VegNet

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Low-Drift nozzles: When were they introduced, and how much have they prevented drift complaints/cases/incidences on non-target sensitive crops, personal property, or people? – *Erdal Ozkan, Dept. of Food, Agricultural, and Biological Engineering*

This is the time of the year we need to pay extra attention to reducing spray drift because some of us are applying herbicides that could create serious problems if the herbicide drifts away from the application site and deposits on crops sensitive to that particular herbicide, such as Dicamba products or Glyphosate. One way we can reduce spray drift is through using low-drift nozzles. Recently someone asked me the question on top of this article. I thought I should share a summary of my answer to this person with you.

When was the first low drift nozzle developed, and what others followed it: Manufacturers have gradually changed designs of their nozzles in order to improve spray patterns and reduce the number of drift-prone droplets. In the USA, the most established sprayer nozzle manufacturer is Spraying Systems, also known as TeeJet. They started the development in their nozzles to achieve the two goals I mentioned above back in late 70's when they came up with a series called LP nozzles (LP stands for Low Pressure). However at low pressures they noticed that the3 spray angle would decrease. Then the next breakthrough came in 1985 with their XR (stands for Extended Range)

nozzles which allowed users to operate their sprayers at pressure as low as 15 psi without seeing any noticeable change in the spray pattern. When operated in low pressures, these nozzles would reduce the number of drift-prone droplets noticeably. The first nozzle in what we call today "low-drift nozzles" was "DriftGuard" developed in 1992. Not many people buy these nozzles these days because "better" (more effective) low-drift nozzles were introduced about 2-3 years later. Several companies introduced what is called as "Air Induction Low-drift nozzles". Today, the most popular types of low-drift nozzles sold are this type.

How much have they prevented drift complaints/cases/incidences on non-target sensitive crops, personal property, or people?

Low drift nozzles work. They reduce the number of drift-prone droplets significantly. However, unfortunately I don't have a good answer to the question on how these nozzles have prevented drift complaints. No such data exist. However, there are indications that these nozzles must have been reducing incidents of drift because people have been switching from the conventional nozzles to "low-drift nozzles" over the years. At least the information I got from one major nozzle company, the "low-drift" nozzles have been overselling their highly popular conventional nozzles. If these nozzles were not reducing the risk of drift damage, people would not have been paying more to buy the low-drift nozzles. Another indication that these nozzles are reducing the risk of spray drift is the recent decision BASF, a major agricultural chemical company, has made. For their product called "Status", basically a Dicamba product, BASF is supplying low-drift air induction nozzles to buyers of Status, free of charge. BASF must have credible data in their hands that there will be fewer complaints related to drift damages as long as people are using Air Induction nozzles. Otherwise, they would not be providing free nozzles (costing up to $300 per buyer, depending on the size of the sprayer boom and the number of nozzles on the boom) to each buyer of Status herbicide.

Herbicide Drift onto Vegetables – *Doug Doohan, Dept. of Horticulture & Crop Science; Dave Scurlock, OSU Extension*

Most vegetable and fruit farmers have probably experienced crop injury from glyphosate spray drift at one time or another. However, the low doses of

glyphosate involved in drift may cause little or no injury and often go undetected. Depending on the crop species glyphosate can be much less toxic than 2,4-D or dicamba, herbicides that are becoming much more important in agronomic crop weed management.

This spring grapevines in nearly every vineyard we have visited show symptoms of 2,4-D injury. In at least one vineyard drift from a nearby soybean field resulted in a complete crop loss. 2,4-D use in burn downs to kill marestail in nearby grains fields was a common factor across most of the vineyards with drift-injury symptoms.

Despite the bad weather this spring it is unlikely that environmental conditions were the major role in the high incidence of drift detection in vineyards. Rather it is the extreme sensitivity of grape to 2,4-D, compared to the species relative tolerance to glyphosate, that is at play. Depending somewhat on the species, broadleaf plants are 100 times or more sensitive to 2,4-D than to glyphosate.

Burn downs are mostly completed before transplanting sensitive crops like tomato. However, with the imminent introduction of 2,4-D- and dicamba-tolerant soybeans the time of herbicide use will extend through June and into July; a period of intensive vegetable crop establishment and growth. Thus your days of escaping the impact of herbicide drift are likely to be over soon and it is important to become informed, and to inform.

