

Effects of Incision, Forced-air Drying, and Pressure Pretreatments on Wet Pockets, Drying Rate, and Drying Defects of *Acacia mangium* Wood

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The pretreatment of 7- and 10-year-old *Acacia mangium* wood using incision, forced-air drying, and pressure were conducted to evaluate the effects on wet pockets, the drying rate, and drying defects. Quarter and rift sawn boards were used in this study. Results showed that the incidence of wet pockets in the incised, forced-air drying, and pressure-treated quarter and rift sawn boards of 7-year-old *A. mangium* alleviated up to 35% and 79%, 60% and 54%, and 54% and 82%, respectively. In 10-year-old *A. mangium*, the occurrence of wet pockets was reduced by 68% and 60%, 31% and 73% and 82% and 73% in quarter and rift sawn boards, respectively. Drying rates of 7-year-old *A. mangium* pressure-treated boards increased by 5% and 40% in quarter and rift sawn boards, respectively. The drying rate was 10% faster for 10-year-old *A. mangium* pressure-treated boards. The application of the pressure pretreatment yielded no severe drying defects at the end of the drying period, except for a mild collapse in one of the 10-years old *A. mangium* sample boards. Incision and forced-air drying pretreatments improved the drying rate; however, pressure treatment was found to be superior in reducing wet pockets and drying defects.

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INTRODUCTION

Acacia mangium can be the primary timber source for local wood-based industries, especially for furniture, owing to its delicate appearance, grain orientation, and colour, which increase the aesthetic value of the wood. Apart from that, the quality, strength, and durability of *A. mangium* wood will bring many advantages to local wood-based industries if this wood can be utilized and managed appropriately. However, kiln-dried *A. mangium* wood has an uneven distribution of moisture contents (MC), which is a problem. The primary issue regarding the uneven drying of *A. mangium* wood is the presence of wet pockets. In timber drying, wet pockets typically occur in quarter sawn, radial-sawn, rift sawn, and double rift sawn boards and are seldom found in flat-sawn or tangential boards (Tenorio and Moya 2011; Gan *et al.* 2015).

Wet pockets, sometimes referred to as wet wood or wet spots, are abnormal zones in the heartwood with high moisture content. They occur in both softwood and hardwood. One primary characteristic of wet wood is that it dries so slowly that it is still wet when normal wood is dry. This causes variability in the final moisture content and fails to meet