

RINGKASAN

Pertumbuhan gulma di sekitar tanaman budidaya menurunkan produksi pertanian. Salah satu gulma yang menyebabkan kerugian yaitu gulma *Ageratum conyzoides* atau bandotan. Pengendalian menggunakan herbisida yang dilakukan secara intensif dan kurang bijaksana dapat menimbulkan pengaruh negati. Oleh karena itu, penggunaan agensia hayati menjadi salah satu pemecahan untuk mengendalikan gulma. Penggunaan jamur dalam penelitian ini dikarenakan jamur mempunyai sifat merusak, dapat diproduksi dalam jumlah banyak, dan dapat diformula. Jamur patogen perlu dilakukan perbanyakan terlebih dahulu di dalam medium sebelum diaplikasikannya ke lapang. Beberapa bahan organik yang dapat digunakan sebagai medium alternatif perbanyakan jamur patogen gulma seperti air cucian beras dan limbah cair tahu. Tujuan dari penelitian ini yaitu untuk mengetahui jenis medium alternatif yang sesuai untuk pertumbuhan jamur patogen gulma, mengetahui lama simpan jamur patogen gulma, dan mengetahui efektivitas jamur patogen gulma terhadap bandotan.

Penelitian ini dilaksanakan di Laboratorium Perlindungan Tanaman dan di Rumah Kaca, Fakultas Pertanian, Universitas Jenderal Soedirman. Penelitian dilaksanakan mulai bulan Agustus 2021 sampai Januari 2022. Rancangan percobaan yang digunakan di Laboratorium yaitu RAL Faktorial yang terdiri atas dua faktor yaitu faktor jamur patogen gulma (*Curvularia* sp., *F. oxysporum*, *Chaetomium* sp.) dan faktor jenis medium (air cucian beras dan limbah cair tahu) dengan empat kali ulangan. Rancangan percobaan yang digunakan di Rumah Kaca yaitu RAK yang terdiri atas perlakuan P_0 = kontrol; P_1 = air cucian beras + jamur patogen gulma *Chaetomium* sp., P_2 = air cucian beras + jamur patogen gulma *F. oxysporum*; P_3 = air cucian beras + jamur patogen gulma *Curvularia* sp.; P_4 = limbah cair tahu + jamur patogen gulma *Chaetomium* sp.; P_5 = limbah cair tahu + jamur patogen gulma *F. oxysporum*; P_6 = limbah cair tahu + jamur patogen gulma *Curvularia* sp., dengan empat kali ulangan. Variabel yang diamati yaitu perhitungan kerapatan konidium jamur patogen, jumlah koloni, masa inkubasi dan gejala, intensitas penyakit, AUDPC, tinggi tanaman, jumlah daun, bobot tajuk segar, bobot tajuk kering, bobot akar segar, dan bobot akar kering.

Hasil penelitian menunjukkan bahwa kerapatan konidium pada medium air cucian beras adalah 57% lebih baik dibandingkan limbah cair tahu. Kerapatan konidium jamur *F. oxysporum* pada medium air cucian beras sebesar $3,75 \times 10^8$ konidium/mL. Medium air cucian beras menjadi medium terbaik untuk perbanyakan jamur. Lama simpan terbaik untuk jamur patogen yaitu selama 4 minggu. Masa inkubasi medium air cucian beras + *F. oxysporum* dan *Curvularia* sp. 4 dan 5,3 hsi, intensitas penyakit 45,52 dan 34,94%, AUDPC 351,47 dan 291,78 % hari. Perlakuan limbah cair tahu + *Curvularia* sp. mampu menekan jumlah daun 59%, bobot tajuk segar 33%, dan bobot tajuk kering 25% dibanding kontrol, sedangkan tinggi tanaman, bobot akar basah, dan bobot akar kering tidak berbeda nyata.

SUMMARY

Growth of weeds around cultivated plants reduce agricultural production. One of the weeds that cause losses is *Ageratum conyzoides* or goat weeds. Control using herbicides carried out intensively and unwisely can have negative effects. Therefore, the use of biological agents to control weeds is a solution. The use of fungi due to it has destructive properties, produced in large quantities, and formulated. Pathogenic fungi need to be propagated first in the media before applying to the field. Some organic materials that can be used as an alternative media for propagation of weed pathogenic fungi are rice washing water and tofu liquid waste. The purpose of this study was to determine kind of alternative media suitable for the growth of weed pathogenic fungi, to determine the shelf life of weed pathogenic fungi, and their effectiveness against goat weed.

This research was carried out at the Plant Protection Laboratory and in the Greenhouse, Faculty of Agriculture, Jenderal Sudirman University from August 2021 to January 2022. The experimental design used in the laboratory was Factorial completely randomized design consisted of two factors, namely weed pathogenic fungi (*Curvularia* sp., *F. oxysporum*, *Chaetomium* sp.) and the type of media (rice washing water and tofu liquid waste) with four replicates. The experimental design used in the Greenhouse was randomized block design consisted of control; rice washing water + *Chaetomium* sp., rice washing water + *F. oxysporum*; rice washing water + *Curvularia* sp.; tofu liquid waste + *Chaetomium* sp.; tofu liquid waste + *F. oxysporum*; and tofu liquid waste + *Curvularia* sp., with four replicates. Variables observed were conidia density, number of colonies, incubation period and symptoms, disease intensity, AUDPC, plant height, number of leaves, fresh crown weight, dry crown weight, fresh root weight, and dry root weight.

The results showed that the conidium density in the rice washing water medium was 57% better than the tofu liquid waste. The conidium density of the fungus *F. oxysporum* in rice washing water medium was 3.75×10^8 conidium/mL. Rice washing water is the best medium for mushroom propagation. The best shelf life for pathogenic fungi is 4 weeks. The incubation period of rice washing water + *F. oxysporum* and *Curvularia* sp. 4 and 5.3 dsi, disease intensity 45.52 and 34.94%, AUDPC 351.47 and 291.78% days. Tofu liquid waste treatment + *Curvularia* sp. was able to suppress the number of leaves 59%, fresh crown weight 33%, and dry crown weight 25% compared to the control, while plant height, wet root weight, and dry root weight were not significantly different.