

TN IRRIGATED AGRICULTURE MODERNISATION PROJECT

CASE STUDIES FROM FIELD PHASE I



Project Objectives

To enhance productivity and climate resilience of irrigated agriculture, improve water management and increase market opportunities for farmers and agro-entrepreneurs in selected sub-basin areas of Tamil Nadu.

SCOPE

Project Outlay
Rs.2962 Crore

Project Period
7 years

66 Sub Basins (4778 Tanks, 477
Anicuts & Water Carriers)

Project Area
5.43 Lakh ha.

Multi Sectoral
(7 Depts, 3 Universities)



Phases	No. of Sub Basins
I	18
II	16
III	20
IV	12

Components

A. Irrigation Systems Modernization

1. Improve water delivery through modernization of irrigation systems
2. Streamlining O&M Activities
3. Improve the Institutional arrangements Modernization (including PIM &SWaRMA) both on the demand & supply side towards collective and sustainable water resources management

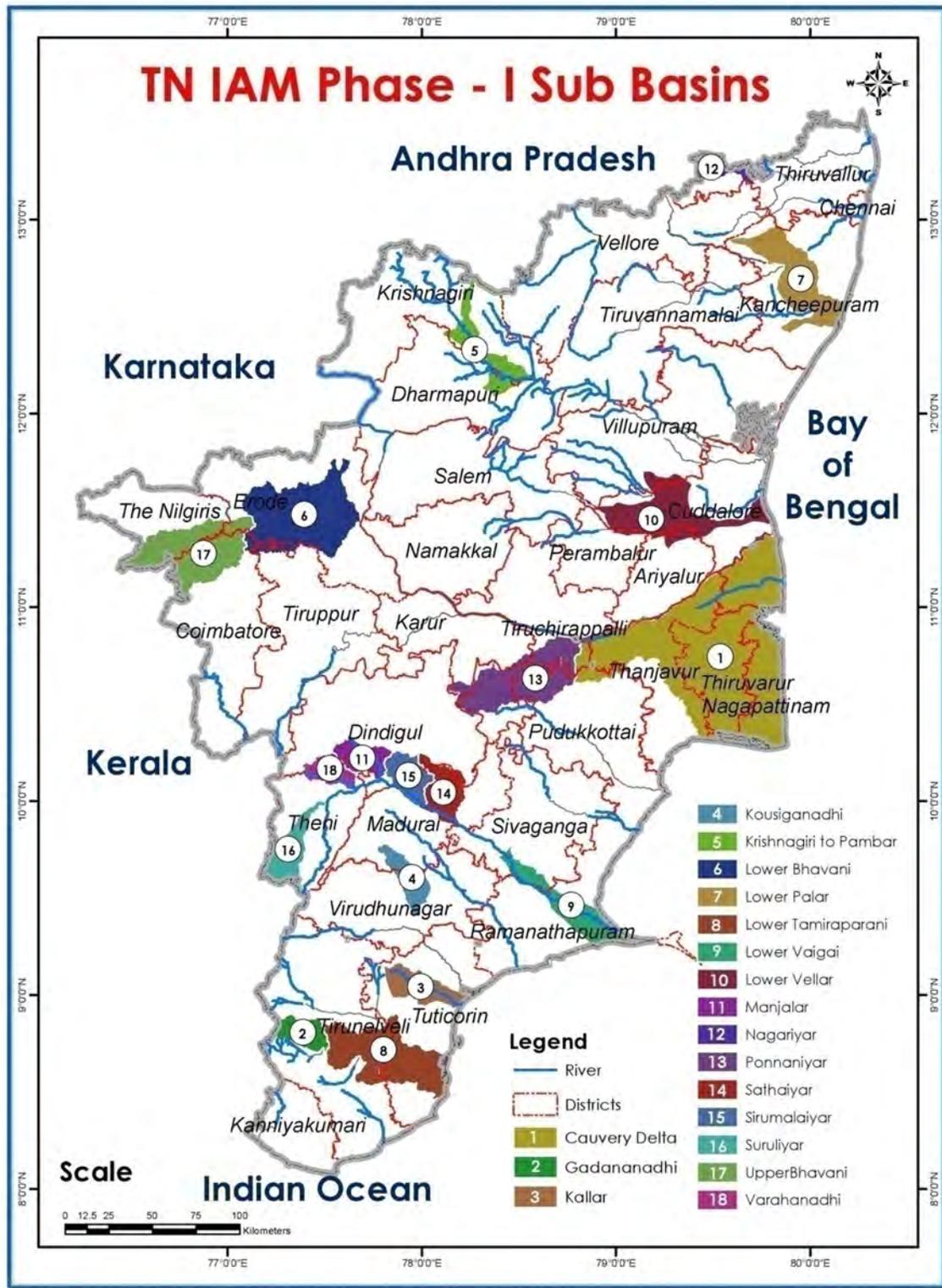
B. Climate Resilient Agricultural Intensification

1. Build on the improved water delivery to increase the productivity of agriculture –through intensification, diversification, value addition and alternative livelihood sources.

C. Project Management Support

MDPU will coordinate and catalyze departments for the preparation implementation of the irrespective project interventions. Project budget, Sub-basin Development Plans and periodical implementation progress

TN IAM Phase - I Sub Basins



LOWER TAMIRABRANI

Arivazhagan-A Multi-Dimensional Farmer



Arivazhagan, a 42 year old progressive farmer hails from Maranthai Village of Alankulam Block of Lower Tamirabarani basin in Tirunelveli district. He has totally seven members in his family and his wife and all his family members involve in agricultural operations. In total he has eight acres of land under Paddy cultivation. With the support of Tirunelveli Agriculture Department and IAM Project Arivazhagan cultivates 2.5 acres of land under System of Rice Intensification (SRI)

Technique and rest of 5 acres under ordinary cultivation. He got Rs.2500 subsidy for each acre under SRI Technique from TN IAM Project.

Before cultivation of Paddy JGL variety in SRI, he had grown dainchaas the green manure and done insitu Mulching. He applied enough Farm Yard Manure (FYM) and basal dressing as Urea, DAP and Potash. He had grown Sunflower as the bund crop and says **"Sunflower has the ability to attract beneficiary insects and it will control the round worm in Paddy field"**. He was trained by the Agricultural Department on how to check the Nitrogen content of the Paddy leaf. He uses Nitrogen Chart without any difficulty. VenkataSubramanian , Assistant Director of Agriculture for Alankulam block says Arivazhagan uses all the latest technique in producing crops and one of which is using Pheromone Trap in the Paddy field. It controls 50% of the insect population. He got best farmer award of Rs.15,000 from District Collector of Tirunelveli. Under ATMA scheme he had visited Nagpur as an exposure visit to learn about various technology used in Agriculture.



Arivazhagan uses power weeder to eradicate the weeds in the SRI field. He says **" It is difficult to use within 15 days of transplanting but it gives good results as their was enough aeration between crops and it induces more tillering"** Power weeder has the double side rotater to clear the weeds. Farmer Interest Group (FIG) uses the power weeder at no cost but they charge Rs.400/acre while giving on rent to other farmers. One Labour who operates weeder can cover 2 acre per day. The cost of Power weeder is Rs. 25000 and the FIG has the seed money of Rs.5 lakhs. Most of the farmers were visiting Arivazhagan field to learn the technique he uses to cultivate the Paddy crop. Lower Tamiraparani

basin has 20 Farmer Field School in which 25 farmers were present in each FFS.

He regularly attends the Farmer Field School (FFS) in Maranthai village which has about the strength of 25 farmers in which 17 were women. So far three classes were held under the FFS in which Organic farming, method of application of Fertiliser were taught to farmers. By knowing his capability Agriculture Department had deputed a Student name Pavithra from Killikulam Agricultural College to have a reverse learning the technique from the farmers

Diversification from Paddy



In the process of encouraging women farmer in the diversification of Crops, Tirunelveli Agriculture Department under TN IAM project taken up Maize Demonstration Plot in the field of Sudha, daughter of Ganapathy in Maranthai Village of Alangulam Block of Tirunelveli District. For the first time in the village they were cultivating maize crop with the hybrid variety seed in 2.5 acres. He is using well irrigation for the supply of water to the field. Sudha has been given subsidy of Rs.5000

under IAM project. Labourers who were involved in the seed planting of Maize crop were given sufficient training for planting by the Agricultural Department. Under exposure visit to SRI field he had visited Hosur, Dharmapuri, Palani and Dindigul.

Farmer Field School



The Farmer Field School is a form of adult education, which evolved from the concept that farmers learn optimally from field observation and experimentation. It was developed to help farmers tailor their Integrated Pest Management (IPM) practices to diverse and dynamic ecological conditions.

MDPU team members along with Agriculture Department members visited Farmer Field School in Sivasailam village in Kadayam block of Tirunelveli district. It was the second class in which 25 farmers were attending the class. In the Farmer regular sessions from planting till harvest, groups of neighboring farmers observe and discuss dynamics of the crop's ecosystem. Simple experimentation helps farmers further improve their understanding of functional relationships (e.g. pests-natural enemy population dynamics and crop damage-yield relationships). This is confusing .Please modify in consultation with the Agri Member

In this cyclical learning process, farmers develop the expertise that enables them to make their own crop management decisions. Special group activities encourage learning from peers, and strengthen communicative skills and group building. Prof. Arumugasamy, Rice Research Station, Ambasamudram took the class on Seed treatment, SRI Technique to farmers. He explained in

detail about soil fertility also to farmer. Farmer were given exposure to Power weeder and Cono Weeder in SRI Cultivation.

