SERICULTURE IN KERALA

“adhipattugram” of tribal silk village an HRDS INDIA initiated program.....
..under Central Silk Board, Ministry of Textiles, Govt of India

The three districts are, WAYANAD, PALAKKAD, & IDUKKI

HRDS INDIA has secured the project of Mulberry plantation and Silk worm rearing for the three districts in Kerala, this project named "adhipattugram" of tribal silk village will be implemented in Wayanad , Palakkad , and Idukki district of Kerala state with the help from the Silk Board which comes under the Ministry of Textiles, Government of India. This three districts cover the major population of tribal's of our state. HRDSAFRCI {*High range Rural Development Society Agro-Farm and Research Center India}* a subsidiary of HRDS INDIA will be the implementing agency

The history of HRDS INDIA Programmes in India dates back to almost two decades. Over the years, many rural development programmes were implemented depending on the needs of the rural poor of our state. Reaching the needy for their basic needs and sheltering of the poor, various rural development programmes were implemented by HRDS INDIA from time to time of the State Government and Central Government.

HRDS INDIA is primarily concerned with addressing the needs of the rural people in matters of sustainable economic activity, shelter & hygiene concerns, rural development and education.

Detailed Objectives...

- Eradication of Poverty by enabling people below poverty line to cross over the line by providing credit, training, infrastructure and marketing support for self employment.
- Providing wage employment opportunity to the rural poor during the agricultural off season
- By creating job opportunity in the field of IT, Recycled Product Manufacture, Textile related products, and Farming for the children's of this families that will accelerate the standard of living of rural poor.
- Creating awareness among rural poor on the importance of sanitation and to maintain real hygiene by providing sanitation facilities.

Sericulture is a non traditional activity in Kerala promoted by the Central and State governments. Sericulture scheme is implemented by Rural Development Department. The productive acreage was 555 acres up to 2001-2002 and during the X plan period it increased to 3351 acres. Cocoon production increased from 31 MT during 1995-96 to 101 MT in 2006-2007, the highest in the sericulture history of the state. The growth in cocoon production was significant particularly in X Plan period. The current cocoon production in the State (2014-15) was 100 tons. Rural Development Department is taking various measures to implement the Sericulture activities in the State.

The major components of Sericulture schemes are

- Support for Mulberry plantation and silk worm rearing.
- Support for extension and publicity.
- Beneficiary empowerment programme.
- Incentive for Bivoltine silk yarn production.
- Production Incentive for quality linked cocoon procurement system.
- Support for mechanisation maintenance of existing Mulberry garden.
- Support for post cocoon sector (Reeling, twisting, weaving, printing, handicraft etc.)

Subsidy

- Plantation subsidy – Rs. 6750/ Acre
- Equipment subsidy – Rs. 37500/Acre
- Rearing shed subsidy – Rs. 1,00,000/Acre
- Irrigation subsidy – Rs. 30,000/Acre
- Production incentive – Rs. 50-75/1 Kg cocoon
- Mechanisation of Mulberry garden – Rs. 30,000/Acre
- Maintenance of existing Mulberry garden – Rs. 4150/Acre

MULBERRY NURSERY TECHNOLOGY

Azospirillum treatment

Mulching

Mulberry saplings

Soil management: Application of FYM @ 20 tones/ha or 12.5 tones of Composted coir pith and VAM @ 100 g/m2

Cuttings treatment: Dipping the cuttings in *Azospirillum* solution @1 kg in 40 litres of water for 30 minutes before planting

Weed management: Continuous mulching for 5 cm height (Critical period for weed competition is 45 days of planting)

Disease management: Soil application of *Trichoderma viride* and *Pseudomonas fluorescens* @ 2.5 kg each/ ha (Incubated with FYM at 1: 5 ratio for 15 days)

2. Integrated root rot management in mulberry

Root rot affected mulberry garden

Incubation of antagonistic

Incubation of antagonistic

- Deep ploughing of land during summer
- Uprooting and burning of severely affected/ dead plants
- Soil drenching of affected plants and surroundings with 0.1 per cent carbendazim
- Application of oil cake @ 2 t/ ha/ yr and Zinc sulphate @ 10 kg/ ha in 2 split doses
- Application of biocontrol agents *viz., Trichoderma viride, Bacillus subtilis* and *Pseudomonas fluorescens* along with FYM (1:1:1:20) @ 100 g/ plant after incubation for 10 – 15 days.

