



Reforestation on salvage clear cuts and following silviculture management of new stands in the Czech Republic

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Extent of salvage clear cuts in the Czech Republic (2020)

Area of salvage clear cuts [ha]	Total area	
	[ha]	[%]
under 1 ha	52 220	46,4
1-5 ha	30 210	26,8
up 5 ha	30 130	26,8
Total	112 560	100



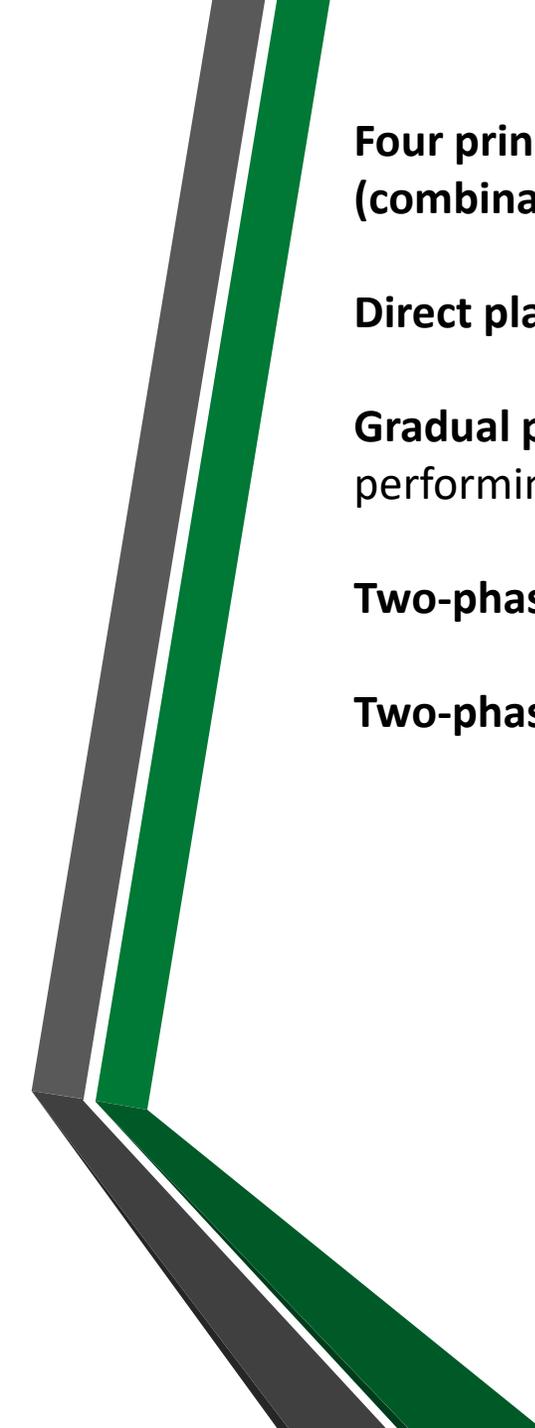
Reforestation of salvage clear cuts

The principal aim is an establishment of mixed, fine-structured mixtures with broad spectrum of tree species providing the expected services of forest.

It is necessary to use all the naturally-regenerated tree species present on the site; other tree species should be planted to achieve appropriately mixed stands.

Decision about which species are needed should be taken into account for future juvenile stand tending.

The principal approach consists in use of **at least three dominant species sharing the mixture nearly equally** on the same site. Other accompanying species can occur and be used to increase desirable diversity.



**Four principal approaches to salvage clear cuts renewal are recommended :
(combinations of the four are also possible)**

Direct planting of tree species mixtures according to recommended species composition.

Gradual planting (prolonged two-phase renewal) consisting in planting of intolerant, well-performing species in open conditions.

Two-phase renewal when first phase consists mainly in artificial regeneration

Two-phase renewal when first phase consists mainly in natural regeneration

1. Direct planting

Target tree species alone or mixed with pioneer tree species are recommended to be planted. Preferred use of the target species is on rich sites preferably in accessible-terrain conditions.

