

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

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Fig. 1 – *Arbutus unedo* L. (strawberry tree)

## INTRODUCTION

- *Arbutus unedo* L. is a Mediterranean specie. The fruits are used to make a spirit which represents the main income for farmers. The interest for high-quality plant material for orchards increased.
- Adult plants were selected (Fig. 1), micropropagated and tested in clonal trials (Gomes *et al.*, 2010).
- Several strategies have been developed to save time, labor cost and to enhance the survival rates following *in vitro* propagation. In this work *ex vitro* rooting was tested.

## MATERIALS AND METHODS

- Selected adult clones were *in vitro* propagated by axillary shoot proliferation (Gomes & Canhoto, 2009).
- Two different rooting treatments were compared (Fig. 2).
- For both treatments acclimatization was performed in the culture chamber for 4 weeks (16/8 H, 40  $\mu\text{mol m}^{-2} \text{s}^{-1}$ ; 25/20°C).
- During acclimatization closed transparent containers were used to keep high humidity level.

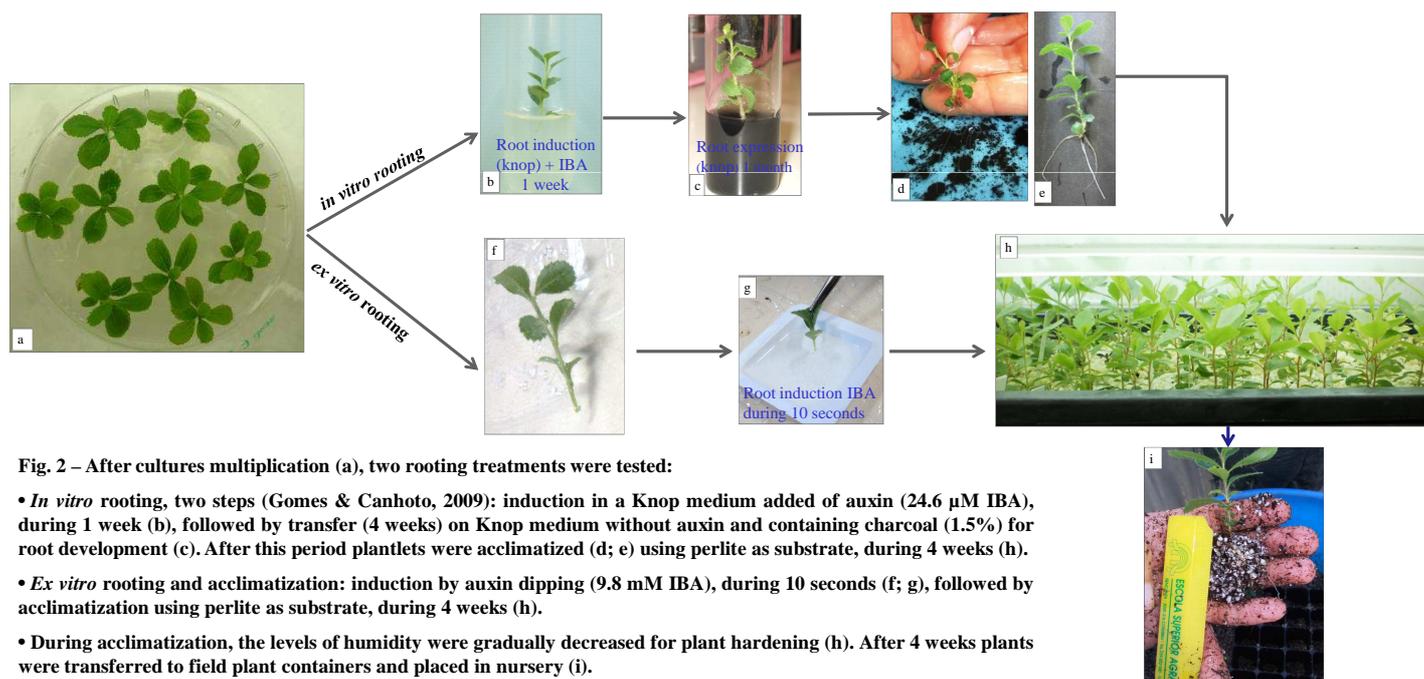


Fig. 2 – After cultures multiplication (a), two rooting treatments were tested:

- *In vitro* rooting, two steps (Gomes & Canhoto, 2009): induction in a Knop medium added of auxin (24.6  $\mu\text{M}$  IBA), during 1 week (b), followed by transfer (4 weeks) on Knop medium without auxin and containing charcoal (1.5%) for root development (c). After this period plantlets were acclimatized (d; e) using perlite as substrate, during 4 weeks (h).
- *Ex vitro* rooting and acclimatization: induction by auxin dipping (9.8 mM IBA), during 10 seconds (f; g), followed by acclimatization using perlite as substrate, during 4 weeks (h).
- During acclimatization, the levels of humidity were gradually decreased for plant hardening (h). After 4 weeks plants were transferred to field plant containers and placed in nursery (i).

## RESULTS

- No significant differences were found on rooting and survival rates.

Rooting	Rooting (%)	Acclimatization Survival (%)
<i>In vitro</i> rooting	98.36 $\pm$ 12.06	97.88 $\pm$ 9.07 <sup>a</sup>
<i>Ex vitro</i> rooting and acclimatization		99.08 $\pm$ 6.83 <sup>a</sup>

- *Ex vitro* rooting, simultaneous rooting and acclimatization process, induced a more developed root system and faster growth.

## CONCLUSIONS

- When *ex vitro* rooting was tested, it was observed a more developed root system and faster growth.
- *Ex vitro* rooting allowed to save time, labor and to reduce plant cost production.
- Within 5 months, 12.500 plants were propagated, with 20 cm tall and suitable for field planting.

## REFERENCES

- Gomes, F., Simões, M., Lopes, M.L., Canhoto, J.M., 2010. Effect of plant growth regulators and genotype on the micropropagation of adult trees of *Arbutus unedo* L. (strawberry tree). *New Biotechnology* 27, 882-892.
- Gomes, F., Canhoto, J.M., 2009. Micropropagation of strawberry tree (*Arbutus unedo* L.) from adult plants. *In Vitro Cell. Dev. Biol.-Plant* 45, 72-82.
- Hazarika, B.N., 2003. Acclimatization of tissue-cultured plants. *Curr. Sci.* 85, 1704-1712.