3. IPM for mulberry leaf Webber

- Irrigation of the mulberry field immediately after pruning to expose the leaf Webber pupae.
- Release of pupil parasitoid, *Tetrastichus howardii* @ 50,000 / ha one day after pruning followed by release of egg parasitoid, *Trichogramma chilonis* @ 5 cc/ha at 10 days after pruning.
- Spraying of dichlorvos 76 WSC @ 1 ml / litre (500 ml/ha) on 30 days after pruning.
- Clipping and burning of the affected shoots.

4. Food supplementation for higher yield of cocoons

Soya flour supplementation twice @ 5g per kg of shoot immediately after third and fourth moult increased the cocoon yield by 7 kgs per 100 dfls

5. “Ilamathi”, a phytojuvenoid for increasing the silk yield

I lamathi


Feeding the treated leaves


Good sized cocoon

Application of '*Ilamathi'* (Phytojuvenoid) is safer to silkworms as it will not hinder the growth and development of larvae. The formulation increases the larval duration by about 14 hours. It has positive impact on economic parameters of silkworm like cocoon weight, shell weight and shell ratio.

Application method

- Treat the mulberry leaves with '*Ilamathi'* @ 1ml/litre of water.
- Feed the second day of fifth instar larvae with treated leaves once in the morning.

Merits

- Gives an additional cocoon yield of 10 kg / 100 dfls.
- Possesses antiviral principles and hence reduces grasserie disease in silkworm.

6. IPM package for unify management

- Fixing nylon net fixed on doors and windows
- Application of uzicide @ 5 litres / 100 dfls on third, fourth and fifth in stars.
- Releasing of hyperparasitoid, *Nesolynx thymus* @ one lakh adults / 100 dfls during fourth, fifth instar stage and after cocoon harvest.
- Installation of uzitrap using aziphor @ 25ml / litre and changed once in every three days from third instar stage onwards.

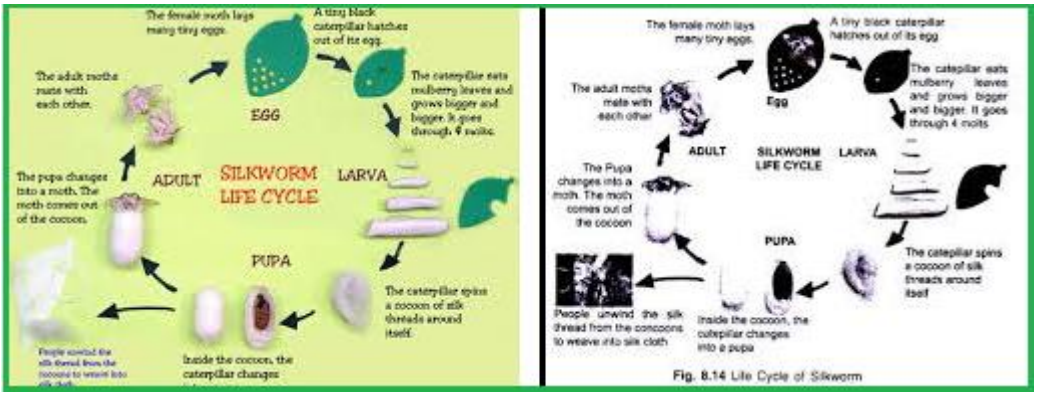


Fig. 8.14 Life Cycle of Silkworm

The production of silk generally involves two processes:

1. Care of the silkworm from the egg stage through completion of the cocoon.
2. Production of mulberry trees that provide leaves upon which the worms feed.

