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FORMATION OF AN ASEPTIC COLLECTION OF FOREST TREE SPECIES, AS ONE OF THE BASIS FOR INTRODUCING THE RESULTS OF BREEDING WORK

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At the Forest Institute of the National Academy of Sciences of Belarus, a transplantable collection of shoot tips with more than 100 genotypes of woody plants has been created and is constantly updated. The main deciduous forest-forming species are represented by black alder (10 clones), species of the genus Ash (5 clones), small-leaved linden (5 clones), and pedunculate oak (3 clones). The basis of the collection is fast-growing tree species (3 clones of willow, 14 clones of silver and white birch, 2 clones of hybrid birch, 26 clones of poplars of various species and hybrids, 12 clones of aspen of Belarusian, Russian and Baltic breeding). These species are model objects of forest biotechnology and material for the production of breeding planting stock, which is in demand in the creation of forest plantations with a short cutting turnover to meet the needs of the pulp and paper industry [1]. Particular attention is paid to the conservation of economically valuable genotypes of the birch genus: curly birch of various morphological forms (18 clones), as well as to rare and decorative representatives, such as black-bark birch (3 clones), dwarf birch (1 clone) and *Betula pendula* cv. 'Dalecarlica' (3 clones). 9 clones of ornamental shrubs (*Forsythia*, *Cotoneaster*, *Philadelphus*, species of the genus *Spiraea*, etc.) are constantly being deposited.

It has been established that the suitable period for collecting green cuttings is April-May, and shoots on lignified branches in laboratory conditions should be carried out from February to March. Preliminary cold storage (2-3 ° C) for 1-3 months to overcome dormancy of buds is effective.

A universal scheme of surface treatment with detergents, chlorine and mercury-containing agents has been developed, which minimizes the processes of necrotization and vitrification of explants as a result of chemical damage.

Growing conditions: temperature 23 ± 2 C, with constant illumination, intensity 3.0-4.0 thousand lux fluorescent lamps, full-spectrum OSRAM L 36 W / 765 Daylight and phytolamps OSRAM L 36

W / 77 FLUORA in the ratio 3: 1, spectral characteristics which is as close as possible to natural light.

Most tissue cultures of fast-growing breeds in the collection are supported on a modified WPM nutrient medium (WPM prescription macrosalts, MS prescription microsals and vitamins), without the introduction of growth regulators providing long-term deposition (individual clones for more than 15 years) and stable organogenesis. The cultivation of fast-growing woody plants is carried out without changing the composition of the nutrient medium in the second and third stage. In addition to the above, the absence of growth regulators in the medium allows one to carry out in the transplantable collection with a minimal risk of somaclonal variability of the initial genotypes, the occurrence of periclinal chimeras and other genetic aberrations, the formation of which is most often associated with the action of exogenous phytohormones [2].

Mass adaptation of regenerants to non-sterile conditions is carried out on a substrate from a mixture of peat and perlite in a ratio of 3:2 or using perlite (fraction 3-5 mm) saturated with a solution of WPM mineral salts, which avoids the negative effect of phytopathogens at the initial stages of plant development and variations chemical and mechanical composition of soil mixtures [3].

Microplants from the *in vitro* collection are selectively used for growing of forest planting stock and creating experimental plots, forest plantation and decorative landscaping. To date, the Forest Institute using microclonal propagated plants has laid more than 30 hectares of Industrial Forest Plantations.

References

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