Pulse Seed Village-Thenpathu



Thenpathu, is a village which falls under Manur Block of Lower Tambiraparani basin in Tirunelveli District. Agriculture Department under IAM Project formed a group of 20 farmers with a initial seed money of Rs.250 each and total sum of Rs.5000. The group has total 17 women and 3 men members formed in the year March 2017. Impressed with the group performance and unity under IAM Project the Agriculture Department has provided Rs.50,000 as the revolving fund. Training was given to farmers to maintain the joint account created in the bank. 10 people had asked Rs.5000 each for farming operations, purchase of seeds and fertilizer.

Selvi, President of the group says selection of seed is the main process adapted by the group for better yield. As the water is available in plenty we go for Paddy-Paddy-Pulses cropping pattern. Manomani, Secretary of the group says we are getting good yield and as the result we getting good profit. The village has been adopted (520 Acres) as whole village concept under SRI Technique by the Agriculture Department. Group members cultivate Ambai variety and under normal cultivation they get an yield of 35 kg per bag of Paddy but by using latest technique they get an yield of 65 kg per bag. For one acre they get an yield of 1200 kg.

Under the seed village concept Manmoni says **“we are planning to cultivate Vamban 6 variety of pulses seed and we are ready to supply all the seeds to Agriculture Depatment”**.

LOWER PALAR

Parimalam-Progressive Farmer from Nerumbur Village of Kancheepuram District.



Parimalam, 39 year old woman hails from the Nerumbur village of Lower Palar Sub basin in Kancheepuram district of Tamilnadu. Her husband Haridas is 45 year old, he too involves in agriculture operations. She has a son Kamalaesh (B.Com) and and her daughter Rithika (B.Sc) . Through TNIAM project Parimalam received Rs.10000/ha as an input in the form of SRI Kit, seed, Green Manure and machine planting. She cultivates Co-51 variety in 5 acres. Total

duration of the variety is 105 days and in nursery it was about 15 days and in transplanting for 90 days.

Parimalam was initially reluctant to take up the Green Manure and followed by the SRI technique as it was a technical process. It was due to the constant interaction with Mr. Ganesan, Assistant Director of Agriculture, Parimalam developed interest and started adopting SRI Technique. She proudly says she knows to measure the Nitrogen content in the crop through bar chart and she applies fertilizer accordingly.

Before cultivation of Paddy Co-51 variety in SRI, she grown daincha as the green manure and done insitu Mulching. She applied enough Farm Yard Manure (FYM) and basal dressing as Urea, DAP and Potash.

Parimalam says she used Cono Weeder to eradicate the weeds within 15 days of transplanting. She says it gives enough aeration between the crops and induces more tillering. Parimalam and her husband Haridas regularly attend the Farmers Field School organized under TNIAM project. She learnt how to utilize the water judiciously through the Farm Field School under the SRI cultivation. Moreover she learnt about organic farming, vermicomposting and application of fertilizers through Farmer Field School

Maximum yield she gets is for 5 acres of land is 186 bags of paddy but this year the yield will be reduced because her field was infected with leaf stem borer. She expects about 160 bag of paddy this time.

After the harvest of CO-51 variety she is planning to go up for another round of Paddy cultivation with ADT-43 which is a 125 days duration variety. When asked why she is not following Green Manure+Rice+Fallow+Pulses, she says she normally follows the pattern but this year the season she unable to follow up the pattern as she cultivated paddy in the summer and it would be ready for the harvest. She says water is available in plenty through borewell irrigation hence she goes for ADT-43 variety for next round.



Mr.Ganesan, Assistant Director of Agriculture recommended bund cropping to control the pest in paddy field while she has the plan to cultivate ADT-43 because intensity of the pest will be very high as she is not following the regular cropping pattern. He also assured to provide the solar lamp to reduce the incidence of pest infection.

Pulse Seed Village-Thirukazhukundram

Jaganathan, 47 year old progressive farmer hails from Veerapuram village of Lower palar sub basin of Kancheepuram district in Tamilnadu. About 20 members



were provided with Rs.50000 as the revolving fund under the Pulse seed village concept of TNIAM project. Farmers have contributed Rs.5000 as their share (Each one of them have contributed Rs.250 each) which will be used for the collective purchase of the seeds.

The farmers were encouraged to produce the seeds required for their villages on their own especially for pulse. Groups were formed for the production of required seeds for the farmers in the village itself. The group members were trained in seed village concept. The major objective is to increase the seed replacement ratio says Mr.Ganesan, Additional director of Agriculture.

For five years each member farmer will be required to contribute an additional amount of Rs 250 every year. In this way each Seed Village Group will have a corpus of at least Rs 75,000 (Rs 50,000 project contribution and Rs 25,000 farmer members' contribution) after five years. The monitoring of this activity and replenishing of funds every year shall be monitored by the department of Agriculture.

Jaganathan follows the cropping pattern adopted as Green Manure+Paddy+ Rice Fallow Pulses. After cultivating 5 and half acres of paddy in SRI Techniques, he had taken up pulses cultivation in 2 acres and 30 cent of his land. He raised Blackgram in his land with 8 kilograms used per acres. He systemically followed the seed treatment with Rhizobium to avoid seed borne pest in the crop. Vamban 6 is the variety he used to raise the pulse crop and it helps in the nitrogen fixation of the second crop for the next year.

On the 30th day he applied one irrigation to the crop and 2% DAP as the foliar spray to control the sucking pest. As he was systemically following the process he got good yield in the Vamban 6. He got an yield of 267 kilogram per acre. In total he got 667 kilo of black gram for 2 acre and 30 cents. He sells it to Farmer Producer Company called Pallava Kootupanai Thittam at the rate of an average income for one kilo of Black gram Rs.57/kg.

Jaganathan says Vamban 6 variety seeds he got with the support of Agriculture Department of Thirukazhukundram and the same if procure for good rate it will be good. He need not sell to private companies. He also says he will share the seeds with fellow farmers in the group who were ready to buy from him.

NAGARIYAR



Tuberoses (Sambangi) Cultivation under TNIAM Project

Balakrishnan, a horticulture farmer hails from the village of Permanulur in Pallipattu block of Tirutani district cultivates Tuberoses (Sambangi) flower in about 0.30 acres under

TNIAM project. The crop will give yield upto 5 to 10 years and planting was done in the month of November, 2018. The total out lay for 1ha is Rs.60000 and Rs.18000 was given to Balakrishnan as he holds 0.30 acres of land. 40% subsidy is given under the TNIAM project and 60 % cost has to be borne by the farmer.

Balakrishnan says normally he used to harvest the flowers once in 3 days the yield will be about 7 kilo to 8 kilo. In normal season he used to sell for Rs.30/kilo and in peak season Rs.120. In the tamil month of Karthigai, Markazhi and Thai there will be very less yield and the rate will be very high say Rs.100. Normally he sells the flower in the market of Chittor and Vellore where he fetches high value for Tuberose flower.

He gets an income of Rs. 3000 to Rs.5000 a month as the regular income from Tuberose Crop. He says at the end of 5 year he can get Rs.250000 from this crop and meet the expenses towards the education of his children besides feeding his entire family without any difficulty. Balakrishnan and his mother help in farming operation of Tuberose crop.

In the initial stage of cultivation he purchased Rhizome from the local market for about 20 kilo at the rate of Rs.2000. Balakrishnan says the crop will require very less water at the rate of 2 times of watering per week which reduces electricity cost. He cultivates the land with borewell water and its available at 240 feet depth.



In the operation maintenance of the crop, Balakrishnan applies Furadan which will keep the Rhizome healthy and give more flowers and weeding is done once in 15 days and about 20 members involve in the weeding operation. He applies Farm Yard manure of 2 loads as the onetime initial basal dressing. Normally picking of the tuberose would be done by three members.

Similarly in the same village Devaraj and Inbavalli have been given support of Rs.20000 each for 0.30

acres and 0.40 acres respectively.

SRI Cultivation-Demonstration Plot.



Palani, a 42 year old progressive farmer hails from Permanallur Village of Pallipattu Block in Tirutani district. He has totally three members in his family All his family members involve in agricultural operations. In total he has one acre of land under Paddy cultivation. With the support of Tirutani Agriculture Department and IAM Project he cultivates one acre of land under System of Rice Intensification (SRI) Technique. He got Rs.4200 subsidy for each acre under SRI Technique from TN IAM Project and a total kit input of Rs.10000. He cultivates the

variety TKM-13.

In order to promote ecological framework during cultivation of paddy crop he applied bio-fertiliser like Pseudomonas 40 gms, Azhospirillum 25 pocket, neem oil 2.5 litres and daincha 40 kilo for nitrogen fixation as a green manure crop. During the time of operation he says he applied conoweeder to eradicate the weeds which promotes tillering in the crop and aeration in the root zone.

He is very conscious about the watering to the paddy crop. He normally maintains 2.5 cms of water in the crop with the alternate wetting and drying method. As he isa progressive farmer in the village he is able to convince 7 more farmers in the village to cultivate paddy under SRI Technique in which 10ha of land were brought under cultivation in Peramanullur village.

He gets an average yield of 7.5tonnes for one ha and one bag fetches him about Rs.1100. Totally he gets 80 kilo per bag of paddy. He follows Green Manure+ Rice+ Rice FallowPulses. He says this time he is unable to fetch yield in the pulses of black gram as there was severe drought and water scarcity.



Other farmers who had undertaken SRI in the Permanallur Village namely Revathi and Panchallamal

Cultivation of Oil seed-Groundnut



Oilseeds production is the special focus in the river sub basins of Tamil Nadu In TNIAM project area special attention is being paid to raise productivity of crops like groundnut. Angiangoan son of Subramani who belongs to dalit community in Permanallur village in Pallipatu block under takes Groundnut cultivation in about 1ha under TNIAM project.

He applies 400 kilograms of Gypsum, Azospirillum 200gms in 10 pockets, Phosphobacterism 200gms in 10 pockets and neem oil of 2.5 litres.

