

INTISARI

Pada budidaya tomat terdapat beberapa kendala yang menyebabkan produktivitas tomat menurun, salah satunya yaitu gangguan OPT. OPT yang dapat menurunkan produktivitas tomat secara signifikan yaitu *Ralstonia solanacearum* penyebab penyakit layu bakteri pada tomat. Gejala yang ditimbulkan akibat infeksi penyakit ini yaitu daun tua di bagian bawah menguning, daun muda mulai layu, dan tanaman menjadi kerdil. Dalam pengendalian penyakit ini dapat dilakukan dengan beberapa cara, salah satunya yaitu dengan pengendalian secara biologis. Pengendalian biologis yang akan digunakan pada penelitian ini adalah pemanfaatan agens pengendali berupa bakteriofag dan strain avirulen *R. solanacearum*. Bakteriofag merupakan virus yang menginfeksi bakteri dan mampu membunuh sel bakteri secara langsung. Penelitian ini menggunakan isolat *R. solanacearum* koleksi Laboratorium Ilmu Penyakit Tumbuhan, Departemen Hama dan Penyakit Tumbuhan, Fakultas Pertanian Universitas Gadjah Mada yang berasal dari beberapa daerah di Jawa. Isolat tersebut di verifikasi dengan uji virulensi pada tanaman tomat dan uji hipersensitif pada tanaman tembakau. Bakteriofag yang digunakan juga diambil dari penyimpanan freezer -80°C yang berasal dari Jawa Tengah. Verifikasi bakteriofag dengan uji *plaque* sebelum diinokulasikan pada tanaman. Mekanisme kerja bakteriofag dalam petri dapat dilihat dengan terbentuknya zona bening. Pada penelitian pengendalian penyakit layu pada tanaman tomat ini, terdapat 6 perlakuan yakni phage 1 (Jatinom), phage 2 (Boyolali), phage 1 + *R. solanacearum* avirulen, phage 2 + *R. solanacearum* avirulen, kontrol (+), dan kontrol (-). Inokulasi dilakukan dengan cara membuat suspensi *R. solanacearum* virulen dan avirulen, serta suspensi bakteriofag. Pada perlakuan phage 1 + *R. solanacearum* avirulen dan phage 2 + *R. solanacearum* avirulen, inokulasi dari masing – masing suspensi dituangkan ke dalam tanah secara bertahap. Konsentrasi yang digunakan untuk inokulasi yaitu 6 ml suspensi *R. solanacearum* virulen dan avirulen, kemudian 5 ml suspensi bakteriofag. Pengamatan yang dilakukan meliputi intensitas penyakit dan nilai AUDPC (*Area Under The Disease Progress Curve*). Hasil penelitian menunjukkan hasil yang berbeda nyata terhadap intensitas penyakit layu bakteri pada tomat. Intensitas penyakit paling tinggi yaitu pada perlakuan kontrol positif yakni sebesar 67, 5% dengan nilai AUDPC 185 dan intensitas penyakit terendah yaitu pada perlakuan phage 1 + *R. solanacearum* avirulen dan phage 2 + *R. solanacearum* avirulen yaitu 0 % dengan nilai AUDPC 5. Dari hasil tersebut dapat disimpulkan bahwa perlakuan phage 1 + *R. solanacearum* avirulen dan phage 2 + *R. solanacearum* avirulen mampu menekan intensitas penyakit layu bakteri pada tomat.

Kata Kunci : Tomat, Bakteriofag, *R. solanacearum*, Intensitas Penyakit, AUDPC

ABSTRACT

In tomato cultivation, there are several obstacles that cause tomato productivity to decrease, one of which is pest disturbance. The pest that can significantly reduce tomato productivity is *Ralstonia solanacearum* which causes bacterial wilt disease in tomatoes. Symptoms caused by infection with this disease are old leaves at the bottom turn yellow, young leaves begin to wither, and plants become stunted. In controlling this disease can be done in several ways, one of which is by biological control. Biological control that will be used in this study is the use of controlling agents in the form of bacteriophages and avirulent strain of *R. solanacearum*. Bacteriophages are viruses that infect bacteria and can kill bacterial cells directly. This study used isolates of *R. solanacearum* from storage in the Laboratory of Plant Diseases, Department of Pests and Plant Diseases, Faculty of Agriculture, Gadjah Mada University from several regions in Java. The isolates were verified by virulence test on tomato plants and hypersensitivity test on tobacco plants. The bacteriophages used were also taken from -80°C freezer storage originating from Central Java. Bacteriophage verification by plaque test before inoculation on plants. The mechanism of action of bacteriophages in petri dishes can be seen by the formation of a clear zone. In this study, to control wilt disease in tomato plants, there were 6 treatments, namely page 1 (Jatinom), page 2 (Boyolali), page 1 + *R. solanacearum* avirulent, phage 2 + *R. solanacearum* avirulent, control (+), and control (-). Inoculation was done by making a virulent and avirulent suspension of *R. solanacearum*, as well as a suspension of bacteriophages. In the treatment of phage 1 + *R. solanacearum* avirulent and phage 2 + *R. solanacearum* avirulent, the inoculation of each suspension was poured into the soil gradually. The concentration used for inoculation was 6 ml of virulent and avirulent *R. solanacearum* suspension, then 5 ml of bacteriophage suspension. In this study, the observations made included the intensity of the disease and the AUDPC (Area Under The Disease Progress Curve) value. The results showed significantly different results on the intensity of bacterial wilt disease in tomatoes. The highest disease intensity was in the positive control treatment which was 67.5% with an AUDPC value of 185 and the lowest disease intensity was in the treatment of phage 1 + *R. solanacearum* avirulent and phage 2 + *R. solanacearum* avirulent which was 0% with an AUDPC value of 5. From these results it can be concluded that the treatment of phage 1 + *R. solanacearum* avirulent and phage 2 + *R. solanacearum* avirulent was able to suppress the intensity of bacterial wilt disease in tomatoes.

Keyword : Tomato, Bacteriophage, *R. solanacearum*, Disease Intensity, AUDPC