

STRUCTURE AND YIELD OF NORWAY SPRUCE -DOMINATED STANDS AFTER SINGLE-TREE SELECTION AND LOW THINNING

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INTRODUCTION

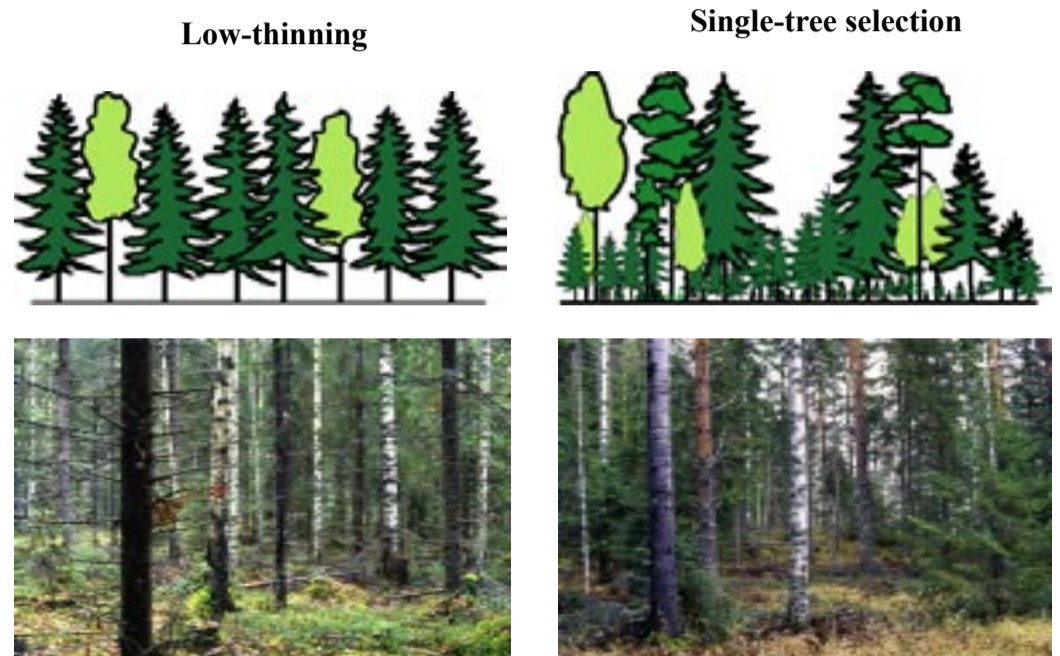
- Silvicultural treatments are classified according to their influence on stem diameter distribution: treatments that reduce and those that maintain or broaden its range.
- The effects of different silvicultural treatments in even-sized stands are relatively well known, but there exist only few experiments concerning uneven-sized ones.

MATERIAL AND METHODS

- The study material consisted of 23 experimental stands extending from southern to northern Finland. These Norway spruce dominated advanced stands grew on fertile mineral soils. Each stand contained two substands randomly treated with single-tree selection or with low thinning.
- The growing stock was measured prior to cutting, after it and at the end of monitoring (ranged from 7 to 14 years).

