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Editors:

Gabriela Libiaková, Alena Gajdošová

Institute of Plant Genetics and Biotechnology, SAS, Nitra, Slovak Republic

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INFLUENCE OF TERMS OF CUTTING, SUCH AS THE SOIL SUBSTRATUM AND ITS TEMPERATURE CONDITIONS ON REGENERATION ABILITIES OF GREEN CUTTINGS OF *Vaccinium corymbosum* L.

Mikalai Paulouski

Central Botanical Garden of NAS of Belarus, Gantsevichi, 225431, Stroiteley, 19-25, Belarus; pavlovskiy@tut.by

Regeneration abilities of green cuttings of highbush blueberry, and also features of growth and development of the received plants were studied in the conditions of a greenhouse. Objects of researches were three cultivars of highbush blueberry of different terms of maturing: Earliblue, Bluecrop and Coville.

For the definition of influence of terms of cutting, such as soil substratum and its temperature conditions it has been equipped three rooting beds with underground heating - 22, 24, 26 °C and the fourth bed - without heating. Heating of a substratum for rooting was carried out within July and August. Every rooting bed was separated into 3 parts and filled with different soil substrata: peat, a mix of peat and sand (2:1) and peat, mulched with 2-cm layer of sand. In these soil mixes every 5 days 100 cuttings of three cultivars of highbush blueberry were planted. Preparation of cuttings was carried out during the period from 8 till 29 of July. Cuttings have been cut by 5-8 cm long from the sprouts of this year after finishing of the spring growth.

At the end of June of the next year striking root plants were counted and biometric parameters were defined at 20 plants in each variant of experiment.

Rooting ability of green cuttings of a highbush blueberry changed depending on terms of cutting and cultivars features. Striking root of cuttings prepared each 5 days constantly grew, and achieved a maximum on 19th of July (Table 1).

The highest degree of influence of term of reproduction on rooting of cuttings is marked at Earliblue cultivar. Fewer stable in this respect was cv. Bluecrop. Cultivar Coville show to be more tolerant to change of terms of cutting in spite highest results of rooting.

It was observed the tendency specifying that optimum terms of rooting corresponds more active period of regeneration of sprouts for all tested cultivars of blueberry. As to the total length of sprouts, the earlier cutting lead to the bigger growth of new plants.

Influence of substratum type on the rooting parameter of cuttings of a blueberry of all cultivars was insignificant. The greatest percent of striking root of the cuttings of cv. Earliblue is received on peat, mulched with sand, cv. Bluecrop - on pure peat, and cv. Coville - on a mix of peat with sand. Insignificant distinctions between variants of experience, the maximum values of striking root of cuttings that were received for each cultivar on a different soil mix specify that the type of a substratum practically did not render influence on rooting of blueberry cuttings in our experiments.

The total growth of sprouts on pure peat was higher than on the other soil mixes (at cv. Earliblue – on 2-6 %, Bluecrop – on 12 % and Coville – on 10-12 %). Pure peat show to be an optimum substratum for growth and development of root system. On our opinion the higher level of fertility of pure peat causes it.

Rooting of blueberry cuttings in beds with heating was a little bit higher, than without heating. The received data do not allow revealing optimum temperature conditions of a substratum for rooting of green cuttings. Thus, the best striking root for cv. Earliblue cuttings is received at temperature 22 °C, cv. Bluecrop – at 24 and 26 °C,

and cv. Coville – 26 °C. There was no linear dependence observed specifying, that at rising the temperature of a substratum the rooting of cuttings improves or worsens.

Table 1. Average rooting of *Vaccinium corymbosum* green cuttings of three cultivars depending on terms of cutting and substratum type, %

