

Country Report

SLOVAKIA

The area of forests in Slovakia is 19,990 km² what equals 41% of the total country's territory (49,036 km²), which occupies the western part of the Carpathian Mountains. About 65% of the territory and thus a large proportion of forests have a mountainous character.

In spite of historical changes in the tree species composition and stand structures, at least 40-45% of forests are semi-natural, originating from natural regeneration and differing only slightly from natural forests in terms of the species composition. More than 70 fragments of natural and virgin forests with a total area of 18,000-20,000 ha still exist in Slovakia.

Tree species composition: The share of broadleaves in the overall species composition is 56,9%, with beech dominating (29,6) and oaks second (13,7%). The share of Noble Hardwoods (maples, ash, elms, alders, limes, wild fruit species) is 4.1%. Conifers are represented by Norway spruce (27, 5%), silver fir (4, 6%) and pines (7, 7%).

Situation of valuable broadleaves: Horizontal ranges of most of the Noble Hardwoods cover the whole country with the exception of high mountains. Natural ranges of *Sorbus torminalis* and rare, supposedly indigenous *S. domestica* are limited to the thermophilous forest associations in southern Slovakia. *Fraxinus angustifolia* occurs only in the riverain forests of the Danubian lowlands. *Tilia platyphyllos* and scattered occurrences of *Ulmus laevis* are not found in the northern part of the country. Most Noble Hardwoods in local forests are naturally regenerated and indigenous. Sweet chestnut (*Castanea sativa*) and black walnut (*Juglans regia*) are the only non-native valuable broadleaves more common in the forests of lowlands and lower hills.

Particularly *Acer* and *Fraxinus* have sufficiently high proportions to be considered economically important tree species. The same was true for mountain and field elm but while the net forest area occupied by maple and ash has increased over the last 50 years, the elms has been reduced dramatically by the Dutch Elm Disease. Additional threats to valuable hardwoods include:

- Skimming-off by forest owners and inadequate regeneration, e.g. of *Prunus avium*
- Isolation (*Sorbus torminalis*), low population density and geneflow from domesticated

cultivars and absent regeneration in *Pyrus sp.* and *Malus sylvestris*

- Increased mortality of sweet chestnut due to chestnut blight (*Endothia parasitica*).

Approved basic materials for artificial regeneration: Approved seed collection stands have been selected for common and narrow-leaved ash (35 stands, 57 ha), sycamore (60 stands, 60 ha), black alder (2 stands, 1 ha), Wych elm (11 stands, 20 ha). Plus trees have been registered for common and narrow/leaved ash (98), sycamore (35), Wych elm (5), and for black alder (83). Seed orchards have been established for: ash (53 clones/ 1.5 ha and 50 clones/ 1ha), wild cherry (57 clones / 1 ha and 46 clones/ 1.3 ha), sycamore maple (35 clones/ 0.5 ha), black alder (60 clones/ 1 ha).

Current Research:

At the National Forest Centre (Forest Research Institute):

- Series of experiments aimed at groupwise introduction of common ash into mixed sessile oak-Turkey oak stands has been evaluated since 2004
- Survival and growth of sycamore maple has been monitored on a series of plots after direct conversion of low forest stands dominated by Turkey oak into mixed stands with sessile oak prevailing.
- PhD study aimed at reproduction processes and testing of seed orchard progenies of common and narrow-leaved ash have been commenced recently.

At the Faculty of Forestry of Technical University Zvolen:

- Biology, reproduction and genetics of *Fraxinus* species was studied in details in the framework of the EU FP5 Fraxigen Project
- Studies aimed at the reproduction, population biology and propagation have been carried out with a focus on wild cherry and *Sorbus* species.

At the Institute of Forest Ecology of the Slovak Academy of Science:

- Long-lasting research of sweet chestnut and black walnut resulted in the establishment of a series of stands where ecology (wood production, site productivity) and the effects of silvicultural techniques have been studied.
- Two-generation progeny testing experiment comprised of open-pollinated has been established for sweet chestnut.

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