

POLAND

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Polish Forests and Valuable Broadleaved Tree Species

The total area of Polish forests is 8.92 mln ha. State forests cover 7.6 mln ha (78.4 %) and private forests occur on 21.6% of total forest area. Coniferous trees dominate in Polish forest: coniferous site types occur on 58.9% and broadleaved site types on 41.1%. Scots pine is a dominant tree species in the lowland (together with larch – 69.5%) and Norway spruce dominates in the mountains (5.5%). The main broadleaved tree species is oak (7.1%). Species structure of Polish forests is presented in tab. 1.

Table 1. Area of broadleaved tree species and ownership structure

Detail	State Forests		National Parks		Private Forests	
	thousands ha	%	thousands ha	%	thousands ha	%
Total tree species	6900.6	100.0	180.0	100.0	1590.6	100.0
Broadleaved trees	1517.0	22.0	72.6	40.3	420.2	26.4
Oak, ash, maple, sycamore	462.0	6.7	8.4	4.7	65.4	4.1
Beech	320.8	4.7	37.2	20.7	45.2	2.8
Hornbeam	20.9	0.3	1.0	0.5	17.2	1.1
Birch , robinia	385.7	5.6	11.1	6.2	131.7	8.3
Alder	298.1	4.3	13.4	7.4	143.1	9.0
Aspen, lime, willow	8.3	0.1	1.5	0.8	15.7	1.0
Poplar	21.2	0.3	-	-	1.9	0.1

State Forests, private and local authority – 1.01.1999
National Parks – 31.12.1998

The main rule of Polish forestry is to increase the area of forests. “The National Program for Augmentation of Forest Cover” anticipates an increase to 30% by 2020 and 33% by 2050. The years 1945-2002 brought major changes of Polish Forests. It should be noted that the percentage of stands with a prevalence of broadleaved species increased from 13 to 23 in the period. “The National Program for Augmentation of Forest Cover” anticipates the reforestation of c. 700,000 ha land by 2020 and a total of 1,500 000 ha in the longer term. From 1994 onwards, means from the central budget and loan from the European Investment Bank allowed the State Forests to step up work on reforestation as compared with the period 1986-93, when about 3900 ha of post-agricultural land and wasteland put back under forest annually. In 2003 reforested area was 26,494 ha. The increase in the area of private land

reafforested has been observed for last years. The acceleration of the process reflects financial assistance preferred under PHARE program, money from the State Forest Fund and support from the Voivodship Funds for the Environmental Protection and Water Management.

Seedlings used in the reafforestation of post-agricultural land are produced at forest nurseries. The quality of habitats and stands should be improved. It is done i.e. by introduction of an understorey of broadleaved species. Stand conversion measures (i.e. the adjustment of the species composition to new environmental conditions) was carried out over 13,712 ha.

Some of the post-agricultural lands are better soil classes. Most of them are situated in contaminated areas, which are not allowed for food production (about 140,000 ha especially in Silesia). The most common way of their afforestation is plantation establishment of fast growing trees.

Poland plays important role in the central–eastern European forestry, because many valuable broadleaved tree species has got borders of their natural distribution. The border of natural range of following tree species can be found in Poland: sycamore, maple, European beech, lime and sessile oak. Environmental changes, especially climate warming, can move the ecological optimum of these species, what could change in the state of forests but across all nature.

However, the dominant tree species in Poland is Scots pine, it is very important to increase the share of broadleaved tree species. Many coniferous monocultures should be convert using broadleaved species. One of the main tasks of studies is to know the changes of main tree species, especially broadleaved, at the border of their natural distribution. Such investigation has been started in the Forest Research Institute in the Department of Forest Ecology and Wildlife Management. We have begun the study in European beech stands across the east border of its natural range. Beech is very important and valuable broadleaved tree in forest ecosystems. Moreover the area of the species increased, because many beech seedlings have been planted for last years. New plantations of beech grow very well in Poland. This species also regenerates naturally. There are many well growing naturally regenerated stands.

Poplar plantations are the most common in Poland. Poplar has been planted in State Forests in sixties. Poplar was planted on very poor site types in the past and in too small spacing, so they died in the age of 20. However, there were about 7300 ha of poplar plantations in Poland in the end of last century. The investigation of poplar plantations has been carried out in the Forest Research Institute in Warsaw. The best proveniences of poplar for plantations were found. There are three types of poplar plantations:

- typical poplar plantations,
- agroforestry: poplar plantations with agriculture or meadow plants in rows,
- under the canopy of poplar other forest tree species are planted.

In sixties plantations of fast growing tree species were established in Poland. The investigations on 40 experimental plantations were carried out by Forest Research Institute with cooperation with Agriculture University in Crakow and Poznan. Most of the plantations were established on post-agriculture lands. The main aim of the plantation was wood production in a very short time. Results of the studies were used for preparing the Principals for plantation establishment. The most important basic tree species for plantations are following trees: European larch, birch and Norway spruce. Other tree species which should be planted with the basic tree species are: grey alder, black alder, lime especially *Tilia cordata*. The species which is sometimes used in plantation is Douglas fir (*Pseudotsuga menziessi*). The results of investigation carried out in the Forest Research Institute showed which proveniences of the tree species should be planted in Poland. The principals of Douglas fir plantations were prepared in the Forest Research Institute.

Plantations of wild cherry (*Prunus avium*) have not been established in Poland yet, however, the Principals of Silviculture says that it could be planted on moist site types. The genetic resources of wild cherry have not been recognized in Poland yet, because the species grows as an auxiliary tree species alone or in small groups. New investigation on wild cherry will be carried out in the future. Other tree which should be used in the plantations is *Robinia pseudoacacia*.

Forest Research Institute carried out investigation on 12 experimental plantations in 1993-2001. The aim of the experiment was to study the production possibility of chosen poplar and willow.