He got an average yield of 3500kg and he sold one bag at the rate of Rs 80per kilo which costs around Rs.2,70,000) He sells the produce in the Koyambedu market in Chennai.

Total amount given under TNIAM project for cultivation of Groundnut is Rs.5000 to the farmer. He procured 130 kilo of seed from local market for sowing.



Cultivation of Horticulture Crops-Mango

The focus of horticulture interventions is on optimizing productivity and diversification of the cropping systems. The project plans to adopt an extensive approach for optimizing productivity of the existing crops by disseminating improved technologies, providing need-based adoption support and piloting cultivation of new crops through marketed extension.

The main objective of the programme is to accelerate crop diversification from high water requiring crops like paddy and sugarcane to lesser water requiring high profit horticulture crops, especially vegetables and fruits through promotion of high productivity and water conservation technologies.

Sudhakar, 42 year old farmer cultivates mango in about 1.2 acres of land in the Pallipattu block of Tirutani District. He was provided with 120 seedlings by the Horticulture Department and each seedling cost around Rs.50. Totally he was provided with Rs.6000 for the cultivation of Mango crops which requires very less amount of water.



Micro Irrigation-Drip and Sprinkler in Nemili Village of Tiruvalankadu



One of the main important tasks of Horticulture department is to Promote of Hi-Tech Irrigation Technologies by installation of micro irrigation with fertigation for efficient use of water and increase the productivity and quality of the produce. Under this sector in the Nemeli village of Tiruvalankadu Block of Tirutani district a marginal woman farmer Rabhidhas has been selected for drip irrigation by the horticulture department.

She cultivates jasmine in 0.685 ha and drip has been installed under TNIAMP project at the rate of Rs.75612. 100% subsidy. Farmer – to – farmer interaction has been arranged with the successful farmers for convincing them to have quick spread of the technologies. As the result about 4 farmers were provided with Drip irrigation and 3 farmers have been provided with Sprinkler irrigation at the total cost of 5.27 lakhs in Tirutani district by horticulture department.



Lateral Irrigation Company installed the Drip irrigation in the farmer field which was jointly inspected by Joint Director of Horticulture , AEE, AED and Deputy Director of Horticulture for the release of the money

Cultivation of Bhendi Crop



Indumathi Dasarathan, a horticulture farmer hails from Nemeli Village of Thrivalankadu block of Tirutani district. Under TNIAM project she was supported with Rs.16000 for cultivating Bhendi crop Samrat variety in about 0.8 acres. She was provided with the support of seed 1.2 kilograms, Bio fertilizer, Vermicompost and Verticillium. Total duration of the crop is about 120 days. She cultivates Bitter gourd as the intercrop. It was sown in the month of January and she takes an yield within 45 days at the average of 50 to 70 kilos. Per month they take an yield of minimum 1 tonnes. Horticulture operations were jointly managed by her husband Dasarathan. He sells the produce in the Tirutani market. Totally seven farmers have been supported by the horticulture department in the Tiruvalankadu area for the Bhendi crop cultivation in 7ha of land.

LOWER VELLAR SUB BASIN

Vermicomposting



Velayutham, a progressive farmer hails from the Karivepilliankuruchi village in Lower Vellar Sub basin of Virudhachalam town of Cuddalore district in Tamilnadu. He cultivates Paddy, Palmoil and Mulberry in 3 acres of land. Impressed by his interest in agriculture, the Agriculture department selected him to provide Silpaulin Method of Vermicomposting along with another 15 farmers in 3 neighbourhoodvillages. It has been widely accepted that vermi-composting provides the nutrients and growth enhancing hormones necessary for plant growth. The fruits, flowers and vegetables and other plant products are grown using vermi-compost. Velayuthamutilises all the vermicompost to Paddy, Palmoil and Mulberry in his own fields. As the cost of production of this compost works out to about Rs.1.5 per kg, it is quite profitable to sell the compost even at Rs.2.50 per kg.

The process of composting crop residues using earthworms comprise spreading the agricultural wastes and cow dung in layers as 3 metre wide, 9 metre length and 0.9 m high beds. Earthworms are introduced in between the layers @ 350 worms per m³ of bed volume. The beds are maintained at about 40 - 50% moisture content and a temperature of 20 - 30o C by sprinkling water over the beds. The earthworms being voracious eaters consume the biodegradable matter and give out a part of the matter as excreta or vermi-castings. The vermi-casting containing nutrients is rich manure for the plants. The compost was protected from natural sunlight and predators.

Velayutham says there are numerous advantages of vermicomposting such as natural fertilizer, not hazardous to soil, environment friendly, Improves soil aeration and texture, improves nutrient status of soil and mostly cost effective. But itis time consuming process it requires 3 months for first harvest which can be applied to as natural fertilizer to soil. Velayutham was initially provided with the support of Rs.6000 which consists of Training Kit Rs.1000, Backend Subsidy: Rs.1750 and Rs.3250 for worms, pole and shadenet under TNIAM Project.

Cultivation of Tapioca



Sounderani wife of Subramani cultivates Tapioca in ThachiperumalNatham village of Lower Vellar Sub basin of Virudhachalam town in Cuddalore district. Sounderani was supported with the seed fund of Rs.21447 under TNIAM Project for 1.2 ha. About 20400 seedlings (Kuchi) was provided with the support to plant Rs.9996 and ECS

Rs.11447 for other farming operations. She cultivates Malwa variety with the total duration of 10 months.

Tapioca is a tropical root crop requires atleast eight months of warm weather to produce crop. It also grown in extremes of rainfall and doesn't tolerates flooding. In drought season it loses leaves to conserve moisture and produce new leaves when rains resume. Tapioca was cultivated in Virudhachalam under irrigated conditions. The land was irrigated once in 15 days with borewell water. May-June is the best season for the cultivation of Tapioca says Sounderani. Potash was applied at the rate of 50 kg/ha during after the weeding of first 50 days.

It was cultivated under irrigated condition furrow and ridge method was used to plant Kuchi-Tuber) When it comes to planting vertical method of planting was followed by Souderani because it results in the uniform space of callus tissue and it helps in forming the tubers uniformly all around the base of Tapioca plant. Sounderani used two stakes per hill in order to increase the yield. She takes an yield of 16 tonnes/ha. She sells 1 tonnes for Rs.10000 in the peak season and last year she sold for Rs.5000/tonnes.

Traders from Attur directly visits the field for the procurement of Tapioca and they give good market price says Sounderarani. He family has totally six members in the family and all the her family members involves in farming operations. In total 9 farmers were supported with 10 ha in the sub basin of Lower Vellar for the Cultivation of Tapioca under TNIAM Project.

Uses of Tapioca:

- The roots of tapioca are called maravallikizhangu, and are used to prepare chips.
- Tapioca pearls are referred to as "javvarisi" in Tamil.
- Most of the delicacies are cooked from this form of tapioca because it is relatively easier to handle than the raw root itself.
- Tapioca is cultivated inorder to provide steady income to farmers.
- Tapioca can be consumed raw (after removing the skins/outer cover) or boiled for various dishes or snacks.

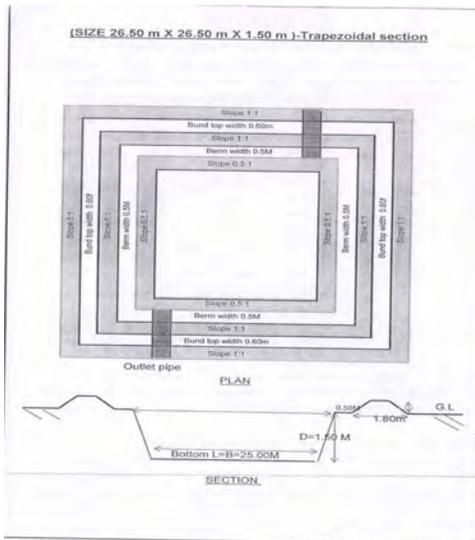
Farm Pond under Agriculture Engineering Department

Farm pond is used basically as a rain water harvesting technique and to conserve the water in the drylands for groundwater recharge. It controls soil erosion and runoff rainwater for further use of Agriculture and Fisheries. It is very difficult to control runoff and soil erosion in the Garden Land. But establishing a farm pond in a precise position will help in conserving soil erosion and also controls surface water runoff.

One such initiative is establishing farm ponds in TNIAM Project with the farmer support by the Agriculture engineering department. In Lower Vellar sub basin about 150 farm pond has been completed by the Agriculture Engineering Department and 150 farmers have been benefitted by the farm pond.

Ilamaran son of Muthukrishnan is one of the progressive farmer from Nadeeswaramangalam village, Keerapalayam block of Cuddalore district in Tamilnadu who came forward to undertake Farm Pond in his land. He was provided with the money of Rs. 54000 has a subsidy and Rs.6000, the farmer contribution. Farm Pond size is 31X20X1.70 metre. Ilamaran says due to storage of water in the pond, the ground water recharge has been increased considerably in the adjacent wells. It's also one of the low cost technology which will be used rainwater harvesting during the drought season.

Size of the Pond



Animal Husbandry: Cultivation of Fodder/Dairy Interest Group



Growing greens to animals in farmers own land is very important. Because it saves a lot of money and at the same time one can feed animals with very good quality foods. Feeding the dairy cattle with green fodder which are grown in farmers own land has many advantages. Feeding the dairy cattle with green fodder will help to reduce the expenses for concentrate feeds and which will ultimately increase the total amount of profits from the farm. One

such initiative has been introduced by Animal Husbandry department under TNIAM Project. One dairy interest group has been formed with 25 members from 25 villages in Srimushnam town of Cuddalore district. A.R.Kuberselvam from Anadakudy village is the president of Dairy Interest Group. Srinivasan 38 year old age dairy farmer supported with Sorghum Fodders, Cow Pea and Agathi seeds to grow in the field in his one ha of land.

