CHAPTER VIII

Agricultural Extension, Education and Research

I. Extension

Agricultural Extension is one of the important activities of Tamil Nadu Agricultural University. The technologies developed by this University or any other research organization will be useful to the society only if it reaches the ultimate beneficiaries namely the farmers. Therefore, the University is reorienting its focus on extension by actively involving in various ongoing activities of the State Agriculture Department.

Agricultural Development Programme

Under the National Agricultural Development Programme the Tamil Nadu Agricultural University will be focusing its activities namely, Upscaling Precision Farming in Tamil Nadu, Establishment of Agri Clinics cum Mini Soil Test Laboratory, Agricultural Mechanization, Establishment of Automatic Weather Stations (AWS), Land Resource Inventory and GIS Database for Farm Village and Block Level Planning, Dryland Development and Popularization of Minor Millets, Promotion of Organic Manure Production and Organic Farming, Strengthening of Quality Seed Production and Distribution, e-Agriculture through '**agritech'** Portal, Krishi Vigyan Kendras, Quality control, monitoring and training.

Tamil Nadu Precision Farming Project is aTamil Nadu State sponsored turnkey project implemented at Dharmapuri and Krishnagiri districts in 400 ha with a total budget of Rs.720 lakhs in the last three years. The technologies for high value agriculture transferred through scientists vs farmer mode and subsequently farmer vs farmer mode served the purpose of Transfer of Technology (TOT) very effectively. The major crops covered are vegetables, flowers, banana and turmeric. The important technologies adopted are community nursery, high yielding and hybrid varieties, chisel ploughing, drip fertigation and market-led production processes. The farm women and workers also get trained in new agricultural technologies. Based on the selected crops grown in the programme by the farmers the net returns/ha varied from Rs.1.50 lakhs minimum to a maximum net return from the crops like banana (Rs.6,55,000/ha), brinjal (Rs.6,18,000/ha), tomato (Rs.3,50,000/ha), flower crops like rose (Rs.10,00,000/ha), golden rod (Rs.1,78,000/ha) and chrysanthemum (Rs.2,92,000/ha) upto a maximum of Rs.6 lakhs. The net return increases when the market price increases.

Under part II plan Rs.308 lakhs have been granted to put up small scale demo in 26 districts @ 20 ha in each through Tamil Nadu Agricultural University, during the year 2007-08. It is proposed to scale up the demonstration of precision farming technology to further strengthen the productivity, value addition and marketability of commodities. Therefore, the precision farming technology and micro-irrigation will be scaled up to cover 12800 ha with a total budget of Rs.64 crores during 2008-09 in order to maximize the productivity, enhance the quality and ensure better marketing of horticultural crops.

In order to promote technical skills of personnel, the Government of Tamil Nadu has sanctioned the training programme under Part II Plan to train the officers of Department of Agriculture, Horticulture, Agricultural Marketing and Agribusiness and Seed Certification and Organic Certification. The programme is being implemented at the Directorate of Extension Education and will be continued to be implemented during 2008-09 with a total budget outlay of Rs.122.50 lakhs.

An estimated 4000 extension functionaries of the Department of Agriculture and allied Departments will acquire training on following aspects: knowledge and skills related to frontier technologies in production and post-harvest management, enabling market-driven agriculture, promoting group farming through cluster approach, application of information and communication technologies in agriculture. Moreover, it is proposed to cover the topics like World Trade Organization, Agricultural Technology Management Agency (ATMA) public-private partnership, cluster approach, integrated nutrient management, integrated pest and disease management, soil health, micro-irrigation and fertigation will be covered in the trainers' training programme.

It was announced to cover Jatropha in 1 lakh hectares in Tamil Nadu in five years and programmed to produce seedlings and distribute at 50 percent subsidy for drip irrigation. During 2007-08 an amount of Rs.4.98 crores was allotted and out of this Rs. 2.50 crores was given to Tamil Nadu Agricultural University (TNAU).

An expenditure of Rs. 45.30 lakhs was incurredand 41.64 lakhs jatropha seedlings were produced.(TNAU - 6 lakhs; State Seed Farms – 26.2 lakhs. 11 biofuel private companies – 9.44 lakhs). These seedlings will be distributed to farmers during this financial year.

Directorate of Extension Education, Tamil Nadu Agricultural University, Coimbatore has been identified as the State Agricultural Extension Management and Training Institute (SAMETI) as part of extension reforms programme in the State. The SAMETI is a state level institute established on the patterns of MANAGE, and mandated to provide support in extension reforms.

The Krishi Vigyan Kendras act as a vital link in the transfer of technology activities of the University. It is entrusted with the main responsibilities such as conducting on-farm trials, front-line demonstrations, and associating with all major extension activities implemented by the State Department of Agriculture. Directorate of Extension Education, TNAU Coimbatore is functioning as a state level Monitoring Centre for all the 29 KVKs (including 15 private / NGO/ TANUVAS KVKs) functioning in the State. At present, 14 ICAR KVKs are functioning under Tamil Nadu Agricultural University. Steps are also being taken to get new KVK for Ariyalur and Tirupur.

To create more awareness among the farming community, and to disseminate agricultural technologies, the publication of Agricultural Technology Information Centre (ATIC) are put in the Indiamart website. Initially 12 TNAU agri consumption products are planned to be put in the Indiamart website. This will facilitate to sell the inputs and findings of TNAU to global market.

