

***Web-Based Expert System for Diagnosing Pests and Diseases in Oyster
Mushrooms Using Forward Chaining and Certainty Factor Methods***

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ABSTRACT

Oyster mushroom cultivation has high economic value, but its productivity is often reduced by pest and disease attacks. Farmers' limited knowledge in identifying symptoms makes the diagnosis process less effective. This study aims to develop a web-based expert system using the Forward Chaining and Certainty Factor methods to assist in diagnosing pests and diseases in oyster mushrooms. The system was developed using the Waterfall model. Data were collected through observations, interviews, expert consultations, and literature studies. The Forward Chaining method was used to determine the type of pest or disease based on user-selected symptoms, while the Certainty Factor method was applied to calculate the confidence level of the diagnosis results. The results showed that the system achieved a diagnostic confidence level of 90%. Black Box Testing using the Decision Table Testing technique indicated that all system functions operated properly without functional errors. In addition, the System Usability Scale (SUS) test involving 25 respondents obtained an average score of 89.2, which falls into the Excellent category with Grade A. Therefore, the developed system is feasible to be used as a supporting tool for farmers in identifying pests and diseases in oyster mushroom cultivation.

Keywords: *Expert System, Oyster Mushroom, Forward Chaining, Certainty Factor, System Usability Scale.*