MORPHOMETRIC CHARACTERISTICS OF THE CRANIOFASCIAL AREA CHILDREN WITH CCLP DEPENDING ON THE GENDER.

Kambarova Shakhnoza Alixuseynovna
Assistant, Bukhara state medical institute.
Shani2112@mail.ru

ABSTRACT

The cultivation of blueberries requires some technological features. When the explants were introduced in vitro, the tops of the blueberries shoots were sterilized with sodium hypochlorite. The results showed that the optimal nutrient medium for obtaining micro plants is WPM. Shoot formation was carried out on media supplemented with 1 mg/l 2iP, and for rooting 2 mg/l IBA. Our results showed that in vitro survival of plants in the soil substrate is influenced by biometric indicators of micro plants: plant height, number and length of roots. Plants with a well-developed root system take root well. The bases of ex vitro blueberry technology have been developed.

Keywords: berry, micro propagation, in vitro, adaptation

INTRODUCTION

Until recently, it would seem that such a rare berry crop as blueberry (Vaccinium myrtillus L.), now every year confidently occupies more and more areas for planting in Uzbekistan. In addition, many private gardeners tend to have several blueberry bushes on their land. Blueberries contain many biochemical elements that are beneficial to human health. Blueberries are used for the production of juices, jams, confectionery, fruit teas, as fillers for yogurt, ice cream and other dairy products, as well as pharmacological preparations, and so on.

Substances contained in berries help prevent the development of Alzheimer's disease by improving signaling in brain cells, thus preventing mental deficiency [Joseph J.A., 2003]. Thanks to polyphenols, which are found in large quantities in blueberries, cell aging slows down and the functioning of peripheral tissues of the cerebral cortex improves [Youdim K.A., 2000]. Other substances, being in large quantities, generally protect the human body from aging and increase vitality [Galli R.I., 2006, Battino M. 2009].

The cultivation of blueberries requires some technological features. The most favorable conditions for the growth and development of blueberry plants are soils with an acidic reaction (pH - 3.5), loose structure and a large amount of organic matter and moisture. This is understandable, since under natural conditions, blueberries grow on waterlogged soils. It is very rare for laying industrial plantations of blueberries to find a site whose conditions would be comparable to the natural conditions of its growth, therefore, in most cases, it is necessary to carry out partial reclamation of the territories allotted for it. To do this, planting pits, or trenches dug along the length of the row, are filled with a specially prepared substrate based on high-moor peat.

Genetic diversity is not always good. If the goal is to quickly and efficiently grow a certain set of equally healthy seedlings, then it is easier to take one known healthy plant variety and propagate it vegetative. At the moment, the most promising and fundamentally new method of propagation of berry crops is micro cloning of plants, in other words, obtaining in vitro the required number of plants that are genetically identical to the original specimen.

In vitro methods have many advantages over traditional propagation methods. In addition to the mentioned genetic identity, it should be noted here that plants obtained by this method quickly pass to the reproductive phase of their development. In addition, they are freed from pathogens, and these methods can easily propagate plants that are difficult to propagate by conventional methods. It is also important that the work by these methods can be carried out all year round, very significantly saving on the area for planting material.

Thus, the goal of our study was to optimize the conditions for the adaptation of plants obtained in vitro to the soil.

High quality seedlings obtained in this way, subject to all agro technical requirements, will further contribute to obtaining the highest yields, and, accordingly, profit.

MATERIALS AND METHODS

The studies were carried out in 2021 using the generally accepted methods of working with the culture of tissues and organs of higher plants (Butenko, 1999).

Intensively growing green shoots of blueberries isolated from vegetative bushes of Bluecrop and Patriot blueberry varieties in the spring-summer period and mature vines in the autumn-winter period were used as the starting material in in vitro culture.

From the green shoots of plants grown in the field or harvested from mature vines taken out of dormancy, delivered to the laboratory, the tops of the shoots 2–3 cm in size were isolated. The tops of the shoots were sterilized in 70% ethanol for 30–40 s. Then they were placed in a 25% sodium hypochlorite solution for 5–7 minutes. After the top of the shoots, they were transferred to sterile water for washing from disinfectants. Work on planting the original explants, as well as their micro propagation, was carried out in a laminar flow hood.

As a base medium (BS), we used a nutrient medium containing macro- and micro salts according to the WPM prescription (Mc Cown, Lloyd, 1981), sucrose (30 g/l), agar-agar 7 g/l, pH 2.5-3.5. After planting in cultivation vessels, single-eyed explantes were transferred to a factor static room and cultivated at a temperature of 21–25 0C with an illumination of 1000 lux (1000 lumi per square meter).

To regenerate shoots from explants, 2iP was added to the nutrient medium at a concentration of 1 mg/L. The resulting sterile blueberry shoots for rooting were transplanted onto nutrient media with by adding 2 mg/l IBA.

Cultivated in vitro rooted blueberry plants 5-7 cm high were transplanted into pots with a mixture of sand/peat/vermiculite in the ratio1:7:2Pots with plants were placed in film mini-greenhouses with natural lighting and maintaining a temperature of 20-25^{0}C. First For 10-12 days, the plants were covered with polyethylene film and protected from direct sunlight, and then the film was removed.

RESULTS AND DISCUSSION

With the introduction of explants in vitro, the indicated mode of surface sterilization of the top of the shoots in 25% sodium hypochlorite solution for 5–7 minutes turned out to be acceptable and effective, without a toxic effect, and the yield of uninfected viable explants was 100%.

The results showed that for the production of micro plants, the optimal medium for inducing blueberry shoot formation and rhizogenesis under in vitro conditions is WPM containing 30 g/l sucrose, 1 mg/l 2iP for shoot formation, and 2 mg/l IBA for blueberry shoot rooting.

When planting regenerated plants in the soil substrate, they should have well-developed leaves or rosettes, as noted by a number of authors [Vechernina N.A., 2009, Kataeva N.V., Butenko R.G. 1983], as well as a developed root system. In our work on the rooting of blueberry plants, it was noted that the development of the root system on the rooting medium is observed within 3-4 weeks, which indicates that regenerates can be planted in the soil substrate as early as a month later.

In the course of the work, the dependence of the survival rate of micro plants in the substrate with their starting sizes when transferred to ex vitro conditions was established. Based on biometric measurements and

taking into account the survival rate of blueberry plants in the soil with micro plant sizes of more than 5.0 cm and with a developed root system, they are well adapted to the soil substrate. While plants with lower biometrics show a lower survival rate.

Our results showed that in vitro survival of plants in the soil substrate is influenced by biometric indicators of micro plants: plant height, number and length of roots. Plants with a well-developed root system take root well. Based on the data obtained, it was found that underdeveloped blueberry plants less than 5.0 cm high and having from 2 to 4 roots per plant after being on the rooting medium for 30 days are not ready for transfer from in vitro to ex vitro conditions. In this case, it is advisable to grow plants to optimal parameters and only after that begin the process of adaptation to soil conditions.

For the adaptation of regenerated plants, the following substrate is optimal: sand, peat (pH = 2.5-3.5) and vermiculite in the ratio1:7:2. The use of vermiculite in the composition of soils allows you to create optimal conditions for plant adaptation, ensuring maximum survival and high growth rates of plants. The bases of ex vitro blueberry technology have been developed.

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