ENVIS

News Letter

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Agriculture

The ploughers are the linch-pin of the world; they bear them up who other works perform, too weak its toils to share.

- Thiruvalluvar

Agriculture is the life blood of the Nations economy as more than 70% of the population depend on agriculture for their livelihood.

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Agriculture provides basic sustenance to all living beings. It is very important that ecologically, socially and economically sustainable agriculture should become the backbone of the development process of the State. Agriculture should be sustainable so that the natural resources such as soil, water and biodiversity are used efficiently and equitably. It should be economically viable and lead to increasing employment opportunity, socially feasible, strengthening the role of women and other marginalized sections of the people. Equity in sharing benefits is vital for community participation in the conservation and enhancement of natural resources. Agriculture continues to be the prime mover of the State economy supporting 60 percent of the population and contributing 13 percent of the State income as of 2004-05[1].

The Government is aiming to achieve 100% food security in the State and also to create avenue for export of agricultural produce for economic upliftment of the farming community. During the Tenth Plan period, the State is aiming an annual growth rate of 4% in agriculture and 8% in horticulture crops for sustainable agricultural development, employment generation and poverty alleviation. The Government is focusing its policies towards overall development of agriculture sector in terms of increasing the cropping intensity by bringing every piece of land under cultivation, productivity increase, maximizing natural resources with parallel efforts to conserve them[1].

Land Use Pattern

Land use pattern of the State has undergone rapid structural changes over the period. The net area sown which stood at 62.59 lakh ha. accounting for about 42.8 percent of geographical area during 1979-80, witnessed a decline to 42.78 percent in 1999-2000 and further to 37.05 percent in 2003-04 (Table 1). The decline in the net area sown was mainly attributed to increasing conversion of agricultural land into nonagricultural purposes including housing sites. The full import of the above observations is that rising population, consequent urbanisation, rural-to-urban induced migration, falling net areas sown, creation of substantial rural employment, indiscriminate housing activities, etc. are major areas of concern[2].

Table 1. Land use pattern

Classification	Average area T.E. 1979-80	Average area T.E. 1999-00	Average area T.E. 2003-04
Forests	2025	2138	2129
Barren and unculturable land	610	478	488
Land put to non-agricultural uses	1682	1966	2041
Culturable waste	351	347	385
Permanent pastures and other grazing lands	165	123	117
Land under miscellaneous tree crops and groves not included in the net area sown	195	238	277
Current fallows	1257	1008	1161
Other fallows lands	456	1137	1588
Net area sown	6259	5560	4817
Total geographical area	**13001**	**12996**	**13003**

Principle crops

The principle food and nonfood crops such as paddy, millets, pulses and oilseeds, cotton and sugarcane are being cultivated in the State. Agriculture which suffered extensively during 2001-04, due to severe drought, experienced an appreciable revival of fortunes during 2004-05 (Fig. 1). There was improvement in the area, production and productivity of various crops[2].

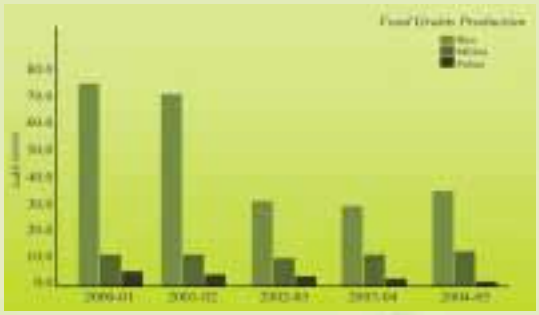

Fig.1. Principle crops of T.N

Jatropha cultivation

In the context of steep increase in the prices of imported oil, attention is being focused on the feasibility of bio-fuel to meet the energy requirements of the economy. Cultivation of Jatropha is being encouraged substantially both by the State Government and the GoI. These plants have the potential of providing employment to farmers and processors besides contributing to greening. It will also contribute to the growth of rural industries for production of crude oil and refined oil. The cost of cultivation would be Rs.10,760 per ha. under dry land condition and Rs.19,560 per ha. under irrigated conditions[2].

