

ONTARIO TOMATO RESEARCH INSTITUTE RESEARCH SUMMARY RESULTS - 2002

PACLOBUTRAZOL AND ACIBENZOLAR-S-METHYL INDUCED TOMATO SEEDLING GROWTH RESPONSE AND RESISTANCE TO BACTERIAL SPECK (*Pseudomonas syringae* pv. *tomato*) AKBARALI MAHESANIYA

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Paclobutrazol, a plant growth regulator and/or acibenzolar-S-methyl, a plant defense activator were postemergence sprayed on two-week-old tomato plug seedlings to evaluate growth response and bacterial speck disease severity. Paclobutrazol induced significant changes involving reduced shoot height, leaf area, fresh shoot and root weights and increased stem diameter and leaf greenness. Acibenzolar-S-methyl had no marked effect on seedling growth except senescence of the lower leaves at higher concentrations. When these two chemicals were combined, the seedlings showed similar growth effects as seen with paclobutrazol and the senescence caused by acibenzolar-S-methyl was reduced. Two repeat applications of acibenzolar-S-methyl as compared to a single application had no significant effects on seedling growth. Bacterial speck foliar symptoms and speck lesion growth were reduced by acibenzolar-S-methyl and the combination of paclobutrazol and acibenzolar-S-methyl showed improved disease control. Higher doses of acibenzolar-S-methyl at either one application or two split applications did not improve disease control over one application. Acibenzolar-S-methyl at 30 mg L⁻¹ with paclobutrazol 5 mg L⁻¹ was the better combination in terms of seedling

development and bacterial speck control. The response of different cultivars to paclobutrazol and acibenzolar-S-methyl were similar for growth effects and bacterial speck disease control.

Akbarali Mahesaniya is a M.Sc. graduate student working with Drs R. E. Pitblado and V. Souza-Machado University of Guelph. The summary abstract is in partial fulfillment of his requirements for the degree of Master of Science. The thesis is available upon request.

Further trials were conducted at the Ridgetown College campus to include the following two abstracts.

PACLOBUTRAZOL/ACTIGARD

EFFECT OF ACTIGARD 50WG AND BONZI 4 ON DISEASE CONTROL IN TOMATOES. Bacterial speck grew more rampant in the greenhouse than bacterial spot. Actigard 50WG at a rate of 30 ppm effectively reduced both populations of bacterial speck and spot. Bonzi 4 did not reduce or control either bacterial diseases in the greenhouse. Tomato seedling vigour was reduced when Actigard 50WG was applied and when bacterial lesions of greater than 8 were counted just prior to being transplanted into the field. Bonzi treated seedlings however withstood or safened the harmful effects caused by bacterial populations over 8 with no significant loss in seedling vigour. There were no treatment effects on stand establishment. The setback observed at the seedling stage caused by either the level of bacterial infections and the slight phytotoxic effects of Actigard 50WG, dissipated once plants were grown outdoors. Yields and fruit anthracnose counts were not significantly affected by treatments.

EFFECT OF ACTIGARD 50WG AND BONZI 4 ON DISEASE CONTROL IN TOMATOES - 4 CULTIVARS. Weather conditions throughout the season were extremely dry, delaying the development of tomato diseases until late August. The treatment effects were not observed in this trial as with other trials where the combination of Actigard 50WG and Bonzi worked extremely well together. The plots were irrigated throughout the season.