

**Title: Evaluation of V-10142 Herbicide in Strawberry
Final Report
SRSFC Project # 2007-14
Research Proposal**

Principal Investigators

Katie M. Jennings
Horticultural Science Department
North Carolina State University
Box 7609
Raleigh, NC 27695
katie_jennings@ncsu.edu

David W. Monks
NCCARS
North Carolina State University
Box 7643
Raleigh, NC 27695
david_monks@ncsu.edu

Objective:

Determine the tolerance of annual strawberry grown in plasticulture to V-10142 herbicide applied postemergence.

Justification:

With the loss of methyl bromide in production of annual strawberry grown on black polyethylene mulch, the likelihood of nutsedge becoming an increasing problem is great. Already we have received an increased number of calls from strawberry growers on methods for controlling this weed. Nutsedge is able to penetrate the polyethylene mulch because of its triangular, sharp leaves. Nutsedge can penetrate the plastic in as little as 10 days following the installation of the black polyethylene mulch. Currently no herbicides are labeled in strawberry to control nutsedge. V-10142, an experimental herbicide by Valent Corporation, is being developed for use in tomatoes and other vegetable crops and it gives good postemergence control of nutsedge and broadleaf weeds. Many vegetables including tomato, squash, watermelon, and zuchinni have exhibited good tolerance. No research has been done evaluating V-10142 in strawberry. Therefore this work would allow us to determine if strawberry is tolerant to postemergence applications.

Materials and Methods:

A trial was established at the Horticultural Crops Research Station, in Clinton, NC. Strawberry plug plants were transplanted in raised beds covered in black polyethylene mulch on October 11, 2006 (normal planting time for strawberry in NC). Treatments were a factorial arrangement of V-10142 rates by three application timings. Rates of V-10142 included 0.05, 0.075, 0.1, 0.15, 0.2, 0.3, and 0.4 lb ai/A . Application timings included December, March, and April. Treatments were applied over-the-top of the strawberries with a backpack sprayer equipped with a flat fan nozzle delivering 20 GPA at 42 psi. Visual injury ratings and strawberry measurements were taken periodically throughout the season and 26 strawberry plants per plot were harvested weekly for five weeks.

Results:

Following each application slight yellowing of the strawberry plants was observed ranging from 3 to 10%, however this injury was transient. V-10142 caused stunting and caused deformed berries to form. Across treatments no statistical differences were observed in the amount of malformed berries, however there was a trend for more deformed berries in treatments applied in December or March. Deformed berries were misshapen and leaves formed from the seeds on the berries (Photos 1 and 2). V-10142 applied in December at 0.2, 0.3, and 0.4 lb ai/A significantly reduced yield on the initial harvest date, although there was a trend for a reduction in yield with the lower rates also. No statistical reduction was noted for Harvest 2 through 5 when V-10142 was applied in December. Across treatments applied in December total strawberry yield was similar with the nontreated check.

V-10142 applied in March delayed fruit production. On the initial harvest date, April 27th, no berries were harvested in plots treated with V-10142 applied at 0.15, 0.2, 0.3, and 0.4 lb ai/A and only an average of 0.1 lb were harvested from plots treated with V-10142 applied at 0.075 and 0.1 lb ai/A while 2.0 lb was harvested from the nontreated check. The lowest rate, 0.05 lb ai/A was not significantly different from the nontreated check. This trend continued through the third harvest on May 10th. On May 18th (fourth harvest) and May 24th (fifth harvest) crop yield was similar to the nontreated check. Across March applications total strawberry yield from 0.05, 0.075, 0.1, and 0.15 lb ai/A was similar to the nontreated check whereas V-10142 at rates of 0.2, 0.3, and 0.4 lb ai/A significantly reduced yield.

Across April treatments berry yield on each harvest date and total yield was similar to the nontreated check, however there was a numerical trend for a reduction in yield as rate of V-10142 increased.

Conclusions:

Rates likely required for acceptable nutsedge control (0.1 and 0.2 lb ai/A) caused too much injury and reduced yield, however this trial is being conducted again during the 2007-2008 season. The lower rates including 0.05 and 0.075 were sometimes safe to strawberry however nutsedge control would likely be inadequate at these rates. Therefore V10142 is not likely to be registered for postemergence application in strawberry grown on plasticulture, however if control of another target weed would be acceptable at these lower rates there might be a fit in strawberry production.

In other trials V-10142 has shown good preemergence activity on henbit and corn spurry, both weeds common in strawberry grown on plasticulture. An area for future research would be to evaluate V-10142 for preemergence weed control in strawberry rows and strawberry middles. Some limited work has been conducted in North Carolina evaluating the carryover effects of V-10142 on strawberry plug plants. A preemergence application may be safer than a postemergence application.

Impact Statement:

It is likely that this herbicide will not enter the IR-4 program to be registered for postemergence application in strawberry.

Citations:

None



Photos 1 and 2. Strawberry fruit produced by strawberry plants treated with V10142 applied postemergence.