CONTROLING TRANSMISSION OF CROWN GALL DISEASE IN SHOOT CUTTING PRODUCTION OF CHRYSANTHEMUM UNDER TROPICAL GREENHOUSE CONDITIONS.

Gunarathna H.M.S.B.[1*], Kumara G.D.K.[1] and Weerasinghe W.W.M.B.P.B.[2]
[1]Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, Sri Lanka
[2]2Ceylon Foliage (PVT) Ltd, Sri Lanka *sameerabgunarathne@gmail.com

Crown gall caused by *Agrobacterium tumefaciens* is a major disease problem that brings significant economic losses in export-oriented Chrysanthemum *(Dendranthema grandiflorum)* shoot cutting production. Disease is transmitted mainly by contaminated planting materials, soil and cutting equipment. The present investigation was conducted to chemically disinfect cutting tools against transmission of the disease and to enhance immunity and rooting ability of shoot cuttings under tropical greenhouse condition at Ceylon Foliage (PVT) Ltd, Boralanda. Firstly, bacterium isolation was done using crown gall samples and cultured in MacConkey media. Identification was done by KOH test, Carrot-disk bioassay and gene sequencings. The first experiment was conducted to control transmission of *disease* from plant to plant by disinfecting cutting knives using isopropyl alcohol (100%), 70% Ethyl alcohol, 1% sodium hypochlorite as treatments. The first pinch was done using treated knives and observed the number of crown galls developed, weekly on the cut surface of chrysanthemum mother plants. The second experiment was conducted to enhance immunity and rooting ability of shoot cuttings obtained from the same mother plants of the first experiment. As treatments, cuttings were dipped in sodium hypochlorite (1%), sodium hypochlorite (1%) + IBA (5%), Barrix control® (7g/l) solutions for five minutes and planted in plug trays. The experiments were conducted using Complete Randomized Design and data were analyzed using ANOVA procedure. All the disinfection treatments were effective while Isopropyl alcohol demonstrated the best performance (100% tolerance). All the mother plants in the control developed crown gall. In the second experiment, unrooted cuttings which were dipped in Sodium hypochlorite (1%) + IBA (5%) performed best in increasing immunity (only 15% disease development), average root growth (8.7 mg dry weight; 3.7 cm root length) and average number of roots (10.6). Disinfection treatment on cutting knives did not significantly enhance immunity and rooting ability of shoot cuttings. Thus, of the treatments tested, Isopropyl alcohol is the best treatment for disinfecting cutting tools to control transmission of crown gall disease from plant to plant while Sodium hypochlorite (1%) + IBA (5%) is the best dip-treatment to enhance immunity and rooting ability of shoot cuttings.

Keywords: *Chrysanthemum, Crown gall disease, Disinfection, Immunity, Rooting ability*