Conversion of coppice forests towards high forests in Romania: economic, technical and political issues

Valeriu-Norocel Nicolescu[1], Matei-Nicolae Ciolan[1], Delia-Maria Baniță[1], Maria Băluț[1] and Cornelia Hernea[2]

[1]Faculty of Silviculture and Forest Engineering, University "Transylvania" of Brasov-Romania
[2]Banat's University of Agricultural Sciences and Veterinary Medicine, Timisoara-Romania

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Introduction

Broadleaved tree species (i.e. oaks – *Q. petraea, Q. robur, Q. cerris, Q. frainetto, Q. pedunculiflora, Q. pubescens* -, European beech, hornbeam, ashes, maples, poplars, willows, black locust, etc.) in Romania= **over 70 %** of national forestland.

Before 1948 (nationalization of all non-state owned forests = over 70 per cent of Romanian forest estate): **over 30 %** of Romanian forests consisted of various forms of coppice (i.e. low coppice LC, high coppice HC (pollarding), coppice-with-standards CWS).

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1948 = beginning of the process of converting coppice forests by:

1. Forbidding the application of CWS (full cessation of coppice cuttings = so-called *conversion by ageing*);

2. Partial cessation of coppice cuttings and continuous reduction of the area covered by LC (**currently only 5 %**) either by (i) ageing of LC or by (ii) replacement of LC and subsequent afforestation.

BUT: in the majority of cases, the process of coppice conversion has NOT taken into account:

(i) The needs for firewood of rural people.

(ii) The high costs of replacing coppices by planting or the old (IInd or IIIrd) generation and

(i) The low quality stumps.

After the fall of Communism (1989) and restitution of forests to the pre-WWII forest owners: there has been **no political willingness** to convert backwards the converted coppice forests even though the majority of individual private forest estates, broadleaved-dominated, are:

(a) Small (1.1 ha on average).

(b) The application of high forest silvicultural systems (e.g., uniform or group shelterwood) is not appropriate and sustainable.

All post-Communist Forest Laws (1996, 2008, and 2015): low coppice only for indigenous poplars, willows, black locust and riverside forests.

In this respect, two situations of conversions:

(i) By ageing

(ii) By replacement of low coppice followed by afforestation

used in Comana Forest District (Giurgiu County Branch, State Forest Administration-ROMSILVA)

will be presented as **case-studies**.

Case-study 1

Conversion by ageing – sub-compartment 23D, V Padina Tătarului Working Circle

Pure Turkey oak stand = former CWS (LC?) with very few standard trees, 55 years old, yield class 2, mean diameter 24 cm, mean height 20 m, mean canopy closure 70%, **rotation age 80 years**.

- **salvage cuttings:** proposed by the current management plan;
- the **state of trees** is very variable as follows:

• The **old standards** show signs of dieback.

• The **coppice stumps** (probably II generation) show 1-4 shoots, of variable sizes and health states, sometimes with holes (gates for water, insects and diseases) = wood discolouration and/or rot.

• The proportion of **trees originating from seed** is low so can not guarantee the successful conversion to high forest.

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Questions

1. **Why** converting such stand to high forest?

2. **Is it worthwhile** keeping the stand standing 25 more years?

3. Is the use of **salvage cuttings** until the end of rotation a valuable technical solution in order to help the natural regeneration by seed of Turkey oak?

Case study 2

***Conversion by replacement of low coppice followed by afforestation* – sub-compartment 97C, VI Comana Working Circle**

Original stand:

- Species composition: 60% linden 30% common ash 10% pedunculate oak, all regenerated by stump stools
- Age: 100 years (rotation age: 70 years)
- Canopy closure: 30%

Last silvicultural interventions: group shelterwood cuttings, followed by planting.

Proposed silvicultural intervention: group shelterwood cutting followed by planting; tending of young regeneration (i.e. beating-up, weeding)

The stand contains a mosaic of **three** different area types:

1. *Small gaps*

- created by opening the old coppice stand and replanting with 100% pedunculate oak PO.

- other species such as common ash, field elm, field maple, small-leaved linden, Turkey oak, naturally regenerated by seed or root suckers, co-exist with pedunculate oak.

These early fast-growing species could represent a ***real threat*** for PO if release cuttings and even first cleaning-respacing will not be performed (e.g., high labour costs, lack of local labour, etc.) in due course.

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2. *Large areas*

- no interventions carried out since the final cuttings.

- dominated by very vigorous small-leaved linden SLL stump stools and root suckers that make almost impossible the natural establishment of other important tree species.

3. *Small planted areas*

- established in 2000 (1.5 x 1 m, 100% pedunculate oak) after removal of old coppice stand. A small plot established in 2015 shows:

a. The very high ***stocking*** (8,640 trees/ha) and ***density*** (over 16 sq.m/ha).

b. Complex ***species composition*** (46% pedunculate oak 44% common ash CA 10% small-leaved linden SLL), and

c. High ***regeneration potential*** (by both stump stools and root suckers) of both CA and SLL.

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The case-study no. 2 is a good example of ***many problems/questions*** related to the conversion of coppice stands through removal of old stand and planting:

1. High cost of seedlings and planting.

2. High competition intensity between planted individuals and naturally regenerated species (CA, SLL, others)

3. High costs of early silvicultural interventions, combined with the lack of local labour, etc.

Some conclusions

In our viewpoint, under the local conditions, the conversion of coppice forests to high forests **has not been** the best solution because of:

a. Low quality of coppice forests (2nd or 3rd generation).

b. High planting costs.

c. Need for expensive early silvicultural operations.

d. Lack or insufficient workforce.

e. High and obvious need of local people for firewood.

f. Etc.

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Thanks for your attention!