
Influence of integrated plant nutrient management using “Newly Modified Panchagavya” and “Albert Solution” on growth and yield parameters of *Capsicum annuum* (Variety - Muria 358 F1) under polytunnel cultivation

K. G. Ketipearachchi¹, N. P. Vidanapathirana^{1*}, K. P. Somachandra² and W. P. W. Mangalika¹

¹ Department of Agro-Technology, Institute of Agro-technology and Rural Sciences, University of Colombo, Sri Lanka

² Regional Agriculture and Research Center, Kahagolla, Bandarawela, Sri Lanka

Abstract

Excessive use of chemical fertilizers causes many environmental, social, and health problems. It is possible to avoid adverse conditions by using organic fertilizers but there are some shortcomings in providing the plant with the required nutrients using only organic fertilizers. Therefore, the integration of chemical fertilizers with organic fertilizers is one of the most applicable methods identified. ‘Panchagavya’ is a blend of five products (milk (107.5 mL/L), dung (250 g/L), urine (250 mL/L), ghee (35.5 g/L) and curd (71.25 mL/L)) obtained from a cow which act 75% as a fertilizer and 25% as a pesticide. In this experiment, the ordinary used ‘Panchagavya’ mixture was slightly modified by adding dry yeast as a fermenting agent and nutrient source which accelerate the fermentation process and pre trials were conducted to select the suitable concentration. Thus, this study was designed to identify an integrated plant nutrient management system for *Capsicum annuum* variety Muria-358 F1 cultivation in polytunnel by adding “Newly Modified Panchagavya” (NMP) as the organic fertilizer and commercially available Albert solution as a chemical fertilizer. The experiment was conducted in the polytunnel in Banadarawela from February 2019 to May 2019. Completely Randomized Design (CRD) was used with three replicates. Each replicate consisted of 6 plants and water (Control- T1), 3% NMP (T2), 5% NMP (T3), Albert solution (T4) and 50% of 3% NMP + 50% of Albert solution (T5) applied as treatments. According to the study, significantly ($P < 0.05$) the highest average plant height in five weeks after planting, average stem diameter in six and seven weeks after planting, fresh and dry weight of roots and yield were recorded from the plants treated T4 compared to the other treatments except treated T5. There was no significant difference between T4 and T5 and T5. Further, the highest chlorophyll content and number of lateral branches per plant was recorded from the plant treated with T5 at the flowering stage of plants. The results revealed that the application of 50% of 3% NMP + 50% of Albert solution is an eco-friendly integrated nutrient management system for *C. annuum* cultivation in polytunnel which is reducing 50% of chemical fertilizers.

Keywords: Albert solution, *Capsicum annuum*, Integrated nutrient management, Panchagavya

***Corresponding author:** nisansala@uciars.cmb.ac.lk