

Influence of rooting hormones, topophysis, shoot age and season on rooting success in propagation by cuttings in European Blueberry (*Vaccinium myrtillus* L.)

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The demand of berries of European Blueberry is high due to the deep color, attractive flavor and potential health attributes. Collecting berries in nature is limited by high costs and low yield and therefore is a barrier to an increased supply of berries to the world market. A domestication process is needed to expand and improve production. Development of genetic improved clonal cultivars is critical to improve yield and efficient orchard cultivation is necessary to allow mechanical harvesting in order to reduce costs. An efficient method for clonal propagation is a key technology for achieving progress in domestication. Propagation by tissue culture techniques is possible in European Blueberry, but is very expensive. Propagation by cuttings has met limited success in the past, but is likely to be a cost-effective method for clonal propagation.

This study investigated the influence of rooting hormones, topophysis, shoot age and season of propagation on rooting success in European Blueberry. Softwood cuttings were taken from annual shoots or from 2-3 year shoots from two wild populations in early July or in September. Five replicates of 18 cuttings were used for each treatment. Cuttings were stuck in plugs filled with raw peat moss without liming or fertilizers and placed in a greenhouse under white plastic to keep high humidity. The temperature was kept at min. 20°C and day length at 20 hours. Rooting success and bud-break of cuttings were evaluated after app. 3 or 6 months. *Hormones*: The effect of dipping the base of cuttings in Floramon A, B or C rooting hormone or spraying stuck cuttings with Pomoxon rooting hormone in 0.1%, 0.5% or 1.0 % concentration was compared to a control treatment without hormones. Rooting was significantly improved in all Floramon and the lowest concentration of Pomoxon treatments compared to control. Best method showed over 80 % rooting after 3 months. *Topophysis*: Selected long annual shoots taken from two populations in July were cut into 3 cuttings each of 5 cm length from base, mid or top of the shoot. After 6 months rooting percentage reached up to 100 % in top and mid cuttings and only slightly less in base cuttings. Bud-break percentage was highest in base cuttings, intermediate in mid cuttings and lowest in top cuttings possible due to apical dominance. *Shoot age*: Cuttings were taken in July from 2 or 3 year shoots from same plants as used for annual shoot cuttings in the hormone experiment. The cuttings were treated with either Floramon B or no hormone. Rooting evaluated after app. 6 months showed lower rooting percentage than in annual shoots but still reached over 50 % rooting. *Season of propagation*: Cuttings from annual shoots were taken from 3 populations in early July or in September. Rooting after app. 6 months showed similar level of rooting percentage and therefore add flexibility to timing of propagation. This is the first report showing that it is possible to reach very high rooting success using softwood cuttings of European Blueberry. This opens for a non-expensive clonal production of selected superior clones.

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