HORTICULTURE

Tamil Nadu is one of the leading horticulture States in India contributing 7.7 percent to the national horticultural production with 5.7 percent of the national level area. Tamil Nadu has been blessed with diversified agro-climatic conditions, suitable for a wide range of horticulture crops like fruits, vegetables, spices, plantation crops, flowers and medicinal plants. A large extent of wastelands and under-utilized lands are available in the State for horticulture development. Tamil Nadu has a long coastal belt of 1076 km. suitable for crops like cashew, coconut, tropical orchids etc. The details of area, production, productivity of various horticultural crops for the years 2004-05, 2005-06 are furnished below[2] (Table 2).

Table 2. Horticultural crop production in T.N.

(Area: Lakh Ha., Production: Lakh MT., Productivity: MT/Ha.)						
Crops	**2004-2005 (Provisional)**			**2005-2006 (Estimated)**		
	Area	**Prdn.**	**Pdy**	**Area**	**Prdn.**	**Pdy**
Fruits	2.39	39.08	16.37	2.58	42.31	16.41
Vegetable	2.06	50.59	24.53	2.23	54.78	24.59
Spices	1.67	7.50	4.50	1.80	8.12	4.51
Plantation Crops	2.53	8.68	3.44	2.73	9.40	3.44
Flowers	0.22	1.75	7.99	0.34	1.89	8.01
Medicinal Plants	0.04	0.08	1.90	0.05	0.09	1.90
Total (All crops)	**8.91**	**107.68**	**12.09**	**9.73**	**116.59**	**12.12**

Medicinal plants

With growing importance of ayurvedic and siddha medicines, the importance of raising medicinal plants is Central to the State's health policy. Medicinal plants are cultivated in the Western Ghats and also in the districts of Thoothukudi, Dharmapuri, Thiruchirapalli, Pudukkottai, Perambalur, Karur and the Nilgiris. The extent of area covered by medicinal plants was around 4000 ha., total production was estimated at about 8000 tonnes[2].

Chemical Fertilizer

The fertilizer consumption (NPK) had gradually declined from 9.38 lakh tonnes in 2001-02 to 7.43 in 2002-03, 7.13 lakh tonnes in 2003-04 but there was slight increase in consumption in 2004-05 to 9.52 lakh tonnes[2] (Table 3).

Table 3. Consumption of Chemical Fertilizers

			(Lakh tonnes)
Nutrients	**2002-03**	**2003-04**	**2004-05**
Nitrogen (N)	4.20	3.78	4.83
Phosphates (P)	1.51	1.59	2.11
Potash (K)	1.72	1.76	2.58
Total	**7.43**	**7.13**	**9.52**

Organic Farming

Due to continuous cropping, indiscriminate use of chemical fertilizers and inadequate application of organic manure to the soil, the general soil health of the State is getting deteriorated. The organic manure content in the soil has gone down from 1.20% in 1971 to 0.68% in 2002 in Tamilnadu, because of less use of organic inputs. The decline in organic matter content has made undesirable changes in soil biodiversity and disruption in harmony of crop plants, which affects soil fertility and productivity. Considering its importance, the application of bio-fertilizer, green manure, green leaf manure, vermi composting, composting of farm wastes through Pleurotus is popularized as a part of Integrated Plant Nutrient Management Technology[2].

Biofertilizer

Bio-fertilizers are environmentally friendly whereas the fertilisation of soil with artificial chemicals tends to cause ecological and environmental damage. However,

this distribution had improved by 1.4 percent to 1312 metric tonnes in 2003-04 followed by a dip (9.67%) 1185 metric tonnes witnessed during 2004-05 (Table 4)[2].

Table 4. Bio-Fertilizers distributed

Quantity in Metric tonnes			
Name	**2002-03**	**2003-04**	**2004-05**
Rhizobium	390	208	270
Azospirillum	712	729	710
Phosphobacterium	192	375	205
Total	**1294**	**1312**	**1185**

Agricultural Biotechnology

Agriculture Biotechnology appears to be an emerging science in present decades. Genetic manipulation and development of genetically modified organism in human welfare is now showing a potential prospect and risk. Thus researches and application of biotechnology in agriculture is a major policy issue in the present decade[1].

