TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

30th SCIENTISTS' MEET ON FORESTRY AND 11th SERICULTURE SCIENTISTS' MEET
(June 2, 2020)

Lead Centre

Forest College and Research Institute
Tamil Nadu Agricultural University
Mettupalayam– 641301

Directorate of Research

Tamil Nadu Agricultural University
Coimbatore – 641 003

2020

PROCEEDINGS

30th Forestry & 11th Sericulture Scientists' Meet (02.06.2020)

The 30th Forestry and 11th Sericulture Scientists Meet was conducted on 2.6.2020 through webinar in Anna Auditorium involving 60 scientists off-line and more than 120 scientists on-line covering all college campuses, research stations and KVKs.

Dr. N. Kumar, Vice Chancellor, TNAU, narrated the importance of forest cover in ensuring environmental safety and rural livelihood. He said that the Hon'ble Governor of Tamil Nadu and the Chancellor of Tamil Nadu Agricultural University Shri **Banwarilal Purohit** kick started a massive one lakh tree planting program in Forest College & Research Institute, Mettupalayam, on October 24, 2019. This gives us opportunity to portrait the significance of forestry in improving environmental quality. He emphasized the need for taking up promotional activities to get employment for sericulture graduates.

Dr. K.S. Subramanian, Director of Research flagged off few emerging issues such as promote improved tree genetic resources across the state as a commercial plantation, ensure spread of the newly released varieties like *Melia dubia* MTP 1 and Kadam MTP 1, large scale demonstration of seed cube technology, frontline demonstration of multi-functional agro-forestry & climate resilient models in Research Stations / College Campuses, scientific data to prove the overexploitation of groundwater by *Prosopis juliflora* and strategies to combat human-animal conflict in Tamil Nadu.

Dr. K.T. Parthiban, Dean, FC & RI, Mettupalayam, presented the research highlights of forestry and sericulture besides proposed action plan for the year 2020-2021. Heads of the Departments Forestry Biology & Tree Improvement, Agro-Forestry, Siliviculture & Natural Resource Management, Forest Biology & Wildlife and Sericulture presented the activities and achievements with respect to their domains. The Vice Chancellor overwhelmingly appreciated the efforts of scientists and offered concluding remarks and the Director of Research summarized the event. **Dr. K.T. Parthiban**, Dean, FC & RI, Mettupalayam, proposed a formal vote of thanks.

The proceedings of 30th Scientists' Meet on Forestry and 11th Scientists' Meet on Sericulture were furnished under the following headings for department-wise:

A. Decisions made on OFT

B. Research projects

C. Remarks on the ongoing University Research projects/AICRP/Externally funded projects

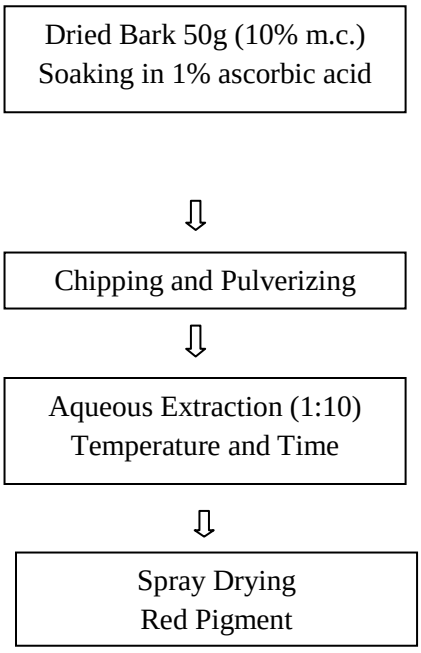
D. General remarks

E. Action Plan 2020-2021

1. Department of Forest Biology and Tree Improvement

A. FOR ADOPTION

1. Eucalyptus Bark Dye Extraction



2. Seed Cube Technology for tree species

No.	Tree Species	Seed Cube Technology
1.	*Azadirachta indica*	Seed coating with TNAU formulation @ 4g / kg + Humid priming : 12 h soaking + 3 days humid incubation Seed cube media: soil (700 g), saw dust (130 g), bone meal (80 g), vermicompost (40 g), VAM (50 g)
2.	*Thespesia populnea*	Seed coating with TNAU formulation @ 4g / kg + Humid priming : 24 h soaking + 3 days humid incubation Seed cube media: soil (700 g), saw dust (130 g), bone meal (80 g), vermicompost (40 g), VAM (50 g)
3.	*Pongamia pinnata*	Seed coating with TNAU formulation @ 3g / kg + Humid priming : 24 h soaking + 36 hours humid incubation Seed cube media: soil (700 g), saw dust (130 g), bone meal (80 g), vermicompost (40 g), VAM (50 g)
4.	*Tamarindus indicus*	Seed coating with TNAU formulation @ 3g / kg + Humid priming : 24 h soaking + 3 days humid incubation + Seed cube media: soil (700 g), saw dust (130 g), bone meal (80 g), vermicompost (40 g), VAM (50 g)
5.	*Albizzia lebbeck*	Seed coating with TNAU formulation @ 3g / kg + Humid priming : 24 h soaking + 3 days humid incubation + Seed cube media: soil (700 g), saw dust (130 g), bone meal (80 g), vermicompost (40 g), VAM (50 g)

For OFT

1. Annatto (*Bixa orellana)* – TNBi 003, TNBi 009 and TNBi 013

No	Genotype	Parentage	Seed Yield (t /ac)	Bixin Content (%)	Duration	% Increase over Population Mean (t/acre)	Special features
1	TNBi 003	Selection	0.91	3.16	Perennial	118.18	High yield High Bixin Wide adoption
2	TNBi 009	Selection	1.13	3.06	Perennial	146.75	

Location :

Farmers field at Dahrapuram, Virudhunagar and Tirunelveli

Experimental Details

Spacing : 3 x 3m

Area : 1 acre

Observations to be recorded

a) Plant Height (m)
b) Basal diameter (cm)
c) No. of branches
d) Fruit weight (Kg)
e) Individual plant yield (g)

For Information

1. Dye Extraction Protocol for *Anogeissus latifolia (leaves)*

Leaf powder 5gram → 1: 3 (powder :water) → Natural Fermentation → Filtration in dark for 3 days

2. Dye Extraction Protocol for *Hibiscus sabdariffa (Bracts)*

Dried Bracts @5g→ 1: 5 (powder:water)→ Heating and vacuum concentration → Filtration

3. Seed Enhancement protocol for Teak

- Mechanical Scarification (6 min) + Alternate soaking in water and drying for 7 days +Seed coating (8 g kg^{-1}) + Humid priming 250 ppm GA_3 (3 days) + Shade drying (1 day)

B. Research Projects

Department	Centre	URP	University Core Project	AICRP	External Funded Project	Total
Forest Biology and Tree Improvement	FC&RI	1	4	1	2	8

C. Remarks on the ongoing university research subprojects/ AICRP / Externally Funded

Sl. No.	Project No. and Title	Project leader	Duration	Remarks
University Research Project				
1	FCRI/MTP/FOR/2015/002 Establishment of an Arboretum of rare and characteristic species of Western Ghats	Dr. S. Vennila Asst. Prof. (For.)	June 2015 to June 2020	The objectives were accomplished and hence recommended for closure. Completion report to be submitted

