

# Herbicide Weed Control in Sweet Corn

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## Abstract

*Preplant incorporated and/or preemergence herbicide treatments including metolachlor (Dual®), EPTC with safener (Eradicane®), cyanazine (Bladex®), pendimethalin (Prowl®), and tank-mix combinations provided good (88%) to excellent (>98%) weed control of prostrate and tumble pigweeds and purslane in sweet corn.*

## Introduction

Weed control in sweet corn is required to minimize competition for space, water, and nutrients. Weeds between the rows can be removed by cultivations but herbicides may be necessary to prevent and/or remove weeds within the row. At planting time, herbicides such as metolachlor (Dual®), EPTC with safener (Eradicane®), cyanazine (Bladex®), and pendimethalin (Prowl®) can be applied as preplant incorporated (PPI) or preemergence (PE) to the soil before the weeds emerge. Eradicane® must be mechanically incorporated because of its volatility and Prowl® must be applied after planting because PPI treatments are injurious to corn. The objective of this field study was to evaluate and determine weed control efficacy and crop safety of various herbicide treatments in sweet corn.

## Materials and Methods

A small plot field study was conducted at the University of Arizona Maricopa Agricultural Center. The test was set up as a randomized complete block design with four replicates and each plot consisted of three 40-inch beds measuring 30 feet in length. One bed was an untreated buffer between treated beds. The field was listed and on March 11, PPI herbicide treatments were applied with a hand-held boom having six flat fan 8004 nozzles spaced 20-inches apart and delivered in 20 gallons per acre of water pressurized with a CO<sub>2</sub> backpack sprayer at 35 psi. Weather conditions during the morning were high cloudiness with winds at 10 mph and air temperature at 65°F. Soil temperature was 58°F and dry. Within 1-hour, a "sidewinder" power incorporator-bed shaper was used to incorporate the PPI treatments to a depth of 3- to 4-inches. After bed shaping, sweet corn cv. Sweetie 82 was planted with a single row on each bed. PE herbicide treatments were applied immediately after planting on the soil surface using the same sprayer. During the afternoon PE herbicide applications, the weather was clearer with some scattered clouds, some winds up to 15 mph, air temperature at 74°F, and soil temperature at 66°F. Following PE applications, water was applied to the crop by furrow irrigation and beds were completely wetted across the surface to activate PE herbicides. Weeds present during the season were *Amaranthus blitoides* (prostrate pigweed), *A. albus* (tumble pigweed), and *Portulaca oleracea* (common purslane). Visual weed control and crop injury were evaluated at 4, 6, and 8 weeks after treatment (WAT).

## Results and Discussion

Results are summarized for observed weed control and sweet corn injury for PPI and PE treatments and showed that pigweeds and purslane were effectively and safely controlled (Table). Eradicane® treated corn had some tolerable corn height reduction and all other treatments were completely safe. All treatments provided near complete and season-long control of purslane at 99% compared to the untreated check. Bladex® alone at 1.0 lb a.i./A applied PE was slightly

better than when applied PPI for pigweed control. Dual® alone at 1.5 lb a.i./A applied PPI appeared to be slightly better than when applied PE for prostrate pigweed control. Prowl® alone at 1.0 lb a.i./A applied PE was comparable to all combination treatments giving better than 98% weed control.

At all rating dates, all herbicide treatments applied alone or in combination as PPI or PE applications provided good to excellent weed control of the limited weed spectrum in sweet corn in this test.

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Table. Herbicide weed control in sweet corn at U of A MAC. (Umeda).

Treatment	Rate (lb a.i./A)	Timing	% Weed Control								
			04/08/94	04/21/94	05/09/94	04/08/94	04/21/94	05/09/94	PORAL 04/08/94	AMAAL 05/09/94	
Untreated check			0	0	0	0	0	0	0	0	0
Dual®	1.5	PPI	0	0	0	97	99	97	99	97	99
Eradicane®	4.0	PPI	0	10	8	99	97	97	99	97	99
Bladex®	1.0	PPI	0	0	0	94	89	88	99	88	96
Dual® + Bladex®	1.5 + 1.0	PPI	0	0	0	99	99	99	99	99	99
Eradicane® + Bladex®	4.0 + 1.0	PPI	0	16	6	99	98	98	99	98	99
Dual®	1.5	PE	0	0	0	95	93	95	99	95	99
Bladex®	1.0	PE	0	0	0	99	96	97	99	97	98
Prowl®	1.0	PE	0	0	0	98	98	98	99	98	98
Dual® + Bladex®	1.5 + 1.0	PE	0	0	0	99	98	98	99	98	99
Prowl® + Bladex®	1.0 + 1.0	PE	0	0	0	99	99	99	99	99	99

PPI and PE treatments applied, corn planted, and watered on March 11, 1994.

CSI = crop stand injury

AMABL = prostrate pigweed (*Amaranthus blitoides*), PORAL = purslane (*Portulaca oleracea*),

AMAAL = tumble pigweed (*Amaranthus albus*)