What are Living Modified Organism (LMO) and Genetically Modified Organism (GMO)?

Cartagena Protocol on Biosafety defined LMO as any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology. In everyday usage LMOs are usually considered to be the same as GMOs, but definitions and interpretation of the term GMO vary widely.

Common LMOs include agricultural crops that have been genetically modified for greater productivity or for resistance to pests or diseases. Examples of modified crops include tomatoes, cassava, corn, cotton and soyabeans.

Source: www.biodiv.org/biosafety/faqs2.aspx

ENVIRONMENTAL CONCERNS

Depletion of water resources

Tamil Nadu's geographic area consist of 17 riverbasins, a majority of which are water-stressed. There are 61 major reservoirs; about 40,000 tanks and about 3 million wells, that heavily utilize the available surface water (17.5 BCM) and groundwater (15.3 BCM). Agriculture is the single largest consumer of water in the State, using 75% of the State's water. A recent World Bank report has shown that the agriculture sector faces major constraints due to dilapidated irrigation infrastructure coupled with water scarcity due largely to growing demands from industry and domestic users and intensifying interstate competition for surface water resources. In some parts of the state, the rate of extraction of groundwater has exceeded recharge rates, resulting in falling water tables. Water quality is also a growing concern. Effluents discharged from tanneries and textile industries and heavy use of pesticides and fertilizers have had a major impact on surface water quality, soils and groundwater.

The State Government has taken a number of progressive actions on water resources and irrigation management, particularly through the Bank-assisted Tamil Nadu Water Resources Consolidation Project (WRCP). Tamil Nadu was one of the first states to pass a groundwater bill, Procurement/Right to transparency act and a farmers management of irrigation systems act. The State has prepared a planning framework for water resources management, and a State Water Policy[3].

Tannery and Textile Industrial Pollution

The study carried out by the Loss of Ecology Authority, GoI revealed that the tannery industries have adversely affected 15,164 ha. of agricultural land in Vellore district and 2,005 ha in Dindigul district. The Authority had looked into the problem of pollution caused by the tanneries located in Vellore, Dindigul, Kancheepuram, Tiruvallur, Erode and Tiruchi districts and awarded a total compensation of Rs 34.73 crore. This amount, to be recovered from the tanneries, will be used for paying compensation to 36,056 individuals, besides helping in reversing the ecological damage caused by these tannery industries[4].

Tiruppur is a fast growing hosiery 'Industrial City' in Coimbatore district of Tamilnadu. It is located on the bank of the Noyyal river. The effluent discharged by the textile industries released into the Noyyal river pollutes the surface and ground water and damages the agricultural land. An environmental damage assessment study carried out by Madras School of Economics on agricultural lands showed that the total irrigated area declined from 16,262 ha. to 14,262 ha. On the other hand rainfed / non-irrigated land increased from 2108.3 ha. to 2668 ha. The study also showed that irrigated crops like paddy have completely disappeared, resulting in an output loss of Rs. 8.62 lakh in 1994-95 harvest prices. The gross output loss for all crops in the 4 villages studied is Rs. 25.23 lakhs[5].

Constraints

Marginalization of land holding, high variability in rainfall distribution, inadequate capital formation by the public sector, declining public investment on agriculture, declining net area sown, over - exploitation of ground water and inadequate storage and post harvest facilities affect the agricultural performance in the state. The state supports seven percent of the country's population but it has only four per cent of the land area and three percent water resources of the country. Of the total gross cropped area, only 50 percent of the area is irrigated in Tamil Nadu. Similarly, of the total area under food grains, only 60 percent of the area is irrigated. Nearly, 52 percent of area is under dry farming conditions in Tamil Nadu apart from stable cropping intensity which is hovering around 120 percent over the period. In spite of the above constraints, the State has made tremendous performance in the production of crops, which is attributed mainly to the productivity increase[1].

