

RINGKASAN

Permintaan cabai rawit di Indonesia terus meningkat setiap tahunnya, yang menyebabkan petani terus-menerus melakukan penanaman. Faktor yang memengaruhi produksi tanaman cabai rawit yaitu penggunaan benih yang bermutu rendah, penerapan teknik budidaya yang belum optimum serta tingginya serangan patogen tanaman. Upaya dalam mendapatkan benih sehat belum pernah diperoleh dan umumnya benih diperlakukan dengan air hangat atau fungisida kimia ketika akan ditanam. Produk biokontrol Bio P60 diujikan untuk mendapatkan benih cabai rawit sehat. Penelitian ini bertujuan untuk mengetahui pengaruh Bio P60 pada kesehatan benih cabai rawit, dan terhadap daya kecambah benih cabai rawit.

Penelitian dilaksanakan di lahan pertanian cabai rawit, di Laboratorium Agrohortikultura, di Laboratorium Perlindungan Tanaman, serta rumah kaca Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto. Penelitian dilaksanakan dari bulan Oktober 2024 sampai Januari 2025. Penelitian dilakukan dengan pemisahan biji cabai rawit dan dikeringkan dengan oven. Selanjutnya benih diperlakukan dengan Bio P60 menggunakan rancangan acak lengkap dengan perlakuan gabungan antara perendaman selama 30 dan 60 menit serta konsentrasi 3, 5, dan 7 mL, menggunakan metode *blotter test* dengan 4 ulangan, setiap cawan terdapat 50 benih, dan dipindah tanam ke rumah kaca selama 21 hari. Variabel yang diamati adalah identifikasi patogen tular-benih, daya kecambah, kecepatan tumbuh, kejadian penyakit, panjang akar, tinggi tanaman, jumlah daun, bobot segar, bobot kering, dan daya hidup.

Hasil penelitian menunjukkan bahwa pada benih cabai rawit ditemukan jamur patogen tular-benih yaitu *Curvularia lunata*. Perlakuan kombinasi konsentrasi Bio P60 5 mL L⁻¹ dan lama perendaman 60 menit dapat mengendalikan patogen tular-benih, sehingga benih menjadi sehat, yang ditunjukkan dengan penekanan patogen sebesar 93,33 %. Perlakuan kombinasi konsentrasi Bio P60 5 mL L⁻¹ dan lama perendaman 60 menit meningkatkan daya kecambah sebesar 39,28 %, meningkatkan kecepatan tumbuh sebesar 40,92 %, dan meningkatkan jumlah daun sebesar 11,75 % dibandingkan kontrol. Pada variabel pengamatan panjang akar, tinggi tanaman, bobot segar, dan bobot kering tidak menunjukkan peningkatan dibandingkan kontrol.

SUMMARY

The demand for bird's eye chili (Capsicum frutescens L.) in Indonesia continues to increase annually, leading farmers to cultivate the crop continuously. Key limiting factors affecting the chili productivity include the use of low-quality seeds, suboptimum cultivation practices, and high levels of pathogen infestation. Efforts to obtain healthy seeds remain inadequate, with farmers commonly relying on hot water treatment or chemical fungicides prior to planting. In this study, the biocontrol product Bio P60 was evaluated for its potential to produce healthy bird's eye chili seeds. The objective was to assess the effect of Bio P60 on seed health and germination performance of bird's eye chili.

The experiment was conducted at a chili cultivation field, the Agrohorticulture Laboratory, the Plant Protection Laboratory, and the greenhouse of the Faculty of Agriculture, Jenderal Soedirman University, Purwokerto, from October 2024 to January 2025. Seeds were manually separated from ripe diseased fruits, then treated with Bio P60 using completely randomized design with combination of soaking treatment for 30 or 60 min and concentration of 3, 5, and 7 mL L⁻¹, using the blotter test method. Each treatment was replicated four times with 50 seeds placed in each Petri dish. The germinated seeds were subsequently transplanted into the greenhouse and maintained for 21 days. Observed variables included identification of seed-borne pathogens, germination rate, germination speed, disease incidence, root length, plant height, number of leaves, fresh weight, dry weight, and survival rate.

*The study results revealed the presence of the seed-borne pathogenic fungus *Curvularia lunata* on bird's eye chili seeds. The combined treatment of Bio P60 at a concentration of 5 mL L⁻¹ with a soaking duration of 60 minutes effectively controlled the seed-borne pathogen, resulting in healthy seeds, as evidenced by a 93.33% pathogen suppression. This treatment also enhanced germination rate by 39.28%, growth rate by 40.92%, and leaf number by 11.75% compared to the control. However, no significant improvements were observed in root length, plant height, fresh weight, or dry weight relative to the control.*