

## Baltic ForBio, WP 2, GA 2.4

### Information about thinnings demonstrating biofuel and roundwood production (714-245-2)

#### Information about stand

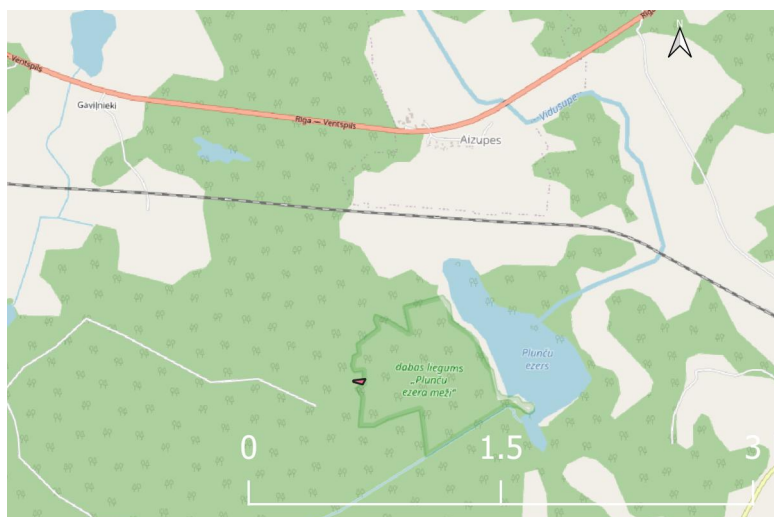
##### *Basic information*

State	Latvia
Region	Kurzeme
Stand ID	714-245-2
Area (ha)	0.1
Thinning year / season	2016
Topic	Thinning with Vimek 404 T5 harvester

##### *Characteristics of work environment and soil bearing capacity*

Good logging conditions, logging can be done all year round without the use of tracks and without placing logging residues in technological corridors.

##### *Location of demo site*



Coordinates of plot centre: X - 401406 Y - 338294 (LKS92)

**Figure 8: Location of compartment<sup>10</sup>.**

<sup>10</sup> Background map from Google maps and map of Latvia from [www.envirotech.lv](http://www.envirotech.lv)

### ***Stand characteristics before harvesting***

<b>Average DBH (cm)</b>	10
<b>Average height (m)</b>	8
<b>Number of trees (trees per ha<sup>-1</sup>)</b>	1600
<b>Growing stock (m<sup>3</sup> ha<sup>-1</sup>)</b>	86
<b>Stand composition</b>	9P1B
<b>Stand age during thinning</b>	30
<b>Dominant species</b>	Scots pine
<b>Stand type</b>	Ln ( <i>Myrtillosa</i> )

### ***Stand management targets***

To increase the value of forest stands by felling damaged and small-sized trees and to provide favourable conditions for the further development of the stand. Logging should be carried out in such a way as to minimize adverse effects on the environment (avoid ruts, prevent mechanical damage to permanent trees and compaction of the soil). Use small-sized trees for the production of biofuels and roundwood (pulpwood and small logs) from larger-sized trees.

### ***Stand characteristics after thinning***

<b>Average DBH (cm)</b>	14
<b>Average height (m)</b>	15
<b>Number of trees (trees per ha<sup>-1</sup>)</b>	962
<b>Growing stock (m<sup>3</sup> ha<sup>-1</sup>)</b>	77
<b>Stand composition</b>	9P1E
<b>Dominant species</b>	Scots pine



**Figure 9: Stand characteristics after thinning<sup>11</sup>.**

### ***Mechanical damages due to thinning***

Damage to 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 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 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<sup>12</sup> (44 kW, 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;

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<sup>11</sup> Photo P.O. Johansson.

<sup>12</sup> In previous models Kubota V2003T engine



harvester weight – 4400 kg; fuel consumption – 4 L per hour; control system – Motomit IT.  
Forwarding is done using compact class machine Kranman Bison 10000.



**Figure 10: Harvester Vimek 404 T5<sup>13</sup>.**

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<sup>13</sup> Photo: G. Spalva.



**Figure 11: Kranman Bison 10000 forwarder<sup>14</sup>.**

### **Harvesting productivity**

While producing biofuel in pre-commercial thinning (average extracted tree  $D_{1.3}$  10 cm or  $0.05 \text{ m}^3$ ), average productivity of harvester is  $4.4 \text{ m}^3 \text{ h}^{-1}$ .

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<sup>14</sup> Photo: P.O. Johansson.