

## Intisari

Penyakit moler menjadi salah satu kendala bagi produksi bawang merah di Indonesia. Oleh karena itu diperlukan upaya pengendalian, dan salah satunya adalah dengan pemanfaatan limbah organik yaitu larutan hasil fermentasi kulit buah (FFP) yang dikenal dengan *eco-enzyme*. Tujuan penelitian ini adalah untuk mengetahui pengaruh aplikasi larutan hasil FFP terhadap perkembangan *Fusarium acutatum* secara *in vitro* dan terhadap penyakit moler pada bawang merah. Penelitian dilakukan dengan dua pengujian meliputi uji *in vitro* dan *in planta* dengan parameter pengamatan berupa penghambatan pertumbuhan koloni jamur dan perkecambahan spora *F. acutatum*, kejadian penyakit, pengamatan agronomis berupa panjang akar, persentase perkecambahan umbi, persentase umbi abnormal, tinggi tanaman, jumlah daun, berat segar, berat kering, dan berat kering umbi bawang merah. Hasil penelitian menunjukkan bahwa ada tiga jenis isolat bakteri dominan yang tumbuh pada larutan hasil FFP yaitu *Acetobacter ghanensis* (Isolat A), *Stenotrophomonas* sp. (Isolat B dan C), *Acetobacter fabarum* (Isolat D). Bakteri *A. ghanensis* dan *A. fabarum* dapat menghambat pertumbuhan *F. acutatum* secara *in vitro* sebesar 33,33% dan 17,90%. Larutan FFP dapat menghambat perkecambahan spora *F. acutatum* di mana semakin tinggi konsentrasi maka semakin tinggi persentase penghambatan spora *F. acutatum*. Sedangkan hasil dari uji *in planta* menunjukkan larutan FFP konsentrasi 2000 ppm dapat menekan intensitas dan insidensi penyakit moler, serta meningkatkan pertumbuhan berat segar tanaman dan berat kering tanaman bawang merah.

Kata kunci: bawang merah, penyakit moler, larutan hasil fermentasi kulit buah, *Fusarium acutatum*

## Abstract

The twisted disease has become a major constraint in shallot production in Indonesia. Therefore, effective control measures are necessary, and one potential approach is the utilization of organic waste, specifically fermented fruit peel liquid (FFP) known as eco-enzyme. This study aimed to investigate the influence of product FFP application on the development of *Fusarium acutatum* in vitro and its impact on twisted disease in shallots. The research was conducted through two testing methods, namely in vitro and in planta, with various parameters including inhibition of *F. acutatum* colony growth and spore germination, disease incidence, and agronomic observations such as root length, percentage of bulb germination, percentage of bulb abnormal, plant height, leaf count, fresh weight, dry weight, and bulb dry weight of shallots. The results revealed three dominant bacterial that grew in the product FFP liquid, namely *Acetobacter ghanensis* (Isolate A), *Stenotrophomonas* sp. (Isolates B and C), and *Acetobacter fabarum* (Isolate D). Bacteria *A. ghanensis* and *A. fabarum* exhibited an inhibitory effect on *F. acutatum* growth in vitro, with percentages of 33.33% and 17.90%, respectively. The FFP liquid solution was found to inhibit *F. acutatum* spore germination, with higher concentrations resulting in increased inhibition percentages. Furthermore, the in planta test demonstrated that the FFP liquid solution at a concentration of 2000 ppm suppressed the intensity and incidence of twisted disease as well as increase the growth of plant fresh and dry weight of shallot plants.

Keywords: shallots, twisted disease, fermented fruit peel liquid, *Fusarium acutatum*