

## **Executive Summary: Weed Control and Crop Tolerance Evaluations in Processing**

### **Tomatoes**

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#### **Weed management strategies for tomatoes.**

The objective of this trial was maintained weed-free to test for weed control and tolerance of tomatoes to various weed management programs. PPI applications of Dual+Treflan followed by POST applications of s-metolachlor+metribuzin Dual+Sencor caused commercially unacceptable visual injury. Injury consisted of stunted plants, reduced leaf area, and leaf distortion. Despite the visual injury that was observed, this treatment did not delay maturity nor did it reduce tomato yield. Reducing the rate of Treflan in the PPI tank mix of Dual+Treflan reduced the amount of injury when followed by a POST tank mix of Dual+Sencor. Excellent season long control of velvetleaf, pigweed species, common lamb's-quarters and eastern black nightshade was observed following PPI Dual+Sencor plus four sequential micro-rate applications of Sencor. The addition of Pinnacle did not increase visual injury. Marketable yields and green fruit production in all herbicide treatments were comparable to the weed-free, untreated check.

#### **Weed control and tolerance of tomatoes to Command (clomazone)**

The objective of this study was to determine weed control and tomato tolerance to PPI treatments of Command (clomazone) applied at rates from 0 to 840 g a.i. ha<sup>-1</sup>. Visual injury to tomato was not observed until 14 days after transplanting (DAP). Injury increased as clomazone rate increased, and it was commercially unacceptable at 1 L/ac Command (2X label rate). Injury symptoms included bleaching of new actively growing leaf tissues. Command provided good control of velvetleaf, excellent control of common ragweed, fair control of eastern black lamb's-quarters and poor control of pigweed species and common lamb's-quarters. Green yield did not increase as Command rate increased, nor was green yield different in any of the clomazone treatments than in the untreated check. Total yield in the weed-free portion of each plot did not differ among any of the treatments.

#### **Weed control and tolerance of tomatoes to tank mixes of Pinnacle, Prism, Bravo and Kocide.**

The objective of this study was to test for weed control and tolerance of tomatoes to various tank mixes of Prism, Pinnacle, Sencor, Bravo and Kocide. Commercially significant visual injury was observed at the high rate of the Prism+Sencor and Prism+Pinnacle tank mixes. Visual injury included yellowing of the growing points and some leaf cupping. In the remainder of the treatments, visual injury was commercially acceptable (i.e. <10%). In all cases, the tomato plants outgrew the visual injury by 28 days after transplanting (DAP). The Prism+Sencor, Pinnacle+Sencor and Prism+Pinnacle tank mixes provided excellent control of velvetleaf, common lamb's-quarters and green foxtail. The addition of Bravo and Kocide to each of these tank mixes did not reduce control of any weed species found in the trial. Control of velvetleaf was fair when Prism or Pinnacle were applied alone. The addition of Bravo tended to reduce velvetleaf control, though differences were not significantly different. Mixing either Prism or Pinnacle with Kocide reduced velvetleaf control. Control of common lamb's-quarters was good in the Prism treatment. The addition of Bravo tended to reduce control of common lamb's-quarters, though differences were not significant. There was a significant decrease in common lamb's-quarters control when Prism was tank mixed with Kocide. The addition of Kocide to Pinnacle reduced control of common lamb's-quarters from 94 to 85%. Green yields were not different among any of the treatments, suggesting that none of the herbicides, either individually or tank-mixed with Bravo or Kocide, delayed tomato maturity. None of the treatments reduced total yield when compared with the untreated check.

#### **Weed control and tolerance of tomatoes to new preemergence herbicides.**

The objective of this study was to compare Command, Valor (flumioxazin), and low rates of Callisto (mesotrione) alone or tank-mixed with Dual+Sencor for weed control and tolerance in tomatoes. The highest rate of Valor and Command caused significant visual injury to tomato. Tomato outgrew the visual injury caused by each tank mix by the end of the growing season. When Dual+Sencor were tank mixed with either Command, Valor, or Callisto at recommended rates, visual injury was not observed. Season-long control of velvetleaf was excellent when Dual+Sencor was followed by Command or Valor, and good when followed by Callisto. Each treatment provided excellent season-long control of pigweed, common lamb's-quarters and common ragweed. Tomato yield following the application of Command, Valor or Callisto after Dual+Sencor provided equivalent green and total marketable yields to Dual+Sencor alone, and there was no increase in green fruit yield in any of these treatments over the weed-free untreated check.

#### **Weed control and tolerance of tomatoes to postemergence application of Dual and Dual plus Sencor**

The objective of this study was to determine weed control and tomato tolerance to POST applications of Dual+Sencor following reduced rates of Dual+Sencor PPI. None of the treatments caused visual injury to tomato. Season-long control of pigweed, velvetleaf and lamb's-quarters was excellent when Dual+Sencor (PPI) was followed by POST applications of Dual+Sencor (at all rates tested). Green yields were not different in any treatments compared to the weed-free check, indicating that POST applications of s-metolachlor+metribuzin did not delay maturity. Marketable yields were not different than in the untreated, weed-free check.

#### **Weed control and tolerance of tomatoes to tank mixes of Sencor plus Cabrio and Pinnacle plus Cabrio**

The objective of this trial was to determine weed control and tolerance of Sencor+Cabrio and Pinnacle (with or without an adjuvant) plus Kocide or Cabrio. None of the treatments resulted in significant visual injury. Season-long control of common lamb's-quarters was greater in the Sencor+Cabrio tank mix compared with metribuzin applied alone as three sequential POST treatments. Season-long control of common lamb's-quarters decreased when Pinnacle was tank-mixed with Cabrio or Kocide and the adjuvant (Agral 90) was not added. Velvetleaf control was also less when Pinnacle and Cabrio were tank mixed without Agral 90.

#### **Tolerance of tomato varieties to Pinnacle**

This tolerance of a number of new processing tomato varieties (N1069, N2199, N1980, N1477, N1529, N1480E, CC337, H9553, H3002, H2401, H9464, H9997, H3402 and H9780) to Pinnacle was tested. Red yields of N1980, N1477, N1529, H3002 and H9553 were similar in the Pinnacle (2X rate) treatment as in the untreated check. The remaining varieties tested showed commercially and statistically significant yield losses when treated with thifensulfuron-methyl.

#### **URMULE Activity:**

An URMULE was submitted for a tank mix of Prism+Pinnacle. URMULEs will be submitted for Prism+Sencor and Pinnacle+Sencor.