Core Projects				
1	**FCRI/MTP/FOR/2018/CP101** Development of Seed Cube Technology for mass propagation of teak (*Tectona grandis*)	Dr. R.Umarani Professor (SST)	February 2018 to September 2020	To be continued
2	**CPBG/MTP/PBG/2018/CP166** Screening of genetic resources of *Caesalpinia sappan* for wood dye	Dr. P. S. Devanand Asst. Prof. (PBG)	December 2018 to September 2020	To be continued
3	Extraction, quantification and chemical characterization of leaf dye of Axle wood (*Anogeissus latifolia* (Roxb.ex DC)	Dr.M.Kiruba Asst. Prof. (For.)	December 2018 to September 2020	To be continued
4	**FCRI/MTP/FOR/2018/CP018** Genetic improvement and clonal propagation studies in *Santalum album*	Dr. S. Vennila Asst. Prof. (For.)	September 2018 to September 2020	The project is recommended for closure .Completion report to be submitted
Externally Funded/ICAR Projects				
1	**TANII/ FCRI/ MTP/DTB/ 2016/ R004** Promotion, Commercialization, Post-Harvest Processing and Industrial Application of Annatto (*Bixa orellana* L.) as a Source of Natural Dye	**PI** Dr.K.Kumaran Professor & Head **CoPI** Dr.P.S.Devanand Dr. M.Umadevi Dr.P.Sudha Dr. S. Vennila Dr.P.Kumar	2016 to 2020	The objectives were accomplished and hence recommended for closure and completion report to be submitted

2	**EID/FCRI/MTP/DTB/2017/R005** Screening neem genetic resources for higher azadirachtin, establishment of field gene bank and industrial plantations	**PI** Dr.K.Kumaran Professor & Head (DFBT) **CoPI** Dr.P.S.Devanand Asst. Prof. (PBG)	2017 to 2022	To be continued to assemble neem germplasm from other states, particularly UP Further expansion of industrial plantation of neem over an area of 100 acres in Thyagavalli and 100 acres in Sivaganga
3	**AICRP/FOR/MTP/FOR/002** AICRP on Potential Crops	Dr.P.S.Devanand Asst. Prof. (PBG)	Since 1982	To be continued

D. GENERAL REMARKS

- *Syzygium malaccense* may be explored for extraction of dye from bark and root.

- Characterization of new trees assembled from natural forests of Tamil Nadu to be taken up.

E. Action Plan (2019 - 2020)

Action Plan 1: Collection, Assemblage and Evaluation of the germplasm of Prioritized tree species			
Activity	**Name of the Scientist and centre**	**Works to be carried out**	**Deliverable/ expected outcome**
Collection, evaluation and varietal development of natural dye yielding species	Dr.K.Kumaran Dr.S.Umesh Kanna Dr.P.S.Devanand Dr.S.Vennila Dr.M.Kiruba Dr.P.Kumar	Germplasm collection and establishment of the following species *Bixa orellana* *Wrightia tinctoria* *Biancaea sappan* *Anogeissus latifolia*	Superior genotypes with high dye content
Collection, evaluation and varietal development of neem genetic resources		Germplasm collection and assemblage of *Azadirachta indica*	Superior genotypes with high oil and aza contents
Collection, assemblage and evaluation of *Simarouba glauca*		Germplasm collection and assemblage of *Simarouba glauca*	Screening of superior genotype with high oil content
Collection, evaluation and varietal development of *Amaranthus hypochondriacus*	Dr.P.S.Devanand Asst. Prof. (PBG)	Germplasm collection, assemblage and evaluation of *Amaranthus hypochondriacus*	High yielding varieties in *Amaranthus hypochondriacus*

Action plan 2: Development of seed testing standards for Annatto and Neem			
Theme Activity	**Name of the Scientist and centre**	**Works to be carried out**	**Deliverable/ expected outcome**
Development of seed testing standards for Annatto and Neem	Dr.R.Umarani Professor (SS&T) FC&RI, Mettupalayam	Seed testing standards for *Azadirachta indica* *Bixa orellana*	Seed testing standards for Neem and Annatto

2. Department of Silviculture & NRM

A. Decision on OFT:

For Adoption

1. Clonal multiplication technology for *Enterolobium cyclocarpum*

Rooting material : Coppice shoots

Rooting hormone : IBA 1000 ppm

Rooting percent : 80 %

2. Local yield table for farm grown *Albizia lebbeck* and *Ailanthus excelsa*

Tree : Vagai (*Albizia lebbeck*)
Agroclimatic region : Western agro-climatic zone

a) Yield model and yield table for *Albizia lebbeck*

a. Yield model for standard stem timber
Y= (-1.212) + (-0.012* Age) + (6.506* Diameter)
b. Yield model for standard stem small wood
Y= (-0.945) + (-0.045*Age) + (2.769*Diameter) + (0.262*No. of branches)

b) Yield model and yield table for *Ailanthus excelsa*

Local yield models for farm grown *Ailanthus excelsa*

Agro climatic Zone	Yield model
Cauvery delta zone	Y= - 0.041 + (0.019*Age) + (0.083*Diameter)
Western zone	Y= - 0.071+ (0.005*Age) + (0.961*Diameter)
North western zone	Y= -0.058 + (0.006 *Age) + (0.833* Diameter)
Southern zone	Y= - 0.085+ (0.002*Age) + (1.163*Diameter)
North eastern zone	Y= - 0.047+ (0.017*Age) + (0.159*Diameter)

3. Irrigation schedule for Red Sanders

Age of trees (Years)	Water requirement @ 75 % Pan Evaporation
1	0.68 Litres / day / tree
2	1.05 Litres / day / tree
3	2.36 Litres / day / tree

4. Sandal Host Technology

Primary host (Nursery) : *Altenanthera sessilis*

Transit host (Initial field establishment) : *Sesbania grandiflora*

5. Early Flower Induction under High Density Planting in Tamarind

Canopy Management : Complete topping of canopy upto 6 feet
Florigen application : Foliar application of Cycocel @ 1500 ppm
Density : 1111 ha^{-1}
Age of the application : 3 to 4 years

6. Management of storage pests of Tamarind seeds

Pest : Tamarind seed weevil (*Sitophilus linearis*) and Bruchid (*Caryedon serratus*)

Recommendation: Oduvan (*Cleistanthus collinus*) leaf powder @ 10 g/kg (1%)

For OFT/MLT

1. Clonal Testing and Precision Silviculture Techniques for *Enterolobium cyclocarpum*

Number of clone : 1

Locations :

1. Western zone: FC&RI, Mettupalayam
2. Southern Zone: Farmers field, Thenkasi dist.
3. North-eastern Zone: Farmers field / AC&RI, Thiruvanamalai.

Experimental details

Treatments:
Main plot - 3
Sub plot - 3
Main plot: Irrigation water Levels
I_1 - 100 % PE (Pan Evaporation)
I_2 - 125 % PE
I_3 - 150 % PE
Sub plot: Fertilizers levels
F_1 - Humic acid (62.5 l ha^{-1})
F_2 - 150:100:100 kg N,P,K ha^{-1}
F_3 - Humic acid (62.5 l ha^{-1}) + 75: 50: 50 kg N,P,K ha^{-1}
Replications: 7
Design of experiment: Split plot Design

Observations to be recorded:

1. Biometric observations viz., Height (m), Basal diameter (mm) & Volume index (VI)
2. Soil nutrient analysis: Physico-chemical properties will be analysed.
3. Testing pulp & plywood quality: Physical parameters,chemical parameters and strength properties.

