

**KARAKTERISASI GENETIK ISOLAT *Trichoderma* spp. DAN  
PENGARUHNYA TERHADAP *Rhizoctonia solani* Kuhn. PENYEBAB  
PENYAKIT BUSUK PELEPAH DAUN PADA JAGUNG**

Oleh: Vellen Natalia Yoniar

Dibimbing Oleh:  
Dr. Ir. Abdul Rizal AZ, MP.  
Dr. Ir. Mofit Eko Poerwanto, MP.

**ABSTRAK**

Salah satu faktor penyebab rendahnya produksi jagung di Indonesia adalah busuk pelepah daun yang disebabkan oleh *R.solani*. Salah satu agen biokontrol yang dapat menghambat pertumbuhan *R.solani* adalah *Trichoderma* spp. masing-masing spesies memiliki potensi yang berbeda dalam menekan pertumbuhan patogen. Penelitian ini dilakukan untuk memperoleh jenis *Trichoderma* spp. yang paling efektif dalam pengendalian patogen *R.solani*. Penelitian dilakukan di Laboratorium Proteksi Tanaman Fakultas Pertanian UPN “Veteran” Yogyakarta bulan April hingga September 2021, dengan dua sub bagian, bagian pertama adalah uji keragaman genetik 6 isolat *Trichoderma* spp. dengan metode PCR menggunakan primer ITS1 dan ITS4. Bagian kedua adalah uji kemampuan antagonis 6 isolat *Trichoderma* spp. pada *R.solani* secara *in vitro* dengan metode *dual culture*. Parameter yang diamati adalah kecepatan tumbuh koloni dan persentase penghambatan dari *Trichoderma* spp. Data diperoleh dari penelitian dianalisis dengan membandingkan hasil sekuensing DNA *Trichoderma* spp. dengan database yang ada di GenBank. Beberapa data yang terdapat pada NCBI BLAST diunduh untuk dianalisis. Hasil uji antagonis dianalisis menggunakan analisis sidik ragam taraf nyata 5% dan jika terdapat beda nyata maka akan dilanjutkan dengan uji DMRT taraf 5%. Hasil penelitian menunjukkan bahwa terdapat perbedaan genetik antar isolat, UPN17 dan KLP5 merupakan *T.asperellum*, isolat UPN16 merupakan *T.harzianum*, isolat UPN27 merupakan *T.viride*, isolat LPT8 merupakan *T.asperelloides*, dan isolat SMD19 merupakan *T.yunnanense*. Berdasarkan 6 isolat yang digunakan, *T.harzianum* merupakan spesies yang paling efektif dalam menghambat pertumbuhan patogen *R.solani*.

**Kata kunci:** Keragaman Genetik, *Trichoderma* spp., *Rhizoctonia solani*, PCR, ITS1 dan ITS4.

**GENETIC CHARACTERIZATION OF *Trichoderma* spp. ISOLATES AND THEIR EFFECT ON *Rhizoctonia solani* Kuhn. CAUSES OF LEAF MIDRIB ROT DISEASE IN MAIZE**

By: Vellen Natalia Yoniar

Supervised by:  
Dr. Ir. Abdul Rizal AZ, MP.  
Dr. Ir. Mofit Eko Poerwanto, MP.

**ABSTRACT**

One of the contributing factors causing low maize production in Indonesia is leaf midrib rot that caused by *R. solani*. One of the biocontrol agents that can inhibit the growth of *R. solani* is *Trichoderma* spp. each species has a different potential in suppressing the growth of pathogens. This research was conducted to obtain which the most effective of *Trichoderma* spp. in controlling the pathogen *R. solani*. The research was conducted at the Plant Protection Laboratory, Faculty of Agriculture, UPN "Veteran" Yogyakarta from April to September 2021, with two sub-sections, the first section is testing the genetic diversity of six isolates of *Trichoderma* spp. with the PCR method by using ITS1 and ITS4 primers. The second section is to test the antagonist ability of 6 isolates of *Trichoderma* spp. on *R. solani* in vitro with the dual culture method. Parameters observed were colony growth rate and percentage of inhibition of *Trichoderma* spp. The data obtained from the study were analyzed by comparing the results of DNA sequencing of *Trichoderma* spp. with the database in GenBank. Some of the data contained in NCBI BLAST was downloaded for analysis. The results of the antagonist test were analyzed using analysis of variance with a significance level of 5% and if there was a significant difference, it would be continued with the DMRT test at a 5% level. The results showed that there are differences between isolates, it shows UPN17 and KLP5 isolates were *T. asperellum*, UPN16 isolate were *T. harzianum*, UPN27 isolate were *T. viride*, LPT8 isolate were *T. asperelloides*, and SMD19 isolate were *T. yunnanense*. Of the 6 isolates used, *T. harzianum* was the most effective species in inhibiting the growth of the pathogen *R. solani*.

**Keywords:** Genetic Diversity, *Trichoderma* spp., *Rhizoctonia solani*, PCR, ITS1 and ITS4.