

## INTISARI

*Bacillus* spp. dikenal mampu meningkatkan ketahanan tanaman bawang merah yang terserang penyakit moler. Kemampuannya sebagai bioprotektan, biostimulan serta *biofertilizer* diprediksi mampu menyaingi keefektifan *Trichoderma* yang saat ini yang digunakan sebagai agens pengendali hayati. Penelitian ini bertujuan untuk mengetahui kemampuan *Bacillus* spp. dalam mengendalikan penyakit moler, meningkatkan aktivitas hormon dan enzim yang berperan dalam induksi ketahanan, serta peningkatan produksi bawang merah di lahan marginal pasir pantai. Penelitian di rumah kaca menggunakan Rancangan Acak Lengkap (RAL). Hasil penelitian di rumah kaca menunjukkan perendaman umbi dengan *Bacillus* spp. mampu menekan insidensi dan intensitas penyakit moler dengan persentase penekanan mencapai 72.2% hingga 100%, mampu meningkatkan parameter agronomi, bobot basah serta bobot kering tanaman. Pengujian dengan metode *High Performance Liquid Chromatography* menunjukkan perendaman umbi dengan *Bacillus cereus* RC76 meningkatkan kandungan asam jasmonat ( $2.34 \text{ mgKg}^{-1}$ ) dan asam salisilat ( $0.95 \text{ mgKg}^{-1}$ ), namun belum mampu meningkatkan enzim peroksidase dan fenilalanin amonia-liase. Pengujian di lahan pasir pantai menggunakan Rancangan Acak Kelompok (RAKL). Hasil pengujian di lapangan menunjukkan perendaman umbi dengan *Bacillus* sp. belum mampu menekan penyakit moler, namun mampu meningkatkan parameter agronomi berupa tinggi tanaman, jumlah rumpun serta produksi bawang merah. Perendaman dengan *Bacillus velezensis* B-27 meningkatkan produksi umbi kering hingga 66.26%. Perendaman dengan *Bacillus* spp. menunjukkan keterbawaan *Fusarium* yang rendah pada umbi pascapanen. Perendaman umbi dengan *Bacillus* spp. mampu meningkatkan produksi bawang merah di lahan pasir pantai.

Kata kunci : *Bacillus* spp., induksi ketahanan, lahan marginal, moler

## ABSTRACT

*Bacillus* spp. has been known to increase the resistance of onion plants affected by several diseases. Its ability as a bioprotectant and biostimulant is predicted to compare the effectiveness of *Trichoderma*, which is currently used as a biological control agent. This study aims to determine the ability of *Bacillus* spp. to control twisted disease, increasing the activity of hormones and enzymes that play a role in the induction of resistance, and increased onion production in coastal land. The greenhouse experiment used a Completely Randomized Design. Greenhouse experiment showed dipping tuber with *Bacillus* spp. able to reduce the incidence and intensity of moler disease with a percentage of 72,2% to 100% and increase agronomic parameters and the wet and dry weight of plants. Testing with the High-Performance Liquid Chromatography method showed tuber dipping with *Bacillus cereus* RC76 increased the content of jasmonic acid ( $2.34 \text{ mgKg}^{-1}$ ) and salicylic acid ( $0.95 \text{ mgKg}^{-1}$ ). However, in the spectrophotometric method, the treatments have not increased the enzymes peroxidase and phenylalanine ammonia-lyase. A field experiment on coastal sand showed tuber dipping with *Bacillus* spp. have not been able to suppress moler disease but were able to increase agronomic parameters as high of plants, the number of clumps, and the production of onions. Tuber dipping with *Bacillus velezensis* B-27 increased dry tuber production by 66.26%. Tuber dipping with *Bacillus* spp. showed low infection of *Fusarium* on post-harvest yield. This study demonstrated that tuber dipping using *Bacillus* spp. increased the production of shallot in coastal land.

Key word : *Bacillus* spp., induction of resistance, marginal land, twisted disease