

Micropropagation and in vitro Conservation via Slow Growth Techniques of Prunus webbii (Spach) Vierh: An Endangered Plant Species in Albania

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Abstract : Wild almond is a woody species, which is difficult to propagate either generatively by seed or by vegetative methods (grafting or cuttings) and also considered as Endangered (EN) in Albania based on IUCN criteria. As a wild relative of cultivated fruit trees, this species represents a source of genetic variability and can be very important in breeding programs and cultivation. For this reason, it would be of interest to use an effective method of in vitro mid-term conservation, which involves strategies to slow plant growth through physicochemical alterations of in vitro growth conditions. Multiplication of wild almond was carried out using zygotic embryos, as primary explants, with the purpose to develop a successful propagation protocol. Results showed that zygotic embryos can proliferate through direct or indirect organogenesis. During subculture, stage was obtained a great number of new plantlets identical to mother plants derived from the zygotic embryos. All in vitro plantlets obtained from subcultures underwent in vitro conservation by minimal growth in low temperature (4°C) and darkness. The efficiency of this technique was evaluated for 3, 6, and 10 months of conservation period. Maintenance in these conditions reduced micro cuttings growth. Survival and regeneration rates for each period were evaluated and resulted that the maximal time of conservation without subculture on 4°C was 10 months, but survival and regeneration rates were significantly reduced, specifically 15.6% and 7.6%. An optimal period of conservation in these conditions can be considered the 5-6 months storage, which can lead to 60-50% of survival and regeneration rates. This protocol may be beneficial for mass propagation, mid-term conservation, and for genetic manipulation of wild almond.

Keywords : micropropagation, minimal growth, storage, wild almond

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