

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	1-1
Area (ha)	0.58
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

Good logging conditions.

Location of demo site



Coordinates of plot centre: X – 664829 Y - 358055 (LKS92)

Figure 48: Location of compartment⁵⁸.

Stand characteristics before harvesting

Average DBH (cm)	19
Average height (m)	15

⁵⁸ Background map from Google maps and map of Latvia from www.envirotech.lv

Number of trees (trees per ha⁻¹)	1150
Growing stock (m³ ha⁻¹)	260
Stand composition	9P1E
Stand age during thinning	38
Dominant species	Scots pine
Stand type	<i>Dm</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)	19
Average height (m)	15
Number of trees (trees per ha⁻¹)	775
Growing stock (m³ ha⁻¹)	188
Stand composition	9P1E
Dominant species	Scots pine



Figure 49: Stand characteristics after thinning⁵⁹.

Mechanical damages due to thinning

Not detected.

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 harvester Vimek 404 SE equipped with KETO Forst ECO felling head (10. Fig.). Harvester is equipped with CAT C2.2T engine (50 kW, 2700 RPM,); harvester width 1.8 m (with large tyres – 2.10 m), length – 4.60 m; MOWI 2046

⁵⁹ Photo G. Saule

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 50: Harvester Vimek 404 SE⁶⁰.

Harvesting productivity

While producing biofuel in pre-commercial thinning (average extracted tree $D_{1.3}$ 9 cm), average productivity of harvester is $6.3 \text{ m}^3 \text{ h}^{-1}$.

⁶⁰ Photo G. Saule.