

# Preemergence Herbicides for Weed Control in Melons

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## Abstract

*All herbicide treatments, Prefar, Frontier, Dual Magnum, Valor, and Prefar combined with Dual Magnum or Frontier caused less than 10% injury on cantaloupes. Frontier at 0.75 lb AI/A, Dual Magnum at 1.0 lb AI/A, Valor at 0.03 and 0.05 lb AI/A controlled weeds similar to Prefar. Prefar at 4.0 lb AI/A combined with Frontier controlled tumble pigweed (94%), narrowleaf lambsquarters (95%), Wright's groundcherry (97%), and horse purslane (94%). None of the preemergence herbicide treatments controlled purple nutsedge.*

## Introduction

In melon crops grown in the desert, bensulide (Prefar®) is the most commonly used herbicide that is used at planting time to control weeds during the period of stand establishment. Prefar effectively controls most grasses and some of the small seeded broadleaved weeds. Common purslane (*Portulaca oleracea*) is most the most efficaciously controlled broadleaved weed by Prefar. Dimethenamid (Frontier®) is generally not recognized outside of the major corn growing regions. S-metolachlor (Dual Magnum®) has been introduced as the more active chemical component of the previous Dual 8E® product. Flumioxazin (Valor®) was identified in the herbicide screening project that exhibited melon crop safety with efficacy on a limited number of weeds. Secondary evaluations were warranted to further evaluate Valor and confirm its crop safety. Most herbicide applications in vegetable crops are single products. Combinations of Prefar with other products in other crops have demonstrated an additive effect to control a broader spectrum of weeds. Combinations of Prefar with other products have not been extensively evaluated in desert-grown melons. This field experiment was conducted to determine the crop safety and weed control efficacy of new herbicides and combinations of Prefar with other herbicides.

## Materials and Methods

A small plot field experiment was established at the University of Arizona Maricopa Agricultural Center, Maricopa, AZ. Cantaloupe cv. Topmark was planted on 17 April 2000 in a single seedline on every other row of 40-inch shaped beds and furrow irrigated. Plots consisted of a single bed measuring 45 ft long and each treatment was replicated four times. Preemergence herbicide treatments were applied on 17 April, immediately after planting. All treatments were applied using a backpack CO<sub>2</sub> sprayer equipped with a hand-held boom consisting of four 8002 flat fan nozzle tips spaced 20 in apart. All treatments were applied in 25 gpa water pressurized to 30 psi. At the time of applications, the temperature was 80F with only a very slight breeze at about 5 mph. The soil was dry and the temperature below the surface was 72F. Crop injury and weed control was evaluated visually following applications at 3 weeks after treatment (WAT).

## Results and Discussion

At 3 WAT, all preemergence herbicide treatments were safe on cantaloupes with less than 10% injury observed (Table). Frontier at 0.75 lb AI/A caused slightly more stunting than at 0.5 lb AI/A. Prefar combined with Dual Magnum caused slightly more stunting than when either herbicide was applied alone. Valor at 0.03 or 0.05 lb AI/A did not show any significant crop injury.

Prefar at 6.0 lb AI/A, the commercial standard treatment, controlled the few tumble pigweed (*Amaranthus albus*), narrowleaf lambsquarters (*Chenopodium denticatum*), Wright's groundcherry (*Physalis wrightii*), and horse purslane (*Trianthema portulacastrum*) in this experiment in a range of 88 to 96%. Frontier, Dual Magnum, and Valor gave similar weed control as Prefar. Prefar at 4.0 lb AI/A combined with Frontier at 0.38 lb AI/A provided the most efficacious weed control of all of the broadleaved weeds at 94 to 97%. None of the treatments alone or in combination had any effect on the purple nutsedge (*Cyperus rotundus*).

Table. Preemergence Herbicides for Weed Control in Melons

| Treatment               | Rate<br>(lb AI/A) | Crop Injury<br>% | Weed Control (%) |       |       |       |       |
|-------------------------|-------------------|------------------|------------------|-------|-------|-------|-------|
|                         |                   |                  | AMAAL            | CHEPR | PHYWR | TRTPO | CYPRO |
| Untreated check         |                   | 0                | 0                | 0     | 0     | 0     | 0     |
| Prefar                  | 6.0               | 3                | 88               | 91    | 94    | 96    | 0     |
| Frontier                | 0.5               | 1                | 84               | 88    | 95    | 75    | 0     |
| Frontier                | 0.75              | 9                | 86               | 91    | 95    | 88    | 0     |
| Dual Magnum             | 0.75              | 5                | 88               | 89    | 95    | 79    | 0     |
| Dual Magnum             | 1.0               | 4                | 91               | 89    | 97    | 89    | 0     |
| Valor                   | 0.03              | 4                | 81               | 90    | 93    | 88    | 0     |
| Valor                   | 0.05              | 4                | 83               | 85    | 91    | 76    | 0     |
| Prefar +<br>Dual Magnum | 4.0<br>0.5        | 8                | 89               | 95    | 97    | 91    | 0     |
| Prefar +<br>Frontier    | 4.0<br>0.38       | 5                | 94               | 95    | 97    | 94    | 0     |
| LSD (p=0.05)            |                   | 7.1              | 7.2              | 7.4   | 6     | 16.7  | 0     |

Ratings at 3 WAT.

AMAAL = *Amaranthus albus* (tumble pigweed)

CHEPR = *Chenopodium denticatum* (narrowleaf lambsquarters)

PHYWR = *Physalis wrightii* (Wright's groundcherry)

TRTPO = *Trianthema portulacastrum* (horse purslane)

CYPRO = *Cyperus rotundus* (purple nutsedge)