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Investigation of conifers mutation forms in Latvia and the possibilities in selecting new sorts

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Kalsnava arboretum and nursery

Kalsnavas arboretum is established on the 18th of September, 1975. The whole area of the arboretum is 143.96 hectares. Plantations of mutation forms are settled down in the part of arboretum where the low forms collections are. Gathering and selecting conifers mutation forms in Latvia was started in 1982. This work Kalsnavas arboretum did together with National botanical garden. These collections are duplicated at Kalsnavas arboretum and at National botanical garden to ensure that they wouldn’t be withered away. On the whole, till the year 1995 there were gathered more than 50 different conifers (Norway spruce, Scots pine) mutation forms. These forms have been multiplied by grafting and rooting, and by sowing seeds of these forms.

Till 2004, the arboretum kept in order and supplemented the collection, and increased the amount of plants and sold them. In 2005, the arboretum was divided in two parts – Kalsnava arboretum and the nursery ‘Kalsnava’. Kalsnavas arboretum continues the supplementing of collection and gathering mutation forms, and conifers selecting work. Nursery ‘Kalsnava’ increases the amount of ornamental plants, relying on the base of Kalsnavas arboretum collection, and sells the plants. From 2006, they started to produce hybrid aspens in larger amount by using tissue cultured crops which are used as forest planting material.

Collections of ornamental trees in Kalsnava

Kalsnavas arboretum has one of the largest collections of ornamental trees and shrubs in Latvia. There are registered 2490 taxa in the spring 2008. In arboretum territory grow more 360 different forms and varieties of conifers, including 107 different Norway spruce and 54 Scots

pine forms and varieties. The most valuable of local origin mutation forms are *Pinus peuce* 'Latgale' (figure 1), *Picea abies* 'Dundanga' (figure 2), *Pinus sylvestris* 'Earl nest', *Pinus mugo* 'Dwarf', *Abies sibirica* 'Nana' and *Abies arizonica* 'Dwarf'.



Fig. 1. *Pinus peuce* 'Latgale' in Arboretum Kalsnava (Photo: Janis Zilins)



Fig. 2. *Picea abies* (Dundanga) in National botanical garden. (Photo: Andrejs Svilans)

Raising new ornamental conifer varieties

Till 2005, there were 36 different sorts of mutation form collection. Beginning in 2005, with the help of National botanical garden, Kalsnavas arboretum started gathering, estimating and selecting of conifers mutation forms. In 2005, it has been gathered 36 mutation forms, in 2006 51 (32 pine and 23 fir trees). Each sort of mutation forms is increased with grafting method in 10 copies. Now there are being made criterions for making tests for distinctness, uniformity and stability and for registration of new conifers forms. From gathered conifer mutation forms in spring of 2009 will be made a collection of varieties comparing to estimate potential conifer varieties.



Fig. 3. Ornamental plants in Kalsnava nursery. (Photo: Janis Zilins)



Fig. 4. *Picea abies* cuttings in Kalsnava nursery. (Photo: Janis Zilins)

From the arboretum collection of conifers varieties, Nursery 'Kalsnava' increases 96 taxa with grafting method and 131 taxa with rooting methods (figure 3). In the aggregate nursery 'Kalsnava' for one year realization makes 89000 conifer cuttings (figure 4), 23000 grafts (figure 5) and 20000 seedlings (figure 6) and so there are produced 132000 new plants.



Fig. 5. One year old mutation form grafts of *Pinus sylvestris*. (Photos: Janis Zilins)



Fig. 6. Seedlings of mutation forms. (Photos: Janis Zilins)