Sorghum Fodder: Sorghum is also considered as one of the best fodder crops for dairy cattle. Srinivasan was provided with 19.2 kilogram of Fodder Sorghum seed and he cultivates in the one acre of



land along with Cow pea and Agathi. The sorghum fodder is cultivated both for grains and green fodder, and it is highly drought tolerant. Farmer can plant sorghum throughout the year, and many varieties are available. But it grows best under temperature ranging between 25 °C and 35 °C. For using the sorghum as fodder, the grass is harvested after the flowering stage. Any type of soil is suitable for sorghum cultivation.

Cow Pea and Agathi: About 4.2 kilogram of seed has been supplied to Srinivasan and the total of 105 kg seed has been supplied to 7.5 acres land (In total) to Lower Vellar Sub basin dairy farmers. Similarly Agathi 8 kilogram of Agathi has been supplied about covering 2 acres of land in sub basin. Each farmer has been given seeds of 0.32 kilogram.

Artificial Insemination: In Lower Vellar Sub basin about 612 animals had been done on Artificial Insemination. Total population of Sub basin expected to cover is about 2500. Dr. Priyadharsini says infertility camp has been conducted in order to check the hormonal imbalance, reproductive disorders, vitamin and mineral deficiency. Prior to camp sufficient publicity has been given in all 25 villages in order to cover all the animals. Artificial Insemination has been given to Srinivasan Cattle before three months back and remains positive.



TNAU: Crop Water Assessment Device

Experience of Using CWAD near Agriculture Research Station, Viridhachalam

Muthu 50 year old farmer says "Am irrigating the field once in the alternate days with the knowledge of CWAD and there was more number of tillers in the crop which also increases the yield of 3 bags of paddy extra per acre". On the quantity of water use he says "Instead of wetting one acre the same water now used to wet 50 cent extra with the knowledge of CWAD". He had placed 4 devices in one acre of land to measure the level of the water.

The CWAD is assembled by inserting a flag into the disc and then combining it into a float. This float assembly is then placed into a clear perforated cylinder, thus completing the device assembly. The CWAD is placed vertically into the soil at a depth of 15 cm. The bottom portion of the holocylindrical body is open and the cylinder is pushed into the transplanted rice field up to 15 cm in depth and the field soil inside the holocylinder is removed manually. The immersion into the soil matches the fibrous root zone of most food crops like rice and has the ability to assess water available in the root zone. The device is strategically placed near the crop at the randomly selected place.



As water is applied to the crop, it percolates into the device from the surrounding saturated soil and rises to the level of water in the root zone. As the water rises in the cylinder, the float and flag assembly also float in the water column and rises vertically. The flag touching the 30-cm red ring is an indication that the root zone is completely saturated (even though the soil surface may appear dry) and indicates for shutting off of the water supply. This is crucial in preventing excess application of water, prevents wastage of precious water and electricity, and prevents reduce crop yields.

With time the crop use and evapotranspiration losses will reduce the water available in the root zone. Correspondingly, the water level in the cylinder will also fall; the float assembly will also drop. As the float drops to 5 cm from the base, which is the minimum level of water designed in the root zone, the flag again touches the red ring, indicating the farmer needs to restart the application of water. As it is a clear cylinder with a flag device, the flags, the measurements, and the corresponding indication levels are visible to the user from afar. Second, to convince farmers to change their water management behavior, he needs to be able to physically see the water level in the root zone. The transparent device aided by markings makes it possible for the farmer to read the water level measurement.

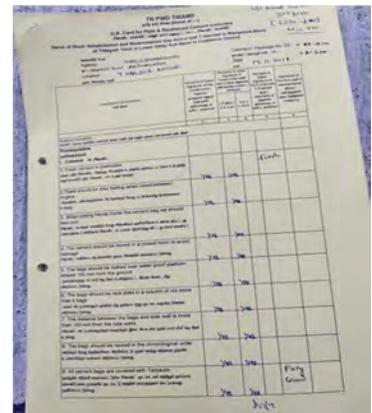
Water Resource Development

Tholudur Anaicut

The Lower Vellar Sub basin is located in Perambalur, Ariyalur, Villupuram and Cuddalore districts of Tamilnadu. Lower Vellar starts from LS @ 100 KM in upstream of Tholudur anaicut. Tholdur Anaicut feed the Wellington Reservoir.



- Name Board about the Anicut has been maintained
- Estimate for the Anicut repairs is Rs.876.48 Lakhs
- OK Cards had been maintained.
- After 100 years of construction it has been renovated now only under TNIAM Project.
- S.Gunasekaran, a farmer from Thozhudur village says “ Work has been excellently carried out by the WRD team, Previoulsy it was in very bad situation and now you can see the change”
- About 63 villages were getting benefited from the Anaicut. Previously WRD Department of Virudhachalam had



approached NABARD for



with the help of TNIAM Project they are able to do the Rehabilitation work.



Krishanagiri-Pambar Sub basin

Package No.7: Rehabilitation of Ichambadi Anicut Left main canal

Estimate Amount Rs. 378.12 Lakhs

Left Main Canal of Ichambadi Anicut runs up to a length of 26.15 km with 61 Nos of Direct Irrigation Sluices having an ayacut of 1315.23 Hectares. This canal was designed with a carrying capacity of 35 Cusec.



- From the head reach upto 26.15 km of this canal was lined with Cast-in-situ Cement Concrete slabs (during the year 1982) in which at Ls 14500 km to 145312 km was deepest and damaged portion. The canal was not able to carry its fullest discharge because of the soil and debris slide down, which results in deficit and delay of supply to the tail end.
- After WRD intervention through TN-IAMP scheme this canal from Ls 14500 km to 145312 km is completely renovated by construction of Cut & Cover with RCC and brought back to its original condition of carrying the full discharge.
- Farmers have expressed their pleasure for doing the construction of this structure under TN-IAMP Scheme. They also stated that the water will reach the tail end without any loss, delay and assurance supply of water throughout the crop period.

- **Package No.8: Rehabilitation of Ichambadi Anicut Right main canal**
Estimate Amount Rs. 448.71 Lakhs

Right Main Canal of Ichambadi Anicut runs upto a length of 30.30 km with 14 Nos of Direct Irrigation Sulice having an ayacut of 1214.07



Hectares. This canal was designed with a carrying capacity of 35 Cusec.

- From the head reach upto 30.30 km of this canal was lined with Cast-in-situ Cement Concrete slabs (during the year 1982) in which at Ls 5015 km to 5210 km was damaged completely. The canal was not able to carry its fullest discharge because of the damaged condition which results in deficit and delay of supply to the tail end.
- After WRD intervention through TN-IAMP scheme this canal from Ls 5015 km to 5210 km is completely rehabilitated by construction of Trough Aqueduct with RCC and brought back to its original condition of carrying the full discharge.
- Farmers have expressed their pleasure for doing the construction of this structure under TN-IAMP Scheme. They also stated that the water will reach the tail end without any loss, delay and assurance supply of water throughout the crop period.

Package: 3: Rehabilitation of KRP Dam Right Main Canal. Estimate cost 294.99 Lakhs

- This Canal Lining is Cement concrete lining form 0-119.10min the head reach immediate downstream side of head sluice with it discharge of 99.67 C/S. before WRD intervention the lining is completely damaged. After lining the seepages were arrested completely.
- Total Ayacut: 1320.83 ha of RMC.

Package No. 1 :Rehabilitation of KRP Dam Left Main Canal Estimate amount of Rs. 427.77 Lakhs

- This Canal lining is in RR Masonry. Before WRD intervention the lining is completely damaged. After lining the seepages were arrested completely.



Package: 4

- Rehabilitation of Manikkanur Tank,
- Estimate cost of Rs. 30.63 Lakhs
- Ayacut: 295 ha
- Weir Repair – 1 No
- Sluice Repair – 1 No
- Bund Strengthening



- The farmers felt happy that the leakage of water by leakages from sluice and weir were completely arrested and water is stored in the tank for irrigation.

Farmer Interest Group in Samandhahalli Village

- The main aim of Farmer Producer Organisation formed in the Samandhahalli village in Krishnagiri to Pambar Sub basin is to ensure better income for the producers through an organization of their own. Small producers do not have the volume individually (both inputs and produce) to get the benefit of economies of scale. Besides, in agricultural marketing, there is a long chain of intermediaries who very often work non-transparently leading to the situation where the producer receives only a small part of the value that the ultimate consumer pays. Through aggregation, the primary producers can avail the benefit of economies of scale. They will also have better bargaining power vis-à-vis the bulk buyers of produce and bulk suppliers of inputs.
- About 200 members from Agriculture and Horticulture producing farmers were joined together in the form of group and they came to form Farmer Producer Group under TNIAM Project. The farmers undertake collective farming various types of "agricultural production in which multiple farmers run their holdings as a joint enterprise". That type of collective is often leads to an agricultural cooperative in which member-owners jointly engage in farming activities with confidence of good marketing avenues. Farmers in the Samandhahalli village involved in producing Rice and Samai has the value added product. Arjunan, Agriculture Marketing officer says "Farmers from the village says are producing minor millets and market produce is very low and because we sell the product through middlemen". But now they had come together to form the group to sell their product for better market price by eliminating the middle men. We are in the process of facilitating awareness on providing the stock to maintain, store and grade the market produce in fetching the better market price to the farmers. At present farmers were selling Ragi for Rs.20 in the local market but whereas the wholesale market it was sold for Rs. 40. Once the Farmer Producers Organisation takes full shape the farmer can get best market price for their produce which will be more than the Rs 20 they hitherto get..To understand the entire Farmer Producer Organisation process the farmers were given exposure visit by the Agri-Marketing Department to Pennagaram town in Dharamapuri district to create awareness about Farmer Producing Organisation (FPO). Out of 10 villages in the target area of Samandhahalli, farmers had been mobilized in the four villages.
- **System of Rice Intensification (SRI) Technique and Cono Weeder Usage by Farmers**
Chinnarasu, 52 year old farmer hails from the village of Samadhahalli in Morappur Block of Dharmapuri District. With the frequent interaction with the Agriculture Department officials under TNIAM Project Chinnarasu learned the water conservation technique through alternate wetting and drying method. He got the subsidy of Rs.2500 for one

acre to cultivate paddy variety Ponni under SRI Technique. Chinnarasu uses Conoweeder to eradicate the weeds in the Paddy field which was provided for Rs.500 by the Agriculture Department under TNIAM Project. Chinnarasu says Cono weeder is a one sided machine, which will improve soil aeration, eradicate the weeds enabling more tillers to erupt. One person can eradicate the weeds of 2 acre in one day against the Normal practice of engaging 4 person to eradicate weed in half day in one acre of the field.

