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## IMPROVING FELLING AND THINNING FOR COPPICE AND YOUNG HIGH FOREST STANDS IN ALPINE CONDITION: THE CASE OF TRENTO PROVINCE

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### OBJECTIVES

The Province of Trento is considered one of the most active forest area of Italy. The forest area covers more than 344 000 ha and the 80% is owned by public institutions. Coppice stands represent 22% of the forest area.

In order to maintain and to improve the quality of coppice and young high forest stands, one of the activities of Provincial Forest Administration (PFA) is to support felling and thinning. PFA is used to manage felling and thinning directly with its own forest working crews in the public forest properties. Cut wood from coppice stands is designed for firewood assuring the right of forest use. Forest operations are paid partly by PFA, partly by the forest owner (usually a Commune) and partly by the final beneficiary.

Felling and thinning are usually operated in alpine marginal areas. Forest working crew operates under difficult operative conditions where cable crane is often required for the tree extraction. PFA is thus oriented to increase the forest operation efficiency in thinning through managing specific working systems. In order to analysis the efficiency of the specific working systems managed by PFA, five working systems were investigated and compared.

### MATERIALS and METHODS

A systematic recording and a critical examinations was sorted out for five selected working systems. In all the selected working systems, the extraction was performed by cable crane. Thus investigations concerned three cable crane systems: sledge yarder, mobile tower yarder and combined system between sledge yarder and mobile tower yarder. The method study was based on stop-watch study. Therefore the five working systems were compared in terms of productivities and costs.

## RESULTS

According to the different factors affecting the productivity and the applied working method, the investigated working systems evidenced a high variability in terms of productivity and costs. Productivity can range from 15 to 5 t/h and cost from 8 to 25 €/t.

## CONCLUSIONS

Combining sledge yarder with mobile tower yarder evidenced interesting productivity and cost. Also the cut evidenced some remarkable results. In the extraction, transportation of cut to length bundles with a length of 3-4 meters evidenced some positive consequences: it showed remarkable productivity but also a safer working condition in respect of the full tree extraction.