The effect of effective microorganisms on the growth and the nutrient content of tomato transplants

Margit Olle
NPO Veggies Cultivation
E-mail: margit.olle@gmail.com

Introduction

- Effective microorganisms (EM) technology was first developed in the 1970's.
- EM is a mixture, containing primarily lactic acid bacteria, photosynthetic bacteria, and yeast, maintained at pH 3.5.
- EM suppress the incidence of pests and diseases, solubilize minerals, conserve energy, increase photosynthetic efficiency, and fix biological nitrogen.

PROBLEM → Elongated, low quality tomato variety 'Valve' transplants.

AIM → The purpose of this investigation was to assess the influence of effective microorganisms on the growth and nutrient content of tomato transplants.

Materials and Methods

Experimental site and time:
Estonian Crop Research Institute greenhouses, Winter of 2014

Substrate:
Peat-based mixture fertilized with Peat Care 11-25-24 (2 kg m^{-3}), magnesium sulphate (0.5 kg m^{-3}) and mixed with dolomite lime (7 kg m^{-3}).

Treatments:

Item	EM treatment	Control
Seeds soaking 0.5 hour	EM 1:500 solution	Water
Substrate treatment	EM 1:500 solution	Water
3 true leaf stage spraying	EM 1:1000 solution	Water
1 week later	EM 1:1000 solution	Water
1 week later	EM 1:1000 solution	Water
1 week later	EM 1:1000 solution	Water

Replications and experimental design:
Randomized block design, plot size 6 plants, 4 replications, experiment repeated 2 times.

Laboratory analyses:
N, P, K, Ca, Mg content

Statistics:
ANOVA by Excel 2010, comparison of means by Fisher LSD test

Results

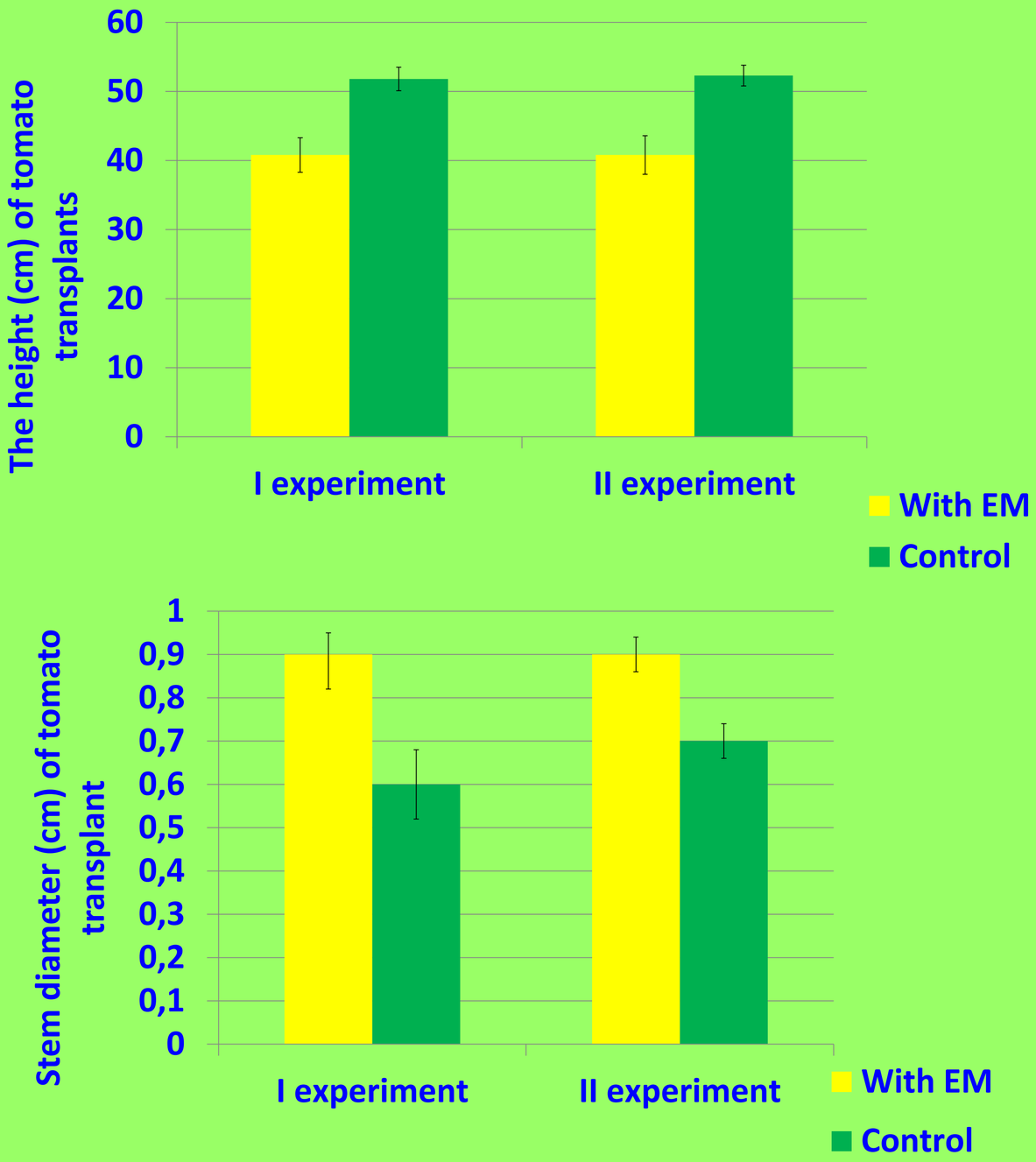

Table S1:
The contents of nitrogen, phosphorus, potassium, calcium, and magnesium in tomato transplants dry matter (%).

	N	P	K	Ca	Mg
EM treatment	4.0 ***	0.73 *	5.0 **	2.3 **	0.68 *
Control	2.9	0.60	3.7	1.9	0.60

Figure S1:
The picture of tomato transplants:
on the left – EM treatment, on the right – Control treatment

Conclusion:
Tomato transplants stay compact, have thicker stems and contain more nutrients in EM treatment.

Acknowledgements: This research was financially supported by the Estonian Agricultural Registers and Information Board, by the Jaagumäe Agro Ltd. and by the Estonian Crop Research Institute.