

Comparison of internal stresses of trees felled using the Open-face notch or Conventional notch technique

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The open-face notch felling technique differs in terms of many points from the traditional Japanese felling practice (i.e., similar to the conventional notch technique). Among these differences, we focused on placement of the back-cut and notched corner. To clarify the effect of placement, we felled trees with various back-cut heights and observed the direction in which cracks propagated. The internal stresses of trees were then analyzed using the finite element method (FEM). As a result, the open-face notch technique of making a back-cut at the same height as the notched corner tended to generate stem cracks or fiber pull. When using the open-face notch technique, one must avoid making the hinge too thick in order to prevent damage to the logs. When using the Japanese technique, one must make the back-cut 2.5 cm higher than the notched corner. And in both felling techniques, the back-cut should not be made below the notched corner.

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