2. Management of *Eligma Narcissus* in *Ailanthus excelsa*

Treatments:

T_1 - Swabbing the stem with grease
T_2 - Swabbing the stem with castor oil
T_3 - Swabbing the stem with coal tar
T_4 - Untreated control

Location :

- FC&RI, Mettupalayam (Location: Mettupalayam)
- KVK, Papparapatti (Location: Veppalampatti)
- ADAC&RI, Trichy (Location: Moovanoor)

Design: RBD

Replication: Five

Observations to be recorded:

Number of pupae per stem at 1, 3, 5, 7 and 14 days after treatment and percent reduction in pupation over control.

3. Permanent Host Management in Sandal

Location:

1. Western zone: FC&RI, Mettupalayam, Coimbatore District
2. Southern Zone: Farmers field, Thenkasi District.
3. North-eastern Zone: Farmers field, Tiruvallur District

Experimental details

Treatments:

1. Sandal + *Pongamia pinnata*
2. Sandal + *Casuarina equisetifolia*
3. Sandal + *Dalbergia sissoo*
4. Sandal + *Pterocarpus marsupium*
5. Sandal + *Enterolobium cyclocarpum*
6. Control

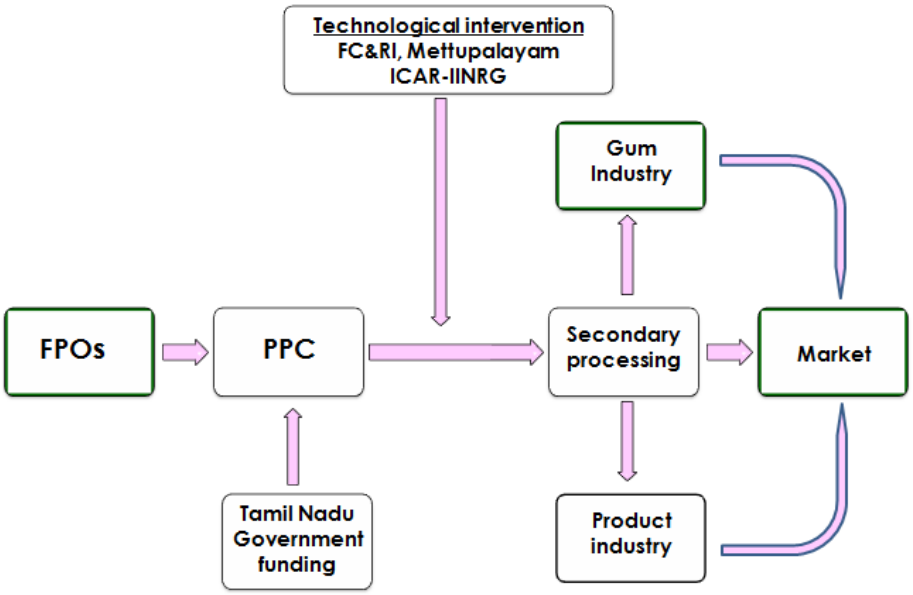
Replications: 4
Design of experiment: RBD

For Information

1. Value Addition of Tamarind Seed Powder

Tamarind biscuit and cake : Replacing 10 % maida with tamarind kernal powder

2. A Value Chain Model in Tamarind



3. Eradication of Alien Species in natural forests

Sl. No.	Invasive species eradicated in natural forest	Regeneration of native trees
1	*Acacia mearnsii*	*Cinnamomum wightii, Buchanania axillaris, Daphniphyllum neilgherrense, Celtis tetrandra, Rhododendron nilagiricum,*
2.	*Prosopis juliflora*	*Butea monosperma, Albizia amara, Bauhinia racemosa, Bauhinia racemosa, Wrightia tinctoria, Cassia siamea, Gmelina arborea*
3	*Lantana camara*	*Ailanthus excelsa, Albizia amara, Azadirachta indica, Ficus religiosa, Acacia leucophloea, Sapindus emarginata,*

4. Management of termites in Plantations

- Application of sand @ 1 kg/tree in the tree basin
- Application of wood chips @ 250 g/tree

5. Technology for sewage odour management

- Mixed microbial cultures: *Acidithiobacillus ferrooxidans* and *Acidithiobacillus thiooxidans* (@ 5 % v/v).
- Suitable trees for sewage odour: *Terminalia arjuna, Millingtonia hortensis, Hibiscus tiliaceus and Melia dubia*.
- Biofloaters for lagoon condition: Microbial cultures + Planting of trees + Biofloating mat of *Phragmites karka* and *Brachiaria mutica.*

B. Research Projects on Forestry

Department	URP	University Core Project	External Funded Project	Total
Silviculture & NRM	4	2	5	11

C. Remarks on the ongoing University Research Projects/University Core Project/Externally funded projects

No.	Project Number and Title	Project leader	Duration	Remarks
University Research Project				
1	**FCRI/MTP/FOR/2017/001** Studies of water requirement of Red sanders (*Pterocarpus santalinus*) at early stages of growth	Dr.S.Radhakrishnan Associate Professor (Forestry)	01.02.2017 to 31.01.2020	Project was completed. Recommended for closure. Completion report shall be submitted along with research paper on or before September 2020. A new URP on "Redsanders growth without irrigation" may be proposed for comparative analysis on or before September 2020.
2	**NRM/MTP/ENS/2016/001** Development of biofloating technology for the odour management in sewage water	Dr.M.Prasanthrajan Associate Professor (Environmental Science)	01.12.2016 to 30.11.2019	Project was Completed. Recommended for closure. Completion report shall be submitted along with research paper.

3.	**CPPS/MTP/ENT/2017/001** Investigation of the termite species infesting live trees	Dr. M. Suganthy Associate Professor (Agrl. Entomology)	01.04.2017 to 31.03.2020	Project was completed. Recommended for closure. Completion report shall be submitted along with research paper.
4.	**CPPS/MTP/ENT/TBB/2019/001** Development of tree based biopesticides for the management of diamond back moth, *Plutella xylostella*	Dr. M. Suganthy Associate Professor (Agrl. Entomology)	01.01.2019 to 31.12.2021	Project may be continued.
Core Project				
1.	**FCRI/MTP/FOR/2018/CP039** Developing modern Silvicultural practices for early establishment of Sandal (*Santalum album*)	Dr.S.Radhakrishnan Associate Professor (Forestry)	01.04.2018 to 31.03.2020	Project may be continued by submitting extension proposal.
2.	**FCRI/MTP/FOR/2018/CP099** Standardizing precision silvicultural techniques for *Enterolobium cyclocarpum* and *Neolamarckia cadamba* clones for pulpwood utility	Dr.M.Sivaprakash Assistant Professor (Forestry)	01.04.2018 to 31.03.2020	Project may be continued by submitting extension proposal.

