Male generative sphere study as a way to identify promising introduced species

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The results of blue spruce (Picea pungens Engelm.) pollen viability research, its dependence from the growing conditions, the level of technogenic pollution, and changes in the temperature of germination are presented in this study. Pollen germinated at various temperatures in a thermostat in petri dishes on a nutrient medium, containing agar, sucrose and boric acid. Pollen with various pollen tube and body grain anomalies observed both in ecologically clean and in polluted conditions.

Among the pollen grains found optically empty grain, grain with reduced body, blistering and branching of the pollen tube. Moreover, a large number of optically empty and grains with a reduced body observed among the pollen of trees, growing in the conditions of anthropogenic impact. Less favorable weather conditions cause a decreasing of viability of pollen in comparison to the previous year.

Cultivation of pollen at 18 °C make no significant differences of viability and rate of growth of pollen tubes between different trees, growing in arboretum. Discrepancies fit within the standard deviation. Trees, growing in anthropogenic polluted conditions, have low levels of vitality and the length of the pollen tubes, but the differences were not significant, and lay within the standard deviation.

Raising of cultivation temperature had a greater impact on characteristics of germinated pollen. The increased temperature greatly affected the blue spruce trees, growing in the conditions of technogenic pollution and red-pollen form, causing a complete loss of viability and death of pollen.

It can be concluded that stressful growing conditions, such as lack of water and technogenic pollution, cause a reduction of adaptable ability to changes in germinating temperature. Decrease of cultivation temperature leads to a change of viability and the rate of growth of pollen tubes, and often ends with the death of pollen. Favorable conditions for the formation of microspores such as the absence of pollutants and protection against lack of water and other adverse factors lead to increased adaptable ability.

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