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THE IMPACT OF PREPEARING PLANT MATERIALS ON THE ADAPATATIVE POTENTIAL OF SCOTS PINE SEEDLING

M.D. Melnichuk, A.P. Pinchuk, A.F. Likhanov, V.M.Maurer, A.A. Kliuvadenko

National University of Life and Environmental Sciences of Ukraine

The preparation of forest planting stock for planting is one of the most important silvicultural activities. This activity determines to a significant degree the survival rate of seedlings, saplings, adaptation time and the beginning of active growth in cultures. Meanwhile, seedling preparation to planting may be considered to an anthropogenic factor that significantly affects the biological stability of future plantings. The influence of anthropogenic factors (positive or negative) on the biological stability of artificially grown plants is manifested both directly and indirectly by changing abiotic and biotic factors. This approach suggests that the general causes for weakening of plants that enhance the negative trend of degradation of Ukrainian forests (half of which are man-made) are also mistakes and miscalculations in reforestation and afforestation that were committed in the past. This study is extremely important due to the influence of various factors (the methods, the seasons, and the period of plant excavation; conditions of storage and preparation of plant materials, root-to-leaf correlation, etc.) on the adaptive capacity of seedlings of Scots pine (*Pinus sylvestris* L.). Especially important are the features of formation, anatomical structure and condition of the physiologically active roots.

In order to study the morphological and anatomical characteristics of the roots of Scots pine seedlings, plant materials were selected before each planting on the cultivated area. The research cultures of year-old seedlings were created in the summer months that were healthy, freshly dug-up from cleared ground, and dug-up with an open root system in the spring time after being stored they were covered-up at the site.

Speed changes in weather conditions, fluctuations in temperature, winds, the presence or absence of snow cover are all categorized as uncontrollable natural factors, but they significantly affect the survival of plants in the first year of vegetation.

The application of the artificially created environment with minor variations of major environmental parameters showed that the seedlings retained their typical structure during the storage of plant roots in the hospitalization mode. Scots pine seedlings that were kept in covered-up storage in the open soil were found to have characteristic differences in the samples of the roots that were examined. Unlike "hospitalized" plants, idioblast bark seedling plants that were in the open soil contained more heterogeneous content. Research has established that the plants that were kept in covered-up areas had slightly altered structural organization of root tissues: an increased amount of the transparency of tracheid, but the width and the thickness of cell walls were reduced.

The overall physiological balance in the tissues of roots strongly depends on specific conditions. This is evidenced not only by features such as the formation of xylem elements, but also by the location, number and size of the absolute idioblast bark containing basophilic compounds that are intensely colored by safranin.

The number and nature of the location of idioblast in the bark, development and anatomical features of the xylem elements of roots of year-old Scots pine seedlings are not the most significant predictor of success for growth. The best method of preparing year-old Scots pine seedlings for planting is hospitalization of dug-up plants within 2 – 3 weeks. This is the measure which contributes to an increased adaptive potential of growth for undersized planting stock. The developed method for recovery of Scots pine seedlings allows the restoration of the root-to-leaf correlation which was disturbed during the excavation of planting materials, and thus increases the survival rate of the seedlings and expands the time for planting in a permanent growing area.