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Rapid propagation of *Arbutus unedo* L. adult selected plants using ex vitro rooting

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Arbutus unedo L. is widely represented in the Mediterranean climates of southern Europe. The species is tolerant to drought and has a strong regeneration capacity following fires making it interesting for Mediterranean forestation programs. In Portugal *A. unedo* grows mainly in the Southern mountainous regions. In the Center the *A. unedo* area has increased to prevent forest fires, by creating forest biomass discontinuities. Usually fruits were picked in wild plants and used to make a spirit called “medronheira”, which represents the main income for owners. The interest for high-quality plant material for field planting increased. A total of 22 adult plants, from centre and south region of Portugal were selected, micropropagated and some of them tested in clonal trials. The success of *in vitro* propagation method is highly dependent of an effective process of rooting and acclimatization to ensure a high survival rate of plants when transferred to field conditions. Several strategies have been developed to save time, labor cost and to enhance the survival rates following *in vitro* propagation, one of this is a simultaneous rooting and acclimatization, usually known as *ex vitro* rooting. In this work *ex vitro* rooting is compared to *in vitro* rooting (two steps) followed by acclimatization.

Two rooting treatments were compared: 1) *ex vitro* rooting by auxin dipping (9.8 mM IBA, during 10 seconds), followed by acclimatization using perlite as substrate; 2) *in vitro* rooting in two steps, induction in a Knop solid medium culture containing auxin (24.6 μ M IBA, during 1 week), followed by transfer (5 weeks) on the same medium without auxin and containing charcoal (1.5%) for root development. After this period plantlets were acclimatized using the same substrate referred previously. For both treatments acclimatization was performed in the culture chamber for 4 weeks (16/8 H, 40 μ mol m⁻² s⁻¹; 25/20°C). Closed transparent containers were used to keep high humidity level. For plant hardening the levels of humidity were gradually decreased. Then after plants were transferred to field plant containers and placed in the greenhouse. No significant differences were found on rooting and survival rates (99% average). However, *ex vitro* rooting induced a more developed root system, faster growth, as well as allowed to save time and to reduce plant cost production. Within 5 months, 12.500 plants were propagated, with 20 cm tall and suitable for field planting.

Key words: cost production; in vitro rooting; micropropagation; Strawberry tree;