

Agro-Physio-Soil Science-Farm Management

Coordinator

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Mandates:

- To conduct research and developmental work for improvement in quality mulberry leaf productivity through agronomical practices and application of geospatial technology
- Maintain 17.58 acres of mulberry farm at the institute
- Supply of instar-specific quality mulberry foliage for all R&D related silkworm rearing conducted at the institute
- To develop cost-effective mulberry cultivation technology.
- Drudgery reduction and mechanization in mulberry cultivation
- Promotion of eco-friendly climate resilient mulberry farming
- Supplying instar specific mulberry foliage
- To evaluate nutritionally superior mulberry genotypes/varieties for stress tolerant-drought and flood tolerant and selection of parent for future breeding programmes.
- Improvement of leaf quality through nutrient fortification by use of plant growth regulators, macronutrients and micronutrients
- Development of recommendation for application of micronutrients, namely, copper, zinc, iron and manganese in the mulberry garden of Eastern and North-Eastern India.
- Standardization of farming practice for enhancement of organic carbon stock in soil under mulberry vegetation.

- Generation of information on sustainability of mulberry productivity under long-term fertilization in relation to the maintenance of soil fertility.
- Popularization of soil test based NPK fertilizer application at field level.
- Popularization of soil test based sulphur fertilizer application at field level.

Technology evolved:

- Developed complete agronomical package of practices for mulberry cultivation.
- Commercial production of both the biofertilizers and limited production of Vermicompost/ quality compost for farm use.
- Developed integrated nutrient management package for mulberry cultivation under irrigated and rainfed condition.
- Developed eco-friendly technologies for mulberry cultivation like green manuring, leguminous covercrop, use of on farm generated vermicompost, EM mediated compost.
- Developed weed management system by leguminous crop like, Cowpea in mulberry cultivation.
- Season-specific suitable intercrops have been identified suited to the available duration of mulberry crop in each season for better additional income.
- Developed drumkit drip irrigation technology for areas with water scarcity.
- Developed Efficient Economic Eco-friendly Weed Mower© Shoot Harvest/pruning Machine for mechanization in mulberry cultivation.
- Identified of Kinetin based PGR restoring the leaf yield by 30% and enhancing cocoon yield by 20% under water logging condition.
- Popularized highyielding mulberry variety C-2028 among farmers in flood prone and water logged areas.
- Popularized highyielding mulberry variety C1730 among farmers in drought prone areas under red laterite soil.
- Developed and commercialized Morizyme-B, a plant growth regulator.
- Establishment of S-1635 as the best mulberry variety for chawki garden.
- Soil test based fertilizer recommendations for mulberry (variety: S1) in West Bengal.

- Soil test based sulphur fertilizer recommendations for mulberry (variety: S₁₆₃₅) in West Bengal.

Resources:

- Autoclave
- Balance (Electrical)
- Colony Meter
- Cryocan, Lux Meter
- Double Glass Distillation Plant
- High and Low speed REMI Centrifuge
- Hot Air Oven
- Hot and Cold Water Bath
- Hydroprobe Moisture Gauge
- Image Analysis System
- Incubator
- Laminar Flow

- Leaf water potential meter

- Mettlet Moisture Analyser, DR
- Microscope (Ordinary)
- Microscope (Stereoscopic)
- Moisture Analyser
- pH meter
- Pocket pH Meter
- Plant Canopy Analyser

- Portable photosynthesis system

- Shaker (Rotary)
- UV-Vis Spectrophotometer
- PowerTiller
- Power weed mower
- Grass cutting machine
- Shoot cutting machine
- Pruning machine
- Computer
- Laptop
- GPS Tracker
- Geo-tagging camera
- Atomic Absorption Spectrophotometer
- Auto Kjeldahl Apparatus

- Conductivity meter
- Flame photometer
- Nephelo-Turbidity Meter

List of on-going projects

- PPF:3532 (in collaboration with NESAC, Dept of Space, Govt of India). Assessment, development and management of area under mulberry in major sericulture districts of West Bengal using geo-spatial technique.
- PPA:3499. Evaluation of field level performance of Vishala mulberry variety in different locations under irrigated conditions in West Bengal

List of concluded projects

- PIP 001: Nutritional studies in mulberry (1990-96).
- PIP002: Improvement of plant productivity through use of commercial plant growth regulator(1990–1996).
- PIP003: Studies on environmental stress in mulberry (1991-98).
- PIP004:Evaluation of improved mulberry varieties for eastern and north-eastern region of India (1997-2001).
- PIP3194:screening of improved mulberry varieties for flood tolerance(20013-2004).
- PPF3487:Decision support system initiative through impact assessment of agro climate on foliage yield of mulberry (*Morus*sp.) for climate resilient sericulture in eastern India
- Pilot StudyBPP(PS):008:Evolving Growing Degree Day based Integrated Sericulture Crop Calendar (2014-15)
- BPP(P):Optimum requirement of irrigation water and its management for sustainable leaf productivity in high yielding mulberry garden under West Bengal conditions (2013-2014)
- BPP(VP):015: Validation of E3WM©SH/PM (Efficient Economic Eco-friendly Weed Mower© Shoot Harvest/pruning Machine) at nested units and farmers' field level (2013-2015)
- Micro-projectsI-BPP(RP):001: Maintenance of *Azotobacter chroococcum* mother culture and mass production of Nitrofertbio-fertilizer (1999-2015)
- Micro-projectsII-BPP(RP):002: Maintenance of *Glomusmoseae* [Arbuscular Micorrhizal Fungus (AMF)] mother culture & mass production of Phosphofertbio-fertilizer (1999-2015).
- PPS 3435: Studies on micro nutrients for sustained high productivity of quality mulberry in Eastern and North-Eastern India (2010-2013).

- PPS 3452: Terrestrial carbon sequestration for sustained high productivity of quality mulberry (2011-2015).
- BPP(P)020: Evaluation of soil fertility for sustained production of quality mulberry leaf in Eastern India under longterm fertilization (2010-2015).