Bookreviews

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[European and Siberian Spruce in USSR]

Izdatelstvo Nauka, Moskva 1975, 176 pp., 15 figures, 34 tables, appendix 21 tables, summary in English

The study presented is an important contribution to the solution of the old problem of the relationship between *Picea abies* (L.) KARST. and *Picea obovata* LEBED. It presents the results of the investigation of numerous materials collected from all over the USSR and evaluated by several authors under the supervision of Professor PRAVDIN.

The publication is divided into several parts:

1. Geological history and system of genus *Picea* A. DIETRICH
2. Variability of *Picea abies*.
3. Genecological investigation of spruce (*Picea abies* and *Picea obovata*) in USSR.
4. Intrapopulation variation in Norway spruce (*Picea abies*), in Siberian spruce (*Picea obovata*) and in their hybrids.
5. Karyological investigation of spruce.
6. Selection of spruce. Theoretical and basic principles.

In the first chapter the history of spruce in the pre- and postglacial period, its division into sections and the phylogenetic relationship between some species are given.

The second chapter is a review of investigations carried out by many authors in the following regions: the Alps and South Europe, Herzynian and Carpathian region, North-Baltic region. This is a complementary part to the author's own investigation in the eastern area of natural spruce distribution, described in the other chapters.

The material has been collected with the help of the forest managements and some forest research institutes. 324 samples, 246 from the European and 78 from the Asian part, have been investigated, including 28 000 trees. The variability of the cone form and of the cone scales, of the cone dimensions, of the seed number in one cone and of the developing of the current-year shoots have been studied. The statistical evaluation has been done with the help of an EVM-Minsk 20 digital computer. The structure of the spruce populations in the different regions has been described. In the chapter dealing with intrapopulation variation special attention has been given to the cone dimensions, to the number of cone scales, to the seed number in one cone, to the cone colour, to phenological forms, to the branching and crown forms, to the structure and colour of bark and to the number of the primary leaves. The seeds for karyological study have been taken from four populations.

The results obtained lead to the conclusion that variation in spruce over a vast region follows certain laws. It is clearly expressed in the variation of the seed scale forms, which the author divides into five groups: Siberian spruce, hybrid of Siberian spruce with European spruce, hybrid of European spruce with Siberian spruce, European spruce and European spruce var. *acuminata*.

In the glacial period there was a territorial isolation in the populations of two species: the European spruce in the West, and the Siberian spruce in the East. The spruce spread out from those two foci on to former glacier sites. At the area of overlapping conditions for spontaneous hybridization were formed. The present spruce populations in the area of the USSR are therefore either free of spontaneous hybridization (allopatric populations — *Picea abies* in the West, and *Picea obovata* in the East) or they are hybrid populations (sympatric — on the Russian Plain). The genetic structure of the latter was formed under the influence of natural selection in accordance with ecological conditions. The existence of an allopatric population and the results of karyological study (the presence of supernumerary chromosomes in *Picea abies* and the lack of them in *Picea obovata*) prove the spruce in the West and in the East to be well-expressed typical species. Two maps showing the distribution of the above mentioned populations of the two species and their spontaneous hybrids are presented in the publication. Twenty-one tables with photos of spruce cones from different geographical conditions are given in the appendix.

A comprehensive list of literature and some hitherto unpublished results are included.

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