

Abstract

Biostimulant Effect of Selected Eukaryotic Microalgae on *Solanum lycopersicum* L. [†]

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Abstract: Microalgae have been found to positively influence plant growth. The objective of this study was to investigate the growth-promoting effects of two selected strains of eukaryotic green microalgae. The biostimulating effects of *Chlorella* (MACC-360) and the benchmark *Chlamydomonas reinhardtii* (cc124) species were investigated on *Solanum lycopersicum* L. model plant grown under controlled greenhouse conditions. The physiological responses of *S. lycopersicum* (*Vilma* variety) to algal biomass addition were analyzed. The plants were cultivated in pots containing a mixture of vermiculite and soil layered with clay at the bottom. The application of algae whole-cell suspensions using the soil drench method as well as foliar application of algae extract prepared by destruction and homogenization of microalgae cells in liquid nitrogen significantly affected the time and extent of flowering, the pigment content (chlorophylls and carotenoids), fruit number, fruit weight, fruit diameter. Algae treatment also increased total yields but not significantly. The biostimulant effect of microalgae on plants proved to be strain-specific. *Chlorella* strain promoted flowering which culminated in higher yields and earlier maturity than control. On the contrary, the *Chlamydomonas* strain increased fruit diameter but reduced fruit number per plant, relative to the control.

Keywords: *Chlorella*; *Chlamydomonas*; tomato; flowering; fruit; yields

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