Modelling the rooting ability of *Polyscias Kikuyuensis* cuttings under different growing media and *Indole-3-Butyric Acid* (IBA) concentrations using logistic regression.

Oeba Vincent Onguso, Giathi Gitehi and Mbinga Jorum

Kenya Forestry Research Institute, P.O Box 20412-00200, Nairobi, Kenya

Polyscias kikuyuensis is a fast growing tree attaining an average height of 30m high with a straight bole of about 15m long. It occurs naturally on wet highland forests of Kenya and dominant in Central Rift valley. It's of high economic value especially in timber production, pulp, veneer and plywood, food containers, carving industry mainly in utensils, musical instruments and beehives. It also plays a significant role in the rehabilitation of the degraded forests besides being an ornamental and shade tree. Due to these valuable characteristics and growing demand, there is a shortage of seedlings through sexual propagation. Recent and on going research is mainly focusing on alternative methods of propagation to supplement the deficit. Vegetative propagation through stem cutting has been picked as a possible alternative that would not only increase the stock but overcome the problem of preys in the forest and on farms. The objective of this paper was therefore, to model and predict using logistic regression approach the rooting ability of *Polyscias Kikuyuensis stem* cuttings under different growing media and IBA concentration levels. The experiment was set in a split plot design and conducted in a seed bed nursery covered with a translucent polythene sheet with propylene net of 90 % shading level. Data on rooting was collected at 52, 70 and 92 days. This involved inspection of each cutting separately. The number of roots formed per a rooted cutting was recorded and also the length of the longest root. Mean cumulative rooting percentage were analyzed using ANOVA procedures by first checking homogeneity of variance; Pearson correlation were carried out to check the interrelation of the variable with rooting and Logistic regression model was used to determine and predict the effect of factors that were likely to influence the rooting ability of *Polyscias Kikuyuensis stem* cuttings. The results showed that the cuttings inoculated with 0.5% under sand soil, significantly ($p<0.01$) rooted better and had highest mean number of roots than 0% and 1% IBA concentrations under top and red sub soils. The result further revealed that the chances of stem cuttings rooting under sand soil and top soil as compared to red subsoil were 3.4 and 1.4 times higher, respectively; and those inoculated with 0.5% and 1% of IBA concentrations as compared to 0% were 2.1 and 3.1 times higher, respectively. Similarly the cuttings rooting after 70 and 92 days were about 6.2 and 9.4 times higher as compared to 52 days, respectively. Overall there was no significant ($p=0.1405$) correlation between rooting and IBA concentrations. In conclusion this approach of propagation would be enhanced with 0.5% IBA under sand soil and further studies need to investigate the optimal percentage of IBA to be used as trend declined at 1%.