

Baltic ForBio, WP 2, GA 2.4

Information about thinnings demonstrating biofuel and roundwood production

Information about stand

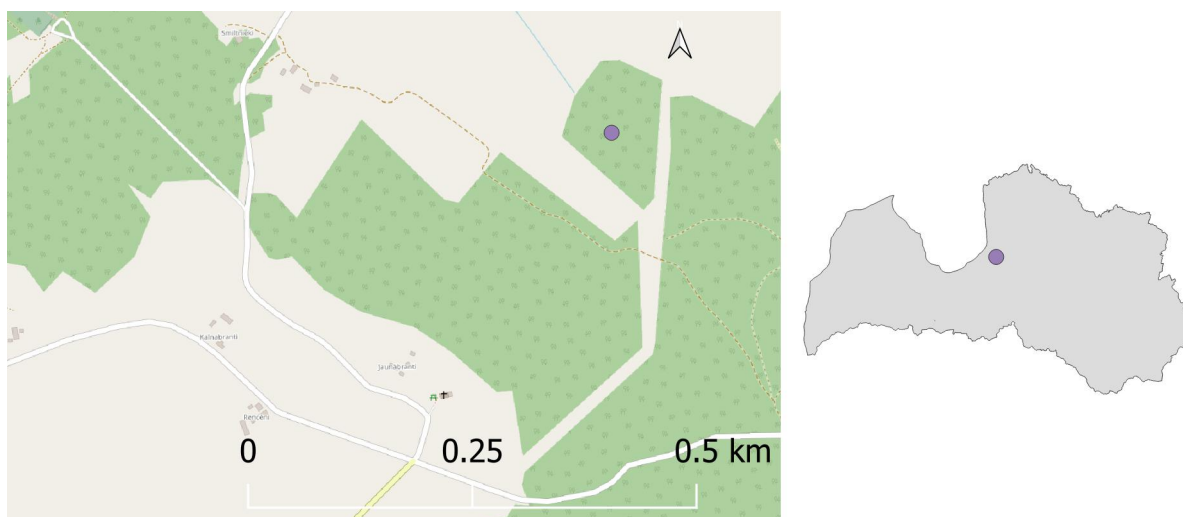
Basic information

State	Latvia
Region	Vidzeme
Stand ID	1-3
Area (ha)	2.2
Thinning year / season	2017
Topic	Harvesting with compact class harvester Vimek 404 SE equipped with KETO Forst ECO felling head

Characteristics of work environment and soil bearing capacity

Poor logging conditions, development and delivery with standard equipment are only possible in winter when the soil is frozen.

Location of demo site



Coordinates of plot centre: X – 535355 Y – 331353 (LKS92)

Figure 36: Location of compartment⁴⁶.

Stand characteristics before harvesting

Average DBH (cm)	20
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⁴⁶ Background map from Google maps and map of Latvia from www.envirotech.lv

Average height (m)	17
Number of trees (trees per ha⁻¹)	940
Growing stock (m³ ha⁻¹)	245
Stand composition	10P
Stand age during thinning	48
Dominant species	Scots pine
Stand type	Nd (<i>Caricoso-phragmitosa</i>)

Stand management targets

To increase forest value by extraction of damaged and small size trees and to ensure favourable growth conditions in the stand. Harvesting is done so to reduce negative impact to environment (avoid ruts formation, mechanical damages of remaining trees and soil compaction). Small dimension trees should be used for biofuel production and from bigger trees standard roundwood assortments (small logs and pulpwood) should be produced.

Stand characteristics after thinning

Average DBH (cm)	22
Average height (m)	18
Number of trees (trees per ha⁻¹)	660
Growing stock (m³ ha⁻¹)	196
Stand composition	10P
Dominant species	Scots pine

Mechanical damages due to thinning

Damage to the remaining trees does not exceed 1%, no ruts have been found, although the harvesting was carried out in a season when this would not be possible with standard equipment.

Applied work method in thinning

Work order considers thinning to minimal basal area or number of trees according to average tree height after thinning.

Distance between technological corridors 20 m with "ghost paths" between the corridors, which are used only by harvester.

Logs are located along the technological corridors. Undergrowth trees are not extracted before mechanized thinning.

The work method applied considers production of standard roundwood assortments and firewood from tops and small dimension trees with at least 3 cm diameter at the top. Harvesting residues in technologic corridors.

Harvesting is done using compact class harvesterVimek 404 SE equipped with KETO Forst ECO felling head (10. Fig.). Harvester is equipped with CAT C2.2T engine (50 kW, 2700

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RPM,); harvester width 1.8 m (with large tyres – 2.10 m), length – 4.60 m; MOWI 2046 crane reach distance 4.6 m, weight 400 kg; clearance – 40 cm; harvester weight – 4500 kg.

Forwarding is done using compact class machine Vimek 610 SE.



Figure 37: Harvester Vimek 404 SE⁴⁷.

Harvesting productivity

While producing biofuel in pre-commercial thinning (average extracted tree $D_{1.3}$ 8 cm), average productivity of harvester is $5.2 \text{ m}^3 \text{ h}^{-1}$.

⁴⁷ Photo: G. Spalva.