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# Abstract Book

## EFFECTIVENESS OF ORGANIC WASTES AS FERTILIZER ON UREASE ACTIVITY OF MAIZE RHIZOSPHERE

Kizilkaya,R.,<sup>a,b,\*</sup> Sushkova,S.,<sup>c</sup>

<sup>a</sup> Ondokuz Mayıs University, Faculty of Agriculture, Department of Soil Science and Plant Nutrition, Samsun, 55139 Turkey  
(Ridvan Kizilkaya, [ridvank@omu.edu.tr](mailto:ridvank@omu.edu.tr))

<sup>b</sup> Agrobigen R&D Ltd.Co., Samsun Technopark, Ondokuz Mayıs University, Samsun, Turkey

<sup>c</sup> Southern Federal University, Academy of Biology and Biotechnology, Rostov-on-Don, 344090 Russia  
(Svetlana Sushkova, [snsushkova@sfedu.ru](mailto:snsushkova@sfedu.ru))

### ABSTRACT:

Soil enzymes are involved in the catalysis of large number reactions necessary for life processes of microorganisms in soils, decomposition of organic residues, cycling of nutrients and formation of organic matter and soil structure. Information on soil enzyme activities used to determine soil microbiological characteristics is very important for soil quality and health. Enzymatic activities caused by soil microbial activities are sensitive indicators for detecting the changes occurring in soils. Urease is the commonly used group name for enzymes that catalyze the hydrolysis of urea in aerobic conditions by acting on C–N bonds (nonpeptide) in linear amides. Urease activity (UAc) in soil is attributed to extracellular enzymes and the enzymes within proliferating microorganisms. Moreover, urease activity in soil is affected by the physicochemical properties and agricultural practices of the soil. Therefore, changes in soil urease activities may be indicative of and extremely sensitive to changes in soil health. UAc in the rhizosphere can be of intracellular origin, released after microbial cell disruption or root cell sloughing, and may be associated with soil colloids and cell debris, or enzymes may be actively secreted by plant roots or root associated microorganisms. This study was carried out in order to determine the effects of different various organic wastes (tobacco production waste, wheat straw, tea waste and hazelnut husk) under greenhouse conditions on urease activity in clay loam soil and rhizosphere (*Zea mays indandata*) soil of maize plant. The organic wastes were thoroughly mixed with the soil at a rate equivalent to 50 g kg<sup>-1</sup> on air-dried weight basis. Experimental design was randomized plot with the replications in greenhouse. The moisture content in soil was maintained around 60 % of maximum water holding capacity by weighing the pots every day. Changes in the UAc were determined in the soil and rhizosphere (*Zea mays indandata*) samples and root free soil taken in 15, 30, 45, 60, 75 and 90 days after the experiment was conducted. At the end of experiment, all organic waste added soil increased UAc in comparison with the control ( $P<0,01$ ) at all experimental periods. Moreover, UAc in rhizosphere soil were higher than in root free soil at all organic waste application ( $P<0,01$ ). Increased of organic wastes on UAc had different trend ( $P<0,01$ ) The most increases are in the UAc in the soil treated with wastes of tea and waste of tobacco production with supplying of low initial C/N ratio compared to the other organic wastes.

**KEY WORDS:** Organic Waste, Soil, Rhizosphere, Urease Activity, Enzyme