

GIUSEPPE BASSATO – FAUSTO B. FONTANELLA – GIUSEPPE SALA

**VARIAZIONI DELLA TEMPERATURA DEL SUOLO
IN STAZIONI FORESTALI
DEL MEDIO BACINO DEL BOITE (ALPI ORIENTALI)**

ATTI DELL'ISTITUTO DI ECOLOGIA E SELVICOLTURA
UNIVERSITA' DEGLI STUDI
PADOVA

VOLUME III
1980-1981
PUBBLICAZIONE N. 1

PADOVA, 1982

SUMMARY

The genus *Salix* L. is considered one of the most important of the European flora because of the great number of species, subspecies and varieties which have a very wide geographical and altitudinal distribution. Of the over 300 taxa both in the boreal and austral hemispheres, 89 are found in the American continent from the Andes to Alaska, 135 are found in the Euroasian continent and 61 in Europe. Of these, about one half are included in the flora of the Italian peninsula.

Willows are an important element among the phytocoenoses, not only because they can produce large quantities of biomass, but above all because of the very great protection they offer the soil. They are, therefore, of great importance to forest economy. In wet sites such as around ponds and lakes and along the banks of rivers and torrents willows are often a fundamental component of the landscape. Although willows are found in many forest habitats, they only become dominant on the outskirts of the forest cover and above the upper limit of tree vegetation, because of their rapid growth and their resistance to difficult climatic and edaphic conditions.

From an economic point of view, apart from producing large quantities of wood at low cost, willows are very useful if not indispensable as windbreaks, for protecting river banks from erosion and for consolidating unstable open areas, contributing to the hydrogeological balances in mountain watersheds and in coastal dune areas. They are used as ornamental plants, fodder, honey-producing plants and are also used as a medicinal plant.

The blooming is useful for phylogenetic characterisation. Anthesis occurs very early especially in the large-leaved species (*S. caprea*, *S. cinerea*, *S. aurita*, etc.) so making available a large quantity of nectar and pollen at a time when there is a scarcity of other flowers for insects. Willows have adapted to entomophily by adding nectaries and pigmentation in the stamen anthers to the ament flowers existing in the ancient willows. This adaptation of the ancient structures (aments) would justify the fairly advanced position of willows in the evolutionary scale, as in Taktajan's and Hutchinson's theory.

From a physiognomic point of view, the genus *Salix* shows all forms of development from trees (typical of hot-temperate climates) to shrubs (cold-temperate climates) to creeping and dwarf shrubs (cold and arctic zones). These ecogeographic differentiations can be seen in the taxonomic table: mostly trees from hot areas are found in the subgenus *Salix*; the subgenus *Vetrix* includes a large number of mesophyllous shrubs from meridional and boreal areas; the subgenus *Chamaetia* includes creeping and dwarf species from alpine and arctic areas.

There are some physiognomic and morphological differences in this genus which are due to some specific environmental factors, so as to permit their being characterised into specific ecophysiognomic types. In hot areas, therefore, there are trees with pointed buds, lanceolate leaves, flower-buds situated at the base of branches, conical aments and male flowers with two or more stamens; creeping shrubs with terminal flower buds, cylindrical or round aments and male flowers with only two stamens are found in cold sites. There are also many intermediate forms between the two described which are considered mesophyllous. Some morphological characteristics are clearly linked to moisture: the species which grow near water have broad glabrous and serrate leaves, long petioles, well-developed stipules and thin leaf sections; drought resistant species have the opposite characteristics.

As far as the interspecific hybridation is concerned, we think that the number of natural willow hybrids is not as great as once thought. This is because willows show great morphological variability within the species, without an analogous geographical variability (ecotype).

There are 34 species in the synchorologic picture of the genus *Salix* in Italy, among which 31 are autochthonous and 3 are not indigenous but cultivated. Of the autochthonous species only two (*S. alba* and *S. purpurea*) have three different subspecies: *S. alba* subsp. *alba*, *S. alba* subsp. *coerulea*, *S. alba* subsp. *vitellina*; three have only one subspecies in Italy, although they have two or three subspecies in general: *S. triandra* subsp. *discolor*, *S. hastata* subsp. *hastata*, *S. elaeagnos* subsp. *elaeagnos*. The autochthonous species are: *S. pentandra*, *S. alba*, *S. triandra*, *S. reticulata*, *S. herbacea*, *S. retusa*, *S. serpyllifolia*, *S. glaucosericea*, *S. breviserrata*, *S. alpina*, *S. hegetschweileri*, *S. nigricans*, *S. mielichhoferi*, *S. glabra*, *S. apennina*, *S. crataegifolia*, *S. appendiculata*, *S. pedicellata*, *S. caprea*, *S. cinerea*, *S. atrocinerea*, *S. foetida*, *S. waldsteiniana*, *S. rosmarinifolia*, *S. hastata*, *S. helvetica*, *S. elaeagnos*, *S. caesia*, *S. purpurea*, *S. amplexicaulis* and *S. daphnoides*. *S. babylonica*, *S. fragilis* and *S. viminalis*, introduced for ornamental and cultivation purposes, should be added. Despite some old references, we are against including *S. laggeri*, *S. aurita* and *S. repens*, which do not seem indigenous to Italian flora.