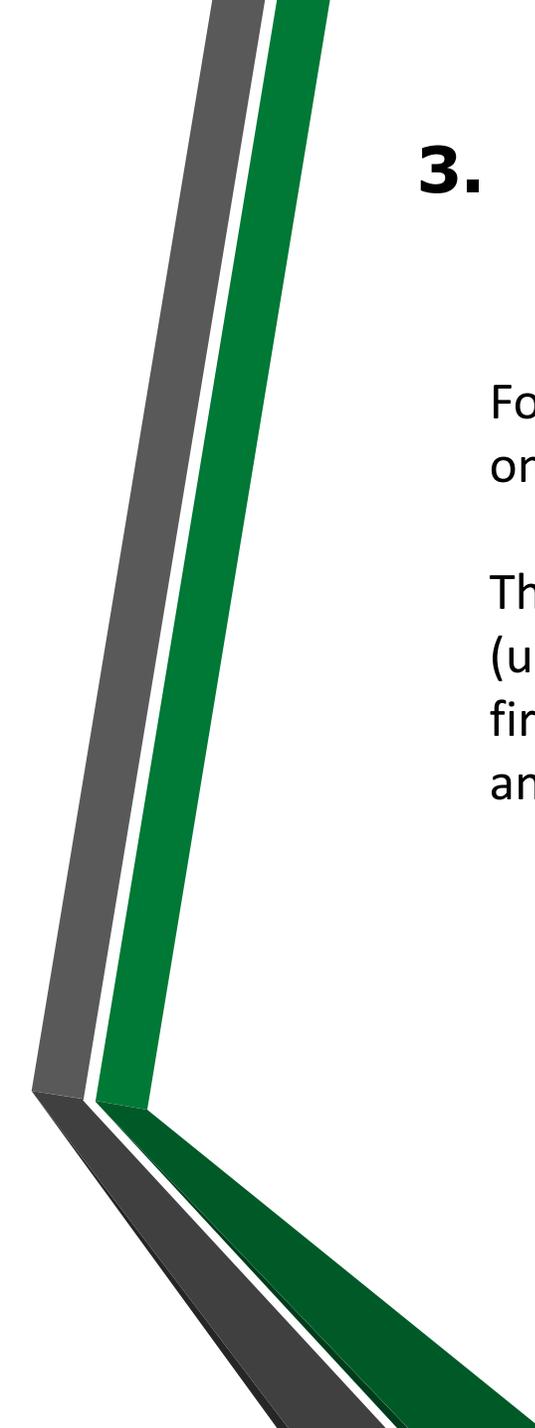
The pioneer species (birch, aspen, alder, poplar) can be used on very large salvage clear cuts (up of 10 ha) for planting in short rotation (20 – 30 y). The goal is the age differentiation of new stands.



2. Gradual planting (prolonged two-phase renewal)

This reforestation technique include out-planting both pioneer and target species such as larch, spruce, sessile oak, alder, aspen and birch. These are interplanted using more sensitive species (e.g. beech) after 2 – 5 years; they are capable of taking advantage of ecological effects provided by the preceding plantation. This technique is preferred on nutrient-rich and gleyic nutrient-medium sites in accessible-terrain conditions.





3. Two-phase renewal when first phase consists mainly in natural regeneration

For the first phase it is possible to use all the naturally-regenerated tree species present on the site.

The second phase can be realized via both natural regeneration and interplanting (underplanting) by tree species that need specific microclimate conditions (beech and fir). There is an essential prerequisite of its applicability - mainly parent trees present and limited weed development on the site.