- **Impact area of Daincha Crop in Samandhahalli Village**

Green Manure Daincha: Green manuring is growing in the field plants usually belonging to leguminous family and incorporating into the soil after sufficient growth. The most important green manure crops is dhaincha. Ramesh, 38 year old farmer after seeing the success in the demonstration plot last year taken up by the Agriculture Department now he voluntarily cultivates Green manure in 3.5 acres. Ramesh says one of the most important features for cultivating Dhaincha is it improves soil structure, increases water holding capacity and decreases soil erosion. It fixes nitrogen in the soil through the root nodules present in the plant and improves grain filling. It is basically 60 days plant which was used as insitu incorporation in the soil thereby reducing application of fertilizer in the later stage of Paddy cultivation.

- **Support Provided to Farmers for Mulching by Horticulture Department**

Mulching for Water Melon Crop: A Mulch is a layer of material applied to the surface of soil. Reasons for applying mulch includes for conservation of soil moisture, improving fertility and health of the soil, reducing weed growth, increasing yield and enhancing the visual appeal of the area. Mrs. Uma, wife of Illayarajain Samandhahalli village of Moraapur block in Dharmapuri district was given support for 1 hectares of land for Mulching at the subsidized rate of Rs.16000 under TNIAM Project. Uma says it can be used for 4-5 years of Cultivation and at present she grows water melon which is 65-70 days duration crop.

- Towards the beginning of the growing season, mulches serve initially to warm the soil by helping it retain heat which is lost during the night. This allows early seeding and transplanting of water melon crops, and encourages faster growth. As the season progresses, mulch stabilizes the soil temperature and moisture, and prevents the growing of weeds from seeds. Uma uses drip irrigation to conserve soil moisture especially in the root zone water melon crop. Uma says one kilogram of water melon fruits is sold for Rs16 in Winter and in summer she sells for Rs. 30-40. She produces 30 tonnes of water melon fruits in one acre of land with the support of Mulching provided under TNIAM Project.

- **Support Provided to Farmers through Artificial Insemination under Animal Husbandry Department**

Artificial Inseminations has been done to six cows of farmer Mrs. Uma in Samandhalli Village of Morappur Block in Dharmapuri District under TNIAM Project. Out of six cows four remains positive.. Dr.Sudharshan says Artificial Insemination was done to cows through door to door campaign in the villages. Uma said that 60 litres of milk through Cross breed are at present realized. Around 60 cents of land she cultivates fodder sorghum CO-4 to feed the cow which is the green fodder which she expects will yield more milk production. She cultivates fodder as the result of the impact it created through the previous IAMWARM Project.

- **Precision Farming -Musk Melon by Tamilnadu Agricultural University**

Micro irrigation is an effective tool for conserving water resources and studies have revealed significant water saving ranging between 25 and 50 per cent by drip irrigation compared with surface irrigation, with yield increases as high as 100 per cent in some crops under specific locations. One such method is demonstrated in farmer Devdiranin Annamalaipatti Village in Krishnagiri Pambar Sub Basin (Morappur Block) for the Musk Melon crop. Fertigation provides Nitrogen, Phosphorus and Potassium as well as the essential trace elements directly to the active root zone, thus minimizing the loss of expensive nutrients, which ultimately helps in improving productivity and quality of farm produce. Nutrients are delivered to the restricted root zone (wetted soil) in a readily available form and frequent delivery of water and nutrients replenish the small volume of soil in the active root zone, nourishing the crop throughout the entire growing season. Devadiran cultivates 3 acres of Muskmelon and Rs.10000 was provided per acre under TNIAM Project as subsidy.. He harvests 20 tonnes/acre during first harvest, 15 tonnes/acre during second harvest and 10 tonnes/acre during third harvest. It is 60-75 days crop. He sells 1 tonnes for Rs.1500 to traders in Coimbatore.

- **Fisheries Kiosk in Krishnagiri Dam**

Lack of hygienic marketing infrastructure in sub-basins has resulted in poor economic return to the farmers. To provide the nutritionally rich fishes in fresh condition to the consumer in hygienic manner, it is proposed to establish modern fish kiosk in Krishnagiri dam. The activity was well established in the IAMWARM I project and many women self-help groups were benefited. The fish kiosk will make available the nutritionally rich fish to the public in hygienic condition and easy accessibility to be ensured to public in Krishnagiri dam. Different value added products of fish like fish cutlet, pickles shall be also promoted for sale. The fish Kiosk is ready to be inaugurated by next week by the District Collector of Krishnagiri. The Capital cost of Rs 8 Lakh per Kiosk was provided from the project and the beneficiary group has provided land and incurs the operational cost. Five Beneficiary were from the women cooperative society. These five women beneficiaries were trained in hygienic handling of fish and quality control , fish marketing technique and also in making value added fishery products like

fish cutlet, pickles as said above etc. The Fisheries department has created awareness of hygienic fish marketing and the needed support from the project. As it was near to Krishanagiri dam it may be a suitable place for good Marketing. The Beneficiary should maintain records of transaction and shall make available it for inspection of Department on demand.

- **Fodder Cultivation under TNIAM Project:**

Sorghum is also considered as one of the best fodder crops for dairy cattle. Muthusamy was provided with 5 kilogram of Fodder Sorghum and cow pea seeds and he cultivates in 60 cents of land under TNIAM Project in Gudur village of Kaveripattanam Block in Krishnagiri district. The sorghum fodder is cultivated for green fodder, and it is highly drought tolerant. Farmer can plant sorghum throughout the year, and many varieties are available. But it grows best under temperature ranging between 25 °C and 35 °C. For using the sorghum as fodder, the grass is harvested after the flowering stage. Any type of soil is suitable for sorghum cultivation. In two months it would be ready for harvest. Muthusamy is also one of the members of Dairy Interest Group formed under TNIAM Project which has 25 members. Muthusamy was given exposure visit to Namakkal Veterinary College TANUVAS and there he was provided with 3 three training programs. Muthusamy is also a milk vendor, daily he collects and supplies 1000 litres of milk to the neighborhoods villages. During our visit Dr. Palanisamy tested on show to identify pregnant animal and it was found four months pregnant.

- **Integrated Pest Management (IPM) under Agriculture Department**

A 15 member women farming community came together to form IPM group in the Kalvahalli village of Kaveripattanam Block of Krishnagiri to Pambar Sub basin under TNIAM Project. Women group members actively involve in the farming operations and they were very much interested to produce mass multiplication of Trichoderma Viridi. 3 members were provided by training by the Agriculture Department on how to produce the mass multiplication of T.Viride in Kudimianmalai in Pudukottai district. Most of the T-Viridi produced were used for the own purpose by the group members. Normally per month they produce 300 kilogram of T.Viridi.

Amutha, one of the group members explained about the process of production of T.Viridi. Molasses yeast medium is prepared in fermenter and sterilized as described earlier. Then after the medium is cooled, the mother culture is added to the fermenter @ 1.5 lit / 50 lit of the medium and incubated at room temperature for 10 days. Then the incubated broth containing the fungal culture is used for commercial formulation preparation using talc powder

Uses of T.Viridi:

Trichoderma viride is a fungus and a bio-fungicide. It is used for seed and soil treatment for suppression of various diseases caused by fungal pathogens. The fungicidal

activity makes *T. viride* useful as a biological control against plant pathogenic fungi. It has been shown to provide protection against such pathogens as *Rhizoctonia*, *Pythium* and even *Armillaria*. It is found naturally in soil and is effective as a seed dressing in the control of seed and soil-borne diseases including *Rhizoctonia solani*, *Macrophomina phaseolina* and *Fusarium* species. When it is applied at the same time as the seed, it colonizes the seed surface and kills not only the pathogens present on the cuticle, but also provides protection against soil-borne pathogens.

- **Pulse Seed Village formed under Agriculture Department**

About 3 groups were formed which consists of 20 members each under Pulse Seed Village under TNIAM Project in Kondalapatti Village of Kaveripattanam block in Krishnagiri district. Farmers were mobilized by the Agriculture Department through one to one discussion to form a group and to get benefit under Pulse seed village. Each group was given a revolving fund of Rs.50000 after the formation of group. Each member has to pay the membership fee of Rs.250. Under the Pulse seed village normally farmer sell the one kilo gram of Ragi for Rs.20/kg in the market. After the formation of the group Agriculture Department procures for Rs. 40/kg directly from the Group members which is double the income farmer gets as the seeds are of good quality. Raja, President of the group says similar to Paddy Agriculture Department procures Paddy and Groundnut from us from the above market value which makes us very happy about the Pulse Seed Village.

