

# EFFECT OF BIOGAS SLURRY FOLIAR APPLICATION ON GROWTH AND YIELD PERFORMANCE OF RED ONION (*Allium cepa* L.)



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2026

## ABSTRACT

This study was conducted as six months of research experiment to evaluate the effectiveness of biogas slurry foliar application combined with inorganic fertilizers and suggest suitable rate of biogas slurry dilution in pot culture for optimum growth and yield of red onion crop (*Allium cepa* L.). Biogas slurry, a nutrient-rich by-product from anaerobic digestion, is an eco-friendly and cost-effective organic fertilizer with potential to improve crop growth when used as a foliar spray. The experiment was laid out using complete randomized method (CRD) with four different treatments and five replicates. The treatments are T<sub>1</sub> with recommended fertilizer (control treatment), T<sub>2</sub> - 1:1, T<sub>3</sub>-1:2 and T<sub>4</sub> -1:3 (slurry: water on the volume basis). Except the control treatment 1/3 of recommended fertilizers were applied to the other treatments. Biogas slurry diluted solution was applied as foliar treatments at two weeks intervals with the amount of 75ml per pot (0.03m<sup>2</sup>) from the 2<sup>nd</sup> week of planting at two weeks of interval for three times. The growth parameters such as plant height and number of leaves were measured at one week interval from the 2<sup>nd</sup> week of planting, yield parameters such as number of bulbs, diameter of the bulbs, fresh and dry weight of the plants and yield per area (kg/m<sup>2</sup>) were measured at the time of harvesting. Data were analyzed by Analysis of Variance. Pair comparisons among treatments means were tested at 5% significance level by Tukey's studentized range test by using minitab software.

The results indicated that foliar application of biogas slurry combined with inorganic fertilizers had a positive effect on red onion growth and yield performance. Especially in the T<sub>4</sub> concentration than the other treatments, this treatment significantly enhanced plant height up to 52.14±2.79, leaf number up to 8.60±0.24, and bulb's diameter up to 2.70±0.05. The findings suggest that biogas slurry can serve as an effective organic foliar fertilizer combined with inorganic fertilizer, contributing to improved growth and potentially higher yield in red onion cultivation.

**Key words:** - Biogas, Comparison, Concentration, Slurry, Yield.

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