

RINGKASAN

Salah satu kendala yang sering ditemui pada lahan budidaya adalah keberadaan Organisme Pengganggu Tanaman, khususnya gulma. Gulma merupakan salah satu Organisme Pengganggu Tanaman (OPT) yang menghambat perkembangan dan produktivitas tanaman. Salah satu cara aman yang ditawarkan dalam mengendalikan keberadaan gulma di pertanaman adalah dengan pengendalian hayati. Teknik pengendalian hayati yang dapat dilakukan yaitu dengan memanfaatkan jamur patogen gulma. Selama ini medium yang sering digunakan untuk perbanyak jamur adalah medium *Potato dextrose broth*, tetapi medium tersebut untuk perbanyak secara massal memerlukan biaya tinggi. Medium perbanyak jamur alternatif yang dapat digunakan antara lain limbah cair tempe dan air kelapa tua.

Penelitian ini bertujuan untuk mengetahui potensi limbah cair tempe dan air kelapa tua sebagai medium perbanyak jamur patogen gulma, mengetahui tingkat patogensitas jamur patogen gulma pada medium alternatif terbaik terhadap gulma daun sempit serta mengetahui respon gulma terhadap jamur patogen gulma. Penelitian ini dilaksanakan di Laboratorium Perlindungan Tanaman dan *screen house*, Fakultas Pertanian, Universitas Jenderal Soedirman dari bulan Oktober 2020 hingga Mei 2021. Penelitian ini terdiri dari dua tahap, penelitian tahap I adalah perbanyak jamur patogen gulma pada medium cair alternatif. Pengujian menggunakan rancangan acak lengkap faktorial, dengan faktor yang diuji jenis jamur patogen gulma (*Chaetomium* sp., *Fusarium* sp., *Curvularia* sp.) dan jenis medium cair (PDB, limbah cair tempe, air kelapa tua). Variabel yang diamati kerapatan konidium jamur patogen gulma. Penelitian tahap II adalah uji virulensi jamur patogen terhadap gulma in-vivo. Pengujian menggunakan rancangan acak kelompok faktorial, dengan faktor pertama yang diuji yaitu jenis jamur patogen (*Chaetomium* sp., *Fusarium* sp., *Curvularia* sp.) dan faktor kedua yaitu jenis gulma (*A. compressus*, *C. kyllingia* dan *C. dactylon*). Variabel yang diamati intensitas penyakit, laju infeksi, AUDPC, tinggi tanaman, jumlah daun, bobot segar tanaman, bobot kering tanaman.

Hasil penelitian menunjukkan bahwa medium limbah cair tempe dan air kelapa tua sesuai untuk digunakan sebagai medium perbanyak jamur patogen *Fusarium* sp., *Chaetomium* sp., dan *Curvularia* sp. Perlakuan kombinasi antara limbah cair tempe dengan jamur *Fusarium* sp. merupakan perlakuan terbaik karena mampu menghasilkan konidium jamur 87,41% lebih tinggi dibanding perlakuan lainnya. Ketiga jamur memiliki kemampuan yang sama dalam menimbulkan intensitas penyakit dan AUDPC pada gulma daun sempit, namun tidak mampu menekan pertumbuhan gulma daun sempit. Jenis gulma *C. kyllingia* dan *C. dactylon* cenderung lebih rentan dibanding dengan gulma *A. compressus* sebesar 49,5 hari x % dan 38,83 hari x % dilihat dari nilai AUDPC.

SUMMARY

One of the obstacles that are often encountered in cultivated land is the presence of Plant Pest Organisms, especially weeds. Weed is one of the Plant Pest Organisms (OPT) that inhibits the development and productivity of plants. One of the safe ways offered in controlling the presence of weeds in the plantation is by biological control. Biological control technique that can be done is by utilizing weed pathogenic fungi. So far, the medium that is often used for fungal propagation is Potato dextrose broth, but this medium for mass propagation requires a high cost. Alternative fungal propagation media that can be used include tempe liquid waste and old coconut water.

*This research aims to determine the potential of tempe liquid waste and old coconut water as a medium for propagation of weed pathogenic fungi, determine the level of pathogenicity of weed pathogenic fungi in the best alternative medium against narrow leaf weeds and determine the response of weeds to weed pathogenic fungi. This research was carried out at the Plant Protection Laboratory and screen house, Faculty of Agriculture, Jenderal Soedirman University from October 2020 to May 2021. This research consisted of two stages, the first stage of research was the propagation of weed pathogenic fungi in alternative liquid media. The test used a factorial completely randomized design, with the tested factors being the types of weed pathogenic fungi (*Chaetomium* sp., *Fusarium* sp., *Curvularia* sp.) and the type of liquid medium (GDP, tempe liquid waste, old coconut water). The observed variable was the density of conidia of weed pathogenic fungi. The second phase of the study was to test the virulence of pathogenic fungi against weeds in vivo. The test used a factorial randomized block design, with the first factor being the type of pathogenic fungus (*Chaetomium* sp., *Fusarium* sp., *Curvularia* sp.) and the second factor being the type of weed (*A. compressus*, *C. kyllingia* and *C. dactylon*). The variables observed were disease intensity, infection rate, AUDPC, plant height, number of leaves, plant fresh weight, plant dry weight.*

*Results of the research showed that the liquid waste medium of tempe and old coconut water was suitable as a medium for propagation of the pathogenic fungi *Fusarium* sp., *Chaetomium* sp., and *Curvularia* sp. The combination treatment between tempe liquid waste and *Fusarium* sp. was the best treatment because it was able to produce conidium fungus 87.41% higher than other treatments. The three fungi had the same ability to cause disease intensity and AUDPC on narrow leaf weeds, but were unable to suppress the growth of narrow leaf weeds. Weed types *C. kyllingia* and *C. dactylon* tended to be more susceptible than *A. compressus* weeds at 49.5 days x % and 38.83 days x %, seen from the AUDPC.*