Animal - Human Conflicts in Agriculture

Another major environmental concern emerging in the agricultural sector is animal-human conflicts. Numerous cases involving elephants, wild boars, monkeys, gaurs, peacocks and other wildlife raiding crops have been reported. Recently a news-paper reported that a stray elephant from the Western Ghats destroyed standing crops in Theni District and in another incident a herd of 30 elephants broke into a banana field and destroyed 200 acres of crop in the Erode district[6].

Photo : *Marcus Knight*

Agri Links

Institution/Organization	Web address
TN Agriculture Department	http://www.tn.gov.in/department/agri.htm
Indian Council of Agricultural Research	http://www.icar.org.in
M.S. Swaminathan Research Foundation	http://www.mssrf.org
Food and Agriculture Organization	http://www.fao.org/agris
Convention on Biological Diversity	http://biodiv.org

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1. Tamil Nadu Agriculture Policy Note 2005-06
2. Economic Appraisal 2003-04 & 2004-05, Evaluation and Applied Research Department, GoTN.
3. Tamil Nadu Agricultural Development, South Asia Agriculture and Rural Development, 2004.
4. S. Gopikrishna Warrier, Businessline, 15 April, 2002.
5. Economic Assessment of Environmental Damage: A case study of Industrial water pollution in Tiruppur, Madras School of Economics (2000).
6. The Hindu 21 February and 04 March, 2006

Workshop on Environmental Aspects of Effluent Irrigation

Madras School of Economics (MSE) in collaboration with Department of Environment (DoE) and Water Technology Centre (WTC), TNAU, Coimbatore organised a Workshop on "Environmental Aspects of Effluent Irrigation" at the WTC on 27th October, 2005. The purpose of the workshop was to discuss the environmental problems related to the disposal of treated/untreated/partially treated or diluted industrial effluents on land for irrigation.

Envis Quiz Contest

Envis Centre, in collaboration with Department of Zoology, Loyola college organized an "Environmental Quiz and Poster contest" for the City college students on 12th December 2005. The programme was graced by Rev. Dr. B. Jeyaraj, S.J. Rector of Loyola College. The inagural address was delivered by Thiru. K.S. Neelakantan, I.F.S., Director, DoE, elaborated the activities of the Department and encouraged young students to participate in the environmental conservation activities Dr. C. Thomson Jacob, Senior Programme officer highlighted the objectives of ENVIS Centre. Totally 26 teams from various city colleges participated. Dr. D. Sudarsanam, Professor, organized the event.

National Symposium on Conservation and Valuation of Marine Biodiversity

The National Symposium on "Conservation and Valuation of Marine Biodiversity" was held at the Marine Biological Station of Zoological Survey of India (ZSI) from 26th to 29th December 2005. Dr. J.R.B. Alfred, Director, ZSI, highlighted the threat to the marine biodiversity of our country. Prof. Dr. S. Kannaiyan, Chairman, NBA spoke about the importance of Marine Biodiversity studies and the threats to marine biodiversity. ENVIS Centre made a poster presentation on "Marine Biodiversity of Tamil Nadu"

Euro Enviro Quiz 2006 – Final

An all-India Inter-School Euro Enviro Quiz, on Environment was conducted in key Cities from the four Zones of India. There were about 170 premier schools who have participated from 14 major Cities on 29th Jan. 2006 at Mumbai. The Quiz was inaugurated with formal lighting of the lamp by Thiru K.S. Neelakantan, I.F.S., Director, along with Mr. S.L.Goklaney, Managing Director, (DoE) Eureka Forbes Limited. A total of 8 schools, two from each zone had qualified for the grand finals. Vibusha Gupta and Krutarth of Cambridge School from Noida emerged as winners of the Euro Enviro Quiz 2006. The All India winner team has been awarded with Certificates, trophies and a magnificient holiday to Malaysia.

Meet on Agro biodiversity

National Biodiversity Authority (NBA) has organised a four day national conference on "Agrobiodiversity" at NIOT from 12th to 15th February 2006. The focal theme of the conference is to disseminate information on plant and animal genetic resources, social intervention and biodiversity conservation, fish genetic resources and conservation, sustainable utilisation and equitable sharing of benefits in bio safety. Over 200 scientists participated and 17 sessions were arranged with special emphasis on soil and soil resources, microbiology and to help boost the exports of medicinal plants, besides discussion on future trends in genetically modified crops.