External Funded Project				
1	**IINRG/FCRI/MTP/DOS/2014/R002** Harvesting, processing and value addition of Tamarind seed gum	Dr.A. Balasubramanian Professor and Head	01.08.2014 to 31.03.2021	Project may be continued
2	**GOTN/FCRI/MTP/DOS/2017/R009** Developing timber yield table for Neem and Albizia grown in western agro climatic zone of Tamil Nadu	Dr.A. Balasubramanian Professor and Head	01.02.2018 to 31.01.2020	Project was completed. completion report shall be submitted.
3	**PPV/FOR/MTP/SIL/2009/R001** Distinctiveness, Uniformity and Stability (DUS) test centre for Neem, Karanj, and Jatropha under PPV & FR Authority at FC&RI, TNAU, Mettupalayam	Dr.A. Balasubramanian Professor and Head	01.04.2018 to 31.03.2021	Project may be continued
4	**GoTN/FCRI/MTP/DOS/2017/R007** Developing Growth Yield Table for seed stand and seed orchard of *Ailanthus excelsa* in Tamil Nadu	Dr.S.Radhakrishnan Associate Professor (Forestry)	01.02.2018 to 31.03.2020	Project was completed. Completion report shall be submitted.
5	**GoTN/FCRI/MTP/DOS/2017/R008** Study on Ecological succession in Invasive species eradicated forest areas	Dr.S.Radhakrishnan Associate Professor (Forestry)	01.02.2018 to 31.03.2020	Project was completed. Completion report shall be submitted along with research paper.

D. General Remarks :

- Developing yield model for farm grown trees using climate data in collaboration with Directorate of crop management, TNAU, Coimbatore
- Developing carbon table for selected farm grown trees
- Possibility of patenting the yield table developed by FC&RI, Mettupalayam may be explored
- Same set of trees may be identified for noise pollution abatement in consultation with Directorate of NRM

E. Action Plan (2020-2021)

Action Plan 1 : Production Silviculture			
Activity	**Name of the Scientist**	**Plan of work**	**Deliverable/ expected outcome**
Developing precision silvicultural techniques for farm grown tree species	Dr. A. Balasubramanian Dr. S. Radhkrishnan Dr. M. Sivaprakash Centre: FC&RI, MTP Dr. B. Sivakumar Centre: AC&RI, Valavachanur	➢ Establishing MLT for short rotational tree species ➢ Irrigation Scheduling ➢ Nutrient Scheduling ➢ Assessment of growth by recording biometric values	Site specific / clone specific Precision silvicultural techniques will be developed for farm grown trees
Good forestry practices for *Enterolobium cyclocarpum* and *Neolamarckia cadamba* clones	Dr. M.Sivaprakash Dr. A.Balasubramanian Dr. M. Suganthy Centre: FC&RI , MTP Dr. R. Vijayan Centre: KVK, Sandhiyur	➢ Optimizing plant density ➢ Irrigation Scheduling ➢ Nutrient Scheduling ➢ Pest monitoring and management	Clone specific precision silviculture techniques will be developed

High density planting techniques for Tamarind	Dr. A.Balasubramanian Dr. S.Radhakrishnan Dr. M.Sivaprakash Dr. M.Suganthy Centre: FC&RI, MTP	➢ Validating the pruning intensity ➢ Validation of Florigen application for flower induction ➢ Fruit yield assessment	High density planting technique will be standardized for tamarind
Processing and Value addition of tamarind seed gum	Dr. A.Balasubramanian Dr. S.Radhakrishnan Dr. M.Sivaprakash Dr. M.Suganthy Centre: FC&RI, MTP Dr. Vennila Centre: PHTC, TNAU, CBE	➢ Standardizing seed gum extraction techniques ➢ Commercializing seed gum technologies ➢ Seed powder storage pest management ➢ Developing value added products using TKP/gum	Tamarind seed gum technology will be commercialized Value added products from TKP/gum will be developed
Developing value chain model for tamarind seed gum	Dr. A.Balasubramanian Dr. S.Radhakrishnan Dr. M.Sivaprakash Centre: FC&RI, MTP	➢ Multi partnership with FPO linked primary processing seed centre ➢ Promotion of seed gum exporters	Improved value chain model with multi stake holders participation for tamarind seed products will be developed for the benefit of farmers
Development of pest management strategies for tea mosquito bug – dieback complex	Dr.M.Suganthy Dr.A.Balasubramanian Dr. P. Renugadevi Centre: FC&RI, MTP	➢ Level of pest incidence ➢ Studying seasonal abundance ➢ Development of management strategy	Pest management strategies for tea mosquito bug – dieback complex will be developed

Action Plan 2: Conservation Silviculture			
Activity	**Name of the Scientist**	**Plan of work**	**Deliverable/ expected outcome**
Comparison of Redsanders under rainfed and irrigated condition	Dr. S.Radhakrishnan Dr. A.Balasubramanian Dr.K.R.Ramesh Dr. M.Sivaprakash Centre: FC&RI, MTP	Growth attributes assessment under rainfed and irrigated condition	➢ Comparative performance of Redsanders under rainfed and irrigated condition will be assessed
Host compatibility study of sandal for farm forestry cultivation	Dr. S.Radhakrishnan Dr. A.Balasubramanian Dr. M.Sivaprakash Centre: FC&RI, MTP	Standardizing permanent host for sandal establishment	➢ Permanent host for sandal will be standardized for farm cultivation
Conservation and Protection of tree varieties through PVP legislation	Dr. A.Balasubramanian Dr. S.Radhakrishnan Dr. M.Sivaprakash Centre: FC&RI, MTP	Being a National DUS test centre, this institute will provide certification standards and approval for varietal registration in trees	➢ Tree varieties will be registered as per PVP legislation

Action Plan 3: Trees and Pollution Abatement			
Plan of work	**Name of the Scientist**	**Activity**	**Deliverable/ expected outcome**
Evaluating the performance of trees under elevated CO_2 condition	Dr.A.Balasubramanian Dr. M.Prasanthrajan Dr. S.Radhakrishnan Centre: FC&RI, MTP	• Assessing growth performance under elevated CO_2 condition • Studying the Ecophysilogical behaviour of trees	Trees suitable for elevated CO_2 condition will be evolved
Screening of indigenous tree species for urban air pollution abatement	Dr. M.Prasanthrajan Dr.A.Balasubramanian Dr. S.Radhakrishnan Centre: FC&RI, MTP	• Air Pollution Tolerance Index of indigenous trees will be recorded	Suitable tree species for urban planting will be screened

3. DEPARTMENT OF AGROFORESTRY

I. For Adoption

1. Improved casuarina high yielding clone

Salient Features:

Parentage	:	Hybrid between *C. equisetifolia* X *C. junghuhniana*
Clone Name	:	CJH27-01
Yield	:	124 to 190 tons per hectare
Pulp Yield	:	49.0 to 51.5 %
Rotation	:	Three Years

2. Improved subabul for higher pulp and yield

Salient Features:

Parentage	:	Progeny selection
Improved progeny	;	FCRILL15
Yield	:	115 tons per hectare (Ht: 10.42m, DBH:5.94cm)
Rotation	:	Three Years
Basic density	:	546 kg/m^3
Calorific Value	:	3600-4200 kcal kg^{-1}
Pulp yield	:	49.5 %
Kappa number	:	20.7
Holo cellulose	:	70.2 %

3. Hysr clone in shisam (*Dalbergia sisoo)*

Salient Features:

