

**PENGARUH *INPUT* PUPUK UREA TERHADAP AKTIVITAS  
FOSFATASE TANAH PADA RHIZOSFER TANAMAN JAGUNG (*ZEA  
MAYS L.*) DI ULTISOL**

**SKRIPSI**

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**FAKULTAS PERTANIAN  
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**Abstrak**

Fosfatase merupakan enzim tanah yang penting dalam proses mineralisasi fosfor organik yang melibatkan peran mikroba tanah. Penelitian ini bertujuan untuk melihat pengaruh input pupuk Urea terhadap aktivitas enzim fosfatase pada rhizosfer tanaman jagung (*Zea Mays L.*). Fosfatase asam maupun fosfatase basa berfungsi sebagai biokatalisator P-organik menjadi p-anorganik yang kemudian dapat diserap dan dimetabolisme oleh sel-sel akar tumbuhan maupun mikroba. Penelitian ini dilakukan di Rumah Kawat Fakultas Pertanian Universitas Andalas dan analisis sampel dilakukan di Laboratorium Departemen Ilmu Tanah dan Sumber Daya Lahan Fakultas Pertanian Universitas Andalas dari bulan Juni 2022 sampai September 2022. Rancangan yang digunakan pada penelitian ini adalah Rancangan Acak Lengkap (RAL) yang terdiri dari 4 taraf perlakuan, perlakuan tersebut 0 g Urea, 1 g Urea, 2 g Urea, 3 g Urea, 4 g Urea dengan 3 kali ulangan. Parameter yang dianalisis adalah pH tanah, N-total tanah, total populasi bakteri, biomassa C-mikroba,  $\beta$ -glukosidase, enzim fosfatase asam dan enzim fosfatase basa. Hasil penelitian menunjukkan bahwa nilai pH tanah dan N-total pada rhizosfer tanaman jagung mengalami peningkatan dengan pemberian pupuk Urea yang meningkat. Total populasi bakteri biomassa C-mikroba di rhizosfer tanaman jagung mengalami penurunan dengan lama periode pengamatan pada 64 HST. Aktivitas enzim fosfatase asam di rhizosfer tanaman jagung meningkat pada periode pengamatan 64 HST seiring dengan bertambahnya pupuk Urea yang diberikan. Aktivitas enzim fosfatase basa dan  $\beta$ -glukosidase di rhizosfer tanaman jagung terjadi penurunan nilai peningkatan seiring lama periode pengamatan pada 64 HST dan penambahan pupuk Urea.

*Kata Kunci : tanaman jagung (Zea Mays L), Aktivitas Enzim Fosfatase, Input pupuk Urea*

# EFFECT OF UREA FERTILIZER INPUT ON SOIL PHOSPHATASE ACTIVITY IN THE RHIZOSPHERE OF MAIZE (*ZEA MAYS* L) PLANTS IN ULTISOLS

## Abstract

Phosphatase is an important soil enzyme in the mineralization process of organic phosphorus which involves the role of soil microbes. This study aims to see the effect of Urea fertilizer input on phosphatase enzyme activity in the rhizosphere of corn plants (*Zea Mays* L.). Both acidic phosphatase and basic phosphatase function as biocatalysts of P-organic into p-inorganic which can then be absorbed and metabolized by plant root cells and microbes. This research was conducted in the Wire Housing of the Faculty of Agriculture, Andalas University and sample analysis was carried out in the Laboratory of the Department of Soil Science and Land Resources, Faculty of Agriculture, Andalas University from June 2022 to September 2022. The design used in this study is a completely randomized design (CRD) consisting of 4 treatment levels, the treatment is 0 g Urea, 1 g Urea, 2 g Urea, 3 g Urea, 4 g Urea with 3 replications. The parameters analyzed were soil pH, soil N-total, total bacterial population, C-microbial biomass,  $\beta$ -glucosidase, acid phosphatase enzyme and basic phosphatase enzyme. The results showed that the pH value of soil and N-total in the rhizosphere of corn plants increased with increasing Urea fertilizer. The total population of C-microbial biomass bacteria in the rhizosphere of corn plants decreased with the length of the observation period at 64 HST. The activity of acid phosphatase enzyme in the rhizosphere of corn plants increased in the observation period of 64 HST along with the increasing Urea fertilizer given. The activity of basic phosphatase and  $\beta$ -glucosidase enzymes in the rhizosphere of corn plants decreased with the length of the observation period at 64 HST and the addition of Urea fertilizer.

Keywords: Corn (*Zea Mays* L.), Phosphatase Enzyme Activity, Urea fertilizer input