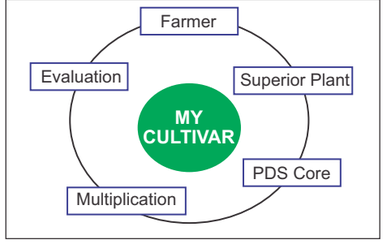
My Cultivar



Rejuvenation technologies in black pepper

Problem

- High percentage of unproductive plants in the field. (More than 40%)

Solution

- Developed an innovative simple technology for initiating healthy root system by filling organic manure and top soil at the basal nodes of pepper vines.
- Established 50 demonstration plots.

Introduction of improved varieties of ginger, turmeric and black pepper.

Problem

- Farmers depend on conventional varieties with low productivity. • Pepper – low productivity • Ginger – low oleoresin • Turmeric – Low curcumin

Solution

- Introduced 18 different varieties of pepper from IISR and Pepper Research Station Panniyur.
- Introduced new varieties of ginger and turmeric developed by IISR and Kerala Agriculture University. • Disseminated through 100 farmers
  through ToT Scheme of DASD (Directorate of Arecanut and Spices Development)

Improved methods of planting material production.

Problem

- Farmers depend on stem cuttings for planting material production.
- Unavailability of quality stem cutting.

Solution

- Introduced and popularized serpentine method of planting material production in black pepper.

Improved technologies in Mushroom cultivation.

Problem

- Low bio efficiency.

Solution

- Developed a growth promoter.
- Increased the clump size by reducing the number of holes in growth bed.
- Enhanced air circulation by fitting an exhaust fan in reverse manner.
- 90% bio-efficiency increase is observed.

Highlights from Core area 3: Agriculture Technologies to promote organic farming and Yield Enhancement

This initiative is to promote sustainable agricultural production through Organic farming and innovative cost effective technologies.

CORE Support Programme (2008-2018)

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Department of Science and Technology
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Technologies

Highlights

Promotion of underutilized crops

Problem
- Genetic erosion • Short lifespan of hybrid verities • Susceptible to pest and diseases • Lack of varieties having regular bearing habit • Less number of kitchen gardens

Solution
- Introduced and promoted 10 varieties of underutilized crops.(*Psophocarpus tetragonolobus, Canavalia gladiata, Dioscorea alata* var *bulbifera, Amaranthus viridis,Momordica dioica, Ipomea muricata, Colocasia esculenta, Dioscorea alata* – local cultivars – 12)
- Enhanced the number of kitchen gardens.
- Number of farmers adopted – 150 farmers in three districts

Multi layer farming in rubber plantations

Problem
- Mono-cropping •Price fluctuation in rubber

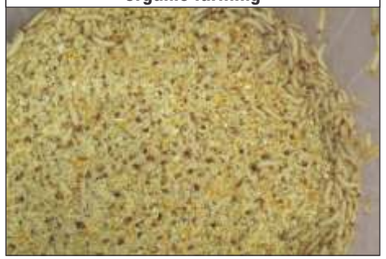
Solution
- Introduced cocoa, arrowroot and black pepper in rubber plantations.
- Designed new spacing to promote mixed farming. (20 feet*10 feet)
- Identified and popularized shade loving black pepper varieties. (Panniyur- 5, *Narayakodi, Karimunda)*
- Introduced *Curcuma zedoria as intercrop*
- Number of farmers adopted – 600 (Idukki & Kottayam districts)
- Optimum growth and yield observed above an altitude of 1600 feet.

Decapitation for High Density Planting (HDP) in banana

Problem
- High cost of cultivation of existing system in HDP.

Solution
- New nursery technique suitable for HDP using decapitation technology.
- Needs only single sucker for getting 2-3 bunches.
- Trial plot in 50 farmer's plots.

Introduced bio agents to promote organic farming



Problem
- Scarcity of proper organic inputs against pest and pathogens

Solution
- Introduced, multiplied and popularized bio control agents *Trichoderma, Metarhizium, Beauveria,* EPN and *Pseudomonas*.
- Number of farmers adopted – More than 5000

Intra-specific grafting technology in coffee

Problem
- Low tolerance of commercial varieties to drought.
- Low productivity of traditional varieties. (300 Kg/ Acre)

Solution
- Introduced toppee stage grafting and cleft grafting.
- Commercial varieties such as Arabica and Robusta were grafted with tree coffee. The advantage of tree coffee is its strong root system.
- Number of experimental plots – 300 tribal farmer's plot.

Seed propagation in of black pepper

Problem
- Growth, disease resistance and drought resistance is low in vegetative propagation. • Depend on traditional varieties. • Lack of adaptable varieties.
- Root shoot ratio is not ideal to withstand summer season in stem cuttings.
- High susceptibility to abiotic stress.

Solution
- Trials started to promote seed propagation and identification of good varieties.
- Identified one seedling with notable difference with the mother plant in a population. • Seeds selected from Kottanadan (A traditional variety) and Panniyur-1 (A Hybrid variety) • 300 farmer's plots were chosen as trial plots in Idukki and Kottayam districts.

Lateral bud initiation in black pepper

Problem
- Low productivity due to low branching. (85 - 120 Kg/Acre)

Solution
- Developed an innovative harvesting method to initiate more branching.
- 2-6 secondary branches with spikes observed per branch.

Somatic embryogenesis in black pepper.

Problem
- Lack of true to type quality planting material.
- High level of systemic infections in shoot tip culture.

Solution
- Developed a protocol for somatic embryogenesis from nucellar tissues
- Two media combinations were developed suitable for solid and liquid medium.

Shoot tip culture in Vanilla.

Problem
- Scarcity of planting material due to severe *Fusarium* infection.

Our role
- Developed a protocol for mass multiplication.
- Cultures initiated for mass multiplication.