Know the symptoms of 2,4-D and dicamba injury on your crops and plan on scouting regularly during the time when grain growers are spraying. Early symptom detection within a few days of drift is important if you hope to detect residues of the causal agent – a data point of great value in obtaining compensation. Inform your neighbors about the high value per acre of the crops you grow and of their extreme sensitivity to trace amounts 2,4-D and dicamba; as little as $1/1000^{th}$ of a field rate can cause symptom development. Help them to understand that you will be seeking compensation should drift symptoms occur in your fields.

Starting with the 2014 Pesticide Education program we will be conducting sessions on these topics aimed primarily at grain growers, their advisors, elevator operators, and custom applicators. Help us spread the word and let's get ready to keep drift from happening.

Comments and questions regarding this article are welcome. Please email Doug Doohan at Doohan.1@osu.edu.

Another Tomato Late Blight Outbreak in Wayne County, Ohio - Sally Miller, Department of Plant Pathology, miller.769@osu.edu; 330-263-3678

Late blight was found yesterday, July 22, 2013, in tomatoes in Wayne County, OH. This is from a different part of the county than we reported last week. Growers are urged to maintain an effective fungicide program on tomatoes and potatoes as outlined last week. This should continue as long as rainy conditions, high humidity and/or heavy dews are expected. See VegNet July 17, 2013 for details on fungicide recommendations.

Organic producers must rely on applications of approved copper-based products. It is very important to stay ahead of this disease, as it cannot be controlled once it is well established in a field. For next season, consider the new hybrid 'Iron Lady' from Martha Mutschler-Chu's breeding program at Cornell University. This is a multiple blight-resistant (early blight, late blight and Septoria leaf spot) hybrid being sold by High Mowing Organic Seeds (http://www.highmowingseeds.com/).

Home gardeners should consider spraying tomatoes and potatoes with a fungicide containing chlorothalanil. Diseased tissue should be removed from the garden in a trash bad and placed in a trashcan or dumpster for removal. We do not recommend composting tomato tissue with late blight as spores may be released into the air and serve as inoculum for other plants. Home gardeners might also consider 'Iron Lady' for next year.

Air Assist Sprayer Field Day – August 8th – *Jim Jasinski, OSU Extension IPM Program, Erdal Ozkan, Dept. of Food, Agricultural, and Biological Engineering*

There will be a field day from 5-7 PM on August 8th at the Western Agricultural Research Station highlighting research on the use of a custom built Jacto air assisted sprayer to increase efficacy of fungicides applied to large canopy crops, such as pumpkin. The use of air assisted technology helps spray droplets penetrate deeper into the canopy and increase deposition on

the lower leaf surface, which greatly improves efficacy against diseases like powdery mildew, especially for contact materials. This technology can also be useful in increasing efficacy when applying insecticides.

The field day will cover the following topics:
- Review 2012 air assist sprayer results on pumpkin
- Have custom designed air assist Jacto sprayer conduct demonstrations in thefield using different nozzle types (flat fan, twin fan, hollow cone) with and without air assist. Water sensitive cards attached to poles in crop canopy will be used to show spray penetration into the canopy. Target crop is pumpkin but concept may apply to other crops with large complex canopy.
- Following air assist discussion and demonstration, a clinic will be held reviewing the proper techniques to perform sprayer calibration.
- Jacto Sprayer company representatives will be on hand for growers to interact with during the field day.
- *A 3 gallon Jactor backpack sprayer will be given away as a door prize.*

Directions to the Western Ag Research Station, 7721 S. Charleston Pike, South Charleston, can be found here on the right hand side of the page (http://oardc.osu.edu/branches/branchinfo.asp?id=9).

There is no cost to attend, but please pre-register by calling 937-484-1526 and ask to be put on the air assisted sprayer field day list. For more details, contact Jim Jasinski at Jasinski.4@osu.edu or 937-462-8016.

Ask Us
Do you have a pest management or production issue that you would like addressed in future VegNet issues? If so let us know. Email your suggestion to Jim Jasinski, jasinski.4@osu.edu.