

Avoiding Outlook Herbicide Injury on Golden Delicious Squash

THE PROBLEM

Occasional injury is noted on Golden Delicious squash that sometimes looks like disease. Young leaves turn brown and fall from the plant if the injury is severe. More likely, the plant will recover and no major impact on yield will be noted. There may be a slight delay in maturity. The pictures to the right are symptoms seen in June of 2014 in Monroe, Corvallis, and St Paul (from top to bottom), all planted about the same time in May. In all cases the squash was able to outgrow these symptoms.



HOW DOES THIS HAPPEN?

Outlook herbicide must be incorporated into the soil so that it is near weeds seeds as they begin to germinate. Outlook herbicide is then absorbed by roots and shoots and growth of the weed ceases. The use pattern for Outlook requires that the squash be planted first, then rainfall or irrigation is used to move the Outlook into the soil from where weeds usually emerge, about $\frac{1}{2}$ to $\frac{3}{4}$ in deep. Squash seeds are typically planted below these depths, and the dose of Outlook reaching squash seeds is minimal and seedlings are not injured. In some years with lots of rain after planting, enough Outlook may actually move down in the soil to reduce emergence and slow seedling growth. Incorporating Outlook herbicide before planting obviously raises the chance of injury.

What happens if Outlook herbicide is not incorporated with water immediately after planting as required on the label? If Outlook is applied but not incorporated with water, a thin band with a high concentration of herbicide remains above the seed and the emerging plant. If water is applied just as the squash cotyledons are pushing through the soil, the stem of the squash will



be exposed to a high concentration of Outlook, and because the stems can also take up the herbicide, damage to the plant leaves may occur. This event is not unique to the use of Outlook in squash. Similar injury to snap beans with Dual Magnum (closely related chemistry) is a relatively common occurrence (see picture to left).

Spring 2014

The 3rd week of May was unique for many growers this year. Squash was planted to moisture into relatively warm soil, and with the expectation that rain would follow as predicted by forecasters. In many places, that rainfall did not materialize as expected, with less than 1/3 of

an inch falling over 3 days. This amount was almost sufficient to get the squash out of the ground, but not enough to fully activate Outlook or produce a uniform crop stand. Growers were reluctant to start watering, and when they did, it was to even up emergence. This caused activation of the herbicide Outlook at a critical time, and squash damage was noted in several fields.

Testing the hypothesis

We put out a small trial at the OSU vegetable research farm to test this hypothesis, and while the situation was difficult to duplicate because of warmer soil temps in late June, and intermittent rainfall, the results were very similar. Outlook was applied at 20 oz/A, and plots that were irrigated as the crop emerged suffered severe damage compared to plots that were untreated.

Figure1 . Outlook injury to Golden Delicious squash when the herbicide was ‘activated’ as the squash began to emerge from the soil. Outlook was applied at 20 oz/A on June 20 after planting irrigated as the squash emerged. Pictures taken on July 6, 16 DAT (days after treatment) and July 18 as the plant recovered. The first leaf is often the most susceptible and can be seen on the soil surface (arrow on picture on right).



Figure 2. **Optimal** incorporation of Outlook herbicide after seeding (left) and **delayed** incorporation that may result in crop damage. Delayed incorporation may also jeopardize weed control.

