

## **Effect of Tea Waste as a Urease Inhibitor in Soil**

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Efficiency of urea rarely exceeds 50%, although it is one of the major fertilizer, as most of it is lost as ammonia and CO<sub>2</sub>. Urease enzyme is responsible for this break down. Excessive release of ammonia is toxic to plants, especially younger plants. Previous researches have shown that chemical compounds in drinking tea can inhibit urease enzyme to a greater extent. This research was designed to study the possibility of using refuse tea to inhibit the soil urease enzyme and slow down the hydrolysis of urea. The optimum amount of tea waste to be incorporated was determined by mixing different amounts of tea waste with constant amounts of urea and soil and released ammonia content was measured after 24 hours using Hoffman's method. The effect of time on inhibition of urease was studied by mixing constant amounts of urea with constant amounts of Tea waste and soil. Ammonia content was measured after 24 h, 48 h, 72 h, 96 h and 120 h. The effect of urease inhibition on growth conditions was also determined as follows. Soil and tea waste mixtures (10:1.5) were prepared in polythene bags with 50%, 75% and 100% urea from the recommended amount and chlorophyll content and inter nodal length were measured at two weeks intervals with "Thilina" tomato variety. Controls were prepared without tea waste and with 100% urea. Complete Randomized design was applied. The optimum amount of tea waste to be incorporated was determined as 1.5 g per 10 g of soil and per 50 mg of urea as this combination showed a 50% average inhibition. Inhibition exhibited a positive correlation with time with  $r^2$  0.976. The treatment containing 50% urea showed a significant increase in chlorophyll content than the control with p value 0.003. There was no significant difference among the treatments for intermodal length. With the results of this research, it can be concluded that the application of tea waste successfully control the hydrolysis of urea and it does not have any negative effects on growth parameters of "Thilina" tomato variety.

Keywords: Urease, Inhibition, Tea waste, Urea