

RINGKASAN

Cabai merupakan komoditas hortikultura bernilai ekonomis yang tidak memiliki substitusi. Penggunaan cabai pada skala rumah tangga sendiri mencapai 70% menunjukkan tingkat kebutuhan yang tinggi pada komoditas ini. Produksi cabai di Indonesia sendiri mengalami penurunan selama rentang tahun 2021 hingga 2023. Salah satu faktornya yaitu infeksi patogen *Sclerotium rolfsii* yang bisa menurunkan 54%. Agens pengendali hayati merupakan alternatif pengendalian patogen menggunakan mikroba antagonis salah satunya *Trichoderma*. Selain sebagai biokontrol, *Trichoderma* spp. menunjukkan kemampuan degradasi kompos. Penelitian pendahuluan mengisolasi *Trichoderma* spp. dari sampel tanah kompos dan kasgot asal TPST Rempoah. Permasalahan yang ada pada sampel yaitu timbulnya berbagai penyakit, termasuk busuk pangkal batang yang menurunkan hasil panen petani. Penelitian ini bertujuan untuk mengetahui efektivitas kompos terfermentasi *Trichoderma* spp. dalam mengendalikan penyakit busuk pangkal batang *Sclerotium rolfsii* dan pengaruhnya terhadap pertumbuhan tanaman cabai.

Penelitian dilakukan di Laboratorium Mikologi dan *Screen House* Fakultas Biologi Universitas Jenderal Soedirman dari bulan Februari 2025 hingga Juli 2025 menggunakan metode *experimental* Rancangan Acak Lengkap (RAL). Variabel yang dihitung selama penelitian yaitu periode inkubasi penyakit busuk pangkal batang *Sclerotium rolfsii*, tanaman bergejala busuk pangkal batang, jumlah daun, tinggi tanaman (cm), umur tanaman cabai saat bunga pertama muncul, bobot kering tanaman, dan pH media awal dan akhir masa tanam. Efektivitas kompos terfermentasi *Trichoderma* spp. dan pertumbuhan cabai dianalisis dengan analisis ragam ANOVA dengan tingkat kepercayaan 95% perlakuan menunjukkan pengaruh nyata uji dilanjutkan dengan *Duncan's New Multiple Range Test* (DMRT) dengan tingkat kepercayaan 95%. Kompos terfermentasi *Trichoderma* spp. mampu menendalkan intensitas penyakit busuk pangkal batang dengan menekan tingkat keparahan penyakit pada kategori ringan. Perlakuan kompos terfermentasi *Trichoderma* sp. isolat satu memberikan hasil terbaik terhadap pertumbuhan cabai dengan rata-rata tinggi tanaman 61.4 cm, jumlah daun 18 lembar, dan berat kering 8.12 g.

Kata kunci: *Cabai*, *fermentasi*, *kompos*, *Sclerotium rolfsii*, *Trichoderma* spp.

SUMMARY

Chilies are an economically valuable horticultural commodity with no substitutes. Household consumption of chili alone accounts for 70%, indicating a high level of demand for this commodity. Chili production in Indonesia has declined between 2021 and 2023. One of the factors is infection by the pathogen *Sclerotium rolfsii*, which can reduce production by 54%. Biological control agents are an alternative method of pathogen control using antagonistic microorganisms, one of which is *Trichoderma*. In addition to its role as a biocontrol agent, *Trichoderma* spp. demonstrates the ability to degrade compost. Preliminary research isolated *Trichoderma* spp. from compost soil samples and cashew nut shells from the Rempoah Waste Management Facility. The issues with the samples include the emergence of various diseases, including stem rot, which reduces farmers' yields. This study aims to determine the effectiveness of *Trichoderma* spp.-fermented compost in controlling *Sclerotium rolfsii* stem rot and its impact on chili plant growth.

The research was conducted at the Mycology Laboratory and Screen House of the Faculty of Biology, Jenderal Soedirman University, from February 2025 to July 2025 using experimental methods Completely Randomized Design (CRD). The variables measured during the study included the incubation period of *Sclerotium rolfsii* stem rot disease, plants exhibiting stem rot symptoms, number of leaves, plant height (cm), age of chili plants at first flower emergence, dry weight of plants, and pH of the growing medium at the beginning and end of the growing period. The effectiveness of fermented *Trichoderma* spp. compost and chili growth were analyzed using ANOVA with a 5% error rate. Treatments showing significant effects were further analyzed using Duncan's New Multiple Range Test (DMRT) with a 5% error rate. Fermented compost containing *Trichoderma* spp. was able to control the intensity of stem rot disease by reducing the severity of the disease to the mild category. The treatment using fermented compost containing *Trichoderma* sp. isolate one yielded the best results for chili plant growth, with an average plant height of 61.4 cm, 18 leaves, and a dry weight of 8.12 gs.

Keywords: *Chili, compost, fermentation, Sclerotium rolfsii, Trichoderma* spp.