issuing short term loan for seasonal agricultural operations to farmers in a flexible and cost effective manner. Banks were advised to intensify plans for issuing Kissan Credit Cards (KCCs) to all eligible borrowers by March 2004 to enable them to purchase agricultural inputs and draw cash for production needs. A total of 4.14 crores KCCs were issued up to March 31st 2004 in the country against 3.13 crores in 2003 March. A personal insurance package to the Kissan Credit Card holders was continued in the Union Budget and to cover them against accidental death or permanent disability up to a maximum amount of Rs. 50,000/- and Rs.25,000/- respectively. The premium burden for this is shared by the card issuing institutions and the KCC holders in the ratio of 2:1. It was operationalised in July 2001.

4.344 Agency-wise and Statewise KCC issued upto June 2004 in the country are given in Table - 4.51

4.345 In order to generate greater awareness about the scheme and to ensure coverage of all eligible farmers NABARD has taken certain initiatives such as conduct of orientation and training programmes for Bankers, educating and guiding farmers on the effective use of KCC facility, using postal media for publicity through 10 lakh Meghdoot Post Cards in rural areas and extending financial support to co-operatives and RRB's for various publicity measures.

Table: 4.51
Agency-wise and State - wise, Kissan Credit Cards Issued upto 30 June 2004

(lakhs)

Southern States	Co-operative Banks	Regional Rural Banks	Commercial Bank	Total
Andhra Pradesh	34.35 (13.82)	7.71 (18.91)	18.60 (17.99)	60.66 (15.45)
Karnataka	11.25 (4.50)	4.62 (11.33)	8.54 (8.26)	24.41 (6.22)
Kerala	6.36 (2.56)	2.22 (5.45)	5.98 (5.78)	14.56 (3.71)
Madhya Pradesh	21.30 (8.57)	1.55 (3.80)	3.97 (3.84)	26.82 (6.83)
Maharashtra	30.03 (12.08)	0.94 (2.31)	7.03 (6.8)	38.00 (9.68)
Tamil Nadu	13.00 (5.23)	0.97 (2.38)	11.04 (10.68)	25.01 (6.37)
All India	**248.57**	**40.77**	**103.38**	**392.72**

Source: Credit Division, Ministry of Agriculture, New Delhi.

4.346 The RBI commissioned a study by the National Council for applied Economic Research (NCAER) for conducting a National Impact Assessment Survey to assess the weaknesses of the KCC scheme and to offer suggestions to make it more effective in providing adequate and timely credit to agriculture. The Survey was carried out in 11 representative states, covering a sample of 4337 KCC holders, 865 non holders of KCC and 433 bank branches.

4.347 The major findings are given in Box. 4.24 In Kerala, the Kissan Credit Card system has been introduced through PACS and 5 lakh cards have been issued so far and a credit limit to the tune of Rs. 800.94 crores have been issued.

BOX-4.24

National Impact Assessment Survey of KCC

Advantages derived from the scheme

- Augmentation in flow of credit to the agriculture sector
- About 6% decrease in cost of borrowings for farmers
- Cost of borrowings of KCC holders from formal sources about 3% lower than those for non KCC holders.
- Significant drop in the number of borrowers depending exclusively on informal sources for this short term credit needs.
- Reduction in cost of borrowings from informal sources by about 3%
- Significant savings in time spent in taking short term agricultural loans
- Decline in cost of delivering credit due to simplification in procedures.

Scope for fine tuning

- Banks still impose too many undue restrictions on the issues of KCCs.
- Cardholders are unable to use KCCs in branches other than the ones issuing them due to the instructions imposed by banks.
- Generally, there are no incentives/rewards for timely payments.
- Credit limits sanctioned by banks are largely inadequate.
- Awareness/implementation level in respect of the Personal Accident Insurance is quite low.

Source: RBI Annual Report.