Parentage	:	Clonal selection
HYSR Clone	:	MTPDS18
Yield (3 years)	:	100-111 tons per hectare
Yield (6 years)	:	200-225 tons per hectare
Basic density	:	610 kg/m^3
Pulp yield	:	49.4 %
Kappa number	:	20.2
Holo cellulose	:	73.6 %

4. New melia clone for face veneer

Salient Features:

Parentage	:	Clonal selection
Colour	:	Light Pink
Grain Pattern	:	Flowery
Look	:	Some are uniform but most of the veneers are having white patches of Sap wood
Hardness	:	Smooth surface but brittle
Density	:	450-550 kg/m^3
Shrinkage	:	6-7 %
Face Yield	:	12.00 %
Avg. Total Yield	:	55.00%
Thickness	:	Peeling below 0.50 mm thickness face veneer is difficult
Face Grading	:	A-150 %, B- 30%, C-33.5%, D-35%

5. High value tress - red sander (*Pterocarpus santalinus*)

Salient Features:

Potential progeny	:	TNRS01
Volume	:	0.3976 m^3
Density	:	900-975 kg/m^3
Rotation	:	15 years

6. Value addition technology

Species	:	*Lantana camera*
Technology	:	Briquetting / pelleting technology
Conversion	:	1.8 tonnes to 1.0 tonne
Calorific value	:	3600 - 3800 k cal/kg

7. Kapok (MTPCP 18) - high pod yielder

Pod yield	: 400-500 pods/ tree
Floss yield	: 4560 kg ha^{-1}

8. Mini clonal technology for teak

Propagation material	: Apical shoot
Rooting media	: Coir pith
Rooting hormone	: IBA @6000 ppm
Rooting percentage	: 55.50 %

II. For OFT / MLT

1. Acacia hybrid clone for pulp & plywood

Clone	:	AM 19
OFT Location	:	3 Farmers field
Data to be recorded	:	All biometric attributes

2. New and alternate species for core veneer & splints

Species	:	*Sterculia alata*
Veneer recovery %	:	64 %
Splints recovery	:	17,000 splints/kg of wood
OFT Location	:	3 Farmers field
Data to be recorded	:	All biometric attributes

3. New and alternate species for core veneer

Species	:	*Sweitenia macrophylla*
HYSR progeny	:	FCRISM20
Veneer	:	19.97 m^2
Veneer yield	:	57.01 %
Density	:	520-560 kg/m^3
OFT Location	:	3 Farmers field
Data to be recorded	:	All biometric attributes

4. New eucalyptus clone with low bark content

Eucalyptus hybrid	:	EHLBT - 01
Bark thickness	:	4.25 mm (check > 6 mm)
Basic Density	:	542 kg/m^3
OFT Location	:	3 Farmers / industry field
Data to be recorded	:	All biometric attributes

5. Improved progeny in white teak (*Gmelina arborea*)

Best Progeny	:	FCRIGA 08
Density	:	515-580 kg/m^3
OFT Location	:	3 Farmers field
Data to be recorded	:	All biometric attributes

6. Melia + CO (BN)5+HEGDE LUCERNE

7. Multifunctional agroforestry models

III. For Information

1. A new clone for essential oil:

E.tereticornis X *E. camaldulensis* → Clone: EH 02

2. Improved timber genetic resources –Teak (*Tectona grandis*)

Promising seed sources

1) Syyaburry	:	MTPTK07
Volume	:	0.2944 m^3
2) Nilambur	:	MTPTK21
Volume	:	0.1600m^3
3) Chandrapur	:	MTPTK16
Volume	:	0.1087 m^3
Wood density	:	620-680 kg/m^3

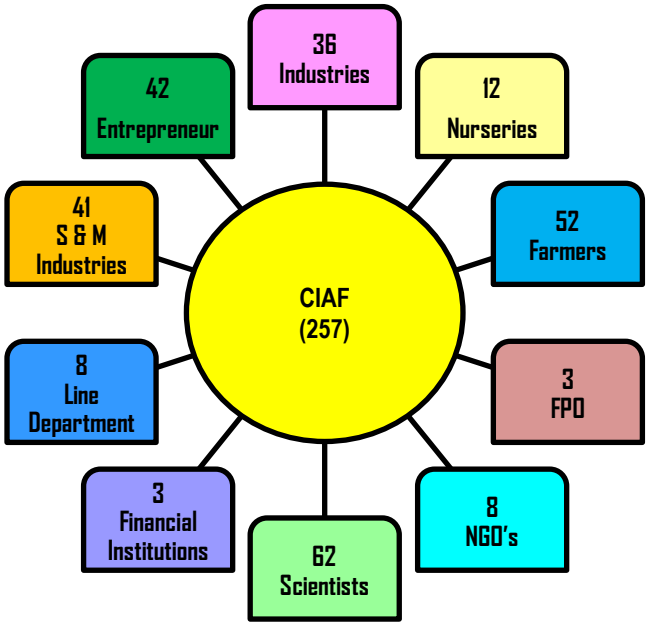
3. Improved genetic resources in TBO's - Jatropha

Parentage	:	*Jatropha curcas* X *Jatropha integerima*
No. of hybrid clones	:	58
No. of elite clones identified	:	05
Promising Clones	:	CJH 13 & CJH 5

4. TIMBER CONTRACT FARMING:

- First of its kind in India
- Species: Teak, Mahogany, Subabul
- Price supportive system
- Continued R and D
- Immediate adoption of improved genetic resources

5. CONSORTIUM OF INDUSTRIAL AGROFORESTRY (CIAF):



Plantation developer – 5000ac/yr

Seedling production – 5 million

Harvesting – 1.25 lakh mt

6. In-situ chipper for forest residues

Species tested : Eucalyptus, Casuarina, Melia and Prosopis

Capacity : 2.5tons/hr

Size of the wood : 2 to 4 inches

Consortium Industry : Santhosh machineries

7. Agroforestry business incubator

Number of Incubates : 41

Technologies for commercialization : Mini Clonal Technology

Briquetting Technology

Seasoning and preservation Technology

Activated Carbon

8. Technology commercialization (Revenue: Rs. 12 lakhs) :

S. No.	Incubatee and Technology
1.	Kumar Hi-Tech Nursery, Annur ***Melia dubia*** **MTP-2**
2	National Associates, Sathyamanagalam ***Melia dubia*** **MTP-2**
3	Covai Gain Naturals, Coimbatore ***Melia dubia*** **MTP-2**
4	NewGen Nursery, Walajapet ***Melia dubia*** **MTP-2**
5	K3 Nursery, Thindivanam ***Melia dubia*** **MTP-2**
6	Maharastra Sandal Grower Farmers Producer Company Ltd., Latur, Maharastra ***Melia dubia*** **MTP-2**
7	Eccentric Organic's Limited, Trichy ***Melia dubia*** **MTP-2**
8	Enhanced Bio Fuels and Technologies India Ltd, Coimbatore ***Melia dubia*** **MTP-2**
9	La Farme De Peter, Thirunelveli ***Casuarina*** **MTP-2**
10	RPS Green Energy Limited, Batalgundu ***Melia dubia*** **MTP-2**
11	Tandulwadi Agro Produce Company Limited, Parbhani, Maharastra ***Melia dubia*** **MTP-2**
12	Tandulwadi Agro Produce Company Limited, Parbhani, Maharastra ***Casuarina*** **MTP-2**

9. Landscape trees

The Following three species are potential trees amenable for landscape and urban forestry.

