

polymorphic microsatellite primers. The mating parameters were estimated using mixed mating model (MLTR software) and the extent of similarity between the mother palms and their progenies were analyzed using the NTSYS software. The percentage similarity between the mother palm and their progenies, as deduced using microsatellite data, ranged from 55 to 74%. The progenies were also analyzed using a RAPD primer capable of distinguishing tall and dwarf palms. All the progenies were found to possess the tall-type marker indicating that the pollen was derived from tall palms in all the cases. The results revealed that WCT cultivar to be pre-dominantly out-crossing and indicate that proper sampling and breeding strategies are required to sustain the high genetic diversity found.

B
18

Evaluation of drought stress tolerance of *Oryza sativa* (MO.16)

Reshma Ranjanan

St. Berchmans College, Changanacherry, Kottayam

In the present study, the morphological, physiological and biochemical responses response of *Oryza sativa* variety Uma (MO.16) to drought stress during germination was evaluated. Germination percentage and vigour index were determined by exposing seeds to varying PEG concentration (0%, 2%, 4%, 6%). The result showed that drought stress decreased seed germination significantly. Carbohydrate, protein, proline, peroxidase activity and amino acid content were also determined. The results showed that there is no significant variation in amino acid content. But proline and peroxidase activity increase with increased concentration of PEG. The content of protein and carbohydrate was increased upto 4% PEG concentration. But in 6% PEG concentration protein content showed that significant decrease and slight decrease in carbohydrate content. Water content of root and shoot tissue was calculated i.e., Relative water content is decreased with the increase in PEG concentration.

B
19

Effect of brassinosteroid, glutathione and adenine sulphate on callogenesis of coconut (*Cocos nucifera* L.) plumule

T.P. Fayas, Jeeha Muneem, K. Lakshmi Jayaraj, U. Bhavyashree, K.K. Sajini, M.K. Rajesh and Anitha Karun

Central Plantation Crop Research Institute, Kasaragod 671124

Coconut is one of the most important tropical plantation crops and was propagated so far through seeds. Coconut is a recalcitrant species as far as tissue culture is concerned. The increased demand for disease resistant palm requires massive multiplication of selected mother palms. Out of various explants, viz., immature inflorescence, tender leaf and immature zygotic embryo and plumule tried, plumule was found to be a better explant for mass multiplication. The plantlet development from plumular explant involve various stages of development like callus induction,

multiplication, somatic embryogenesis and regeneration of somatic embryo to complete plant. Even though the formation of somatic embryo from plumular explants was achieved, its efficiency for conversion into plantlet was remained low. In order to achieve uniform response in the developmental process it is essential to refine the protocol. The present study was designed to increase the efficiency of callus formation from plumular explant. To achieve this goal various treatments conducted by supplementing chemicals such as brassinosteroids, glutathione, adenine sulphate. The experiment was conducted by supplementing three different concentrations of each chemical and three replications were performed. Result obtained after 60 days of culture initiation were analyzed using SAS software system. Glutathione was found to be better for callus induction compared to other two chemicals.

B
20

Identification and screening of Expression Sequence Tags (EST) of pheromone gland specific FAR in *Helicoverpa armigera* female moth species

M.N. Reddy, B. Antony, T. Grace¹ and R. Pilankatta

Department of Biochemistry, Central University of Kerala, Padanakkad, Kasaragod

¹*Department of Genomic Science, Central University of Kerala, Padanakkad, Kasaragod*

Pheromones are biologically significant, low molecular weight compounds providing cues for sexual maturation and signalling of messages in the insect communication system. Sex pheromones are ideal alternatives to the usage of insect pesticides and used as a bio control in an agricultural fields. Even though, there are thousands of chemical components present in pheromones synthesized by various moth species, the exact set of genes and the mechanism involved in the sex pheromone biosynthesis pathway are not well characterized. In this context, the pheromone gland specific fatty acyl reductase (pgFAR) gene isolation and characterization in *Helicoverpa armigera* (Lepidoptera) female moth species was undertaken in this study. pgFAR of *Helicoverpa armigera* (Lepidoptera) is an essential enzyme involved in the reductive modification of acid to alcohols during the pheromone biosynthesis. We isolated pheromone gland from female *Helicoverpa armigera* moth followed by isolation of total RNA from pheromone gland (pg) and cDNA was generated by RTPCR. Two amplicons of size 600 bps and 750 bps were obtained using PCR amplification of the cDNA with degenerate primers. The gene fragments were cloned in TOPO TA vector system and propagated in the bacterial *Escherichia coli* (*E. coli*) system. The plasmids were isolated and analysed by restriction enzyme digestion for the presence of insert. Upon sequencing the insert, it was found that the 600 bps, 750 bps of FAR gene fragment of *Helicoverpa armigera* is having an identity of 77% to the FAR-like protein XII of *Ostrinia scapulalis* (Lepidoptera: Crambidae) and 88% of Sterol carrier protein 2/3-Oxoacyl-CoA thiolase (*Spodoptera litura*) respectively by NCBI blast analysis. Further experiments are planned to get the full length FAR transcript by Rapid amplification of cDNA ends (RACE) and functional assay of specific gene using the Yeast/Insect expression system. The EST obtained from this study can be used for designing the hybridization probes for identifying the FAR genes in *Helicoverpa armigera* and other related groups of species.