- **Crop Water Assessment Device (CWAD) by Tamilnadu Agricultural University**

Mrs. Mangai 45 year old women farmer says "Am irrigating the field once in the alternate days with the knowledge of CWAD and there was more number of tillers in the crop which also increases the yield of 3 bags of paddy extra per acre". On the quantity of water use she says "Instead of wetting one acre the same water now used to wet 50 cent extra with the knowledge of CWAD". She had placed 4 devices in one acre of land to measure the level of the water.

The CWAD is assembled by inserting a flag into the disc and then connecting it into a float. This float assembly is then placed into a clear perforated cylinder, thus completing the device assembly. The CWAD is placed vertically into the soil at a depth of 15 cm. The bottom portion of hollow cylindrical body is open and the cylinder is pushed into the transplanted rice field up to 15 cm in depth and the field soil inside the hollow cylinder is removed manually. The immersion into the soil matches the fibrous root zone of most food crops like rice and has the ability to assess water available in the root zone. The device is strategically placed near the crop at the randomly selected place.

As water is applied to the crop, it percolates into the device from the surrounding saturated soil and rises to the level of water in the root zone. As the water rises in the

cylinder, the float and flag assembly also float in the water column and rises vertically. The flag touching the 30-cm red ring is an indication that the root zone is completely saturated (even though the soil surface may appear dry) and indicates for shutting off of the water supply. This is crucial in preventing excess application of water, prevents wastage of precious water and electricity, and prevents reducing of crop yields.

With time the crop use and evapotranspiration losses will reduce the water available in the root zone. Correspondingly, the water level in the cylinder will also fall; the float assembly will also drop. As the float drops to 5 cm from the base, which is the minimum level of water designed in the root zone, the flag again touches the red ring, indicating the farmer needs to restart the application of water. As it is a clear cylinder with a flag device, the flags, the measurements, and the corresponding indication levels are visible to the user from afar. Second, to convince farmers to change their water management behavior, he needs to be able to physically see the water level in the root zone. The transparent device aided by markings makes it possible for the farmer to read the water level measurement. This a very user friendly mechanism to enable the farmer to control and regulate the irrigation optimally to the field.

- **Vermicomposting by Silpaulin Method of Production**

Periyasamy, a progressive farmer hails from the Arahalli village of Kaveripattanam block in Krishnagiri district of Tamilnadu. He cultivates Paddy in 1 acre of land. Impressed by his interest in agriculture, the agriculture department selected him to provide Silpaulin Method of Vermicomposting. It has been widely accepted that vermi-composting provides the nutrients and growth enhancing hormones necessary for plant growth. The fruits, flowers and vegetables and other plant products grown using vermi-compost. As the cost of production of this compost works out to about Rs.1.5 per kg, it is quite profitable to sell the compost even at Rs.2.50 per kg. So far Periyasamy has collected 400 Kilogram of Vermicompost from the demonstration method of Production and he uses for his own field.

The process of composting crop residues using earthworms comprise spreading the agricultural wastes and cow dung in layers as 3 feet wide, 9 feet length and 0.9 feet high beds. Earthworms are introduced in between the layers @ 350 worms per m³ of bed volume. The beds are maintained at about 40 - 50% moisture content and a temperature of 20 - 30o C by sprinkling water over the beds. The earthworms being voracious eaters consume the biodegradable matter and give out a part of the matter as excreta or vermi-castings. The vermi-casting containing nutrients is rich manure for the plants. The compost was protected from natural sunlight and predators.

Periyasamy says there are numerous advantages of vermicomposting such as natural fertilizer, not hazardous to soil, environment friendly, Improves soil aeration and

texture, improves nutrient status of soil and mostly cost effective. But its time consuming process it requires 3 months for first harvest which can be applied to as natural fertilizer to soil. Periyasamy was initially provided with the support of Rs.5000 which consists of Training Kit Rs.1000, under TNIAM Project.

- **Farm Pond by Agriculture Engineering Department and Fish Culture by Fisheries Department**

Farm pond is used basically used for rain water harvesting technique and to conserve the water in the drylands for groundwater recharge. It controls soil erosion and runoff rainwater for further use of Agriculture. It is very difficult to control runoff and soil erosion in the Garden Land. But establishing a farm pond in a precise position will help in conserving soil erosion and also controls surface water runoff.

One such initiative is establishing farm ponds in TNIAM Project with the farmer support by the Agriculture engineering department to Jagadeeshan Son of Vediappan is a 50 year old farmer hails from the village of Jagathapur village in Kaveripattanam block in Krishnagiridistrict. Jagdeeshan was in constant touch with Agriculture Engineering Department (AED) to get some kind of help. AED explained about the farm pond facility under TNIAM Project. Immediately he was interested and agreed to the support rendered by AED.

Jagdeeshan was provided with the seed money of Rs. 54000 as a subsidy and Rs.6000 as the farmer contribution. Farm Pond size is 31X20X1.70 metre was constructed by the Agriculture Engineering department.

Fisheries department supported him with stocking 6000 fingerlinks like Katla, Roghu, Miurgal, Philkendai and Viral Meen in Pond. The fishes are ready for harvest now which may fetch Rs.120/kg totally he may harvest 1200 to 1300 kilo from the pond.

- **Brinjal Cultivation and Drip Irrigation by Horticulture Department**

One of the main important tasks of Horticulture department is to Promote diversification with Hi-Tech Irrigation Technologies by installation of micro irrigation with fertigation for efficient use of water and increase the productivity and quality of the produce. Under this sector in the Kilkuppam village of Kaveriapattam Block of Krishnagiri district a marginal farmer Manoranjitham was selected for drip irrigation by the horticulture department. She was provided with 100% subsidy of 1.65 ha for Rs.1.78 Lakhs for her Brinjal Field under TNIAM Project. She was also provided with the inputs costing f Rs.20,000 for Brinjal Cultivation apart from drip irrigation. Farmer – to – farmer interaction has been arranged with the successful farmers for convincing them to have quick spread of the technologies. She got an yield of 3680 kilo in two harvest

which she sells for Rs.20/kg. Total duration of the crop is 120 days. She was selected by Horticulture department through one to one discussion and frequent interaction.

Sirumalaiyar Sub Basin

Bhendi and Brinjal cultivation in Shade Net

A shade net house is a structure that is framed and made using materials such as pipes and iron. This shade net house structure is covered by a net which is referred to as a shade net. Hence, the name – shade net house. But, this net is not just any ordinary net. It is one which is made of a 100% Polyethylene and the threads are specialized to stabilize the incoming UV radiation.



Balakrishnan, a progressive farmer hails from Kattakulam village in Vadipatti Block of Sirumalaiyar Sub Basin. He comes from the joint family background and holds 16 acres of land in which he cultivates Paddy, Coconut and Banana. He came to know about the shade net through Assistant Horticulture Officer of Vadipatti Block and shown interest to raise crops under the shade net. He was given continuous support to facilitate knowledge about Shade net by the Horticulture Department of Sirumalaiyar Sub Basin through other Schemes of Government of India undertaken by the Horticulture Department. He had attended village melas organized by the Horticulture Department to know about the Shade net Scheme under TNIAM Project. To erect the structure he initially faced the difficulty because his land area is located in the remote location and no road facility is available. He managed to erect the structure with great difficulty.



He cultivates Bhendi-Samrat Variety in about 1500 square feet and Brinjal-Simran Variety in 1000 Square feet. Total shade net area is about 2500 square feet with the 50% Subsidy of Rs.887500. Shade net maintains the temperature of around 25.6 degree Celsius. Balakrishnan says he is able to raise the crops easily during the summer season because it bring balance in the temperature required for the crops and shade loving plants. During summer pest attack will be high and it shade net there is no incidence of Pest attack. Sucking pest will be very high in summer both in Bhendi and Brinjal crops but due to maintenance of optimum temperature there is no incidence of Pest attack. Bhendi Yellow Vein Mosaic Virus, Powdery Mildew is common disease which normally leads to reduce in the yield of Bhendi and Brinjal crops and it crops under shade net shows there is no such incidence of disease/pest attack.

In summer temperature normally their will be drop of flower and and those get minimized under the shade net. It improves pollination among the crops. Balakrishnan irrigates the field once in two weeks through rain hose and soil is clay loamy it can maintain the moisture for maximum two weeks. It saves water without drenching the field very often.

Bhendi-Samrat Variety crop duration is about 90-100 days. He takes an yield of 90 kg in three days. Totally there will be 18-20 pickings of the crop and he sells Rs.30 to Rs.50 kg. He is yet to take a harvest of Brinjal crop. Similary there is also possibility to raise cucumber, Green leaf vegetables, Tomato and KodaiMilagai under Shade net in any season. The shade net structure can withstand 10 years duration and green colour Polyethylene sheet need to be changed once in four years. Totally only one shade net has been allotted for Sirmalaiyar Sub Basin but that facility has been followed by progressive farmer like Balakrishnan.



Crop Diversification-Kudiraivalli

Crop diversification is the introduction of new crops or changing cropping systems to agricultural production on a particular farm taking into account the different returns from value-added crops with complementary marketing opportunities. Diversification in agriculture is key in achieving food security, improved human nutrition and increase in rural employment.



Suganthi Mary, a women farmer hails from the village of Silukuvapati in Nilakottai block of Dindigul District. Her husband is Kennedy Ambrose who also involves himself in the agriculture operations. Suganthi Mary is the first farmer who undertook Kudiraivalli Cultivation in Nilakottai Block. Through leaflet distribution undertaken by the Agriculture Department she came to know about importance of Kudiraivalli. She cultivated as a Rabi season crop.

