DEVELOPMENT OF *IN VITRO* PROPAGATION PROTOCOL FOR *Aquilaria crassna* Pierre

P.G.S.R. Chandrarathne[1], A.M.C.I.M. Attanayake[2], P.G.A.L. Kumara[2] and P.A. Weerasinghe[1]

[1]Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka.
[2]Central Research Station, Department of Export Agriculture, Matale, Sri Lanka.

Aquilaria crassna (Agarwood) is a tree producing resin, which has a growing demand in international market. This study was focused on developing a micropropagation protocol for good quality planting materials production of *Aquilaria* with the objectives of finding suitable explant sterilization and shoot multiplication media. During experiment 1, four treatments were tested to identify the appropriate sterilisation procedure for seeds on Woody Plant Medium (WPM). As treatments, T1: 0.1% Captan, T2: 0.5% Captan, T3: 1.0% Captan, T4: 1.5% Captan together with 30% Clorox were used, keeping explants 15 min for sterilisation in all treatments. Among those treatments, T3 performed the best seed survival rate (4.67±1.53) after four weeks. In experiment 2, four treatments were tested to identify the best sterilisation procedure for *Aquilaria* shoot tips. In this experiment, T1: 0.5% Carbendazim, T2: 1.0% Carbendazim, T3: 0.8% Mercuric Chloride, T4: 1.0% $HgCl_2$ together with 30% Clorox treatments were used sterilising explants in 15 min in each treatment. In addition, 50% Ethanol for five min was used for each treatment. Among those treatments, T3 performed the best shoot survival rate (9.33±0.58) after 4 weeks. In experiment 3, different hormonal combinations were tested for *Aquilaria* shoot multiplication. As treatments, T1: 1.5 mg L^{-1} BA+0.25 mg L^{-1} NAA, T2: 1.5 mg L^{-1} BA+0.5 mg L^{-1} NAA, T3: 3.0 mg L^{-1} BA+0.25 mg L^{-1} NAA and T4: 3.0 mg L^{-1} BA+0.5 mg L^{-1} NAA were used. The highest number ($p<0.05$) of shoots (8.40±2.50) and leaves (10.3±3.15) were observed in T3 after 12 weeks. Based on the results, T3 was selected as the best treatment for *Aquilaria in vitro* multiplication.

Keywords: Agarwood, Explant sterilisation, Micropropagation, Shoot multiplication media