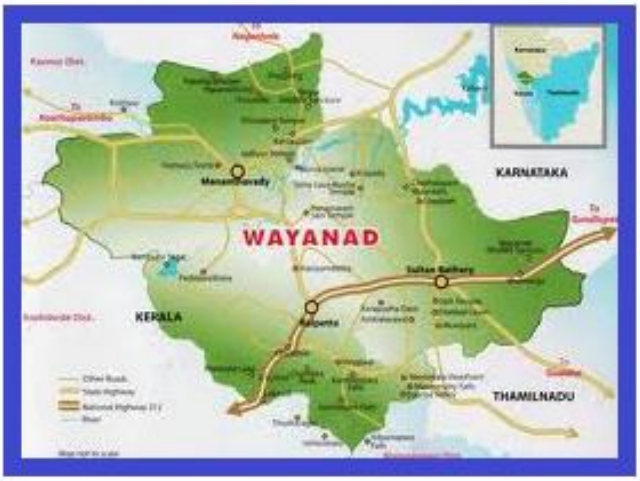
The silkworm caterpillar builds its cocoon by producing and surrounding itself with a long, continuous fiber, or filament. Liquid secretions from two large glands within the insect emerge from the spinneret, a single exit tube in the head, hardening upon exposure to air and forming twin filaments composed of fibroin, a protein material. A second pair of glands secretes sericin, a gummy substance that cements the two filaments together. Because an emerging moth would break the cocoon filament, the larva is killed in the cocoon by steam or hot air at the chrysalis stage.

Silk is a continuous filament within each cocoon, having a usable length of about 600 to 900 metres (2,000 to 3,000 feet). It is freed by softening the binding sericin and then locating the filament end and unwinding, or reeling, the filaments from several cocoons at the same time, sometimes with a slight twist, forming a single strand.

Silk containing sericin is called raw silk. The gummy substance, affording protection during processing, is usually retained until the yarn or fabric stage and is removed by boiling the silk in soap and water, leaving it soft and lustrous, with weight reduced by as much as 30 percent. Spun silk is made from short lengths obtained from damaged cocoons or broken off during processing, twisted together to make yarn.

The degumming process leaves silk lustrous and semitransparent; with a smooth surface that does not readily retain soil. Silk has good strength, resisting breakage when subjected to weights of about 4 grams (0.5 ounce) per denier. Wetting reduces strength by about 15–25 percent. A silk filament can be stretched about 20 percent beyond its original length before breaking but does not immediately resume its original length when stretched more than about 2 percent. Silk, lower in density than such fibres as cotton, wool, and rayon, is moisture-absorbent, retaining as much as a third of its weight in moisture without feeling damp, and has excellent dyeing properties. It is more heat-resistant than wool, decomposing at about 170° C (340° F). Silk loses strength over a long period of time without appropriate storage conditions and tends to decompose with extensive exposure to sunlight but is rarely attacked by mildew. It is not harmed by mild alkaline solutions and common dry-cleaning solvents. Friction imparts a static charge, especially in low humidity. The rustling sound, or scroop, associated with crisp silk fabrics is not a natural property of the fibre but is developed by processing treatments, and it does not indicate quality, as is sometimes believed.

WAYANAD



Sl.No	Particulars	Wayanad	State
1	No. of Revenue Divisions	1	21
2	No. of Taluks	3	63
3	No. of Revenue Villages	49	1478
4	No. of Municipalities	1	60
5	No. of Municipality Wards	28	2216
6	No. of Block Panchayat	4	152
7	No. of Block Panchayat Wards	57	2095
8	No. of Grama Panchayat	25	978
9	No. of Grama Panchayat Wards	459	16680
10	No. of Assembly Constituencies	3	140
11	No. of Parliament Constituencies	1	20
12	No. of District Panchayat Wards	16	332

