**Ecological Sustainability of N Utilisation and Leaching in *Solanum lycopersicum var. cerasiforme* via Green Synthesis of Zeolite LTA**

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**Abstract**

A sustainable green synthesis of zeolite from kaolin was cooperated in soil to reduce the leaching effect for environmental sustainability. An experiment was conducted to determine the effects of cation-binding mineral zeolite on nitrogen leaching, yield, and nitrogen absorption of cherry tomatoes in a pot. There are seven distinct experimental treatments: Control High (CH); Control Standard (CS); Control Low (CL); 2g of zeolite(2gZ); 4g of zeolite(4gZ); 6g of zeolite(6gZ); and 6g of industrial zeolite (6gIZ) grown in a greenhouse with randomized design. According to the results, 6g of zeolite demonstrates the smallest significant difference between the concentration mean values of nitrite and nitrate compared to the other treatments. Regarding the average nitrogen concentration in the soil at each harvest, 6g of zeolite added to the soil has the highest value compared to other treatments. There is no significant difference in fruit weight for all treatments, but 6g of zeolite results in the highest aggregate mean weight compared to other treatments. With its capacity as a CEC, this green synthesis zeolite reduced the discharge of water from a container while increasing the average nitrogen concentration in the soil. The elevated CEC of zeolite also demonstrates an increase in cherry tomato weight.

**Keywords:** Zeolite LTA; Nitrogen; Leaching; Cherry Tomato