

### 3. AGRICULTURAL ENGINEERING

#### 1. Introduction

The Agricultural Engineering Department implements schemes relating to

- prevention of land degradation by controlling soil erosion through watershed management;
- promotion of efficient use of water and;
- Intensification of farm mechanisation.

#### 2.1 Agricultural Mechanization

Mechanization is a very important intervention in agriculture for increasing productivity of crops. For efficient utilization of scarce and fast depleting resources, farm mechanization assumes even greater significance.

##### 2.1.1 Land Development Machinery for hiring.

Land levelling and land shaping machinery is made available to farmers at reasonable rates on hiring by the department. 91 Bulldozers, 63 Laser Land Levellers, 171 Tractors, 2 Hydraulic Excavators, 7 Paddy Transplanters and 50 Paddy Combine Harvesters are available with the department for hiring out to the farmers at

nominal hire charges. These machinery are also utilized for relief works during flood and natural calamities. The department is developing a mobile based online booking system for hiring of machinery.

##### 2.1.2 Minor Irrigation Machinery.

The Department is having 30 Rotary Drills, 9 Percussion Drills, 19 Mini Drills, 62 Hand Boring Sets, 7 Long Hole Equipments and 32 Rock Blasting Units for hiring out to the farmers at nominal charges. These machinery are used for digging of new bore wells and deepening of open wells. Also, 8 Resistivity Meters and 2 Electrical Loggers are also given on hiring to farmers for identification of underground water resources for locating the aquifers.

##### 2.1.3 Agricultural Mechanisation Programme under National Agriculture Development Programme (NADP)

Steps are being initiated for promotion of end to end mechanization in Sugarcane cultivation in custom hiring mode through Entrepreneur Development by providing 40% subsidy with a financial outlay of Rs.2.77 Crore under NADP. During 2014-15, 7694 agricultural machinery and implements were distributed to

farmers with a subsidy allocation of Rs.30.00 Crore.

The scheme will be continued during 2015-16.

#### 2.1.4 Agricultural Mechanisation Programme under the Centrally Sponsored Scheme of Sub Mission on Agricultural Mechanisation

Under this, farmers can buy agriculture machinery, availing 40% subsidy of the cost of machinery / implements (50% subsidy for SC/ST, Small & Women farmers). Tractor, power tiller, rice transplanter, specialised self propelled machinery, self propelled horticultural machinery, tractor (below & above 35 HP) & power tiller driven equipments, manual / animal drawn equipments, plant protection equipments etc. are provided to farmers on subsidy.

During the year 2014-15, an amount of Rs.2.53 crore has been provided as subsidy to the farmers towards distribution of 222 numbers of Tractors. An amount of Rs.1.35 Crore has been allotted for the establishment of Farm Machinery Testing Centre at Agricultural Engineering College and Research Institute, Tamil Nadu Agricultural University, Kumulur, Trichy District.

The State Government has announced establishment of Custom Hiring Centres in all the 385 blocks with the objective of making

machinery available for taking up agricultural operation like sowing, transplanting, weeding, plant protection and harvesting through registered Farmer groups. During 1<sup>st</sup> Phase, 65 Custom Hiring Centres are proposed to be established under NADP-SMAM scheme at an estimate of Rs.25.00 Lakh / centre and works are under progress. Out of this Rs.25.00 lakh, 40% (Rs.10.00 Lakh) will be subsidy and balance 60% (Rs.15.00 lakh) will be the beneficiary contribution. An amount of Rs.6.50 Crore has been provided under this scheme. Also, during 2<sup>nd</sup> phase, it is proposed to establish 99 Custom Hiring Centres at a cost of Rs.9.90 Crore.

Under the scheme of "Post Harvest Technology and Management" 22 Nos. of Multi Crop Threshers, 27 Nos. of Maize Husker Shellers and 32 Nos. of Mini Dhal Mills were purchased at a cost of Rs.134.39 lakh and 327 demonstrations of the above machinery are being conducted at a cost of Rs.9.80 lakh. After completion of demonstration for at least 12 months, the above machinery will be handed over to the user groups at 50% of the price of the machinery.

During the year 2015-16 the schmeis is proposed to be implemented with an outlay of Rs.13.22 Crore.

