Preemergence Herbicide Combinations for
Weed Control in Cantaloupes

K. Umeda

Abstract

Sandea, Valor, and Outlook offered promising results in different combinations
applied preemergence (PREE). The combination of Prefar plus Sandea gave 95%
control of pigweed and continued to control lambsquarters at 90% late in the
season. Prefar combined with Valor gave acceptable pigweed control and
lambsquarters were controlled at acceptable levels at 88 and 86%, respectively.
Outlook combined with Valor was safe and gave good early pigweed control and
later control of lambsquarters. Strategy alone at either 1.0 or 2.0 pt/A did not
provide acceptable levels of weed control and no significant crop injury was
observed.

Introduction

Melon growers are extremely limited with the availability of only three herbicides for use at planting time. Weed control
is critical to establish a satisfactory crop stand in the spring or fall growing seasons. In the desert production systems,
Prefar* (bensulide) is the most commonly used herbicide applied to the soil surface after planting before the first
irrigation. It is primarily a grass herbicide with some activity against small-seeded broadleaf weeds like purslane and
pigweeds. Curbit* (ethafluralin) is occasionally used but melons are susceptible to injury. Strategy* [ethafluralin (20%)
and clomazone (6%) package mix] was introduced recently for melon weed control. Clomazone (Command*) has been
evaluated in the past but melon foliage exhibited severe bleaching and effective weed control was marginal. Sandea*
halosulfuron) is an effective postemergence nutsedge herbicide that also demonstrate efficacy and marginal safety when
applied to the soil. Valor* (flumioxazin), Dual Magnum* (s-metolachlor), and Outlook* (dimethenamid) initially exhibited
selective weed control in screening experiments. This field study was conducted to evaluate and determine the safety
and efficacy of combinations of several soil applied herbicides in cantaloupes. The combining of herbicides could
broaden the spectrum of weeds to be controlled in melons and may be safer on melons if lower rates of application are
used.

Materials and Methods

A small plot experiment was conducted at the University of Arizona Maricopa Agricultural Center, Maricopa, Arizona.
Cantaloupe cv. Sol Dorado was planted on every other raised and shaped 40-in bed such that the single seedlines were
80-in apart. The melons were furrow irrigated with water running in only the north furrow as opposed to every furrow
to prevent salt build up in the seedline on the beds. Each treatment plot consisted of one 40-in bed measuring 30 ft in
length. Herbicide treatments were replicated four times in a randomized complete block design. All herbicide treatment
applications were made using a backpack CO
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sprayer equipped with a hand-held boom consisting of two flat fan 8002
nozzle tips spaced 20-in apart. All sprays were applied in 30 gpa water at a pressure of 40 psi. Preemergence (PREE)
herbicide applications were made on 26 March 2002, one day after planting. At the time of applications, the weather was
clear with no wind, air temperature at 70°F and dry soil at 68°F. The furrow irrigation was applied within a day and the
beds were sub-irrigated nearly completely across the top to activate the herbicides. Cantaloupe injury and weed control
was rated visually at intervals after PREE applications of herbicides.

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Results and Discussion

At 3 weeks after treatment (WAT), prostrate pigweed was the dominant weed species present and common lambsquarters appeared later in the season. The combination of Prefar plus Sandea gave very good early control of pigweed (95%) and continued to control lambsquarters (90%) late in the season (Table). Cantaloupe was slightly stunted and injury was a marginally acceptable 15%. Prefar combined with Valor gave acceptable pigweed control and lambsquarters were controlled at acceptable levels at 88 and 86%, respectively. Prefar combined with Dual Magnum or Outlook gave marginally acceptable weed control but melon injury was not acceptable at 19 and 24%, respectively. Dual Magnum combinations with Sandea or Valor tended to cause marginally unacceptable melon injury and late season lambsquarters control was not effective. Outlook combined with Valor was safe and gave good early pigweed control and later control of lambsquarters. Outlook plus Sandea controlled weeds similar to Valor combinations but injury was higher on cantaloupe. Sandea at 0.05 lb AI/A alone was injurious to melons and weed control was marginally acceptable. Strategy alone at either 1.0 or 2.0 pt/A did not provide acceptable levels of weed control and no significant crop injury was observed.

Sandea, Valor, and Outlook offered promising results in different combinations applied PREE. Future research is necessary to determine efficacy against a broader spectrum of weeds. Lower rates in combinations should be evaluated to ensure melon crop safety and continued weed control efficacy.

*Product names mentioned are registered trademarks.
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Table. Preemergence herbicide combinations for weed control in cantaloupes

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Melon Injury (%)</th>
<th>Weed Control (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(lb AI/A)</td>
<td>AMABL 3 WAT</td>
<td>AMABL 12 WAT</td>
</tr>
<tr>
<td>Untreated check</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Prefar + Sandea</td>
<td>4.0 + 0.05</td>
<td>15</td>
<td>95</td>
</tr>
<tr>
<td>Prefar + Valor</td>
<td>4.0 + 0.05</td>
<td>15</td>
<td>88</td>
</tr>
<tr>
<td>Prefar + Dual Magnum</td>
<td>4.0 + 0.25</td>
<td>19</td>
<td>84</td>
</tr>
<tr>
<td>Prefar + Outlook</td>
<td>4.0 + 0.25</td>
<td>24</td>
<td>93</td>
</tr>
<tr>
<td>Dual Magnum + Sandea</td>
<td>0.25 + 0.05</td>
<td>21</td>
<td>76</td>
</tr>
<tr>
<td>Dual Magnum + Valor</td>
<td>0.25 + 0.05</td>
<td>16</td>
<td>83</td>
</tr>
<tr>
<td>Outlook + Sandea</td>
<td>0.25 + 0.05</td>
<td>18</td>
<td>88</td>
</tr>
<tr>
<td>Outlook + Valor</td>
<td>0.25 + 0.05</td>
<td>10</td>
<td>88</td>
</tr>
<tr>
<td>Strategy</td>
<td>1.0 pt/A</td>
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<td>76</td>
</tr>
<tr>
<td>Strategy</td>
<td>2.0 pt/A</td>
<td>8</td>
<td>61</td>
</tr>
<tr>
<td>Strategy + Sandea</td>
<td>1.0 pt/A + 0.05</td>
<td>18</td>
<td>89</td>
</tr>
<tr>
<td>Sandea</td>
<td>0.05</td>
<td>19</td>
<td>88</td>
</tr>
</tbody>
</table>

LSD (p=0.05) 15.9 13.4 33.0 11.2

AMABL = *Amaranthus blitoides* (prostrate pigweed), CHEAL = *Chenopodium album* (common lambsquarters)
Herbicides applied 26 March 2002