Cultivar	Date	Substratum						Average rooting parameter	
		peat+sand		peat, sand mulched		peat			
		x±m _x	V,%	x±m _x	V,%	x±m _x	V,%	x±m _x	V,%
Earliblue	8.07	18±1	7	17±4	39	19±3	24	18±1	6
	14.07	22±1	8	25±4	25	25±4	29	24±1	8
	19.07	34±8	36	42±3	10	37±5	23	37±2	11
	24.07	27±4	23	29±3	18	26±4	25	27±1	6
	29.07	21±6	48	27±6	37	25±5	31	24±2	12
	average	24±4	26	28±6	32	26±4	24	26±1	7
Bluecrop	8.07	38±5	21	40±7	30	25±5	13	42±3	13
	14.07	37±4	19	37±7	28	48±4	9	43±6	23
	19.07	52±4	13	49±1	1	54±3	12	50±1	3
	24.07	49±3	10	46±4	13	50±4	24	50±3	11
	29.07	38±5	20	45±2	7	57±8	41	42±2	9
	average	43±5	17	43±3	11	50±3	11	45±3	9
Coville	8.07	61±4	11	41±4	17	55±11	33	52±6	20
	14.07	72±4	10	72±4	8	62±10	26	68±3	8
	19.07	73±4	9	67±3	6	71±3	8	70±2	4
	24.07	68±9	22	58±5	15	65±5	13	64±3	8
	29.07	42±7	25	45±4	15	53±11	33	47±3	13
	average	63±8	20	57±9	24	61±4	11	60±2	6

Biometric parameters of plants received from the cuttings, grow at different temperature conditions of a substratum do not allow to ascertain essential advantages of use of underground heating. Heating of a substratum rendered beneficial effect only on formation of root system of blueberry.

Influence of underground heating on the rooting of green cuttings of highbush blueberry in our experiments was ineffective because weather conditions during this period were favorable for propagation of this culture.

That irrespective of terms of cutting, the type of rooting substratum and its temperature conditions, the higher degree of striking root was characteristic to cuttings of cv. Coville, averaging 60±2 % (Table 1). Much below index was showed by cv. Bluecrop - 45±3 %, and only 26±1 % of cuttings has got acclimatized at cv. Earliblue. Comparative studying of biometric characteristics of the plants obtained from cuttings has shown that cv. Bluecrop and cv. Coville have generated equal number of sprouts and gave a growth of 14.5 and 14.2 cm, according to. The total length of sprouts at cv. Earliblue was in 1.6 times lower than at two other cultivars. Because of low rooting of the cv. Earliblue cuttings and according to a smaller root competition, saplings of the this cultivar have generated root system for 10 and 16 % greater volume in comparison with other cultivars.

Regeneration of green cuttings of highbush blueberry was determined mainly by a cultivar's features and the terms of cutting, and did not depend on the type of a used substratum and its temperature conditions during the experiment.

***In vitro* REGENERATION AND PROPAGATION OF *Vaccinium* spp.**

Mária Gabriela Ostrolucká¹, Emília Ondrušková¹, Alena Gajdošová¹, Gabriela Libiaková¹ and Daniel Šimala²

¹ *Institute of Plant Genetics and Biotechnology, Slovak Academy of Sciences, Akademická 2, 950 07 Nitra, Slovakia; gabriela.ostrolucka@savba.sk¹*

² *SARC- Grassland and Mountain Research Institute, Research Station, 027 55 Krivá, Slovakia*

The interest for cultivation of highbush blueberry (*Vaccinium corymbosum* L.) and lingonberry (*Vaccinium vitis-idaea* L.) has increased in many countries. Some introduced cultivars of these species are suitable also for cultivation in conditions of Slovakia as alternative fruit crop. The native natural stands of the *Vaccinium* species in Slovakia are devastated and less productive caused by harsh collection. Experiments showed that *in vitro* techniques can be used as an alternative way of breeding and production of large number of plants also on commercial scale. Direct regeneration of shoots from nodal and shoot-tip explants, as well as adventitious shoot production from leaves and stems can be used for *in vitro* propagation and effective multiplication of these species. The shoot proliferation intensity of individual cultivars is different. The optimisation of culture conditions, plant growth regulators, mainly cytokinin type and concentration for each cultivar is necessary. In general the higher multiplication effect has been achieved on the medium with zeatin in comparison with 2iP in shoot regeneration from dormant apical and axillary buds. TDZ has been effective in adventitious shoot regeneration from the leaf tissue in highbush blueberry while zeatin in lingonberry. Microshoot rooting has been achieved on AN culture medium supplemented with IBA or directly in the peat after dipping of shoots into solution of IBA under *ex vitro* conditions.

Experiments confirmed successful regeneration and reproduction in *Vaccinium* spp. The phases of the shoot multiplication and rooting *in vitro* are without any problems. Limiting factor is transfer of plantlets to non-sterile environment depending on the different sensitivity of the genotypes.

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