

Forest Biomass for Pellet Production



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Small scale ATV forwarding in Iceland

Introduction/Background

Forestry in Iceland is becoming more important as the forest area is increasing. Regional afforestation programmes support the planting of trees and the use of land in the form of forestry. Forests have been growing since those programmes offered land owners alternatives to conventional usage of land. Now, forest scientists see the chances for regional use of bioenergy and therefore connected the necessity to do forest operations in Icelandic forests more than ever. Even-aged forest stands as they are common in Iceland and normal in planted stands have a need for thinning operations in order to increase the value of the remaining trees.

Energy is a cheap resource in most of the country, nevertheless, bioenergy in form of forest based energy can provide a local solution in some cases. The recent opening of a wood chip boiler in Hallormsstadur is a outstanding example how this can be implemented.

ATV forwarding equipment

The overall hauling productivity is a function of the trailer capacity, the handling time (loading and unloading of logs) and the ATV's driving speed.

The trials have revealed considerable differences in productivity in natural grown birch (*Betula pubescens*) stands and for pine (*Pinus contorta*). In pine log forwarding the productivity was higher compared to conditions with birch stems. Larch (*Larix sibirica*) stems had the highest average productivity and the variation has been very small.

All-Terrain Vehicle Forwarding Trailer

Type

Polaris Sportsman 800 TWIN Avesta 3.2 H

Details

6x6 Big Boss model 2006
 On demand AWD, EFI, Aggregate: Honda 6,5 GX 200
 Automatic with EBS



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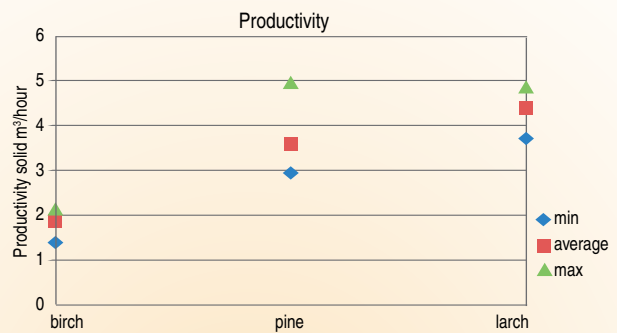
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Production and costs

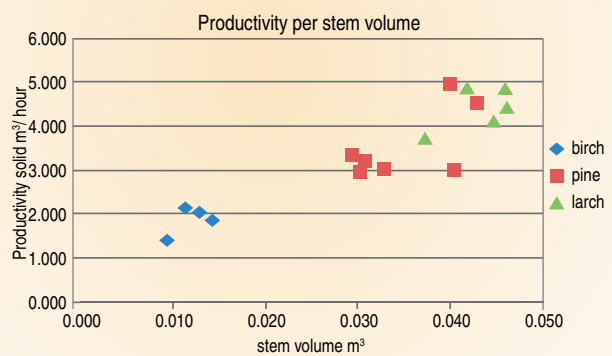
The trials have shown that the species and dimensions of the material also significantly affect the overall productivity of the operation. Birch has been growing naturally and is very crooked, the main length varied between 1 to 3 meters, the diameters between 4 and 13 centimeters with an average of 7.8 cm, the average stem volume is 0.012 m³.

The transported larch logs were originally planted and cut to a length of 3 meters, the diameters varied between 7 and 28 centimeters, the average diameter was 12,99 cm and the average stem volume 0.043 m³.

The pine stands were also planted and the log lengths were cut to 3 and 3,5 meters with diameters between 10 and 15 cm. Therefore, the average stem volume for pine is 0.039 m³.



Productivity of birch, pine and larch forwarding trials.



Productivity of small scale ATV forwarding depending on the stem volume.