Radial variation of fiber dimenstions, annual ring width, and wood density from natural and plantation trees of Alder (Alnus glutinosa) wood

ABSTRACT

The aim of this research was to determine radial variations of some wood properties from natural and plantation trees of Alnus glutinosa. Oven-dried wood density (WD), fiber cell features, and annual ring width (ARW) were determined in radial positions of stem at breast height of tree. The results showed that the cultivation methods had significant influence on the fiber length (FL), fiber diameter (FD) and ARW. The effect of interaction between radial position and cultivation methods on anatomical features was not significant, except for cell wall thickeness (CWT). Fiber cell features and WD increased with distance from pith for both cultivations trees. The ARW decreased with increasing the cambial age in both cultivation methods. The average of FL and ARW in plantation trees was higher than those in natural trees. Widest FD was found in natural forest. There were significant relationships between ARW-WD and WD-FD for natural forest and between ARW-WD, ARW-CWT and WD-FL for plantation forest. About 67 % of WD variation in natural and plantation trees were related to FD and ARW, respectively. Due to high FL and ARW, wood from planted trees could be suitable for paper production than wood from natural trees.

Keyword: Alnus glutinosa; Plantation forest; Natural forest; Wood properties