- *Mitragyna parviflora*
- *Senna automeria*
- *Koelreuteria apiculata*

B. Research projects

Department	Centre	URP	University Core Project	AICRP	External Funded Project	Total
Agroforestry	FC&RI	3	2	1	3	9

C. Remarks on the ongoing university research subprojects / AICRP /externally funded projects

No.	Project Number and Title	Project leader	Duration	Remarks
University Research Project				
1	**DCM/MTP/AGR/2016/001** Screening and evaluation of shade tolerant fodder crops in *Melia dubia* based silvipastoral system	Dr. K.Ramah Asst. Prof. (Agronomy)	November 2016-October 2019	Project may be closed since, all objectives were completed.
2	**HCRI/MTP/HOR/VEG/2019/001** Evaluation of Vegetable Cluster bean genotypes under *Melia dubia* based ecosystems	Dr. M. Prabhu Assistant Professor (Hort.)	October 2019 to September 2022	May be continued

3	**FCRI/KDM/FOR/2016/001** Progeny Evaluation for higher productivity in *Albizia lebbeck* L.(Benth) for dry land agroforestry system	Dr.P.Rajendran Associate Professor (Forestry)	July 2016 to July 2021	May be continued
University Core Project				
4	**CARDS/ MTP /AEX 2018/CP 167** Identification and documentation of ITKs among the tribes of The Nilgiris.	Dr.C.Cinthia Fernandaz Assistant Professo (Agrl. Extension)	February, 2019 to November, 2020	May be closed and viable ITK technology may be taken for commercialization.
5	**FCRI/MTP/FOR/2018/CP 041** Design and Development of Multifunctional Agroforestry Model for Drylands	Dr.R.Jude Sudhagar Associate Professor(Forestry	June 2018 to May 2021	May be continued
Externally Funded/ICAR Project				
6	**CPL/FCRI/MTP/AGF/2017/R005** Improvement, Characterization and Utilization of tree species amenable for Composite Wood Technology (CWT)	Dr.K.T.Parthiban Professor (Forestry) and Dean	5 years (01.04.2017 to 31.03.2022)	May be continued
7	**DBT-JAT/FCRI/MTP/AGF/2009 /R009** Breeding and Management of Jatropha Hybrid Genetic resources	Dr.K.T.Parthiban Professor (Forestry) and Dean	22.04.2019 to 31.03.2022	May be continued

8	**CIAF/FCRI/MTP/AGF/2016/R004** Consortium of Industrial Agroforestry(CIAF)	Dr.K.T.Parthiban Professor (Forestry) and Dean	01.04.2016 onwards continuous	May be continued
9	**AICRP/FOR/MTP/FOR/001, No.DR/P2/ICAR/AICRP-AF/ASO/FC&RI,MTP/Agron/2019 dt. 30.07.2019;** All India Coordinated Research Project on Agroforestry	Dr.P.Rajendran Associate Professor (Forestry) Dr.K.Ramah Assistant Professor (Agronomy)	Since 2014	May be continued

D. General remarks

- Integrated Farming System (IFS) may be included as a component of Agroforestry model
- Role and contribution of Non Timber Forest Products (NTFP) in the tribal livelihood may be explored.

E. Action plan (2019 - 2020)

Action Plan 1 : multifunctional agroforestry			
Activity	**Name of the Scientist and centre**	**Works to be carried out**	**Deliverable/ expected outcome**
Development of High Yielding Short Rotation (HYSR) clones amenable for multifunctional agroforestry systems	Dr.K.T.Parthiban Dr.I.Sekar Dr.P.Rajendran Dr. R.Jude Sudhagar	• Continuation of inventory of FGR • Continuation of tree genetic resources evaluation • Conducting OFT / MLT in Melia, Toona, Acrocarpus, *Sterculia alata* • Continuation of clonal technology for tree species	• • HYSR Clones will be identified • Mini clonal technology for *Toona ciliata* and Jatropha will be developed

Design and development of agroforestry models	Dr.I.Sekar Dr.K.Ramah Dr.C.Cinthia Fernandaz Dr.P.Kumar Dr.G.Thangamani	• Establishment of MLT in Multi functional agroforestry • Establishment of OFT in Melia based silvipastoral model • Continuation of IFS model • Domestication of millet varieties through ITKs from tribal area to develop millet based AF • Establishment of *Enterolobium cyclocarpum* based AF System • Development of microbial consortia for high value timber species	• Profitable multifunctional agroforestry model will be identified • Microbial consortia for high value timber species will be developed
Tree fodder studies and development of concentrate feed	Dr.P.Rajendran Dr.B.SivaKumar Dr.K.Ramah	• Continuation of productivity and quality evaluation • Development of tree fodder based feed concentrate	• Potential fodder trees will be identified and included in the tree protein bank

Design and development of climate resilient agroforestry models	Dr. P. Rajendran Dr.K.Ramah Dr. M.Prabhu	• Continuation of climate resilient Agroforestry studies	• Productive model for changing climate will be identified

Action Plan 2: Development of multipartite linkages			
Linkage & Impact studies for sustaining Agroforestry	Dr.K.T.Parthiban Dr.I.Sekar Dr.C.Cinthia Fernandaz, Dr. K.Divya	❖ Strengthening linkages through CIAF ❖ Continuation and maintenance of database ❖ Socio Economic Studies ❖ Development of Business enterprise through MAFBIF	❖ Establishment of linkages for promotion of consortium based agroforestry

4. DEPARTMENT OF FOREST PRODUCTS AND WILDLIFE

A. DECISIONS MADE ON OFT

FOR ADOPTION

1. *Sterculia foetida* as alternate plywood

Veneer recovery : 60 %

Veneer shrinkage :5.5%

Water absorption :4.85%

Plywood density :610 Kg m^{-3}

2. Kapok (*Ceiba pentandra*) as pulpwood

Pulp yield : 42.80 %

Kappa number : 23.00

Tensile index : 17.28 Nm/g

Tear index : 2.70 $mN.m^2 g$

Burst index : 1.46 $kPa.m^2/g$

Opacity : 79.00%

30 % blending with Eucalyptus /Casuarina

For Information

1. Identified tree gum powder (*Azadiracta indica, Ceiba pentandra and Acacia nilotica)* as hydrocolloid

- ✓ Solubility high for *Azadiracta indica* gum in hot water (84%)
- ✓ No toxic compounds
- ✓ Gum powder can be used as thickening agent

2. Standardized the extraction protocol for *Prosopis* and *Delonix* Seed Gum

Collection of seeds

⇩

Drying (8-9% M.C. (Wb)

⇩

Roasting
(5,7 min at 105°C)

⇩

Decortication

⇩

Soaking in Water (30 min)

⇩

Milling
(60 mesh sieve)

⇩

Vacuum Drying (6% M.C. (Wb)

3. **Identified two elephant corridors and one tiger corridor for Sathyamangalam Tiger Reserve**

Elephant corridors: Thengumaragada to Anaikatty (64 km)

Thengumaragada to Sigur to Mudhumalai (60 km)

