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History

Agroforestry has been practiced from the beginning of agriculture in whole Europe; however, currently it is not a common landuse system in Czech Republic. Traditional agroforestry practically (**Fig. 1**) disappeared during the era of collective farming throughout of 20th century, except for small remnants and modern agroforestry systems are not in practice yet.



Fig. 1. Trees on pastures (forest pasture) – NP Podyjí, traditional historical land use management systems; now restarts for biodiversity conservation



Fig. 3. Silvoarable streuobst - intercropping under fruit (apples, pears, plums and cherries) orchards - White Carpathians



Fig. 4. Hedges and life fences – collective farming and field joining to larger block led to their drastic reduction, however some remnants can be found in mountain areas.

Present state

Nowadays, the most extended traditional agroforestry practice in Czech Republic is **silvopastoral** form of **streuobst** (**Fig. 2**) remaining in sites with less favourable conditions for intensive agriculture (e.g. mountains – regions of White Carpathians and Bohemian Forest). **Silvoarable streuobst** (intercropping under fruit orchards – **Fig. 3**) nearly disappeared but nowadays some organic farmers are interested in implementation of this practice. Usually the **streuobst** is based on cultivation of local fruit high-stemmed tree varieties (e.g. apples, pears, plums and cherries) and thus posses high value for *in-situ* conservation of traditional germplasm.

The use of **hedges and live fences** (**Fig. 4**) along the field borders, streams and slope contours has also a long tradition in Czech Republic. Unfortunately, the era of collective farming and joining fields to larger block led to their drastic reduction, however some remnants can still be found again in mountain areas. The importance of these systems for biodiversity conservation (so called ecologic networks) is now recognized and the establishment supported.

We can also find other agroforestry systems with lower extension: **forest trees on pasture** (found in mountain areas), intercropping of forest trees and forest farming/gardening. The trees on pastures (**Fig. 1**) do not usually have productive functions (e.g. timber) but they provide some important services: animal welfare (shading, wind-speed reduction, scratching), protection from soil erosion, habitat for insect and birds, drainage of pastures or microclimate for rare plants. Very important for production of feed for animals are seed crops tress (oaks, chestnut) in game reserves too. **Intercropping of forest trees** (**Fig. 5**) involves interplanting trees in forest during first years after establishment. In past it was practiced in lowland alluvial forests e.g. in Southern Moravia. Now this system is practiced only in small part of floodplain forest where crop cultivation is usually practiced for the first three years and it helps weed reduction. We can find also few examples of **homegardens/forest farming/gardening** (**Fig. 6**) scattered around Czech Republic, usually as hobby farming.

Currently, to our knowledge, there are not practiced any modern agroforestry systems (e.g. alley cropping) for timber production yet; however, potential for production of quality timber (e.g. wild cherry, walnut) and wood biomass exists. Rapid development of short rotation coppice systems (based on willows and poplars for fuel biomass) during last decade also makes growing potential and interest in establishment of these systems in agroforestry schemes (e.g. in combination with timber trees or agricultural crops).



Fig. 5. Intercropping of poplar trees in forest



Fig. 6. Homegardens – hobby farming found in many regions of the Czech Republic

Perspectives

We can divide the future development of agroforestry in Czech Republic into four types: (i) **maintenance of traditional agroforestry as Streuobst**, because of their high agrobiodiversity and cultural values; (ii) **development of modern, intensive agroforestry** practices such as alley cropping with the focus for diversification of agriculture through production of quality timber (e.g. wild cherry, walnut) or wood biomass (e.g. poplar, willow); (iii) **conservation and establishment of hedges, live fences and buffer strips** for service function such as erosion control, demarcation, shelter for domestic animals, water quality maintenance, biodiversity corridors etc; and (iv) **management of smaller private woodlots with specific component** (e.g. mushrooms, berries, medicinal plants) – forest farming and permaculture gardening; however, mainly as a hobby farming.

In the near future, we cannot expect implementation of European legislation concerning agroforestry into Czech legislation and also any direct financial support for agroforestry, because of low extension and non-existent awareness.

However, there is a potential for development of agroforestry in the future in order to increase productivity (wood biomass, agriculture product), to reduce environmental risk (drought, erosion), to increase biodiversity (forest pasture, ecological networks) and to keep social stability. **The Czech Agroforestry Association** has been currently established, with the aim to lead and support of development of agroforestry in Czech Republic.



Fig. 2. Silvopastoral form of streuobst in White Carpathians - extensive fruit orchards with tree density usually between 50 and 200 trees·ha⁻¹ grazed by sheep or cattle

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