



Annual shoot development dynamics of Scots pine

(genetic differences)

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Materials & Methods



Repeated measurements of height carried out in 3 trials:

- Grafted seed orchard, age 10 years
- In total 72 clones, represented by 4 ramets (copies) each
- Mean height 4.1 m, diameter 7.2 cm
- Height differences for 95% or ramets does not exceed 0.4 m from mean and have no significant influence to annual height increment (r²=0.03) or height growth intensity (r²=0.02)
- Measurements carried out in year 2008



Materials & Methods



- Open pollinated progeny trials (experiments No. 352 and 441) at the age of 4 and 6 years (in year 2008 and 2010)
- Progenies of 61 tree and 4 control lots
- Mean height at the beginning of 6th vegetation period in exp. No. 352 was 110.5 cm and in exp. No. 441 64.0 cm.







 All experiments located in poor sandy soil, Vacciniosa forest type in relative similar climatic conditions, surrounded by Scots pine stands







• Average height increment reached 70 cm



Growth period: a- 27.04.-04.05.; b-05.05.-10.05.; c-11.05.-16.05.; d-17.05.-22.05.; e- 23.05.-30.05.; f-31.05.-4.06.; g-5.06.-11.06.; h-12.06.-24.06.; i-25.06.-02.07.



Share of total height increment, formed in period with highest growth intensity, %

Share of total height increment, formed in period with highest growth intensity, has moderate heritability ($H^2=0,30$), similar to that of growth intensity on average ($H^2=0.29$)





- On average 32% of height increment is formed during the period of highest growth intensity (end of May-beginning of June).
- Correlation between share of height increment, formed in period with highest growth intensity and total length of height increment is negative, non-significant and week (r=-0.22).
- It is possible to select clones, forming more than 35% of total length of height increment during relative short period (15-20% of total height growth period) and still heaving average or high total length of height increment.

Results O.p. progeny trials



- Tree height have a relative large influence to height increment: correlation with total length of increment r=0.56 at the age of 4 years and r=0.48 at the age of 6 years.
- Average height increment reached 48 cm in exp. No. 352 and 23 cm in exp. No. 441.







 In both trials and ages total length of height increment was weakly related to share of total height increment, formed in period with highest growth intensity (on average r=-0.22 at individual tree and r=-0.07 at family mean level).



share,% - share of total height increment, formed in period with highest growth intensity

Results O.p. progeny trials



 Length of used growing season at family mean level was weakly related with total length of height increment (r=-0.05) and share of total height increment, formed in period with highest growth intensity (r=-0.13)



Conclusion

Main conclusion – it is possible to select genotypes, forming relative large proportion from total increment in short period of time (1-2 weeks, corresponding to 15-20% of height growth period), but

selections especially for this trait needs to be carried out; ordinary selection based on tree height would not yield the result









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Thank You!

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