B. RESEARCH PROJECTS ON FOREST PRODUCTS AND WILDLIFE

Department	Centre	URP	niversity/Core Project	External Funded Project	Total
Forest Products and Wildlife	FC&RI ettupalayam	2	3	1	**6**

C. Remarks on the ongoing university research projects core projects and externally funded project

Sl. No.	Project Number and Title	Project leader	Duration	Remarks
University Research Project				
1	**FCRI/PKM/FOR/2016/ 001** Studies on the wood characterization of *Ceiba pentandra (*Kapok) for pulp wood, plywood and match wood production	Dr.I.Sekar Professor (Forestry)	Jan.2017 to Nov.2019	All the works were done. Hence, this project shall be closed and completion report to be submitted on or before September 2020

2	**CPPS / MTP/ ENT/ 2019/ 001** Bio-ecology, taxonomy and management of wood boring beetles in forest wood yards"	Dr.M.Senthilkumar Asst. Prof. (Ag. Ento.)	Aug.2019 to Sep.2022	This project may be continued
Core Project				
3	**FCRI/MTP/FOR /2018/ CP100** Studies on suitability of *Ailanthus excelsa* and *Sterculia foetida* for plywood production	Dr.M.P.Divya Prof.&Head	Nov. 2018 to Mar. 2020	The objectives of this project were achieved Hence, this project shall be closed and completion report to be submitted on or before September 2020.

4	**FC&RI/MTP/FOR/2018/ CP040** Value added products of gum from trees grown in farm lands under different agroclimatic zones of Tamil Nadu	Dr.R.Ravi,AP (For.) Dr.K.Baranidharan, AP(For.) Dr.P.Sudha, AP(F&APE)	Sep.2018 to March 2020	Testing the utility of gum powder as thickening agent in food products will be done and then this project shall be closed and completion report to be submitted on or before November 2020.
5.	**FCRI/TRY/FOR/2018/CP097** Studies on the influence of precision silvicultural techniques on N*eolamarckia cadamba* (roxb.) clones in Trichy	Dr.S.Manivasakan	Nov.2020 - Mar.2020	Progress of work is very slow. Hence it should be speed up and the work should be completed within 6 months
External Funded Project				
6.	**FC&RI/MTP/TNFD/F36 scheme NG** Monitoring biodiversity and impact in critical habitats after removal and maintenance of invasive alien species and efficacy of maintenance works in Sathyamangalam Tiger Reserve	Dr.K.Baranidharan Asst.Prof.(Forestry)	April 2016 to March 2021	Project may be continued

D. Genetal remarks

- Phyto chemistry studies in medicinal trees

E. Action plan (2020 - 2021)

Action Plan 1. Studies on the wood characterization in farm grown trees				
S. No.	**Activity**	**Name of the Scientists and centre**	**Work to be carried out**	**Deliverables / Expected outcome**
1.	Studies on the suitability of *Grewia tiliaefolia* and *Leucaena leucocephala* for plywood utility	Dr. M. P. Divya Dr.I.Sekar Dr.S.Manivasakan Centre: FC&RI	Testing plywood properties	Suitability of plywood will be identified

Action Plan 2 .Value Addition of Non Wood Forest Products				
1.	Development of exudate gum	Dr.R.Ravi Dr.P.Sudha Centre: FC&RI	Analysing the gum properties in *Albizia lebbeck* and *Albizia saman*	Development of gum powder
2.	Extraction of Bee wax from Indian bee colonies	Dr. M. Senthil Kumar Dr.M.P.Divya Centre: FC&RI	Alternative bee products from Indian bees	Value addition of Bee products

Action Plan 3.Wood deterioration Studies and their management				
1.	Bioecology, taxonomy and management of wood boring beetles in timber yard	Dr.M.Senthil Kumar	Biology and morphological characterization of wood boring beetles	Development of IPM modules for the management of wood boring beetle

2.	Management of termites through entomopathogenic nematodes	Dr.M. Senthil Kumar Centre: FC&RI	Collection of termites from infesting trees and standardization and release of *Steinernema sp* for termite control	Biological control of termites

Action Plan 4 : Human -animal conflict				
S. No.	**Activity**	**Name of the Scientist and centre**	**Work to be carried out**	**Deliverables / Expected outcome**
1.	Human Elephant Conflicts Management	Dr.K.Baranidharan Dr.R.Ravi Centre: FC&RI	Preventive measures for elephant entry in FC & RI campus	Physical, chemical and biological barriers to prevent elephant entry
2.	Wild boar and Monkey conflicts management	Dr.K.Baranidharan Dr.R.Ravi Centre: FC&RI	Control mechanism for Wild boar in ARS Bhavanisagar and Monkey management in FC&RI	Physical, chemical and biological barriers to prevent Wildlboar and Monkeys
3.	Avian management	Dr.K.Baranidharan Dr.R.Ravi Centre: FC&RI	Management stratergies to prevent the damages by Peacock and Parrot	Physical and Acoustic based barriers for avian management.

5. Department of Sericulture

A. Decision on OFT

For OFT

1. Effect of minerals on economic traits of silkworm, *Bombyx mori.* L.

Locations

- Coimbatore (TNAU)
- Trichy (ADAC&RI)
- Killikulam (AC&RI)
- Madurai (AC&RI) and
- Kudimiyanmalai (AC&RI)

Treatments

- T1- Zinc sulphate 100 ppm + magnesium sulphate 200 ppm + potassium chloride 100 ppm
- T2- Untreated control
- Replication: 13 replications @ 500 larvae per replication.

Observations to be recorded

Mature larval weight, cocoon weight, pupal weight, shell weight, shell ratio and filament length

2. Effect of silkworm excreta on mulberry and silkworm

Locations

- Salem (Yethapur),
- Dharmapuri (KVK, Paparapatty)
- Krishnagiri (RRS, Paiyur)
- Coimbatore (TNAU) and
- Mettupalayam (Annur)

Treatments

T1- Silkworm excreta 400 g/plant
T2- Untreated control
Replications -13 , plot size – 40 m^2

Observations to be recorded

Mulberry parameters: shoot length, number of branches per plant, number of leaves per branch, internodal length, 100 leaves weight and leaf yield.

Silkworm economic traits: larval weight , cocoon weight, shell weight and shell ratio.

