

## **Feasibility of Propagating *Dioscorea alata* using Vine Cuttings under Aeroponic System**

**\*Kajanan<sup>1</sup>, S., Thayalan<sup>1</sup>, S., Anmeegan<sup>1</sup>, S. Thishanthiny<sup>1</sup>, S., Sahna<sup>1</sup>, M.S.F. and Wishwajith Kandegama<sup>2</sup>, W.M.**

<sup>1</sup>Department of Bio-systems Engineering, Faculty of Agriculture and Plantation Management,

Wayamba University of Sri Lanka, Makandura, Gonawila (NWP), 60170, Sri Lanka

<sup>2</sup>Department of Horticulture and Landscape Gardening, Faculty of Agriculture and Plantation Management,

Wayamba University of Sri Lanka, Makandura, Gonawila (NWP), 60170, Sri Lanka

\*Kajanankaja111@gmail.com

*Dioscorea alata*, is a popular tuber crop, and nutritionally superior to other tropical root and tubers. It is a staple food for approximately one billion people in Asia, Africa and the Pacific region. It is an important reliable source of diosgenin, a pharmacologically active ingredient to treat arthritis. Despite the high demand of this crop for diverse purposes, the production is far below due to different reasons. Expansion of the cultivation is limited due to lack of technology for year-round production of planting materials. Tuber is the main propagation material that is used for commercial cultivation. This study was focused on evaluating the feasibility of using mature vegetative parts of the vine as propagation materials. Vine with leaf and vine with nodes treated with three different root inducers (Aloe Vera, activated charcoal and commercial plant rooting hormones) were used for initiating roots and mini-tubers. Planting materials were placed in aeroponic chamber and fertigated with automated sprinkler system in 30 minutes interval. Water quality, temperature, pH and electrical conductivity were monitored daily. Number of roots, root length, tuber formation and tuber size were measured for 6 weeks. All treatments were replicated three times. Complete Randomized Designing was used and compared the growth performances using ANOVA. The data were analyzed using Minitab version 10.1. Callus initiation was observed from 14 to 21 days after establishing whereas the rooting induced after 18 days. The longest root growth 4.81 cm and 4.88 cm were observed in both vine with leaves and vine with nodes respectively treated with commercial root hormone. Activated charcoal demonstrated the lowest root growth. Mini-tuber development was observed in several nodes in the same vine which can be used as a novel mass propagation material in *Dioscorea*. However, further studies are required for further evaluation of their performance as propagation materials under the Aeroponic system. This research was funded by FAO Sri Lanka (LoA No: 378/22/TCP/SRL/3804).

**Keywords:** Callus, Mini-tubers, Rooting, *Dioscorea alata*, Aeroponic system