

VALBRO species in the rural landscape

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Tree structures of “Valuable Broadleaved” species of European agrarian landscapes represent important sources of wood and profits to rural communities but also harbour a substantial proportion of their biodiversity. These structures are particularly meaningful as indicators of ecological stability and ecotones, as well as old productive agricultural processes. Small woodlots, hedgerows or scattered trees over agriculture fields provide stepping-stones corridors among the agrarian matrix and an adjacent woodland matrix.

The arrangement of tree structures that incorporates European ash, wild cherry, walnut, black alder and elm was studied on the territory of nine villages of the Northeast Portugal. Orthophotos time series from 1958 to 1995 were used to record changes in the amount and species composition of these structures. Variation partition was utilised to explain the heterogeneity of structures and species due to environmental and spatial factors.

Tree structures are generally uneven-aged and managed on a single tree basis: farmer evaluates each tree and removes all undesirable ones; only mature and near decrepit trees are harvested. Spontaneous seedlings of desirable trees are promoted and beneficiated. Cuttings provide incomes on a regular but lower return basis. Tree lines are more abundant in meadows (50 m/ha); scattered trees densities are higher near villages, on hills and also on meadows (4 trees/ha).

Our results confirmed our empirical field knowledge: scattered walnut and cherry trees are located on the villages’ environs; ash and alder mainly in tree lines over pastures. Near village patterns reveals an existing human use (walnut, cherry) or vanishing forage practices (elm). Trees in pastures aim to complement animal forage in dry season, as well as river regulation. Small woodlots are strategically placed over open fields for animal resting during hot season.

Last half century, Northeast Portugal landscape became homogeneous as a result of vanishing woody structures; in our study, a loss ratio of one tree, a dozen meters, and one hundred square meters of tree structures per hectare each decade was found. Structures’ decreasing is higher on meadows and hills, particularly in scatter trees and lines; woodlots amount show constancy. Our results indicate the important role of human presence in sustaining deciduous trees structures in the traditional agrarian landscape.

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