

# Application of Aeroponics for Adaptation of Fruit and Berry Crops to *ex vitro* Conditions

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The paper considers the results of research on improving the technology of adaptation of fruit and berry crops, i.e. blackberries, raspberries and grapes, to *ex vitro* conditions. We used previously propagated *in vitro* material of raspberry (Oranzhevoye Chudo), blackberry (Black Satin), and grape (Muscat Ottonel, Moldova, Monarch). The authors highlight the point that the phase of microclone adaptation to *ex vitro* conditions is one of the important components of the technology, since the death of regenerating plants is often observed. Therefore, selecting efficient technologies to solve the existing problems of plant adaptation is a promising line of research in plant cell biotechnology. One of those modern innovative technologies is aeroponics. Aeroponics creates optimal growing conditions for plants to fully unlock their potential, helping them to grow aboveground biomass and form a powerful root system [1, 2]. Two options were used to adapt microclones to *ex vitro* conditions: 1) adaptation directly in the soil, and 2) adaptation in aeroponics environment. In the first adaptation option, microclones were transferred to peat pots filled with FASCO universal soil. In the second option, the aeroponic clone propagator X-Stream 120 for 120 plants with a system of irrigation of the root zone of cuttings was used for the adaptation of microplants. The conducted studies showed that the adaptation of regenerant plants directly in soil resulted in the death of 80–100% of microclones, whereas aeroponic technologies resulted in 100% survival of plants. Moreover, intensive growth and a substantial increase in vegetative biomass of these plants were also noted. It was demonstrated

that the size of the initial microclone has a significant impact on the gain in growth of the aboveground biomass and root system. For example, the maximum biometric values obtained for the raspberry plants when using regenerant plants was 2–3 cm in height, while for blackberry plants it was 3–4 cm. Thus, it has been established that it makes sense to use aeroponic technologies during the last phase of clonal micropropagation for the adaptation of berry crops to *ex vitro* conditions.

#### **References**

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