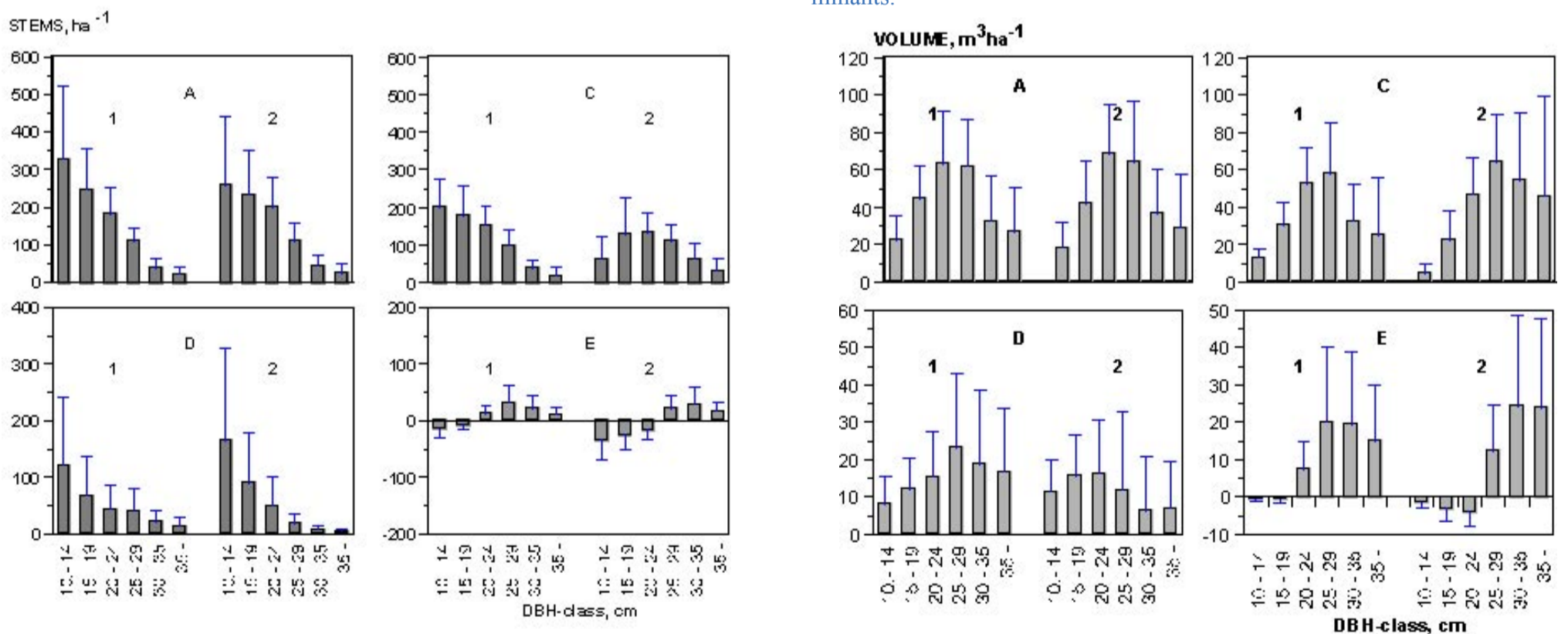
RESULTS

- ◆ In the differentiative cutting, the average removal was in single-tree selection $79 \text{ m}^3\text{ha}^{-1}$ (31%) and $62 \text{ m}^3\text{ha}^{-1}$ (23%) in low thinning.
- ◆ During monitoring, the current annual increment (CAI) was $5.4 \text{ m}^3\text{ha}^{-1}\text{a}^{-1}$ in single-tree selection and $4.6 \text{ m}^3\text{ha}^{-1}\text{a}^{-1}$ in low thinning on average. In 18 out of the 23 plot pairs the CAI was higher (p-value 0.013) in single-tree selection than in low thinning.
- ◆ In addition, single-tree selection plots numbered 1300 stems ha^{-1} of small trees (from breast height to DBH 9 cm) after cutting. During monitoring the ingrowth was 170, mostly Norway spruce, and the transition to the trees exceeding 9 cm was 80 stems ha^{-1} .



CONCLUSIONS

- ◆ The differences of growth in favour of single-tree selection may be partially explained by the development stage of the growing stock. Removal of slow growing dominants results positive reaction in smaller ones. On the other hand, removal of small trees, as in low thinning, will hardly benefit the remaining dominants.



Mean stem number (left) and growing stock volume (right) by treatment (1 = Single tree selection and 2 = Low thinning) and diameter class before cutting (A), at the end of monitoring (C), in removal (D), and its change during monitoring (E). Standard deviation is marked with line in the bars.

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