Baltic ForBio

Baltic ForBio, WP 2, GA 2.4

Information about thinnings demonstrating biofuel and roundwood production (602-32-8)

Information about stand

Basic information

State	Latvia
Region	Kurzeme
Stand ID	602-32-8
Area (ha)	1.3
Thinning year / season	2016/spring
Topic	Thinning with Vimek 404 T5 harvester

Characteristics of work environment and soil bearing capacity

Poor logging conditions.

Location of demo site

Coordinates of plot centre: X - 429860 Y - 328938 (LKS92)

Figure 23: Location of compartment[29].

Stand characteristics before harvesting

Average DBH (cm)	9
Average height (m)	11
Number of trees (trees per ha^{-1})	3350

[29] Background map from Google maps and map of Latvia from www.envirotech.lv

Growing stock (m^3 ha^{-1})	199
Stand composition	4E4B2Ma
Stand age during thinning	43
Dominant species	Spruce
Stand type	Dms

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)	13
Average height (m)	15
Number of trees (trees per ha^{-1})	1247
Growing stock (m^3 ha^{-1})	108
Stand composition	9E1B
Dominant species	Spruce

Mechanical damages due to thinning

Damage to the remaining trees does not exceed 3%, no ruts have been detected.

Applied work method in thinning

Work order considers thinning to minimal basal area or number of trees according to average tree heigth 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 applied work method considers leaving of small dimension trees (including technologic corridors if their $D_{1.3} < 6$ cm, if they are not hampering harvesting operations, but, if such small tree is harvested (cut down) it should be dropped without delimbing in area where it is not becoming an obstacle to harvesting and forwarding operations

Harvesting is done using compact class harvester Vimek 404 T5 a equipped with Keto Forest felling head (10. Fig.). Harvester is equipped with CAT C2.2T engine[30] (44 kW,

[30] In previous models Kubota V2003T engine

2700 RPM,); harvester width 1.8 m (with large tyres – 2.15 m), length – 3.35 m; tyre size 405/70-24; MOWI 2046 crane reach distance 4.6 m, weight 400 kg; clearance – 40 cm; harvester weight – 4400 kg; fuel consumption – 4 L per hour; control system – Motomit IT.

Forwarding is done using compact class machine Kranman Bison 10000 6WD and middle class forwarder John Deere 810D.

Figure 24: Harvester Vimek 404 T5[31].

Harvesting productivity

While producing biofuel in pre-commercial thinning (average extracted tree $D_{1.3}$ 8 cm or 0.05 m^3), average productivity of harvester is 4.7 m^3 h^{-1}.

[31] Photo: G. Spalva.