A SHORT HISTORY

Comprising an area of 2,132 sq. kilometres, Wayanad has a powerful history. Historians are of the view that organized human life existed in these parts, at least ten centuries before Christ. Countless evidences about New Stone Age civilization can be seen on the hills of Wayanad. The two caves of Ampukuthimala located between Sulthan Bathery and Ambalavayal, with pictures on their walls and pictorial writings, speak volumes of the bygone era and civilisation. Recorded history of this district is available from the 18th century. In ancient times, this land was ruled by the Rajas of the Veda tribe. In later days, Wayanad came under the rule of the Pazhassi Rajahs of Kottayam royal dynasty. When Hyder Ali becames the ruler of Mysore, he invaded Wayanad and brought it under his sway. In the days of Tipu, Wayanad was restored to the Kottayam royal dynasty. But Tipu handed over the entire Malabar region to the British, after the Sreerangapattanam truce, he made with them. This was followed by fierce and internecine encounters between the British and Kerala Varma Pazhassi Rajah of Kottayam. When the Rajah was driven to the wilderness of Wayanad, he organised the war-like Kurichiya tribals into a sort of people's militia and engaged the British in several guerrilla type encounters. In the end, the British could get only the dead body of the Rajah, who killed himself somewhere in the interior of the forest. Thus, Wayanad fell into the hands of the British and with it came a new turn in the Home of this area. The British authorities opened up the plateau for cultivation of tea and other cash crops. Roads were laid across the dangerous slopes of Wayanad, from Kozhikode and Thalassery. These roads were extended to the cities of Mysore and Ooty through Gudalur. Through the roads poured in settlers from all parts of Kerala and the virgin forest lands proved a veritable goldmine with incredible yields of cash crops. When the State of Kerala came into being in November 1956, Wayanad was part of Kannur district. Later, south Wayanad was added to Kozhikode district. In order to fulfil the aspirations of the people of Wayanad for development, north Wayanad and South Wayanad were carved out and joined together to form the present district of Wayanad. This district came into being on November 1, 1980 as the 12 district of Kerala.



AGRICULTURE

This high altitude district is characterised by the cultivation of perennial plantation crops and spices. The major plantation crops include coffee, tea, pepper, cardamom and rubber. Coffee based farming system is a notable feature of Wayanad. Coffee is grown both as pure crop and as mixed crop along with pepper. Pepper is grown largely along with coffee in the north eastern parts of the district, especially in Pulpally and Mullankolly areas. Coffee in Wayanad (66,999 ha.) shares 33.65 per cent of the total cropped area in the district and 78 per cent of the coffee area in the state. Other major crops are rubber(63,015 ha.), coconut(59,452 ha.), cardamom (38,348 ha.), tea (31,792 ha.) cassava and ginger. A recent increase in the area under coconut cultivation is noticed in the lower elevations. Paddy is cultivated in 22,772 hectares of land. The rice fields of Wayanad are in the valleys formed by hillocks and in majority of paddy lands, only a single crop is harvested. Ginger cultivation in Wayanad has also substantially increased in recent times and the ginger produced is mainly marketed in the form of green ginger. Homestead farming assumes importance in this district. The average size of holdings is 0.68 ha. A variety of crops including annuals and perennials are grown in these small holdings. The crops include coconut, arecanut, pepper, vegetables, tuber crops, drumstick, papaya, etc. and fruit trees like mango and jack. The crop patterns/crop combinations prevelant in this district are not based on any scientific norms. Therefore scientific cropping patterns suitable for the agro-ecological situation is to be recommended

PALAKKAD

BRIEF HISTORY

Palakkad is a part of the erstwhile Malabar district of Madras Presidency. The district accounts for about 11.5% of the total land area of the state of Kerala, with the share of population is 8.22.%. The literacy rate of the district is low than the state. The district has got two types of climates. Ottappalam, Alathur and Mannarkkad are having a climate similar to that of other districts of Kerala, whereas Palakkad and Chittur are having rather a dry climate similar to Tamilnadu. However the average rainfall is good for cultivation. There are five Taluks and 163 villages in the district. There are four Municipal towns and Ninety one Panchayaths in the district. The district is divided into 13 Community Development Blocks for the effective implementation of various developmental activities.Palakkad or Palghat is the land of Palmyrahs and Paddy fields. Along with Kuttanadu, Palakkad is a major Paddy growing area of the state. It is often called as the “Gateway of Kerala”. The Sahya Ranges bordering the region and the 32 Kim. long gap in the mountains esert a dominant influence on the climate of the region. This Gap is known as “Palakkad Gap”. In the past, this land was known as Palakkattussery Etymologist traces the word Palakkadu from Palanilam meaning the dry area. Palakkad has a long history dating back to the Paleolithic Period, which was



