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Glyphosate Vapor Drift: Bright Yellow Young Growth

Bright yellow young growth on numerous plant species near the air intake fans in the greenhouse can denote glyphosate vapor drift.



Almost every year I run into a situation of herbicide injury with greenhouse crops. In North Carolina, September is when people renovate their lawns. It is also common that I receive emails about odd growth appearing on plants after vapor drift from a 2,4-D type herbicide was taken into the greenhouse by the exhaust fans. Keep in mind; only a little vapor can cause catastrophic damage. I have seen instances in which an herbicide applied a mile away resulted in damage to poinsettias. In addition,



Figure 1. Dahlia with yellow bands near the base of a young leaf caused by glyphosate vapor drift.

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very low concentrations can still kill plants. For instance, to replicate vapor drift damage, I target a solution concentration of 1/10th of 1% of the mixing rate.

Unfortunately, I recently came across the effects of Glyphosate (Roundup®, etc) applied near the air intake fans of a greenhouse. I first noticed that some small dahlias had a yellow band on the new growth (Fig. 1). It could have been mistaken as an iron deficiency; especially with the cooler weather we had been experiencing. Upon entering a second house, it was clear the problem was not nutri-

tional. There was a large group of tomato plants with bright yellow young growth (Fig. 2). The affected group was situation near the air intake fan (Fig. 3). The zone of damage was most severe about 5 feet in from the fan and extended for about 10 feet. Plants further in the greenhouse were normal. Damage also occurred in other houses. If hanging baskets were near the air intake fan, those plants also exhibited damage (Fig. 4).

At high concentrations, glyphosate is a quick and efficient killer. (Its mode of action is a chlorophyll inhibitor, thus that is why

Additional Glyphosate Injury Information

If you want to find out additional information about glyphosate injury, link to the following publications.

Tomatoes (Clemson University)

http://www.clemson.edu/extension/hgic/hot_topics/2010/07glyphosate.html

Mississippi State: Glyphosate Drift ID and Anticipated Crop Response

<http://msucares.com/crops/college/07presentations/pdf/glyphosate-wheat.pdf>

University of Illinois

<http://urbanext.illinois.edu/hortanswers/detailproblem.cfm?PathogenID=197>

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the new growth turns yellow because the green coloration produced by chlorophyll is blocked.) At low concentrations, glyphosate is still lethal; it just takes longer for it to kill. In our simulated drift studies, it may take up to 2 weeks for a glyphosate treated plant to die. In general, any plant exhibiting bright yellow coloration will die (Fig. 2). Discarding them is the only option. Plants

with lighter shades of yellow (pale yellow) or only a few leaves affected will generally have stalled new growth, but will survive. If economically feasible, trim back the plants and apply a high ammoniacal-nitrogen and high phosphorus based fertilizer such as 20-10-20 or 20-20-20 to try to stimulate new growth. The recovery period for mildly affected plants is generally 3 to 4 weeks.



Figure 2. Bright yellow leaves near the growing point denote glyphosate vapor drift injury.



Figure 3. Plants near the air intake fan affected by vapor drift.

TIPS

Turn off air intake fans before applying herbicides outside of greenhouses.

Do not apply herbicides on windy days.

Avoid glyphosate applications inside of greenhouses containing plants.

Glyphosate spray residue can dry on plastic surfaces (plastic film or weed barrier) and can later volatilize when the plastic is rewetted (such as when poinsettias are set on top of the weed barrier and irrigated). A few days after a glyphosate application is made inside a greenhouse, it is a good idea to rinse all plastic surfaces before placing plants there.



Figure 4. Hanging baskets near the air intake fan with vapor drift.

Possible Mimics: New Growth with Yellow Foliage

Iron Deficiency: typically begins as an interveinal chlorosis. With advanced symptoms the entire upper shoot can turn yellow. Note symptoms develop over time. Test the substrate pH to confirm.

Heat Gas Problems: cracked heat exchangers or leaking gas pipes can lead to yellowing of the top growth. Inspect the furnaces for problems.