Preliminary study on the effect of 22(S), 23(S) homobrassinolide on *in vivo* rooting of ornamental shrubs in peat-free substrate

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Studies on the use of peat-free growing media to grow potted ornamental plants are nowadays increasing, due to environmental concerns around the exploitation of peat. However, few studies focus on the substrate mixture used in the cutting production, which, together with the choice of hormone to promote the development of roots, are the key elements for a successful propagation phase. The most important features required for substrate used for rooting cutting are porosity and water retention. Moreover, the development and quality of cuttings is influenced by the source material characteristic, irrigation management, and phytohormone type. To promote the formation and development of adventitious roots, synthetic hormones (suitable concentrations of auxine and cytokinins) or fitormones (brassinosteroids) are often applied, although their use can produce opposite effects on different species. As example, the formation of adventitious root in hypocotyl cuttings of mung bean is promoted by auxin and inhibited by brassinosteroid, while in soybean very low concentration of 24-epibrassinolide stimulated adventitious root formation. With the aim of evaluate the effect of brassinosteroids on rooting, cutting from two ornamental Mediterranean commercial shrubs, *Prunus laurocerasus* L. and *Crataegus pyracantha coccinea* L. plants were sampled at the end of November and rooted on a free-peat substrate, containing coconut coir dust:pumice 70:30 v v-1. For each species, 12 cm-leafed-cuttings (with 4-6 leaves) were prepared and treated through the immersion of cutting portions of 1 cm for 5 seconds in: a) 4000 ppm of both indole-3-butyric acid (IBA) and 1-naphthaleneacetic acid (NAA); b) 5 ppm 22S,23S-homobrassinolide (SSHB); c) 25 ppm 22S,23S-homobrassinolide (SSHB); d) water (without hormones; control treatment).

A half of treated cuttings (120 cuttings) was maintained in a greenhouse in alveolar containers equipped with a fog system for 120 days, while the other half was collected in different periods (0, 8, 32, and 115 days after cutting preparation) and subjected to protein extraction and analysis, to obtain more information concerning ornamental shrub rhizogenesis. At the end of the trial (after 120 days) each treatment was evaluated in term of rooting percentage, fresh and dry root weight, length, and root area. In *C. pyracantha coccinea* cuttings treated with SSHB had similar growth of cuttings treated with auxins, while some biomass parameters highlighted better performance of auxins compare with SSHB for *P. laurocerasus* rooting. Generally, the data showed that SSHB had a positive influence on the formation of lateral roots, but the response was genotype and SSHB concentration dependent.

Keywords: cutting production, clonal propagation, auxin, brassinosteroids, coconut coir dust.