EVALUATING THE EFFECTIVENESS OF TREATMENT SOLUTIONS ON BLUE STAIN FUNGI GROWTH IN PINE WOOD PLANTATIONS IN SRI LANKA

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The presence of blue stain fungi in pine wood plantations causes a significant challenge to the pine wood industry. Because of the visible discoloration due to the presence of fungi, it significantly reduces the market value of the wood. This study was conducted to explore the occurrence of blue stain fungi growth in pine wood plantations in Sri Lanka, with a focus on assessing the effectiveness of various wood treatment solutions. The research was conducted over six months, at a pinewood plantation in Bandarawela. The primary objective was to compare the effectiveness of different treatment solutions on the occurrence of blue stain fungi in treated versus non-treated wood samples.

27 wood samples prepared from freshly cut pine trees were used in this study. The samples were treated using four different solutions: two inorganic preservatives, Anti-blue and Anti-boron which are widely available in the market, and two innovative organic preservatives developed in Sri Lanka: Final Solution Without Mud (FSWOM) and Final Solution With Mud (FSWM). Samples were immersed in the solutions for 48 hours for the treatment, using the dipping method. To assess the impact of treatment timing, two sets of samples were prepared: one set was treated within 7 days of cutting, and another set within 7 to 14 days. To provide a baseline for comparison, a control set of non-treated samples was maintained.

The results demonstrated that all treated samples showed significantly reduced blue stain fungi growth compared to the non-treated samples. Both inorganic preservatives, Anti-blue and Anti-boron, were highly effective in mitigating the blue stain fungi growth. Remarkably, the organic preservatives were also successful. FSWM was the most effective organic solution matching the performance of the commercially available inorganic preservatives. FSWOM, while slightly less effective than FSWM, still provided good protection against blue stain fungi, indicating the potential of organic solutions in wood preservation. It revealed that adding paddy field mud significantly enhanced the antifungal properties of these organic preservatives, approaching the level of effectiveness of the inorganic preservatives.

Additionally, the study found that the timing of the treatment whether applied within 7 days or 7 to 14 days after cutting did not significantly affect the effectiveness of the treatment solutions. This implies that there is flexibility in the timing of treatment without compromising its effectiveness.

The study concludes that both organic and inorganic preservatives are effective in mitigating blue stain fungi growth in pine wood. More specifically, the organic preservative FSWM provides an effective and environmentally friendly alternative to inorganic preservatives, thereby enhancing wood preservation techniques.

Keywords: Blue stain, Fungi growth, Organic wood preservatives, Pinewood

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Background

- Main challenge of Pine wood
  - Blue stain fungi
- Affects to the aesthetic appeal
  - Visible discoloration
- Reduce market value

Focus of the Research

- Effectiveness of wood preservatives
- Comparing inorganic and organic treatment solutios
- Effectiveness of the timing of the treatment

Methodology

Sample Collection	Sample Preparation	Sample Treating	Data Collection	Data Analysis
				
Randomly selected Freshly Cut Trees	Sample size 2" x 2" x 18"	Anti – Blue Anti - Boron FSWOM FSWM	Monthly Photographs of all 4 sides	Grid Count Method

Results

Fungi Growth on wood samples for all treatment solutions