

# COST E42 – Growing Valuable Broadleaved Tree Species

Country Report: **Slovenia**

## 1.) Introduction

Total forest area amounts to 1,169,196 ha, what is about 57.7 % of total area in Slovenia (Report of Slovenian Forest Service for year 2005).

Most common species are Norway spruce (*Picea abies*) having share of 32.2 % in growing stock, European beech (*Fagus sylvatica*) with 31.7 % and Silver fir (*Abies alba*) with 7.7 %. These three species are followed by oaks (*Quercus petraea*, *Quercus robur*), by pines (*Pinus sylvestris*, *Pinus nigra*) and by other tree species (ibidem.).

Valuable broadleaved tree species have about 5 % in total growing stock. Their share is higher in younger stands above all because of their abundant and frequent fructifications. Foresters promote valuable broadleaves on account of their timber value, aesthetic role (particularly in urban forests) and for biodiversity reasons. It must be noted that in the exploitation of their timber potential we still have large reserves.

## 2.) Completed research

In Slovenia the research work on valuable broadleaved tree species is coordinated by prof. dr. Marijan Kotar.

In the last period the research work concerning valuable broadleaves in Slovenia was focused more or less on the following tree species: sycamore (*Acer pseudoplatanus* L.), wild cherry (*Prunus avium* L.), common ash (*Fraxinus excelsior* L.) and narrowleaf ash (*Fraxinus angustifolia* Vahl.).

The research activities could be divided into four research areas. For the first three above listed species growth analyses were carried out. These three species were studied from the silvicultural point of view as well. While yield analyses were done only for common ash. Both species of *Fraxinus* genus were studied using molecular analysis. Moreover, the populations of *Fraxinus angustifolia* has been also morphometrically researched.

The most important findings of four below listed references are summarized as follows:

1. Concerning common ash the positive influence of diameter at breast height, age and forking on heart extent was ascertained, while the diameter increment in the last 20 years and cross-section height have a negative effect on heart extension. Higher extent of heart on carbonate bedrock was confirmed using GLM analysis. Alike by beech the heart extent increases along the stem axis up to the height of 6 m, after that it slowly decreases. The possibility for veneer production above the dbh of 45 cm or above the age of 60 years is rather small.
2. Site productivity of sycamore is positively correlated with soil depth, coarse silt percentage in the cambic horizon, the content of phosphorus in leaves and, partly, with potassium. The effect of nitrogen supply on height growth or site productivity was not confirmed. Furthermore, height growth on sites with a higher rate of nutrient cycling, higher macronutrient supply and higher sand percentage in the cambic horizon is significantly faster. As to the growth of basal area, in addition to positive dependences of crown size, many other correlations with site factors were confirmed.

3. The research deals with the height growth in wild cherry, whitty pear tree and wild service tree during the growth season in young plantations and thicket. According to the results of analyses, wild cherry can be classified into the sustained growth pattern. Its growth season can be intermitted by one or two growth stagnation periods. During these stagnation periods the wild cherry never forms terminal buds. The whitty pear tree has the single flush of growth pattern in the Slovenian Istria, but in the northern part and in the middle of Slovenia it resembles the wild cherry in its growth pattern, namely it has two flushes of growth. In the stagnation period it does not form the terminal bud. The height growth of the wild service trees is characterized by two flushes of growth and in between the two flushes the tree forms a terminal bud.
4. Wild cherry trees growing on open area in comparison with trees growing in the stands have very slow but constant height growth and oppositely, fast diameter growth, which declines steeply after the age of 20 years. Diameter increment of wild cherry trees growing in the stands is influenced most strongly by utilization of growth space, if the component of internal tree development is eliminated. Diameter increment of trees in younger stages of development is dependent above all on height precedence of adjacent trees. Later is diameter increment affected by crown width and finally, in the mature phase by the relative crown length. Within this research the highest so far known wild cherry tree in Slovenia was measured, measuring 38,79 m in height at the age of 74 years.

### 3.) Recent research

Currently, we have started with the growth and yield analyses on Norway maple (*Acer platanoides* L.), on lime trees (*Tilia cordata* Mill. and *Tilia platyphyllos* Scop.) and partially also on Wych elm (*Ulmus glabra* Huds.). Furthermore, the work on seed stands is going on.

### 4.) Important Literature

#### REFERENCES:

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3. KOTAR, Marijan. Priraščanje v višino v vegetacijski dobi pri divji češnji (*Prunus avium* L.), skoršu (*Sorbus domestica* L.) in breku (*Sorbus torminalis* (L.) Crantz) = Height growth during growth season in wild cherry (*Prunus avium* L.), whitty pear tree, (*Sorbus domestica* L.) and wild service tree (*Sorbus torminalis* (L.) Crantz). Gozdarski vestnik, 2005, 63, 4, p. 179-196, ilustr.
4. GAŠPERŠIČ, Boštjan, KADUNC, Aleš, KOTAR, Marijan. Vpliv velikosti krošnje na debelinski prirastek pri divji češnji (*Prunus avium* L.) = The influence of crown size on diameter increment in wild cherry (*Prunus avium* L.). Gozdarski vestnik, 2006, 64, 1, p. 3-13, ilustr.

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