She used to cultivate normally Paddy crop but due to severe drought she opted to cultivate Kudiraivalli. During the process of cultivation she undertook soil test with the support of Agriculture Department and decided to undertake Kudiraivalli cultivation based on the recommendations. She used Farm Yard Manure, Green Leaf Manure and mostly organic manures were used in the Cultivation of Crop. At the time of ploughing the field Bio fertilizers were such as Azhospirillum and Phosphobacteria were extensively used. Duration of the crop is 65-70 days and variety used for



cultivation is Co-7. She harvested 1300 kilograms of Kudiraivali in 2.5 acres of Cultivation. 1 kilo she sold at the rate of Rs.60. In processed pocketing she sold at the rate of Rs 90. Normally in Nilakottai block the estimated yield is about 375 Kilogram per acre and districtwise the yield is about 450 Kilogram per acre. Cost of cultivation is Rs.7550. She got an income from the cultivation as Rs. 24900 and through post harvest management she got an extra income of Rs.17350.(Please check this figure)

Uses:



Through Value addition of Kudiraivalli one can use it for preparation of

- Meals
- Laddu
- Adai
- Upuma and Pongal
- Payasam
- Its highly nutritious food used to control diabetes.

Crop Diversification Maize

Maize is one of the most important food crop after rice and wheat. The maize is cultivated throughout the year for various purposes including grain, fodder, green cobs, sweet corn, baby corn and pop corn. Under TNIAM Project Maize is used as crop diversification in order to reduce the consumption of water which is one of the main agenda of the Project.

Through one to one discussion with the farmers in the evening time the Agriculture department has convinced about 5 farmers in Nilakottai block of Sirumalaiyar Sub basin to undertake Maize cultivation as the alternate crop of Paddy. They were provided with the Pamphlets to educate them about the importance, method of cultivation, cost of cultivation involved in the cultivation of hybrid maize. Chandrabose, a 50 year old farmer in Nilakottai area cultivated Maize crop undertaken the demonstration plot in 50 cents with the hybrid variety CP818. Spacing adopted for the cultivation of Maize crop is about 75cmX24cm. Total duration of the crop is 105 days. Total cost of cultivation borne by farmer is Rs.20,000 and Subsidy is Rs.5000 from TNIAM Project.



Chandrabose made the seed treatment technique with the help of chemical chloropyrifos 20 EC before sowing in the field to control seed borne disease. In addition to that Metalaxis

6gm was used per kilo to reduce borer in shoots. He applied Farm Yard Manure (FYM) 6.25 tonnes and 10 pockets of Azospirillum and Phosphobacteria to the soil to maximise the yield. He used Pulses Blackgram as the bundcrop in order to reduce the pest attack. Chadrabose took an yield of 13 tonnes from 50 cents and one tonnes he sold for Rs.2200.

Dairy Interest Group

About 25 Dairy Interest Group (DIG) members were formed from different villages in Nilakottai block of Sirumalayar Sub basin in Dindigul district. One such DIG member is 67 year old Sivanandi son of Panidevar ,one of the progressive farmers from Odiyagoundapatti village in Shivaganapuram block, who had shown interest in the formation of DIG, Animal Husbandry activities. He was head of the DIG group formed and given exposure visit to Namakkal Veterinary College. The Sirumalayar sub basin DIG group were given continuous interaction for fodder cultivation, calf management, mastitis management and infertility management demonstrations. This activity demonstrated better dairy farming practices to large number of farmers in the sub basin resulted in sustained adoption and improved milk productivity. Sivanandi the DIG group members actively disseminates the advantages of better animal husbandry practices to other farmer in the village. DIG members were equipped with one training program on Artificial Insemination Technique to animals.

Fodder Cultivation

Fodder is deficit in the Sirumalaiyar Sub Basin villages to the tune of 30-40%. The short fall was addressed by increasing the fodder biomass by providing fodder Sorghum, Cow Pea and Agathi varieties through the Dairy Interest Group. The Dairy Interest Group, AHD undertakes fodder development in one acre for each farmer totalling to 15ha in a year for five year period. Sivanandi was taken to the nearby villages within venterinary jurisdiction to adopt the practices followed by the other farmers in the area.



The TNIAM Project demonstration crop in Sivanandi field acts as a stimulating factor to adopt extensive fodder cultivation to the nearby village farmers thereby reducing the fodder gap in the village.

Artificial Insemination



Veeralakshmi, a women farmer from Odiyagoundapatti village had the great difficulty in bringing animal to the Veterinary hospital because of the very remote location. So in order to avoid the difficulty the Consultant were appointed by AHD to ensure the success of the AI program and farmers prefer to have their animals inseminated at the door steps as this not only saves their man hours but also increase the success rate.

Veeralakshmi has the breed jersey cross which is 2 year old calf done with the Artificial Insemination with the Jersey Frosen Semen Straw. So far the AHD has achieved 80% target under Sirumalaiyar Sub basin covering 1700 animal population.

Pandal Cultivation in Sirumalaiyar Sub Basin

Pandal vegetables, being short duration crops, fit very well in the intensive cropping system. It offers viable option for the growers to get increased income per unit area. It includes no. of vegetables viz. bitter gourd, snake gourd, ribbed gourd, panda avarai etc. These vegetables are grown on commercial scale and are capable of giving high yields and high economic returns to the growers. It has tremendous market potential. The cultivation of vegetables is constrained due to high initial investment cost. With the objective of enhancing area under pandal vegetables and encouraging farmers to obtain increased income, it is proposed to implement under TNIAM project on "Encouraging Cultivation of Pandal Vegetables"



Under TNIAM Project in Sirmalayar Sub Basin 13 progressive farmers were identified to undertake Pandal Cultivation. In Nilakotai Block alone 4 beneficiaries were identified and they were given support for Pandal Cultivation covering 6.65 ha. Farmers were selected by Village Mela Campaign and One to One discussion with them by Horticulture Officer. One such Beneficiary is David, from the Village Malayagoundanpati in Nilakotai block of Dindigul District. Due to severe drought condition in the area we had adopted Pandal Cultivation in 0.60ha with the subsidy of 120000 says Mary wife of David. Farmer contribution is 50%. The structure alone has been erected and she is yet to grow the vegetables.

Drip Irrigation in Tapioca and Brinjal Field (Agaram Tank)



Micro Irrigation technology plays a vital role in Agriculture in saving water and increasing productivity through effective utilization of every drop of water. Micro Irrigation has received considerable attention from farmers for its perceived ability to contribute significantly to groundwater resources development, agricultural productivity and economic growth. Drip Irrigation System is a life saver for many farmers under TNIAM Project, by enhancing the yield and quality of the produce. Increasing water scarcity and limited availability of labour has paved the way for implementation of Micro Irrigation scheme. Micro Irrigation technology improves water use efficiency by 40% - 60% by precise water application. Through fertigation technology, fertilizers are directly applied to the root zone in drip irrigation, hence fertilizer use efficiency is also increased.

Under TNIAM Project in Sirumalaiyar Sub Basin 23 Small farmers were selected to provide drip irrigation under the area coverage of 15 ha. If they were small farmers they were provided with 100% free and if they rich farmers they were provided with 50% contribution from the farm. One such two Progressive farmer namely Karuppaiah and Jamunarani were identified in Pallapatti Village through Village Mela Campaign and Frequent Interaction with Horticulture Officer to provide drip irrigation facility. Karuppaiah cultivates Tapioca in 4 acres (Subsidy Rs.110012) and Jamunarani Cultivates Brinjal in 2.47 acres (Subsidy Rs.58000) respectively. They were watering the plant once in 15 days by Saving enormous amount of water through Drip Irrigation. Karuppaiah says Micro Irrigation has emerged as a technology for sustainable agriculture and a suitable solution to manage the fast depleting ground water sources. By adopting this technology there is a significant impact on income with increased productivity, uniform growth and earlier maturity.



Silpaulin Method of Vermicomposting



Sampath, a 44 year old progressive farmer hails from the Panaikudi village in Sathiyar Sub basin of nearby Maduari town in Tamilnadu. He cultivates Paddy, Guava and Pulses in 3 acres of land. Impressed by his interest in agriculture, the agriculture department selected him to provide Silpaulin Method of Vermicomposting along with another 5 farmers in 5neighbourhoodvillages. It has been widely accepted that vermi-composting provides the nutrients and growth enhancing hormones necessary for plant growth. The fruits, flowers and vegetables and other plant products grown using vermi-compost. Sampath utilizes all the vermicompost to Paddy, Guava and Pulses in his own fields. 6 Kilogram of earthworms was introduced in his farm. One kilogram it a may costly around Rs.10-12 if he decide to sale the Vermicompost. 45 days once he harvest the Vermicompost and life period will be around 7-10 years.

Sampath says there are numerous advantages of vermicomposting such as natural fertilizer, not hazardous to soil, environment friendly, Improves soil aeration and texture, improves nutrient status of soil and mostly cost effective. But its time consuming process it requires 3 months for first harvest which can be applied to as natural fertilizer to soil. Sampath was initially provided with the support of Rs.6000 which consists of Training Kit Rs.1000, Backend Subsidy: Rs.1750 and Rs.3250 for worms, pole and shade net under TNIAM Project.

TNAU-Green Manure, SRI and Pulses

Communication Specialist had interacted with more than 15 farmers who undertook Green Manure+SRI+Rice FallowPulses in Sirumalaiyar Sub basin. As there was no standing crop during the time of field visit unable to document the stories. But 15 farmers shared their opinion about Green Manure+SRI and Pulses. Total target is 50 ha for both Dindugul and Periyakulam areas. Rangaraj, a Progressive farmer who undertook SRI cultivation says he took an yield of 152 bags/ha and totally 7.5 tonnes. Ranagaraj says he had reduced inorganic fertiliser due to application of Green Manure Daincha. During the farming operations he undertook weed eradication through Conoweeder thereby increasing air space among crops and tillers in the crop.



