Preservation of weedsÃ¢Â€Â™ pathogenic fungi in tempeh and tapioca liquid waste and its effectiveness in goatweed (Ageratum conyzoides)

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Abstract	This research aimed to determine the best liquid media for the propagation of weed pathogenic fungi, the duration of the fungus storage on the media, and their virulence on goatweed (Ageratum conyzoides). The research consisted of two stages, i.e., the propagation of weed pathogenic fungi in alternative liquid media using a factorial completely randomized design, with the first factor being the pathogenic weed fungus (Curvularia sp., Fusarium sp., and Chaetomium sp.) and the second one being the media (tempeh or tapioca liquid waste) with four replicates. Applications were carried out using a hand sprayer on the underside of weed leaves at a density of 106 conidia or cfu mL-1. Each weed was sprayed with 10 mL of the solution. Variables observed were conidia density, number of colonies, incubation period and symptoms, disease intensity, the area under the disease progress curve (AUDPC), plant height, number of leaves, dry crown weight, and dry root weight. The results showed that tempeh and tapioca liquid waste media could be used as alternative media for multiplying pathogenic fungi. The conidia density of Curvularia sp. was 2.375 ÃƒÂ— 109 conidia mL-1 higher than that of Fusarium sp. at 1.7 ÃƒÂ— 109 conidia mL-1 and Chaetomium sp. at 9.5ÃƒÂ—104 cfu mL-1. Curvularia sp. propagated in tempeh liquid waste was able to cause damage to the leaves of goatweed as shown successively from the incubation period of 3.33 dai or accelerating 81.50%, increasing the disease intensity of 88.78%, and the AUDPC of 713.25% days compared to control. The most effective shelf life of Curvularia sp., Fusarium sp., and Chaetomium sp. in both tempeh and tapioca liquid waste media was found at six weeks at room temperature. Curvularia sp. in tapioca liquid waste could decrease weed height, the number of leaves, shoot dry weight, and root dry weight by 45.11, 28.65, 22.12, and 46.25%, respectively, compared to control.
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