



Jerry Faulring

Off Target Herbicide Damage...Could Change Your Life Forever

Although hundreds, maybe thousands, of Maryland agricultural producers and property owners have incurred plant damage from misapplied herbicides, the topic does not get much attention. In 2017 the topic has exploded nationally with hundreds of articles being written across the country due to hundreds of thousands of crop damaged acres being reported.

Why don't we know much about this very prevalent problem in Maryland? I have some theories but they are just that. As growers of non-traditional agricultural crops (nursery, landscape, vineyards, fruits and vegetables, etc.) we have a significant interest in this matter which apparently has the potential to worsen as new genetically modified crops are brought into production along with new or modified weed control materials.

Over the last few years I came to believe Boxwood Blight was the one thing to keep me awake at night. I now believe blight is a non issue compared to losing thousands of plants, and possibly my livelihood, to herbicide damage.

Dicamba can now be used on 'dicamba ready soybeans'. Implementation has gone very poorly. The manufacturer says it

is the applicator's fault and the applicators claim the product was not thoroughly vetted for safety and efficacy. The situation has become so serious that Alabama has outlawed dicamba use in most situations. If you Google 'dicamba herbicide crop damage' you will get 231,000 responses in .08 seconds.

2,4-D has been implicated in off target herbicide damage probably since it was invented.

My purpose for writing this article relates to the fact that Waverly Farm probably incurred damage last spring, possibly from the misapplication of 2,4-D. I made a formal request of the Maryland Department of Agriculture to investigate the problem. To my surprise when I made the request I learned that Maryland has

several investigators – wow, who thought there would be this level of demand for the service? With hindsight, I now believe MDA is understaffed to handle the complaint load. The original on-site investigation here took place June 1, 2017. The first feedback for my investigation arrived on October 6, 2017. As I write this article, early November, there is still no report available from the June 1 investigation.

It is an illegal violation of the chemical label to allow any applied material to move onto another property. Fence lines and property lines are, by law, intended to provide us with safety and security. All of us need to heed this tenant of law as we apply materials to our own property including landscapes.

(continued on page 12)



Herbicide damage to tomatoes.

(continued from page 11)

There is good news. The timing of the damage allowed for nearly 100% recovery of the affected plants. There is one block of *Cornus Florida* dogwood that showed new leaves in the spring but no subsequent new growth. However, I am truly concerned that subsequent herbicide injury might include a different application date or material, which could result in a different outcome, and might be devastating to my business. With hindsight, I believe I have seen tell-tale signs of herbicide damage over the years but it never rose to the level of concern. In fact, my discovery of damage this year started with just a few plants of a *Viburnum plicatum*; initially I thought it might be frost damage or aphids. As I looked further I started to see symptoms on a variety of genus.



Herbicide damage to landscape tree.



How do herbicides go off-target?

1. Actual spray drift. We think of spray drift as the obvious visual movement of chemicals not landing on the target acreage. The photo above shows a rather helter-skelter application with chemicals on the road and significant movement of applied material drifting around the area. If you don't know, this is an illegal application by either an ill-informed applicator or one who just doesn't care. The second photo depicts an even more egregious violation of law and label.

2. Volatilization or vapor movement at the molecular level caused by a temperature inversion. Modern spray equipment from ground applicators has reduced the incidence of actual drift. Often misunderstood by applicators is the high risk for pesticide movement caused by temperature inversions. When volatile chemicals are applied to foliage and soil they have the potential to leave the surfaces through volatilization at the molecular level; think evaporation. The chemical movement may or may not be visible. As the chemicals rise into the still air they become part of an invisible cloud or part of an actual cloud as seen below. When atmospheric conditions are right the cloud can move for miles settling to the ground at some point in enough concentration to in affect, make a second application of the chemical.





Fog developing in an early morning temperature inversion. Source: Ryan Miller, University of Minnesota

We have all seen temperature inversions but likely did not recognize it as a potential vector of harmful chemicals excepting that most everyone knows smog can be dangerous to our health.

I have studied off target herbicide damage by way of temperature inversion extensively and believe such was the likely transmission mode of herbicides in my situation. Based on inspection of damaged plants by the good people from Maryland Extension, not MDA staff, followed by my own reading, the damage here likely came from 2-4D.

Quick review. 2-4D is available in two different formulations; ester and amine. Amine is the most widely used form in landscape care for broadleaf weed control. It is stable and will show limited volatilization; it costs more but is worth the price. The ester form is inexpensive and is very volatile meaning it can readily vaporize into the atmosphere. Due to cost savings the ester form is generally

used by crop producers.

I talked to Black Diamond Crepe Myrtle and Kousa Dogwoods planted near the horse paddocks one local farmer who told me he sees herbicide damage on his soybeans often. He is pretty sure it comes from the same place every time. When asked why he doesn't complain, he says he does not want to ruffle any feathers. I wonder if he just does not want a response if he were to damage another's crops. A code of silence?

Since 1973 I can't even come close to remembering how many pesticide applicator training sessions I have attended. NOT ONCE have I heard the term "temperature inversion herbicide transmission" mentioned. I was previously aware of the phenomenon from reading general agriculture trade magazines and chemical labels; thought it must just be a problem somewhere else. Having had numerous conversations this year with a variety of industry members in

Maryland, I now know, I was ignorant on the topic.

Shockingly, an off target herbicide case has never been litigated in Maryland. Given the voluminous number of claims over the years – stop and think about this – why has claim never found its way into court? First, no smart attorney, or insurance company, wants to be the first as there is no precedent. Second, and related to the first, insurance companies would rather settle a claim than go to court and possibly have a worse outcome. Third, there must be compelling documentation and proven evidence against the defendant for a plaintiff's attorney to want to pursue the case.

All of the above is a profound conundrum for plaintiffs. The compelling evidence in this case would have to be provided by MDA. I am not aware of any third party investigators.

Over the last several years, MDA and USDA have been aggressively encouraging increased local food production. Increasingly these crops have been grown organically which brings a whole new dynamic to the concern over off target herbicide application. These expanding crops as well as significant increases in the wine industry, all of which include many very sensitive crops to herbicide damage, suggest MDA has a vastly increased urgency to improve pesticide applicator training and the process for investigating off target herbicide application such that harmed growers may seek compensation in an expedited manner to stay in business. 🌱

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