

ABSTRAK

POTENSI RESISTENSI JAMUR *Xylaria* sp. PENYEBAB PENYAKIT BUSUK AKAR DAN PANGKAL BATANG TEBU TERHADAP FUNGISIDA KARBENDAZIM

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Penyakit busuk akar dan pangkal batang tebu (BAPB) yang disebabkan oleh jamur *Xylaria* sp. merupakan salah satu kendala utama dalam budidaya tebu di Lampung. Penyakit ini berpotensi menurunkan produktivitas dan rendemen gula secara signifikan. Salah satu pilihan dalam tindakan pengendalian BAPB tebu adalah aplikasi fungisida, seperti karbendazim. Namun demikian, penggunaan fungisida dalam jangka panjang dapat memicu munculnya resistensi. Penelitian ini bertujuan untuk mengetahui potensi resistensi *Xylaria* sp. terhadap karbendazim. Penelitian dilaksanakan pada September 2025 – Februari 2026 di Laboratorium Penyakit Tumbuhan, Fakultas Pertanian, Universitas Lampung. Penelitian dimulai dari isolasi jamur, generasi mutan resisten, uji stabilitas resistensi, uji morfologi koloni pada berbagai suhu, serta uji resistensi silang terhadap fungisida lain. Hasil penelitian menunjukkan bahwa mutan *Xylaria* sp. masih mampu tumbuh pada media yang mengandung karbendazim hingga konsentrasi 4,0 µg/mL. Nilai EC₅₀ kultur parental sebesar 0,772 µg/mL, meningkat menjadi 1,135 µg/mL pada kultur mutan dan 1,129 µg/mL pada kultur subkultur. Nilai RF pada kultur mutan dan subkultur masing-masing sebesar 1,4702 dan 1,4624, sedangkan nilai FSC sebesar 0,9947 menunjukkan bahwa perubahan sensitivitas terhadap karbendazim mendekati stabil setelah proses subkultur. Jamur mampu tumbuh pada suhu 18–30°C, tetapi tidak pada 37°C. Mutan juga tetap sangat sensitif terhadap prochloraz dan benomil. Hasil ini menunjukkan bahwa *Xylaria* sp. memiliki potensi resistensi yang rendah terhadap karbendazim.

Kata kunci: EC₅₀, fungisida, karbendazim, resistensi, tebu, *Xylaria* sp.

ABSTRACT

RESISTANCE POTENTIAL OF XYLARIA SP., THE CAUSAL AGENT OF SUGARCANE ROOT ROT AND BASAL STEM ROT DISEASE, TO CARBENDAZIM FUNGICIDE

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Root and basal stem rot disease of sugarcane caused by *Xylaria* sp. is one of the major constraints in sugarcane cultivation in Lampung. This disease has the potential to significantly reduce crop productivity and sugar yield. One of the control measures for sugarcane root and basal stem rot is the application of fungicides such as carbendazim. However, the long-term use of fungicides may trigger the emergence of resistant fungal populations. This study aimed to determine the resistance potential of *Xylaria* sp. to carbendazim. The research was conducted from September 2025 to February 2026 at the Plant Disease Laboratory, Faculty of Agriculture, Universitas Lampung. The study was initiated by fungal isolation, generation of resistant mutants, resistance stability testing, colony morphology observation at various temperatures, and cross-resistance testing against other fungicides. The results showed that mutant isolates of *Xylaria* sp. were still able to grow on media containing carbendazim up to a concentration of 4.0 µg/mL. The EC₅₀ value of the parental isolate was 0.772 µg/mL, which increased to 1.135 µg/mL in the mutant isolate and 1.129 µg/mL in the subcultured mutant. The resistance factor (RF) values of the mutant and subcultured isolates were 1.4702 and 1.4624, respectively, while the fungicide sensitivity change (FSC) value of 0.9947 indicated that the change in sensitivity to carbendazim was nearly stable after subculturing. The fungus was able to grow at temperatures ranging from 18°C to 30°C, but no growth was observed at 37°C. The mutants also remained highly sensitive to prochloraz and benomyl. These results indicate that *Xylaria* sp. has a low resistance potential to carbendazim.

Keywords: EC₅₀, fungicide, carbendazim, resistance, sugarcane, *Xylaria* sp.