NITROFEN HERBICIDE for control of Yellow Oxalis in greenhouse roses

JACK L. BIVINS • CLYDE ELMORE

YELLOW OXALIS (Oxalis corniculata) is frequently a serious pest in greenhouse rose production. When steam fumigation precedes planting, the oxalis seedlings and plants are killed. However, due to the three to five year interval between steam treatments, when the roses are producing, reinfestation occurs by seed from adjacent beds. The seed is ejected from the seed pod with sufficient force to carry for several feet into previously clean beds. The seeds cling to clothing and often to animals, enabling them to be spread throughout the greenhouse and even to be introduced from the outside.

A preliminary study was started with the cooperation of Paul Nielson of Groen Rose Co., on March 4, 1971 to evaluate four herbicides, Nitrofen at 6 and 18 lbs active ingredient per acre, propachlor at 1 and 3 lbs, and chloramben at 6 and 18 lbs. The herbicides were sprayed over the soil surface, over new canes, and on lower leaves of the four-year-old, Happiness variety rose plants. The plots were immediately watered with an Ohio State watering system. Established four year old Happiness variety roses had been planted into a mix of redwood shavings and Baywood loamy sand soil in ground beds. A one-inch top dressing of redwood shavings was maintained around the plants. The herbicides were sprayed onto a solid stand of oxalis in early bloom and seed pod stage. All treatments were applied with a 2 gallon, X-Pert Hudson sprayer, equipped with an 8002 Tee-Jet nozzle and immediately watered in with ¾inch per sq ft of water through an Ohio State sprinkler system.

Weed count and crop phytotoxicity ratings were taken at intervals after herbicide application (see table). Crop phytotoxicity ratings were made May 4, June 11, and August 20, 1971. Weed counts were made June 11 and August 20, 1971.

When evaluated 44 days after treatment, Nitrofen at 3 lbs-active ingredients per acre killed about 50% of the mature yellow oxalis plants. At 9 lbs, over 95% control was achieved. Four months following the treatment, Nitrofen at 3 lbs was not effectively controlling oxalis, however the 9-lb rate continued to control better than 98% of the germinating seed. Observations made as early as one week following treatment showed that mature oxalis plants were affected by the herbicide. No visible symptoms of damage to mature or new rose canes were observed.

Effective Oxalis corniculata control of both mature plants and germinating seedlings was achieved with 9 lbs active ingredient per acre of Nitrofen for a four-month duration. At 3 lbs, partial control was achieved for 44 days, however, regrowth and new seedlings emerged by four months.

From the results of these experiments, Nitrofen appears to be a promising herbicide for pre- or postemergence control of Oxalis corniculata.

Nitrofen is most effective on weeds when applied preemergence or early post-emergence. If the herbicide is mixed into the soil it becomes ineffective. It is presently registered on several California crops and registration is pending on several ornamental crops.

The University of California cannot currently recommend Nitrofen on greenhouse roses until registration and further research on roses is available.

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AVERAGE OXALIS CORNICULATA PLANTS PER PLOT AND PER CENT CONTROL FROM SPRAYING HAPPINESS ROSES WITH TWO RATES OF NITROFEN

<table>
<thead>
<tr>
<th>Herbicide Treatment</th>
<th>Rate</th>
<th>Mature plants</th>
<th>New seedlings</th>
<th>Control</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(June 11, 1971)</td>
<td>Avg. plants per plot</td>
<td>Avg. plants per plot</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Nitrofen 3</td>
<td>2.20</td>
<td>95.1</td>
<td>99.9</td>
<td>34.7</td>
<td>79.3</td>
</tr>
<tr>
<td>Nitrofen 9</td>
<td>2.20</td>
<td>95.1</td>
<td>99.9</td>
<td>34.7</td>
<td>79.3</td>
</tr>
</tbody>
</table>

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