The Government of Tamil Nadu is equipping the State Agricultural Department with the State-of-the-art Information and Communication Technology (ICT) infrastructures under TNAUAGRITECH, which will facilitate agricultural related information access and advisory services to the farmers and all stakeholders. The programme is proposed to be implemented with objective of providinge-connectivity in all the 60 centers of Tamil Nadu Agricultural University with all the 385 blocks and 30 districts of Tamil Nadu. This will provide need based information to the farming community through TNAU Agritech portal with various ICT modes.

II. Education

Tamil Nadu Agricultural University is offering twelve undergraduate degree programmes. The programmes offered under general stream are B.Sc. (Agriculture), B.Sc. (Horticulture), B.Sc. (Forestry), B.Sc. (Home Science) and B.Tech. (Agricultural Engineering) and the programmes offered under self supporting stream areB.Tech. (Biotechnology), B.Tech. (Bioinformatics),B.Tech. (Horticulture), B.Tech. (Food Process Engineering), B.Tech. (Energy and Environmental Engineering),B.Tech. (Agricultural Information

Technology) andB.S. (Agribusiness Management). The following are the important activities taken up during the current academic year (2007-08):-

- During the academic year 2007-08, two new undergraduate programmes v*iz.,* B.Tech. (Agricultural Information Technology) and B.S. (Agribusiness Management) were started.
- e-education has been introduced for all undergraduate programmes. The syllabus and course materials are hosted in the website.
- Establishment of e-learning lab for training the UG teachers and preparation of e-learning resources.
- Internet connectivity to all the students' hostel has been provided.
- Two new diploma courses started at Regional Research Station, Aruppukottai and Rice Research Station, Ambasamudram.

Educational activities to be taken up in the year 2008-09

- Preparation of e-learning resources for the revised syllabus.
- Video streaming of lecturing by UG teachers
- E-learning resources will be developed for the courses of B.Sc. (Agriculture) under the
  ICAR-NAIP scheme.
- Online examination system is to be introduced from the next academic year.
- Starting of three new diploma courses at Agricultural College & Research Institute, Killikulam, Costal Saline Research Centre, Ramanathapuram and Horticulture Research Station, Pechiparai.

Tamil Nadu Agricultural University has a long standing collaboration with many Universities in USA for students and faculty exchange. The TNAU students also undertake research in various universities in Australia, Italy, Mexico, Japan, Canada, United Kingdom and South Africa.

Dual degree programme between TNAU and Cornell University, USA in "M.Tech. in Food Processing and Marketing and Master of Professional Studies (MPS) in Food Science and Technology" will be offered from 2008-09 academic year.

Distance Learning Programmes

The Directorate of Open and Distance Learning, one of the constituent units of the TNAU is offering distance learning programmes through correspondence mode *viz.,* Certificate Courses, PG Diploma programmes and PG Degree programmes for the benefit of various segments of the farming community, entrepreneurs, self help groups and other learners who aspire for correspondence education and interested in establishing agro-based industries in rural areas. In this direction, the Directorate of Open and Distance Learning has organized 16 certificate courses,3 post graduate diploma courses and 3 post graduate degree programmes (Table-11). The Directorate of Open and Distance Learning has proposed to organise5 certificate courses, 5 Post Graduate diploma courses and 2 post graduate degree courses during the year 2008-09 (Table-12).

III. Research

Tamil Nadu Agricultural University is takingup research works on various problems faced bythe agricultural sector in Tamil Nadu. These research projects are funded by the state and central governments and various national and international donors.Research programmes are undertaken by the scientists of Tamil Nadu Agricultural University in 10 colleges located in seven campuses (Table-13), 34 research stations(Table-14) 14 Krishi Vigyan Kendras and five plantclinic centres (Table-15). Need-based research activities are

carried out as decided in the various forums such as Scientific Workers' Conference and Crop Scientists' Meet which are held annually. The future research activities will be : -

Development of transgenic crops and hybrid to achieve higher yields in major crops such as rice, cotton, sorghum, cumbu, ragi, red gram, blackgram, groundnut, development of post-harvest technologies, mechanization technologies for cotton and rice, developing implements for plantation crops, improvements in food safety and quality for banana and mango processing, special designs for drainage systems for waterlogged areas in command areas, concerted efforts to make hybrid jatropha, evaluating the properties of jatropha oil and bio-diesel and related agro industrial tie-ups, and biogas production from agro-industrial wastes, sewage, municipal wastes, and market wastes.

Floriculture Research Station at Thovalai

Action has been taken to establish a Floriculture Research Station at Thovalai in Kanyakumari District under the special grant. An initial amount of Rs. 10 lakhs has been allotted.

Under the Rs.50 crore special grant from Government of India research on nanoscience and nanotechnology will be taken up. (Nano means very small and measures one billionth of a meter. This technology aims to design at 1-100 nanometer size of target particles and characterization, production and application of structures, devices and systems by controlling shape and size):-

- Nanoherbicides and nanofertilizers will be useful to manage weeds in the rainfed agriculture and increase the productivity of the soil by controlled release of nutrients.
- Applying nanotechnology for identifying and separating viable seeds from dead seeds.
- Remediation of polluted soils using nanoparticles.
- Improve the shelf-life of food items through nanomembranes.