Workshop on Tamil Nadu Environment project

Workshop on formulation of "Tamil Nadu Environment Project" was organised by the DoE on 20th February 2006 at Hotel Days Inn. Chennai. Thiru K.S Neelakantan I.F.S, Director, DoE delivered the Presidential address. The main objectives of the workshop were to identify critical environmental issues, prioritization of issues, and to find out advance technological solutions for managing the environmental problems and action plan for implementation of short/medium/long term measures.

Training Programme on Substances that Deplete the Ozone Layer

A training programme on substances that deplete the Ozone layer for State Government agencies was conducted by the C.P.R. Environmental, Education Centre and Ozone cell of the MoEF at Hotel Le Royal Meridian on 24-25th February 2006. The main objective of the training was to phase out ozone depleting substances. Dr. A. Duraisamy, Director, Ozone Cell, MoEF delivered the inaugural address. The sessions covered implementation of Montreal Protocol in India and national obligation and commitment to Montreal Protocol, national ODS regulations, problems of illegal trade in ODS and possible means to solve and screening methods to identify ODS. Thiru K.S. Neelakantan, I.F.S., explained the State Government role in phasing out ozone depleting substances.

Enviro clippings

State has dense forest cover

Thiru K.S. Neelakantan, I.F.S., Director, DoE said that the State has recorded an increase of 1,161sq.km of forest cover since 2001. The State has very dense forest cover of 2,440 sq.km moderately dense forest cover of 9,567sq.km and open forest of 10,636 sq.km. The Forest cover in 2001 was 21,482 sq.km; the total area in 2003 was 22,643 sq.km.

- October 24, 2005 The Hindu

ICAR to launch GM rice varieties soon

The Indian Council of Agricultural Research (ICAR) through the Directorate of Rice Research (DRR) has proposed to launch two high specialty rice varieties - Golden Rice, genetically engineered rice that makes and stores Vitamin A precursor in the seed, and another variety containing higher iron content.

- November 2005, Advanced Biotech

TN tops in productivity of major crops

Dr. Mangala Rai, Director General, Indian Council of Agricultural Research, said Tamil Nadu continues to occupy top place in All India ranking in productivity of major crops. Tamil Nadu stood second in the production of rice with an average yield of 3.35 tonnes per hectare, fourth in total food grain production (2.24 tonnes), first in jowar(0.962 tonnes), first in total oilseeds (1.61 tonnes), groundnut production (1.78 tonnes) productivity of turmeric (5,100 kg processed turmeric per ha) and in sugarcane production (106.78 tonnes).

- December 24, 2005 The Hindu

GM foods labeling law in India soon

Consumers will soon be able to know if they are being offered genetically modified (GM) food or ingredients and be able to make a choice, whether or not to buy/ eat such food. There will be a law for labeling of GM foods.

- January 2006, Advanced Biotech

Concern over field trials of GM food

Many recent studies have strongly reinforced fears about the dangers of GM foods. Statistics available worldwide showed that the number of field trials of GM crops began declining.

- January 4, The Hindu

The new premises of the ENVIS Centre of the DoE was inaugurated by Thiru K.S. Neelakantan, I.F.S., on 5th April 2006. The ENVIS Centre is actively involved in the preparation of a dynamic and interactive website on State of Environment and Related issues and SoE Report of Tamil Nadu. The ENVIS Centre act as a clearing house to answer environmental queries. Centre is also propagating environmental awareness among school children through an interactive environmental education website and organising monthly online quiz for school children.

Thiru K. S. Neelakantan, I.F.S., inaugurating the ENVIS Centre of DOE

ENVIS Library

The World Environment Day theme for 2006 is Deserts and Desertification and the slogan is Don't Desert Drylands!

The slogan emphasizes the importance of protecting drylands, which cover more than 40% of the planet's surface. This ecosystem is home to one-third of the world's people who are more vulnerable members of society.

Source: www.unep.org

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