Pulse Seed Village in Varahanadi and Manjalar Sub Basin



Totally four Pulse Seed Village groups were formed under TNIAM Project in Varahanadi (3 groups) and Manjalar (1 Group). One such group exist in Vadukapatti Village of Periyakulam Sub Division of Varahanadi Sub Basin. Agriculture Department under IAM Project formed a group of 20 farmers with a initial seed money of Rs.250 each and total sum of Rs.5000. The group has total 19 men and 1 woman members formed in the year March 2019. Impressed with the group performance and unity under IAM Project the Agriculture Department has provided Rs.50,000 has the revolving fund. Training was given to farmers to maintain the joint account created in the bank. 10 people had asked Rs.5000 each for farming operations, purchase of seeds and fertilizer.

Group members cultivate Vamban 4, Vamban 5 variety. For one hectare they get an yield of 800 kg. 1 Kilo they sell for Rs.50 under Regulated Market. Veerabahdran, President of the Pulse Seed village says they hadintiated the process in March and Impact is yet to be ascertained.

Fish Cultivation in PWD Tank in Sathiyar Sub Basin

Fisheries Department is promoting fishculture in the Usilampatti tank in Sathiyar Sub basin.

The effective water spread of this tank for fishculture is 12ha and 24,000 fish fingerling of Indian Major Carp has been stocked. The fish culture strategy adopted is stock, manage and harvest. The fishes stocked will grow by feeding on the natural feed available in the tank. The culture will be continued till the water level reduces when let out for irrigation. The harvest will be done by inland fisheries cooperative society. The culture is in progress and a fish production of 1500kg/ha is expected.

Wall Paintings undertaken by Horticulture to Disseminate technology in Varahanadi, Manajalar Sub Basins



Farm Pond Support by Agriculture Engineering Department



Farm pond is used basically as rain water harvesting technique and to conserve the water in the drylands for groundwater recharge. It controls soil erosion and runoff rainwater for further use of Agriculture. Its very difficult to control runoff and soil erosion in the Garden Land. But establishing a farm pond in a precise position will help in conserving soil erosion and also controls surface water runoff.

One such initiative is establishing farm ponds in TNIAM Project with the farmer support by the Agriculture engineering department. Chokkanathan, 57 year old farmer hails from the village of Ponnariyankottai in Pattukkottai of Cauvery Delta Sub basin. His 5 acre of Paddy, Sugarcane farm was completely destroyed in the Kaja Cyclone and he was helpless. He was survived with his Rani, elder daughter Sivaranjani and an engineering student Adisankar. Chokkanathan was in constant touch with Agriculture Engineering Department (AED) to get some kind of help. AED explained to Chokkanathan about the farm pond facility under TNIAM Project. Immediately he was interested and agreed to the support rendered by AED.

Chokkanathan was provided with the money of Rs. 54000 as a subsidy and Rs.6000 as the farmer contribution. Farm Pond size is 31X20X1.70 metre. With his own interest he let 400 seedling of fish like Catla,Rohu,Mrigal and he spentRs.3000/-. He got an yield of 200 kilo and one kilogram he sold for Rs.150. He takes two harvest in a year. Net profit per year is Rs.20,000. Now Chokkanathan earns the income through Farm Pond with the support rendered by the AED under TNIAM Project. Chokkanathan says water level nearby wells remains stagnant as we are maintaining water level in the pond.

Integrated Pest Management Group by Agriculture Department

A 15 member women farming community came together to form IPM group in the Thuvankurichi Village of Pattukkottai Block of Cauvery Delta under TNIAM Project. Women group members actively involve in the farming operations and they were very much interested to produce mass multiplication of Trichoderma Viridi. They were provided with training by the Agriculture Department on how to produce the mass multiplication of T.Viride

Trichoderma Viride



Trichoderma viride is a fungus and a biofungicide. It is used for seed and soil treatment for suppression of various diseases caused by fungal pathogens. The fungicidal activity makes T. viride useful as a biological control against plant pathogenic fungi. It has been shown to provide protection against such pathogens as Rhizoctonia, Pythium and even Armillaria. It is found naturally in soil and is effective as a seed dressing in the control of seed and soil-borne disease including Rhizoctoniasolani, Macrophominaphaseolina and Fusarium species.

When it is applied at the same time as the seed, it colonizes the seed surface and kills not only the pathogens present on the cuticle, but also provides protection against soil-borne pathogens.

Mass multiplication: Molasses yeast medium is prepared in fermentor and sterilized as described earlier. Then after the medium is cooled, the mother culture is added to the fermentor @ 1.5 lit / 50 lit of the medium



and incubated at room temperature for 10 days. Then the incubated broth containing the fungal culture is used for commercial formulation preparation using talc powder

Maheswari the IPM Group member says Horticulture department were keen to purchase the T.Viride produced by group and month they can produce maximum amount of 100 kilo which can be sold to Rs.1000. Apart from that they were also planning to use the T.Viride for the own farm land.

Vermicompost by Silapaulin Method:

Sasikumar, a progressive farmer hails from the Thuvarakurichi village of Pattukottai in Thanjavur district of Tamilnadu. He cultivates Paddy 2 acres of land. Impressed by his interest in agriculture, the agriculture department selected him to provide Silpaulin Method of Vermicomposting along with another 5 farmers in Pattukkotai Block. It has been widely accepted that vermi-composting provides the nutrients and growth enhancing hormones necessary for plant growth. The fruits, flowers and vegetables and other plant products grown using vermi-compost. As the cost of production of this compost works out to about Rs.1.5 per kg, it is quite profitable to sell the compost even at Rs.2.50 per kg.



Sasikumar says there are numerous advantages of vermicomposting such as natural fertilizer, not hazardous to soil, environment friendly, Improves soil aeration and texture, improves nutrient status of soil and mostly cost effective. But its time consuming process it requires 3 months for first harvest which can be applied to as natural fertilizer to soil. Sasikumar was initially provided with the support of Rs.5000 which consists of Training Kit Rs.1000, under TNIAM Project.

Artificial Insemination by Animal Husbandry Department



In Pattukkotai block about 200 animals had been done on Artificial Insemination. Total population of Pattukkotai block is expected to cover is about 300. Dr. Veeramani says infertility camp has been conducted in order to check the hormonal imbalance, reproductive disorders, vitamin and mineral deficiency. Prior to camp sufficient door to door campaign and message through Progressive farmers were conveyed to cover all the animals. Artificial Insemination has been given to Sambath, 55 year old farmer Cattle before three months back and remains positive.

Pandal Cultivation in Thanjavur district under Cauvery Delta



Pandal vegetables, being short duration crops, fit very well in the intensive cropping system. It offers viable option for the growers to get increased income per unit area. It includes no. of vegetables viz. bitter gourd, snake gourd, ribbed gourd, panda avarai etc. These vegetables are grown on commercial scale and are capable of giving high yields and high economic returns to the growers. It has tremendous market potential. The cultivation of vegetables is constrained due to high initial investment cost. With the objective of enhancing area under pandal vegetables and encouraging farmers to obtain increased income, it is proposed to implement under TNIAM project on "Encouraging Cultivation of Pandal Vegetables"

Farmers were selected by Village Mela Campaign and One to One discussion with them by Assistant Director of Horticulture. One such Beneficiary is Senthil Kumar, from the Village of Pudhupatti Village in Budhalur block of Thanjavur District. Due to severe drought condition in the area we had adopted Pandal Cultivation in 0.25ha with the subsidy of Rs 45286 says Senthil Kumar. Farmer contribution is 50%. He cultivates Bitter Gourd through the Pandal Cultivation under TNIAM Project. He also has the plan to cultivate Cucumber under Pandal.

Brinjal Cultivation under Horticulture Department

Amalraj, a 45 year old farmer from Vallamputhur village in Sengipatti Block were provided with 80 gms of Mahyco-10 Brinjal variety seed by Horticulture Department of Thanjavur district. He was given seed money of Rs. 8000 to cultivate Brinjal Crop of 0.40 ha and he takes an approximate yield of 2300 kilo in two harvest which he sells for Rs.20/kg. Total duration of the crop is 120 days. He was selected by Horticulture department through one to one discussion held under Village mela campaign in Thanjavur district.



Micro Irrigation Support under Horticulture Department



One of the main important task of Horticulture department is to Promote of Hi-Tech Irrigation Technologies by installation of micro irrigation with fertigation for efficient use of water and increase the productivity and quality of the produce. Under this sector in the Vallamputhur village of Sengipatti Block of Thanjavur district a marginal farmer DravidaSelvi has been selected for drip irrigation by the horticulture department.

She cultivates Tapico in 3.42 ha and drip has been installed under TNIAMP project at the rate of Rs. 290386. 100% subsidy. Farmer – to – farmer interaction has been arranged with the successful farmers for convincing them to have quick spread of the technologies.

EPC Mahindra Company installed the Drip irrigation in the farmer field which was jointly inspected by Joint Director of Horticulture and Deputy Director of Horticulture for the release of the money.

Fish Culture in Farm Pond by Fisheries Department

Fish culture is promoted in a Farm pond at Vellapermbur village of Thrivayaru block established under TNIAM Project by Agriculture Engineering Department

The Fisheries Department has provided provided fish seed and feed. The farmer plans to harvest the fishes after the fishes attain a weight of more than 500gm. He says the fishes will fetch a good price of Rs.150/-per Kg and hopefull getting a good profit. He also desires to sustain the activity in the coming season utilizing his own capital.



Cage Fish Culture :

Fisheries Department is demonstrating Fish farming in cages in Yela Lake of Maneyeripatti Village in Budhalur Block of Thanjavur District.



A group of four progressive farmers lead by Thiru . Chandrasekar are the beneficiaries. The cage was installed from the project and inputs like fish seed (GIF Tilapia) and feed were provided to the group from the project. Maintenance of cage like cleaning the cage and feeding the fish is done by the group. The culture is in progress and the group is optimistic that the activity will be a profitable one.