substantiated by a number of megalithic retics discovered from this region It also housed the Capitals of two Kingdoms such as Palakkad and Kollengode, which were in prominence till a Century back The ancient history of Palakkad is shrouded. According to William Logan, the author of “Malabar Manual”, the Pallava Dynasty of Kanchi might have invaded Malabar in the second or third century. One of their headquarters was Palakkad, which could be the present Palakkad. For many centuries the Malabar Region ruled by Perumals. Malabar had been invaded by many of the ancient South Indian Rulers. After this the Malabar was divided among their Utayavars. The famous among them were the “Valluvakonathiri” (Ruler of Valluvanad) Kollengode Raja (Ruler of Venguvanad) and Sekharivarma (Raja of Palakkad) of Palakkattussery. The Palakkad Region was came under the control of Kollengode Raja and Sekharivarma Raja of Palakkad. When the Kozhikode Sammoothiri invaded Palakkad in 1757, the Palakkad Raja sought the help of Hyder Ali of Mysore. His help forced the Sammoothiri for retreat. Later Hyder Ali subjugated all territories in Palakkad, which were under the possession of Kozhikkode Sammoothiri. Thus whole dominion of Palakkad passed into the control of Mysore Sulthan Hyder Ali Khan and his son Tippu Sulthan. The war between East India Company and Tippu Sulthan ended with the treaty of 1792 and all the possessions of Tippu in Malabar area ceded to the East India Company and it formed the Malabar District of the Madras Presidency.

Sl. No.	Items	Year	Unit	Palakkad	Kerala
1	Taluks	2014	Nos	5	63
2	C.D.Block	,,	,,	13	152
3	Municipalities	,,	,,	4	52
4	Corporations	,,	,,	--	5
5	Panchayaths	,,	,,	90	991
6	Revenue Villages	,,	,,	163	1585
7	Parliamentary Constituencies	,,	,,	2	20
8	Assembly Constituencies	,,	,,	11	140
9	Jilla Panchayaths	,,	,,	1	14
	Jilla Panchayath Constituencies	,,	,,	26	304
10	Block Panchayaths	,,	,,	13	152
	Block Panchayath Constituencies	,,	,,	141	1638
11	Grama Panchayaths	,,	,,	90	991
	Grama Panchayth Constituencies	,,	,,	1178	13209
12	Municipal Councils	,,	,,	4	52
	Municipal Constituencies	,,	,,	130	1569
13	Corporations	,,	,,	--	5
	Corporation Constituencies	,,	,,	--	298
14	Persons in the Electoral Roll	,,	,,		
	Grama Panchayaths Male	,,	,,	807413	8630381
	Female	,,	,,	855639	9079321
	Total	..	..	1663052	17709702
	Municipal/Corporations Male	,,	,,	93322	1872227
	Female	,,	,,	98720	1974683
	Total	,,	,,	192042	3846910

	Total Numbers Male	,,	,,	900735	10502608
	Female	,,	,,	954359	11054004
	Total	,,	,,	1855094	21556612
15	Total Area	,,	Sq. Km	4480	38863
16	Residential Houses	1991	Nos.	438045	5459474
17	Households	,,	,,	444998	5513200
18	Population Total	,,	,,	2382235	29098518
	Male	,,	,,	1155822	14288995
	Female	,,	,,	1226413	14809523
19	S.C. Population Total	,,	,,	378548	2886522
	Male	,,	,,	184850	1422614
	Female	,,	,,	193696	1463908
20	S.T. Population Total	,,	,,	35465	320967
	Male	,,	,,	17822	160812
	Female	,,	,,	17638	160155
21	Density per Sq. K.M.	,,	,,	532	749
22	Growth Rate (1981 – 91)	,,	%	16.52	14.32
23	Sex Ratio (for 1000 Males)	1991	Nos.	1061	1036
24	Main Workers	,,	,,	786381	8301087
	Cultivators	,,	,,	97289	1015083
	Agricultural Labourers	,,	,,	348299	2120452

