

CONVERSION AS AN ADAPTIVE FOREST MANAGEMENT MEASURE- THE ADVANTAGES AND DISADVANTAGES OF DIRECT AND INDIRECT CONVERSION

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1. SUMMARY

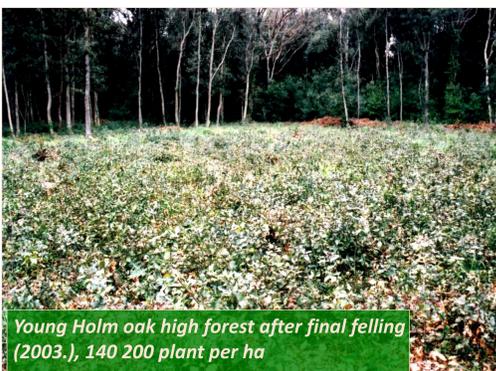
Even though coppice management is regarded as the oldest silvicultural system, such activities received little attention in Croatia until recently. With adoption of Rural development programme for Republic of Croatia for the period 2014 – 2020 research on conversion of coppices and other degraded forest stands into high forests have become more prominent. Also, emigration in rural areas, along with a number of other socio - economic factors, leads to a reduction of anthropogenic impacts on coppice (fewer need for firewood, livestock grazing is reduced, etc.). In such conditions, coppices have a slow natural progression in a high silvicultural form, but a more active approach to adaptation-oriented management helps accelerate the development of the dynamics and stand structure to the desired target, reducing the risk of fire and attack of various pathogens. At the same time, it provides revenue from cutting during the conversion period itself.

Paper presents and compares advantages and disadvantages of direct and indirect conversion through several studies; case study of Holm oak coppice conversion under the principles of seeding cuts by the auspices of „Croatian forests“ Ltd. This case study presents successful long-term research on indirect stand conversion. Study of direct conversion is based on Conversion plans for two trials in private forests: conversion of high European hornbeam stand and Black locust coppice.

The aim of presented research results is to provide insight into the structure and potential of young tree generation. In addition, it aims to suggest efficient and adequate conversion methods and activities, which should result with increase of ecosystem services, enhancement of stand structure, stability and resilience of forest ecosystems to climate change and altogether long-term increase of their commercial value.

Keywords: conversion, seeding cuts, adaptation, Holm oak, European hornbeam, Black locust

INDIRECT CONVERSION



WHAT IS CONVERSION?

Conversion is silvicultural activity by which one silvicultural form is transformed into the other. Two basic conversion types can be distinguished in Croatian scientific studies:

I. INDIRECT

Indirect conversion is transformation of coppice to high silvicultural form through cleaning, thinning and regeneration under the canopies of old stand and by application of seeding cuts. This requires a longer period and more complex silvicultural activities if compared to direct conversion.

II. DIRECT

Direct conversion presents transformation of coppices into high silvicultural form through clear cut, which is immediately followed by planting / seeding with the same or other commercially interesting tree species.

A. RECONSTRUCTION

Same species,

(e.g. felling of beech coppice and planting/sowing of beech)

B. SUPSTITUTION

Planting/sowing some other indigenous species

(e.g. planting sessile oak after felling Black locust (*Robinia pseudoacacia* L.) coppice)

AIM OF CONVERSION

The aim of conversion is to transform degraded forest types into higher silvicultural form in areas where such forests existed before, but only where the current climatic and stand conditions allow such transformation. Also, they have to meet various economic and environmental goals:

- Improvement of beneficial function
- Improvement of structure, stability, and resistance of forest ecosystems to climate change
- Long-term: increase the economic value of degraded forest types and an increase of:
 - Using renewable energy sources (forest biomass) in rural areas
 - Carbon sequestration in existing forests and reforestation

DIRECT CONVERSION

European hornbeam (*Carpinus betulus* L.) stand Black locust (*Robinia pseudoacacia* L.) coppice



INDIRECT CONVERSION

advantages

- higher quantity of quality wood at the end of the planned production period
- close - to - nature
- fixation of CO₂
- no sudden change in microclimate

disadvantages

- time consuming
- depends upon seed production of stand
- complexity of silvicultural activities

Coppices are considered to be degraded stands on high quality habitats, and it is recommended to translate them into high silvicultural form naturally through the principles of seeding cuts. That way, with relative low tending and thinning costs, coppices would become stable and productive stands.

DIRECT CONVERSION

advantages

- quick
- simple
- species selection
- no damage on young growth

disadvantages

- aesthetics (clear cut)
- sudden microclimate change
- money consuming
- frequent tendin operations
- release of CO₂ into atmosphere