ABSTRACT

Vegetative and reproductive characteristics of tomato and sweet pepper in tropical greenhouse cultivation and effects of the plant growth regulator "Stimulate™"

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The study investigated the vegetative and reproductive growth and development of greenhouse grown tomato (*Lycopersicon esculentum,* var. Albaron) and sweet pepper (*Capsicum annuum* var. Tenato) plants, as well as tomato plants grown under open-field conditions (var. Flora Dade). The commercial growth enhancer Stimulate™ (a mix of auxin, gibberellin and cytokinin) was applied to plant shoots fortnightly.

Vegetative and reproductive parameters were assessed throughout harvesting as well as diameter, number of seeds and certain postharvest biochemical attributes of selected, fruits.

Mean mass of greenhouse-grown fruits, peaking at the second node or cluster, generally decreased throughout plant life, but showed smaller, secondary peaks every five or six nodes, indicating a decrease in competition for assimilates as earlier fruit were reaped. Tomato (Albaron) fruit dry mass varied little, from 5.23 to 5.68 % fresh mass, and mean diameter was 5.72 to 6.35 cm. Total fruit mass per plant was 13.725 kg for greenhouse-grown Albaron and 11.552 kg for open-

field Flora Dade. Total sugar content was higher for Flora Dade than Albaron red-ripe fruits (37.9 to 41.5 and 22.9 to 35.9 % dry mass respectively), as was acidity, but differences may have been due to less advanced ripening in Albaron. The greenhouse tomato fruits took 7 and 9 days, for controls and treated respectively, to change from red-orange to red-ripe stage, while those from the open-field took 11 and 13 days respectively. The Stimulate™ had no effects on shoot height, number of leaves or fruit yield (means per fruit or plant) for any crop, but had significant effects in tomato fruits on dry mass, water content and time for skin colour change. Fewer aborted flowers in the sweet pepper control plants suggested that Stimulate™ increased flower production. Positive correlations were found for mass and diameter of both sweet pepper and tomato fruit.

Keywords: Sanya St. Trecia Steen; *Capsicum annuum*; Fruit sugar content; Fruit acidity; Greenhouse cultivation; *Lycopersicon esculentum*; Plant growth regulators; Stimulate™; Sweet pepper; Tomato