RINGKASAN

Penelitian ini bertujuan untuk 1) mengkarakterisasi *Bacillus* sp. isolat B16 dan *R.solanacearum*, 2) menguji kemampuan *Bacillus* sp. dalam menekan *R.solanacearum* secara *in vitro* 3) menentukan isolat *Bacillus* sp. yang paling efektif dalam mengendalikan penyakit layu bakteri secara *in planta*.

Penelitian ini dilaksanakan pada bulan September 2017 sampai dengan Januari 2018 di Laboratorium dan *Screenhouse* Perlindungan Tanaman Fakultas Pertanian Universitas Jenderal Soedirman. Penelitian ini menggunakan Rancangan Acak Lengkap pada pengujian *in vitro* dan Rancangan Acak Kelompok pada pengujian *in planta* dengan 4 perlakuan dan 6 ulangan, apabila berbeda nyata antar perlakuan maka di uji lanjut menggunakan BNT pada taraf 5%. Perlakuan terdiri atas kontrol , B1 isolat padi, B16 isolat terung dan B298 isolat kentang. Variabel yang diamati meliputi kemampuan antagonisme, mekanisme hambatan, masa inkubasi, intensitas serangan, AUDPC (*Area Under Disease Progress Curve*), tinggi tanaman, diameter batang, jumlah dan luas daun.

Hasil penelitian menunjukkan bahwa karakterisasi bakteri antagonis *Bacillus* sp. isolat B16 meliliki bentuk bulat, warna krem, memiliki gram positif, positif terhadap pengujian KOH 3% dan H_20_2 3%, negatif pada pengujian fluoresent pada medium KB, tidak mukoid, positif pada pengujian pertumbuhan 40 ^oC dan memiliki endospora. Sedangakan untuk *R.solanacearum* memiliki bantuk fluidal, berwarna krem keruh, gram negatif, negatif pada pengujian KOH 3%, positif pada uji H_20_2 3% , negatif pada pengujian fluoresent pada medium KB, sangat mukoid, negatif pada pengujian pertumbuhan 40 ^oC dan tidak memiliki endospore. Pengujian isolat B16 mampu menekan pekembangan *R.soanacearum* sebesar 11 mm pada pengujian *in vitro*. Perlakuan isolat B16 dalam formulasi yeast extract 0,25% + ekstrak kentang 150gr (750ml) + air kelapa (250ml) efektif menekan intensitas penyakit sebesar 95,11%, menekan nilai AUDPC menjadi 6,2. Perlakuan isolat B16 juga mampu meningkatkan variabel pertumbuhan tanaman seperti diameter batang, jumlah daun, luas daun dan tinggi tanaman masing masing sebesar 22,40%, 36,19%, 55,77% dan 41,80%.

Kata kunci: *Bacillus* sp., *R.solanacearum,* antagonis, terung, agens hayati, antibiosis

SUMMARY

The research objective are to characterize Bacillus sp. isolate B16 and R.solanacearum, test potency of Bacillus sp. On compressing R.solanacearum inside in vitro condition, and to get Bacillus sp. Isolate with highest effectivity to control R.solanacearum on in planta condition.

The research was conducted at the Plant Protection Laboratory and Screenhouse, Faculty of Agriculture, University og General Soedirman in September 2017 untill January 2018. This research used Complete Randomize Design to in vitro testing and Block Randomize Design to in planta test with 4 treatment and 6 times repetition, if the experiment shown significant distinction between the treatment it will conduct with LSD test using 5% level. Several Treatment that used are control, B1 paddy isolate, B16 eggplant isolate, and B298 potato isolate. The Variable that observe are antagonistic capability, inhibiting mechanism, incubating term, offensive intensity, AUDPC (Area Under Disease Progress Curve), plant height, stem diameters, total leaf and leaf's wide.

The results showed that the characterization of antagonistic bacteria Bacillus sp. isolate B16 had round shape, cream color, had positive gram, positive for KOH 3% and H_20_2 3% test, negative on fluorescent test on KB medium, not mucoid, positive on 40 ^oC growth test and had endospores. While for R. solanacearum had a fluidal shape, muddy cream, negative gram, negative at KOH 3% test, positive at H_20_2 3% test, negative for fluorescent test on KB medium, very mucoid, negative on 40 ^oC, growth test and lacked endospore. Result of experiment shown that treatment of B16 are effectiv to inhibit growth of R.solanacearum inside in vitro condition at 11 mm. Treatment B16 isolate on formulation yeast extract 0,25% + potato extract 150gr (750ml) + coconut water (250ml) effective compress disease intensity 95,11%, hold number of AUDPC become 6,2. Treatment B16 isolate also capable increase plant growth variable such as stem diameters, total of leaf, leaf's wide and plant high to each unit 22,40%, 36,19%, 55,77% dan 41,80%.

Keyword: Bacillus sp., R.solanacearum, antagonistic, eggplant, biological agen, antibiosys