

PERFORMANCE OF HYBRID TOMATO (*Solanum lycopersicum*)
VARIETIES TO DIFFERENT EFFECTIVE MICROORGANISM
(EM) DERIVATIVE COMBINATIONS

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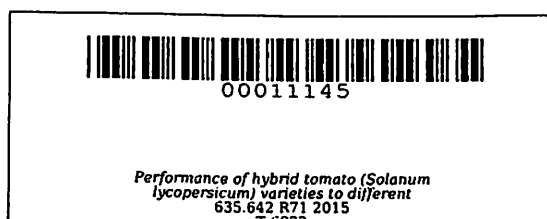
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✓ **PERFORMANCE OF HYBRID TOMATO (*Solanum lycopersicum*) VARIETIES
TO DIFFERENT EFFECTIVE MICROORGANISM (EM)
DERIVATIVE COMBINATIONS**

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ABSTRACT

ROSARDA, GINA R. Performance of Hybrid Tomato (*Solanum lycopersicum*) Varieties to Different Effective Microorganism (EM) Derivative Combinations. PhD Dissertation. Doctor of Philosophy in Agriculture Cavite State University, Indang, Cavite. November 2015. Adviser: Dr. Teddy F. Tepora.

This study was conducted to determine the effect of different proportions of EM derivatives on two hybrid tomato varieties.

A 2x4 factorial design arranged in CRD was used to analyze the effect of different EM derivative combinations on two hybrid tomato varieties. Two factors were considered: variety of two hybrid tomatoes and proportion of EM derivative combinations. Treatments used include proportions of EM derivatives, fish amino acids (FAA), fermented plant juice (FPJ), fermented fruit juice (FFJ): Proportion 0 (control), Proportion 1 (70%+20%+10%), Proportion 2 (60%+30%+10%) and Proportion 3 (50%+40%+10%) with variation in application at different growth stages. Constant foliar application of oriental herbal nutrients (OHN) and water soluble calcium phosphate (Caphos) 0.15:16 li dilution was done.

Growth and yield responses of two varieties of tomato with different proportions of EM derivative combinations were evaluated in terms of plant height, number of leaves, days to flower, days to fruit initiation, days to fruit maturity, number of flowers per plant, number of clusters per plant, number of fruits, average weight and average yield per plant. Fruit quality was evaluated in terms of weights and grades. Postharvest properties of tomato were evaluated using visual quality rating based on peel color changes and percentage weight loss. Insect infestation and disease incidence were also assessed. Cost and return in tomato production with respective treatment was analyzed.

Presence of macro elements such as nitrogen, phosphorus, potassium and microelements like zinc, manganese, copper and iron were traced in different EM derivatives.

Significant effects on plant height and number of leaves were observed with different proportions of EM derivative combinations at 35 and 42 DAT.

Number of flower per cluster, number of days to flower, days to fruit initiation and days to fruit maturity, likewise were not affected by different proportions of EM derivative combinations. However, significant effect on the number of flower cluster per plant at 16, 31 and 40 DAF was observed.

Moderate infestation of whitefly during vegetative stage and light infestation of leaf miner were observed in two varieties of tomato. Moderate incidence of bacterial wilt and blossom end rot in tomato varieties under control were recorded.

EM derivative combinations had no significant effect on the average number of fruit, average weight, and average yield and fruit size of the two tomato varieties.

Significant effect of different EM derivative combinations on visual quality rating at 60 and 120 DAH and percentage weight loss rating at 60, 90 and 150 DAH were observed.

Application of Proportion 2 (60%+30%+10%) in Diamante max gave the highest yield and net income as revealed by the cost and return analyses for the two varieties of tomato.

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Gina Romilla Rosarda

A PhD dissertation submitted to the faculty of the Graduate School and Open Learning College, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Agriculture, Crop Science. Prepared under the supervision of Dr. Teddy F. Tepora.

INTRODUCTION

Tomato, scientifically known as *Solanum lycopersicum*, is one of the most cultivated vegetables worldwide and is extensively grown as secondary crop especially in rice-corn based farming system in the Philippines (BAR, 2013). Tomato consumption increases because of its health benefits and the variety of uses it provides. It is the most sought vegetable in every Filipino household, hotels, restaurants, and fast food chains. To supply the needed volume of tomato, conventional method of farming has been practiced by the growers. However, the problems associated with the use of hazardous chemicals for crop protection, weed control and soil fertility are receiving outmost attention worldwide since pests, diseases and weeds become resistant to chemical pesticides, an environmental pollution which can result to ecological imbalances.

Application of organic fertilizers has been noble and traditional practice of maintaining soil health and fertility (Mehdizadeh *et al.*, 2011).