### 2.2.1. Soil conservation in River Valley Project

Department is also carrying out soil and water conservation works to prevent soil erosion and land degradation. Soil Conservation Scheme in interstate catchments of River Valley Project was initiated and sponsored by Government of India to reduce the rate of sedimentation of the multipurpose reservoirs.

In the state, the River Valley Project is being implemented from 2013-14 in South Pennaiyar and Mettur catchments under National Agriculture Development Programme. During the year 2014-15, works were carried out in an area of 12394 Ha. and 952 no. of structures were constructed at an outlay of Rs.11.64 crore.

During the year 2015-16, it is proposed to continue the programme in Dharmapuri, Krishnagiri and Erode districts by covering an area of 3710 Ha. and constructing 255 Nos. of structures.

### 2.2.2. Soil & Water Conservation under Hill Area Development Programme

Hill Area Development Programme is implemented with the objectives of eco-restoration, eco-preservation and eco development, in the Nilgiris district.

Works relating to soil and water conservation and landslide mitigation are taken up under this scheme. However, for taking up works in private patta lands the beneficiary has to contribute 5% (SC/ST farmers) and 10% (other farmers). The community works and the landslide treatment measures are executed with 100% contribution from the scheme.

During 2014-15, 895 Nos. of soil water conservation structures were constructed. Channel widening and straightening was undertaken for 35 kms. at a total financial outlay of Rs.5.67 crore.

### 2.2.3. Treatment in Krishnagiri and Kundah reservoir projects under Dam Rehabilitation and Improvement Project

The World Bank aided Dam Rehabilitation and Improvement project (DRIP) is being implemented in Kundah and Krishnagiri dams by Agricultural Engineering Department, with the objective of reducing siltation of multipurpose reservoirs by adopting appropriate soil conservation measures in the catchment areas.

It is proposed to implement Soil Conservation activities in catchment area of Kundah and Krishnagiri Reservoir Projects under the above scheme over a period of 3 years

(From 2014-15 to 2016-17) with a total outlay of Rs.15.41 crore.

#### 2.2.4. Deepening of Farm Ponds created under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) in Ramanathapuram District

Farm ponds are cost effective Rain Water Harvesting structures which have become popular among farmers. Water stored in farm pond can be used for providing supplemental irrigation for rainfed crops like pulses and millets during critical stages of growth. As announced by the Hon'ble Chief Minister during Collectors' Conference 2012, Farm ponds are taken up for deepening upto a depth of 0.5 metre under MGNREGS and further deepening up to two metres is done by the department using machinery. Work related to deepening of 311 farm ponds were completed at a cost of Rs.1.51 Crore during the year 2013-14. Deepening of 973 farm ponds at a cost of Rs.4.72 crore was done during the year 2014-15.

During 2015-16, it is proposed to take up 1755 farm ponds for deepening at a cost of Rs.8.77 crore. During 2015-16, it is also proposed to construct 32 Nos. of farm ponds at a cost of Rs.16.82 lakh as 1<sup>st</sup> instalment released by Government of India under National

Mission for Sustainable Agriculture (NMSA) with 50% subsidy assistance in five districts viz. Perambalur, Pudukkottai, Sivagangai, Virudhunagar and Thoothukudi.

#### 2.2.5. Construction of Recharge Shafts under National Mission for Sustainable Agriculture

Construction of 497 Recharge Shafts was taken up at a cost of Rs.2.98 crore during the year 2014-15 under National Mission for Sustainable Agriculture. These structures will facilitate recharge of ground water aquifer in 7 districts namely Madurai, Dindigul, Ramnad, Sivaganga, Virudhunagar, Tirunelveli and Thoothukudi.

### 2.3. Water Management

Irrigation is critical for the success of Agriculture. The water resources of the State have been exploited up to 90% of their potential. The water use efficiency of the conventional irrigation methods is only about 35-40%, warranting judicious management of irrigation water.

#### 2.3.1. Command Area Development and Water Management Programme under Accelerated Irrigation Benefit Programme

The Centrally Sponsored Command Area Development and Water Management

Programme (CADWMP) under Accelerated Irrigation Benefit Programme (AIBP) is being implemented in Tamil Nadu with the financial assistance of Central and State Governments in the ratio of 50:50.