IDUKKI

A SHORT HISTORY

IDUKKI District was formed on 26 January 1972 as per Government notification No 54131/C2/71/RD dated 24th January 1972. The district consists of Devikulam, Udumbanchola and Peermedu taluks of the erstwhile Kottayam district and Thodupuzha taluk (excluding two villages Manjallore and Kalloorkadu) of the erstwhile Ernakulam district. At the time of formation the district headquarters started functioning at Kottayam and from there it was shifted to Painavu in Thodupuzha taluk in June 1976, where it is proposed to build a new planned forest township.

The district's name, 'Idukki' is supposed to be derived from the Malayalam word 'Idukku' which means a narrow gorge. Periyar which is one of the largest rivers of Kerala, flowing through Idukki gorge formed between the two high massive rocks called "Kuravan" and "Kurathi", is the site of the gigantic Idukki arch dam.

We have very little authentic knowledge which throws light into the ancient history of Idukki district. Eventhough there is no clear evidence whether men of the paleolithic age lived here, there is evidence of stone-age civilisation. Stone-age dolmens were discovered in the valleys of Anchanad in Devikulam taluk.

Archaeological excavation conducted during 1947-48 at Kallar Pattom colony in Udumbanchola taluk and at Vandiperiyar in Peermedu taluk brought to light the remains of Old Stone-age Menhir and Tombs.

Historians believe that Kuzhumoor, the capital of Chera Kings of the Sangam Age, is the Kumily in Peermade taluk. It is assumed that portions of Meenachil taluk and the whole of High Range were included in the Thanthuzhynad under the Kulasekhara Empire (A.D.800-1102). For some time these regions were under the region of the Thekkumkoor Kingdom. It was proved that Vennimala, one of the capitals of the Thekkumkoor Rajas, was in Idukki district. Poonjar Kingdom was established by Manavikrama Kulasekhara Perumal. Manavikraman brought Meenachil taluk and the High Range under his rule from the Thekkumkoor Raja. Thus major portions of Idukki district came under the rule of the Poonjar Raja.

Geography

Idukki has an area of 4,479 km^2 (1,729 sq mi) and is the second largest District of Kerala (the largest being Palakkad). Rugged mountains and forests cover about 97 percent of the total area of the District. The district borders the Kerala districts of Pathanamthitta to the south, Kottaym to the southwest, Ernakulum to the northwest and Thrissur to the north and Coimbatore, Dindigul and Theni Districts in Tamil Nadu to the east. The district is accessible only by road. Rail and Airlink is not available. A national Highway NH 49 and State highway 13 and 33 passes through the district

Anamudi, the highest peak in India south of the Himalayas, is in the Kuttampuzha Panchayat of Adimali Block, in the Kannan Devan Hills Village of Devikulam taluk. Thirteen other peaks in the district exceed a height of 2,000 m (6,600 ft). The Periyar, Thodupuzhayar and Thalayar are the important rivers of the district. Idukki Dam, Asia's largest Arch Dam is located at Idukki Township of Idukki Taluk.The points where the Periyar flows through the gorge formed between two high massive rocks called "Kuravan" and "Kurathi" is the site of the Idukki arch dam



Demographics

According to the 2014 census Idukki district has a population of 1,107,453.This ranks it as 416th among the 640 districts of India. The district has a population density of 254 inhabitants per square kilometer (660/sq mi). Its population growth rate over the decade 2001–2011 was −1.93%. Idukki has a sex ratio of 1006 females for every 1000 males, and a literacy rate of 92.2 per cent.