the efficiency of insect tracheal system in supply of G_2 during these stressed situations like continuous biting without elevation of anaerobic glycolysis. A sharp increase in the content of acetylcholine (Ach) in head and thorax may be the reason for observed immobility or lack of coordination in movements of ants after biting. Observed hyper proteinemia in ants within a short period of 30 minutes was evidenced by additional bands in electrophorogram.

L 8

Comparative study of three different methods of coconut plumule extraction for embryogenic callus induction

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

Central Plantation Crop Research Institute, Kasaragod 671124

A protocol was standardized to obtain maximum embryogenic calli from plumule culture. In the present study three different plumule extraction methods were carried out, *viz*., i) Plumule extracted aseptically from *in vitro* germinated embryo after 10-12 days (T_1). ii) Plumule extracted from germinated embryo subjected to GA_3 treatment after 5 days (T_2). iii) Plumule extracted from fresh embryo (T_3). The primary calli induction from the T_1 was 21%, T_2 27% and T_3 79% respectively. However the calli formed from T_3 had 56% of embryogenic calli. The calli obtained from sliced embryos formed less percentage of embryogenic calli because of the presence of cotyledonary tissues which inhibits multiplication of meristematic tissues. In the case of plumule extracted from GA_3 treated embryos, non embryogenic calli was more compared to fresh plumule. It was found that the addition of GA_3 in the initial stages inhibits the formation of embryogenic calli and favors direct shooting. Currently this protocol is employed for scaling up the planting material production from released varieties of coconut.

L 9

Histological studies of somatic embryogenesis of coconut plumule derived callus

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

Central Plantation Crop Research Institute, Kasaragod 671124

Somatic embryogenesis is a regeneration system that leads to the formation of bipolar structures resembling zygotic embryos from somatic cells. It is a useful approach for thelarge-scale micro propagation of plant species, such as coconut,that have no natural vegetative propagation system. During somatic embryogenesis, several cellular changes occur inside the tissues. Since coconut is one of the most recalcitrant species to generate *invitro*, it is necessary to study in detail about the cellular changes that occur during the somatic embryogenesis to improve the culture strategies for better response. In the present study, coconut plumules were used as an explant for