During 2014–15, CADWMP was implemented in an area of 2,113 Ha. with a budget of Rs.19.25 crore in six ongoing command areas viz., Vaigai Project (Ramanathapuram, Sivagangai and Madurai Districts), Kalingarayan Anaicut Project (Erode District), Manimukthanadhi System (Villupuram and Cuddalore Districts), Pelandurai anaicut Project (Cuddalore District), Ellis Anaicut Project (Villupuram District) and Cheyyar anaicut System (Thiruvannamalai District).

During the year 2015–16, it is proposed to continue Command Area Development and Water Management Programme to cover an area of 11,200 Ha. at an expected financial outlay of Rs.44.30 Crore in the on-going above project areas except Vaigai Project. Also, it is proposed to cover an area of 5000 Ha. at an outlay of Rs.21.07 Crore in three new project areas of Kalingalar Nichabanadhi Irrigation Project (Tirunelveli and Virudhunagar Districts), Kelavarapalli Reservoir Project (Krishnagiri District) and Kudhiraiyar Reservoir Project (Dindigul and Tiruppur District).

Participatory Irrigation Management (PIM):

With a view to strengthen the Water Users Associations, financial assistance is extended as a one time functional grant of Rs.1,200/- per Ha. for the associations from the year 2014-15. Maintenance of the assets of WUAs (Water Users Associations) are carried out from the interest accrued from this fund. 1989 Nos of Water Users Association/ Farmer's Councils have been formed covering an area of 9,35,664 Ha. in the 33 command areas. So far, Rs.37.86 Crore has been released as maintenance grant.

2.3.2. World Bank Aided Tamil Nadu IAMWARM Project

The Irrigated Agriculture Modernisation and Water bodies Restoration and Management (IAMWARM) Project has been implemented with the assistance from World Bank since 2007-08.

Under this scheme 48,302 Ha. have been covered with Micro Irrigation System (MIS), 2,691 Nos. of farm ponds have been constructed and 800 numbers of farm machinery/implements have been distributed to WUAs for use of sub basin farmers. Apart from this, works relating to 882 Rain Water

Harvesting structures and 12 improved water conveyance systems have been completed.

During the year 2014-15 and 2015-16, the scheme was implemented with a financial outlay of Rs.22.70 crore. This programme has been completed on 30.06.2015.

### 2.3.3. Community bore well scheme in Sivagangai District.

A sum of Rs.20.29 lakh was spent under National Agriculture Development Programme for laying 12 bore-wells to farmers groups in Sivagangai District at 50% subsidy. User group each consisting of 10-15 Nos. of farmers covering a minimum of 10 Hectares per bore well is formed and registered. 50% of bore well cost is paid by the Department as subsidy and balance 50% is contributed by the user group.

## 3. Solar Energy – New Innovative schemes

### 3.1. Provision of Solar Driers to farmers /farmers' groups for drying agricultural produce

The State Government is also promoting use of solar energy in agriculture. Solar driers for faster drying of agriculture produces like coconut, chillies, moringa leaves, maize and fruits like banana and tomato are installed at 50 % subsidy. 100 Nos. of Poly carbonate sheet

covered parabolic green house type solar driers (with a minimum floor area of 400 sq.ft.) at a total cost of Rs.4.00 Crore with 50% subsidy assistance (Rs.2.00 Crore) sanctioned under NADP for the year 2014-15 are being installed in various districts of Tamil Nadu.

During the year 2015-16, 50 more numbers of Poly carbonate sheet solar driers are proposed to be installed at a cost of Rs.3.00 Crore with 50% subsidy assistance under NADP.

### 3.2. Provision of Solar Powered Pumping System with automatic tracking facility

The scheme of providing 2000 nos. of Solar powered pumping system linked with Micro irrigation system is under implementation. Under the scheme 80% subsidy is provided to beneficiary farmers of which 50% is provided under NADP and 30% under the scheme MNRE.

Work orders have been issued to the approved companies for installation of 1750 Nos. under three categories viz., bore wells, open wells and surface storage tanks. 1299 nos. of pumps have been installed at a cost of Rs.34.50 crore. The scheme is to be continued during the year 2015-16.