

# Ecological Features of Traditional Coppice in Ukraine

Ivan Sopushynskyy, Vasyl Zayachuk, Ruslan Ostashuk, Ruslan Maksymchuk

Department of Botany, Wood Science & Non-Wood Forest Products, Ukrainian National Forestry University

## Background

In Ukraine, traditional coppice forests vary in tree species composition and structure reflecting climatic conditions. The type of coppice management is significantly linked to the permanent users among them are National Agency for Forest Resources, Ministry of Ecology and Natural Resources etc. Generally, coppice forests are located mainly in the temperate climatic zones (Steppe, Forest Steppe and Mixed Forests) on the agricultural land with the low fertilization (Fig. 1).



Figure 1 Environmental zones

## Objectives

The research project was addressed to study the ecological features of tree species of coppicing in different environmental zones of Ukraine. The following tree species were taken into the research in the steppe are *Armeniaca vulgaris* Lam. (Fig. 2), *Quercus robur* L., *Robinia pseudoacacia* L., *Fraxinus excelsior* L.



Figure 2 Traditional Coppice of *Armeniaca vulgaris* Lam. growing in Steppe

The next objectives of the coppicing study were focused on the structure of coppice stands to get additional financial income and the reflecting the common vision among local stakeholders.

## Results

The amount of the precipitation in a year within Ukraine decreases from the northwest to the south-east with the simultaneous increase in the level of evaporation (Table).

Environmental zones	Average annual rates, mm		Ratio of precipitation to evaporation
	Precipitation	Evaporation	
Mixed Forests	590	450	1,3
Forest Steppe	500	500	1,0
Steppe	330-450	650-820	0,4-0,7

The climatic condition of the steppe coppice is characterized by the lowest precipitation in March, with an average of 29 mm and in July - 63 mm. At an average temperature of 20.4 °C, July is the hottest month of the year. At -6.9 °C on average, January is the coldest month of the year.

Ecological figures of oak, apricot and black locust is characterized by moisture content and richness of soil as well as climatic conditions (Fig. 3)

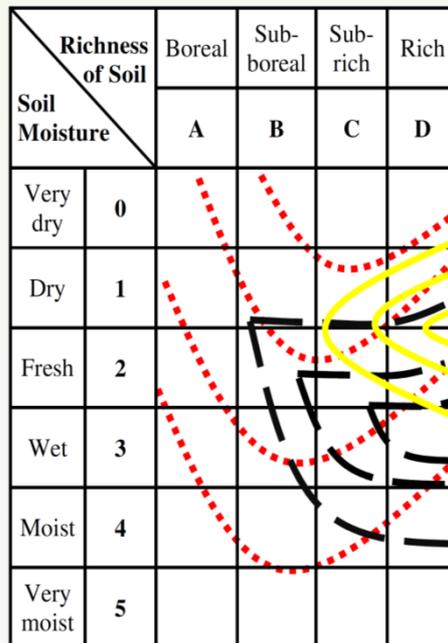


Figure 3 Ecological figure of

— — — *Quercus robur* L.  
 ..... *Robinia pseudoacacia* L.  
 ——— *Armeniaca vulgaris* Lam.

## Discussion

The silvicultural parameters of oak and ash trees are greater about 10-15% in the Forest Steppe and about 20-25% in Mixed Forests than in Steppe.

The coppice forest in the steppe is mainly represented by *Armeniaca vulgaris* Lam., *Quercus robur* L., *Robinia pseudoacacia* L., *Fraxinus excelsior* L. They at the age of 50 years old are characterized by the height of about 17 m and the diameter of about 20 cm. Coppice of black locust is of the protective importance in Steppe. It occupies an area of about 100 Thousand ha.

The silvicultural perspectives of the coppicing are mostly depend on one hand from the local community demands on wood products (branches for brooms, pole wood, firewood etc.) and non-wood forest products (berries, mushrooms) on other hand from the industrial production of firewood and charcoals.

There is in fact a new direction in the development of traditional coppicing focusing on the honey production (bee farming). It is of economic value in the establishment of short rotation plantations represented by *Robinia pseudoacacia* L. in the environmental zones of Steppe and Forest Steppe and by *Tilia cordata* L. in Mixed Forests.

## Conclusion

Ecological features of traditional coppicing are of silvicultural importance to manage in the sustainable way and to provide an array of products and services for households, industry and society. Depending on the ecological situation and the actual needs of society, a new type of industrial coppicing is addressed on the bee farming. The short rotation coppicing is not of an economic value or in the priority of the Ukraine.

## References

- Sopushynskyy I., Ray C.D., Zayachuk V., Ostashuk R., Sopushynskyy M. (2017) "Manual and Mechanized Forest Operations in Ukrainian coppicing: Products Diversity and Economic Assessment" on the EuroCoppice Final Conference within COST Action FP1301: 19-21 June, 2017, Limoges: 17.
- Sopushynskyy I., Ray C.D., Zayachuk V., Zhmurko S., Kharyton I., Sopushynskyy M., Maksymchuk R., Hrymchuk I. (2016) Silvicultural assessment of natural coppice forests: a case study relating to coppice management by rural communities in the Ukrainian Subcarpathians // Coppice forests in Europe: ecosystem services, protection and nature conservation: Conference within COST Action FP1301 EuroCoppice: 16-17 June 2016, Antwerpen: 37.
- Sopushynskyy I., Kharyton I., Mnyukh O. (2015) Challenges in the eco-based forest management of coppice forests in Ukraine // Ecology and Silvicultural Management of Coppice Forests in Europe: Scientific Meeting of FSP COST Action FP 1301, 19-23 October 2015, Aldus: 42-44.