

practices, in adjacent plots at the Potthkkulama Research Station, in IL<sub>1</sub> Agro-Ecological Region. Eight adjacent palms from each of four genotypes were selected. Palms were monitored throughout the 80-day natural drought experienced in early 2005. DB showed the highest ISP (24) while DG (22.5) and CL (21.5) were next with minor differences and CRD (19), being the lowest of all. Thus, CRD can be identified as a drought sensitive genotype compared to the rest. Therefore, four genotypes can be ranked according to drought tolerance in terms of ISP as DB>DG>CL>CRD. However, these results are substantially different from known conditions at the field level. Therefore, more careful observations on much harsher and prolonged drought are needed to verify the applicability of this method.

### 039

#### Effect of bio control agent *Trichoderma* (*T. viride* and *T. konnigii*) on basal rot of *Cloropytum comosum* 'laxum' caused by *Sclerotium rolfsii*

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At present, the biological control of soil borne fungal diseases is becoming popular in foliage industry of Sri Lanka, which is a nature-friendly ecological approach to overcome the problems caused by standard chemical methods of plant protection. With a suitable bio control agent pathogen can be suppressed and reduced the disease incidence could be reduced effectively. This experiment was conducted over a period of six months in polytunnel to identify a potential bio control agent for basal rot of *Cloropytum comosum* 'laxum' caused by *Sclerotium rolfsii* with five treatments of *Trichoderma viride*, *Trichoderma konnigii* and combination of *Trichoderma viride* and *Trichoderma konnigii*, Pormarsol forte 80% wp and control. The mean disease incidences of above treatments were 1.75, 2.75, 1.5, 1.75 and 10.75 respectively. It was revealed that *Trichoderma viride* and combination of *Trichoderma* spp. are suitable for the highly effective control of plant diseases caused by *Sclerotium rolfsii*.

### 040

#### *In vitro* callus induction of *Spilanthes calva* DC [*Spilanthes acmella* auct. non L.,] (Maha Akmella)

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*Spilanthes calva* DC. (Maha Akmella) is a valuable medicinal plant belongs to Family Asteraceae. It is widely used in indigenous medicine to treat toothache in most of the Asian countries. Not only it has anesthetic properties, but also contain secondary metabolites, with the insecticidal properties, which could be used as potential bio insecticide. This is an annual plant, which grows to a height about 30 cm. After flowering mother plant is dried off. Four to six weeks later seeds are germinated and new seedlings are produced. Viability of seeds loses within short period of time. Even though seeds are germinated percentage of germination is low (about 30%). Rooting of cuttings is also not possible. This is a limitation in using this valuable medicinal plant for commercial production. Therefore it is very important to develop a protocol for mass propagation through tissue culture and establishing cell cultures will be useful for large-scale chemical extraction in industrial purposes.

Leaf discs were used as explant for callus initiation. In order to identify the suitable maturity stage for callus initiation, leaves were harvested at different maturity stages i.e first, second and third fully opened leaf.

Leaves were washed with Dettol™ soap and soaked in a solution of Teepol™ for 5 minutes. After that leaves were washed with running tap water for 45 minutes. In order to surface sterilize. Leaves were washed with 10% Clorox™ (5.25% Sodium hypochlorite v/v) for 5 minutes and then with 70% alcohol for 30 seconds each followed by three successive washings in sterile distilled water. These operations were carried out inside the laminar airflow cabinet before inoculation. Basal media tested for the

study were full strength MS (Murashige and Skoog, 1962) medium and ½ MS (both macro and micronutrients) medium. Media were supplemented with different concentrations (1.0 mgL<sup>-1</sup> – 3.0 mgL<sup>-1</sup>) of BAP and 2,4-D. Cultures were incubated under complete dark at 25±1°C in the growth room.

Study conducted by Haw and Keng (2003) on the same species produced multiple shoots from axillary bud explants without inducing callus in MS medium supplemented with 2.0 mgL<sup>-1</sup> BAP. In the present study, callusing was observed within 5 days of incubation in full strength MS medium supplemented with BAP and 2,4D. It took longer period to initiate callus when both macro and micro nutrients in the basal medium was lowered to half and the amount of callus produced was also very low even after 6<sup>th</sup> week of incubation. In order to observe the time taken to produce maximum amount callus fresh weight was measured after 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> week of incubation. It was observed that maximum amount of callus was produced within 4 weeks in all explant types tested with a maximum of 0.88 g ± 0.23 in leaf discs obtained from first fully opened leaf.

In order to determine the best growth regulator combination for callus initiation, calli fresh weights were measured after fourth week of incubation in different growth regulator combinations tested. Highest amount of calli were in MS medium in the presence of 2.25 mgL<sup>-1</sup> BAP and 1.0 mgL<sup>-1</sup> 2,4-D. Fragile calli, which were translucent and mucilaginous in nature were observed within 15 days of incubation, which could lead to cell suspension cultures.

### 041

#### Collection, conservation, evaluation and use of durian germplasm at Horana

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Unavailability of high quality varieties is one of the constraints in commercial durian production. A program to collect durian germplasm was initiated at Horana. Fruits from 26 seedling trees were evaluated for fruit weight, number of arils, number of seeds, weight of husk and seeds using six fruit per tree. Aril size, seed size, % rind, % seed and % aril were calculated. Aril color, flavor and overall acceptability were also recorded with a panel test. Results showed high variability in fruit quality traits exists among trees. Highest variability was found in number of seeds per fruit (CV=36.2%) while % rind showed the lowest variability (CV=7.26%). Number of seeds varied from 3.7 -19.2 per fruit while % rind varied from 60.5-79.5%. Nine accessions selected were planted with five replicates for further evaluation. Plant height and stem girth showed significant differences at early stages but became non significant by three years after planting. At 42 months after planting plant height varied from 368-492 cm while stem girth ranged from 42.0 - 52.8 cm. Principal component analysis of selected fruit and leaf characteristics of six accessions showed that first three PCs accounted for 89.35% of the variation in the characteristics used for the analysis indicating that the varieties of the collection are diverse. Collection of germplasm continued with establishment of a field gene bank to conserve accessions with two replicates. Nine selections were also further tested in farmer fields for adaptability.

### 042

#### *In vitro* propagation of *Kaempferia galanga* (L)

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*Kaempferia galanga* (L) is an aromatic perennial herb, which is widely used in Ayurvedic medicine. Dry tubers are imported in large scale to Sri Lanka due to lack of mass production in Sri Lanka. Disease susceptibility and higher cost of production have restricted its cultivation. Propagation of *Kaempferia galanga* is normally by rhizome cuttings but disease susceptibility of tender rhizomes restricts propagation in large scale. Propagation through other vegetative methods is not possible. Rahman *et al.* (2004) reported the possibility of obtaining plants through somatic embryogenesis but the survival rate was low. Therefore an attempt was made to develop a protocol for mass propagation of *Kaempferia galanga* through direct organogenesis.