Successive development of birch stand on salvage clear cuts

July 2007



May 2010



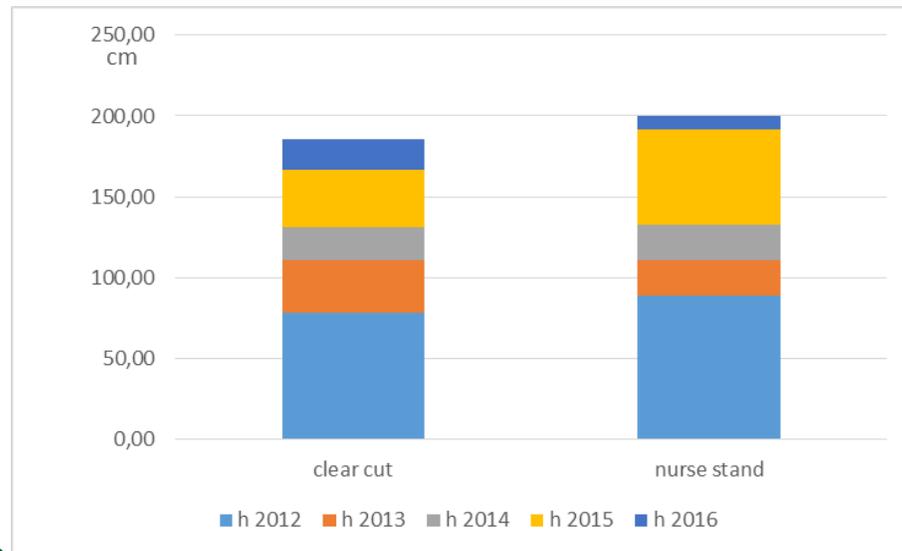
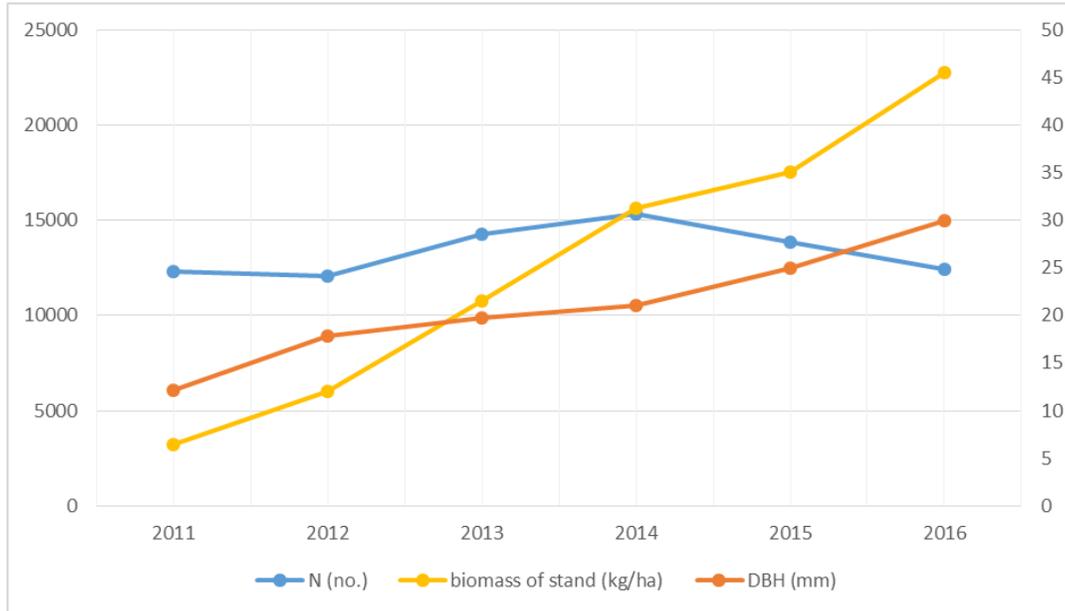
August 2010



February 2014



Growth of nurse stand (birch) and target species (beech) on clear cut and under nurse stand



4. Two-phase renewal when first phase consists mainly in artificial regeneration

Preparatory stands can be established using both planting and seeding. Many tree species can be used. Lower planting densities per hectare can be applied because the next phase consists in interplanting of other species (via natural or artificial regeneration). This approach is recommended particularly in large salvage clear cuts. If natural regeneration is not satisfactory, it is necessary to add plantation using planting stock capable of good performance on the site.



Silviculture management following establishment of new stands

Large area of clearcuts = large area of thickets (young stands) in the next decade



Great importance to use **adequate management**



Knowledge and practical experience from “classical” young stands (common forestry)

What is available?

Experiments established after former calamities (e.g. wind calamity Kyrill 2007)

Early thinning supports:

- Mechanical stability (mainly in coniferous stands)
- Improvement of stand microenvironment (lower interception, improved litter decomposition, ...)
- Quality and quantity of wood production
- Survival of admixed species

According to **full range of methods of clear cut regeneration** (direct planting or seeding, natural regeneration, preparatory tree species, etc.).





Dissemination of new knowledge and experiences is of the utmost importance, because **neglected thinning of young stands would lead to loss** of stability, species admixtures, quality and overall functionality of the ecosystems.





**Thank you for
your attention!**

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