

INTISARI

Cengkih (*Syzygium aromaticum*) merupakan salah satu komoditas penting asli Indonesia. Organisme Pengganggu Tumbuhan (OPT) merupakan faktor yang menjadi kendala dalam budidaya cengkih khususnya penyakit bercak daun *Neopestalotiopsis* yang berdampak pada kerusakan fase pembibitan. Diperlukan pengendalian ramah lingkungan ditengah isu pestisida yang telah menjadi permasalahan kerusakan lingkungan. Pemanfaatan *Bacillus* spp. sebagai agens hayati merupakan salah satu upaya alternatif untuk terus menjaga keseimbangan lingkungan. Penelitian ini bertujuan untuk skrining 20 isolat *Bacillus* spp. yang berpotensi sebagai agens pengendali hayati terhadap penyakit bercak daun *Neopestalotiopsis*. Pengujian dilaksanakan di Rumah Kaca dan Laboratorium Ilmu Penyakit Tumbuhan, Departemen Hama dan Penyakit Tumbuhan, Fakultas Pertanian, UGM. Uji antagonis *co-culture* dan perkecambahan spora digunakan dalam skrining isolat potensial penghambat pertumbuhan *Neopestalotiopsis* sp. secara *in vitro*. Empat isolat terbaik *B. velezensis* B-27, *Bacillus* sp. RB77, *B. subtilis* EA64, dan *Bacillus* sp. DM2 dipilih untuk uji lanjut pada rumah kaca menggunakan Rancangan Acak Lengkap (RAL). Perlakuan perendaman bibit cengkih dengan suspensi *Bacillus* spp. diawal dan kombinasi semprot serta tuang secara temporal 2 minggu sekali selama 3 bulan. Hasil uji rumah kaca menunjukkan bahwa isolat *Bacillus* sp. RB77, *B. subtilis* EA64 dan *Bacillus* sp. DM2 mampu menurunkan intensitas penyakit bercak daun *Neopestalotiopsis* secara signifikan. *Bacillus* sp. RB77 dan *B. subtilis* EA64 mampu menurunkan insidensi penyakit secara signifikan. *B. velezensis* B-27 dan *B. subtilis* EA64 memberikan pengaruh nyata terhadap pertambahan tinggi tanaman secara signifikan serta *B. subtilis* EA64 memberikan pengaruh nyata terhadap pertambahan volume kanopi secara signifikan.

Kata kunci: *Neopestalotiopsis* sp., *Syzygium aromaticum*, *Bacillus* spp., *B. velezensis*, dan *B. subtilis*.

ABSTRACT

Cloves (*Syzygium aromaticum*) are one of the important commodities native to Indonesia. Plant Pest Organisms is a factor that becomes an obstacle in clove cultivation, especially *Neopestalotiopsis* leaf spot disease which impacts damage to the seedling phase. Environmentally friendly control is needed to address the pesticide issue, which has become a problem of environmental damage. The utilization of *Bacillus* spp. as a biological agent is an alternative effort to maintain ecological balance. This study aimed to screen 20 isolates of *Bacillus* spp. that have potential as biological control agents against *Neopestalotiopsis* leaf spot disease. Tests were carried out in the Greenhouse and Plant Disease Laboratory, Department of Plant Protection, Faculty of Agriculture, UGM. Antagonist co-culture and spore germination tests were used in screening potential growth inhibitor isolates of *Neopestalotiopsis* sp. in vitro. The four best isolates *B. velezensis*, B-27, *Bacillus* sp. RB77, *B. subtilis* EA64, and *Bacillus* sp. DM2 were selected for further testing in the greenhouse using a Completely Randomized Design (CRD). Clove seeds were treated with a suspension of *Bacillus* spp. by soaking at the beginning and with a combination of spraying and pouring periodically once every 2 weeks for 3 months. The greenhouse test results showed that the isolate *Bacillus* sp. RB77, *B. subtilis* EA64 and *Bacillus* sp. DM2 was able to significantly reduce the intensity of *Neopestalotiopsis* leaf spot disease. *Bacillus* sp. RB77 and *B. subtilis* EA64 were able to reduce the incidence of disease significantly. *B. velezensis* B-27 and *B. subtilis* EA64 had a real influence on the significant increase in plant height and *B. subtilis* EA64 had a real influence on the significant increase in canopy volume.

Key words: *Neopestalotiopsis* sp., *Syzygium aromaticum*, *Bacillus* spp., *B. velezensis*, and *B. subtilis*.