Abstract

In order to investigate the effect of Indole butyric acid concentrations and three types of cutting on rooting of Chinese Elm cuttings, two single experiments were conducted in 1389 and 1390 in Isfahan University of Technology's greenhouse, in the form of factorial experiments based on a completely randomized design along with four replications. In both experiments, the Indole Butyric Acid hormone and cutting type were investigated in 5 levels (0, 5000, 10000, 15000, 20000 mlg/liter) and 3 levels (softwood, Semi-hardwood and hardwood) respectively. Prior to cuttings culturing, the amount of soluble carbohydrate and the percentage of nitrogen at the end of cuttings were measured. The amount of carbohydrate and nitrogen in hardwood cuttings were significantly higher than those in other kinds of cuttings. In the first experiment, the cuttings were cultured in a bed containing Perlite and Peat (3:1 v/v), under irrigation condition (without Misting System) and in a tent with a height of 0.5 m and with a 60-80 percent relative humidity. In the second experiment, the IBA treated cuttings were cultured in a medium containing Perlite and Peat (3:1 v/v) and under Misting System condition (using a tent with a height of 1.5 m) with a 90-95 percent relative humidity. After 8-10 days of culturing, cuttings were removed and properties like rooting percentage, root length, root number, and root wet/dry weight were measured. In the first experiment, rooting percentage was zero and was only observed in treatment of high concentration of IBA Callus induction. In general, Callus induction percentage in hardwood cuttings was higher than that in semi-hardwood cuttings. As for the results obtained from the second experiment, both factors of cutting type and IBA hormone caused a significant difference. In softwood cuttings, rooting percentage was zero and increased whenever the concentrations of Indole Butyric Acid hormone in hardwood and semi-hardwood cuttings increased. Hardwood cuttings treated with Indole butyric acid of 15000 and 20000 (mlg/liter) concentrations possessed the highest percentage of rooting (95 and 90 percent, respectively), the most root length, root number, and root wet/dry weight among the entire treatments.
Keywords: stem cutting, Chinese Elm, rooting, Indole butyric acid