

RINGKASAN

Gulma merupakan salah satu jenis organisme pengganggu tanaman yang banyak ditemukan di areal budidaya tanaman. Gulma yang banyak dijumpai yakni gulma daun lebar, yang menyebabkan persaingan. Persaingan tersebut dapat mempengaruhi pertumbuhan dan produktivitas dari tanaman budidaya menjadi menurun. Pengendalian gulma yang umum dilakukan oleh petani adalah dengan menggunakan herbisida kimia, namun penggunaan herbisida kimia yang berlebihan dapat menimbulkan banyak dampak negatif. Perlunya alternatif pengendalian yang lebih aman namun tetap efektif dalam mengendalikan gulma. Pengaplikasian jamur patogen gulma dapat menjadi salah satu alternatif mengendalikan gulma. Penelitian ini memiliki tujuan untuk mengetahui jenis jamur patogen gulma dan efektivitasnya dalam mengendalikan gulma daun lebar, jenis gulma daun lebar yang dapat dikendalikan dengan menggunakan agensia pengendali gulma, dan pengaruh aplikasi jamur patogen gulma terhadap persentase perkecambahan biji gulma daun lebar.

Penelitian ini dilaksanakan selama tiga bulan sejak bulan Agustus hingga November 2020, bertempat di Laboratorium Perlindungan Tanaman dan Lapangan Terbatas, Fakultas Pertanian, Universitas Jenderal Soedirman. Rancangan penelitian yang digunakan yakni Rancangan Acak Kelompok untuk percobaan di lapangan terbatas dan Rancangan Acak Lengkap untuk percobaan di Laboratorium. Rancangan percobaan terdiri atas dua faktor perlakuan, yaitu faktor gulma daun lebar (*Ageratum conyzoides*, *Portulaca* sp., dan *Amaranthus spinosus*), dan faktor jamur patogen gulma (Kontrol, *Fusarium oxysporum*, *Chaetomium* sp., dan *Curvularia* sp.). Variabel yang diamati meliputi gejala dan tanda penyakit, masa inkubasi, intensitas penyakit, kejadian penyakit, laju infeksi, nilai AUDPC, tinggi tanaman, jumlah daun, bobot tajuk segar, bobot akar segar, bobot tajuk kering, bobot akar kering, dan perkecambahan biji. Data diuji F dan apabila terdapat keragaman antar-perlakuan dilanjutkan *Duncan Multiple Range Test* pada taraf kesalahan 5%.

Hasil penelitian menunjukkan bahwa *Chaetomium* sp. merupakan jamur patogen pengendali gulma yang paling efektif karena mampu mempercepat masa inkubasi 35%, meningkatkan intensitas penyakit 23,01%, dan meningkatkan nilai AUDPC 21% dibandingkan dengan kontrol. Gulma babadotan merupakan gulma yang paling rentan terhadap serangan jamur patogen karena memiliki masa inkubasi lebih cepat dan laju infeksi tertinggi jika dibandingkan dengan gulma krokot dan bayam duri. Seluruh jamur patogen gulma mampu menekan persentase perkecambahan biji gulma daun lebar, dengan persentase penekanan pada *F. oxysporum* sebesar 41,28%, *Chaetomium* sp. sebesar 30,47%, dan *Curvularia* sp. sebesar 26,13% dibandingkan kontrol.

SUMMARY

Weeds are a type of plant pests that are commonly found in plant cultivation areas. Weeds that are often found are broadleaf weeds. The requirements for growing weeds are not much different from cultivated plants, causing competition. This competition can affect the growth and productivity of cultivated plants to decrease. This is the reason for the need for weed control. Common weed control by farmers is using chemical herbicides, however, overuse of chemical herbicides can cause many negative impacts. This makes the need for alternative control which is safer but still effective in controlling weeds, especially broadleaf weeds. The application of weed pathogenic fungi can be an alternative solution for controlling weeds. Pathogenic fungi are known to inhibit weed growth, so they have the potential to be used as bioherbicides. This experiment aimed to; 1) determine the types of weed pathogenic fungi and their effectiveness in controlling broadleaf weeds, 2) determine the types of broadleaf weeds that can be controlled using weed control agents, and 3) determine the effect of application of weed pathogenic fungi on the germination percentage of broadleaf weeds.

This experiment was carried out of three months from August to November 2020, at the Laboratory of Plant Protection and Limited Fields, Faculty of Agriculture, Jenderal Soedirman University. The research design used was a randomized block design (RBD) for experiments in limited fields and a completely randomized design (CRD) for experiments in the laboratory. The experimental design consisted of two treatment factors, namely the treatment factor of broadleaf weeds (*Ageratum conyzoides*, *Portulaca* sp., and *Amaranthus spinosus*), and the treatment factor for weed pathogenic fungi (Control, *F. oxysporum*, *Chaetomium* sp., and *Curvularia* sp.). The variables observed included symptoms and signs of disease, incubation period, disease intensity, disease incidence, infection rate, AUDPC value, plant height, number of leaves, fresh shoot weight, fresh root weight, dry shoot weight, dry root weight, and seed germination. The data obtained by the *F* test and if there is variation between treatments, continue with the Duncan Multiple Range Test at an error level of 5%.

The results showed that *Chaetomium* sp. is the most effective weed control fungi pathogen because it can accelerate the incubation period by 35%, increase disease intensity 23.01%, and increase AUDPC 21% compared to controls. Babadotan weeds are the weeds that are most susceptible to pathogenic fungal attacks because they have a faster incubation period and the highest infection rate when compared to purslane and thorn spinach. Weed pathogenic fungi were able to the proportion of the germination proportion of broadleaf weed seeds, with the overall proportion in *F. oxysporum* of 41.28%, *Chaetomium* sp. amounted to 30.47%, and *Curvularia* sp. amounted to 26.13% compared to control.