

EFFECT OF FERTILIZER TYPES AND PANCHAGAVYA FOLIAR SPRAYING ON GROWTH, YIELD AND QUALITY OF RADISH (*Raphanus sativus* L.)

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Radish is a widely cultivated root vegetable valued for its rapid growth and nutritional benefits. The increasing interest in sustainable agriculture has heightened the focus on nutrient management strategies that enhance radish growth while minimizing environmental impacts. This study aimed to determine the effects of different nutrient management approaches, along with 3% *panchagavya* foliar spray as a bio-stimulant, on growth, yield and quality of radish. The location was designed as a two-factor factorial randomized complete block design (RCBD) with three replicates for each treatment. The first factor comprised three fertilizer treatments: Department of Agriculture recommended dosage of inorganic fertilizers (RDIF), organic nutrient management (ONM), and integrated nutrient management (INM). The second factor examined the application of *panchagavya* foliar spray, comparing treatments with and without its use. The growth (plant height, leaf count, fourth leaf size), yield (tuber length, diameter, fresh/dry weight), and sensory attributes (taste, color, shape, texture) were recorded. The results indicated no interaction effect between the type of fertilizer and foliar sprays. In contrast both the type of fertilizer and the application of foliar spray had a significant effect ($p < 0.05$) on radish yield with RDIF yielding the highest average at $2.48 \pm 0.17 \text{ kg m}^{-2}$, followed by INM at $1.82 \pm 0.21 \text{ kg m}^{-2}$ and ONM at $0.51 \pm 0.05 \text{ kg m}^{-2}$. Additionally, *panchagavya* foliar spray led to a significantly higher average yield of $1.79 \pm 0.35 \text{ kg m}^{-2}$, compared to the control, which yielded $1.41 \pm 0.26 \text{ kg m}^{-2}$. Sensory evaluation results revealed that the flavor of radish tubers was enhanced in plants treated with *panchagavya* and organic fertilizers. These findings highlighted the effectiveness of RDIF and *panchagavya* in boosting radish yield and quality, suggesting their broader application in sustainable agriculture. Additionally, the promising results from INM indicated that combining it with bio-stimulants like *panchagavya* could enhance long-term soil health and sustainable crop production.

Keywords: Bio-stimulant, Nutrient management, Radish yield, Sensory evaluation, Sustainable agriculture