3. OFT on mulberry booster

Location : Farmer's field at Annur
RRS, Paiyur
TCRS, Yethapur
SS&AC, Coimbatore
CRS, Aliyarnagar

Treatments: T_1 **:** Untreated control
T_2 : Fe (1%) +Zn (0.50%)+Mn (0.50%)+Mo (0.01%)+B(0.20%)

B. Research projects in sericulture

Department	Centre	URP	University funded project	External funded project	Total
Sericulture	FC&RI	4	5	-	9

C. Remarks on the on going university research sub projects and core projects

S. No.	Project No and Title	Name and designation of project leader	Project period	Action taken
1.	**NRM/MTP/SAC/2019/001** Status and dynamics of soil nutrients and carbon sequestration potential with organic manures in mulberry growing soil	Dr.R.Rajeswari Assistant Professor (SS&AC)	March 2019 to February 2022	The project may be continued

2.	**CPPS/MTP/SER/2018/CP 102** Enhancement of quantitative and qualitative traits in mulberry through mutation breeding	Dr. P. Mangammal Assistant Professor (Seri.)	November 2018 – October 2020	Experiment may be carried upto to three generations
3.	**CPPS/MTP/SER/2019/CP 155** Application of oil cakes and assessment of their impact on mulberry crop and silkworm	Dr.R.Shanmugam Assistant Professor (Seri.)	December 2018 to November 2021	The project may be continued
4	**CPPS/MTP/SER/2017/00 1: 497** Effect of minerals on growth and development of silkworm, *Bombyx mori L.* and their impact influence on cocoon economic traits	Dr.K.A.Murugesh Assistant professor (Seri.)	May 2017 - April 2020	Proposed for OFT. The project may be closed
5.	**CPPS/MTP/SER/2019/CP 155** Application of Amino acids as exogenous modulator for enhancing productivity and quality of raw silk	Dr.K.A.Murugesh Assistant professor (Seri.)	January 2019 - December, 2021	The project may be continued
6.	**FCRI/MTP/SER/2018/CP O42** Effect of probiotics on growth and development of silkworm, *Bombyx mori L.*	Dr.P.Priyadharshini Assistant Professor (Seri.)	September 2018 – August, 2021	The project may be continued

7.	**CPPS/MTP/SER/2017/001: 428** Value addition to Mulberry Silkworm Rearing Waste and their impact on both Mulberry and Silkworm	Dr.R.Shanmugam Assistant Professor (Seri.)	May 2017 to April 2020	Proposed for OFT. The project may be closed
8.	**NRM/MTP/ENS/SER/2018/001** Standardization of the dose of additives and inoculums for combined seri-waste composting	Dr.P.Jothimani Assistant Professor (ENS)	Jul 2018 to Jun 2021	The project may be continued
9.	**FCRI/MTP/SER/2018/CPO43** Evaluation of pharmaceutical properties of sericin	Dr.P.Priyadharshini Assistant Professor (Seri.)	September 2018 – August, 2021	The project may be continued.

D. General Remarks

- Effect of probiotic strain *Staphylococcus gallinarum* may be validated.
- Expression of variability in mutant mulberry should be observed for three generations

E. Action Plan 2020-2021

Action Plan 1: Host plant production and management			
Activity	**Name of the Scientist and centre**	**Work to be carried out**	**Deliverables /expected**
Strengthening of mulberry germplasm at FC&RI, Mettupalayam and ARS, Bhavanisagar	Dr.S.Susikaran Assistant Professor (Seri.) Dr.P.Mangammal Assistant professor (Sericulture)	Collection of mulberry genotypes with high latex will be added to germplasm	Assemblage of germplasm for breeding experiments.
Development of organic growth promoter for mulberry cuttings.	Dr.R.Shanmugam Assistant Professor (Seri.)	Pellet formulation will be developed	Smart delivery of nutrients to mulberry.
Identification of effective antagonist against black root rot, *Lasiodiplodia theobromae* of mulberry	Dr.P.Renukadevi Associate Professor (Plant Pathology)	Screening of endophytes/bacterial/fungal antagonists under *in vitro* will be done. Evaluating the identified	Effective bioagent will be identified to compete black root rot disease in mulberry.
Testing of vermicompost based consortia under field conditions against root rot complex	Dr.P.Renukadevi Associate Professor (Plant Pathology)	Conducting field trial using the consortia against rot root complex	Effective management of root rot complex using consortia

Assessing the carbon sequestration potential from available mulberry trees.	Dr.P.Jothimani Assistant Professor (ENS)	Collection of soil and mulberry wood and leaf samples from available mulberry tree types at FC&RI and CSGRC, Hosur Analysing the carbon stock in soil and carbon sequestration potential of mulberry tree	Harnessing the mulberry tree types for hoarding the atmospheric C content and reducing the carbon foot print.
Commercial production of mulberry cuttings and saplings.	Dr.R.Shanmugam Assistant Professor (Seri.) Dr.K.A.Murugesh Assistant Professor (Seri.)	VCS will be proposed and operated.	Supply of quality mulberry saplings for better leaf yield.
Development and validation of multi micronutrient formulation for mulberry	Dr.R.Rajeswari Assistant Professor (SS&AC)	Study of physico chemical properties of mulberry booster. Validating the mulberry booster	Enhance the quality and yield of mulberry in mulberry tracts.

Action Plan 2: Silkworm production and management			
Activity	**Name of the Scientist**	**Work to be carried out**	**Deliverables**
Effect of probiotic *Staphylococcus gallinarum* on economic traits of silkworm, *Bombyxmori* L."	Dr.P.Priyadharshini Asst.Prof (Sericulture)	Conducting bioassay with *S.gallinarum* (three replications @ 200 larvae per replication)	Reduce mortality and enhance cocoon characters.

Action Plan 3. Value addition in Sericulture			
Activity	**Name of the Scientist**	**Work to be carried out**	**Deliverables**
Validating and exploring sericin for wound healing activity	Dr.P.Priyadharshini Asst.Prof (Sericulture)	Validation will be done with Pharmacology Dept,TANUVAS, Namakkal.	Improvised pharmaceutical utility of sericin

6. Other Campuses Projects:

Sl. No.	Project No. & Title	Project period	Project Leader	Remarks
1	**DST/AEC/KUM/2018/R008** Development of Technologies for Extraction and Dormancy Reduction of Teak Seeds	Oct.2018 To Feb.2021	Dr.P.Masilamani	This project may be continued
2	**FCRI/KKM/FOR/2019/002** Identification of suitable pulse crop for Red Sanders based agroforestry system	Sep.2019 - Sep.2021	Dr.P.Kumar	This project may be continued
3	**FC&RI/PKM/FOR/2020/001** Progeny Evaluation in Kapok (*Ceiba pentandra* (L.) Gaertn.)	May 2019- Mar.2024	Dr.M.Murugesh	This project may be continued
4	**CPPS/KDM/AEN/2016/001** Study on termite fauna in Vayalogam soil series and their management in avenue trees	June 2016 to May 2020	Dr.S.Suganya Kanna	This project shall be closed and completion report should be submitted on or before October 2020

Vice Chancellor Remarks

- Value addition studies in grain amaranthus may be taken up at the Dept of PHTC, AEC&RI, TNAU, Coimbatore and CSC&RI, Madurai

- Validation of yield table by felling sample trees available in different campus of TNAU by following university norms

- Rhizosphere microflora of Marayoor sandal may be assessed in collaboration with Department of Microbiology, TNAU, Coimbatore

- Moringa may be included as fodder in the tree protein bank

- Value added products may be developed from seed powder of *Prosopis juliflora*

- Honey box may be made by using alternate tree species instead of teak and supplied to all TNAU centres.

- Mulberry booster to be validated through on farm trials.

Director of Research Remarks

- Forestry Scientists to own the bulk plantings done in various College campuses and Research Stations. Such establishment can be used as an experimental sites for PG / Ph.D / Scientists

- Model Multi-functional Forestry can be exhibited wherever possible

- There is a wide array of advancement in forestry science (geo-informatics, drones application, sensors, nano-enabled forest products etc.) and new research projects can be proposed in the novel areas of research to attract external funding.

VI. CONTACT DETAILS OF SCIENTISTS PARTICIPATED IN THE CSM

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