# The Plant Doctor's LANDSCAPE TIPS

*By Dr. David L. Roberts, The Plant Doctor LLC a.k.a. The Tree Doctor*

## HERBICIDE LABELS: THEY ARE A-CHANGIN'

### INTRODUCTION

Ever since humankind sinned, weeds have become one of many unwelcome nemeses for "Man" to pay and, hence, toil for our sins . . . at least if you believe some Biblical scriptures. Humans have invented clever ways to deal with what might be viewed as God's Will to punish us for our sins. In my view, it's really not our fault; God gave us a brain, after all, which we can use to create means to ease the hardships associated with life, whether we travel long distances via inventions such as automobiles or airplanes, or whether we engage in increasingly efficient ways to provide sufficient food production for the growing "billions of sinners" on this planet.

Technology is wonderful in many ways; how many of us would now willingly live without our cell phones or computers? Herbicides represent advanced technology and very useful tools for the management of unwanted plants (weeds) in nurseries and landscapes as well as production agriculture. Would we prefer to get down on our hands and knees to crawl across our clients' lawns to eliminate broad leaf or grassy "weeds" so they may enjoy their monocultured, blemish-free, luxurious lawns and landscapes? See what I mean? And think how much more our food would cost if we had to pay human laborers to hand-weed farmers' fields.

Unfortunately, while herbicides have been a blessing if not essential for current modern agriculture and for efficient means of managing weeds in landscape and nurseries, there are some unwanted consequences for this modern technology (Photos 1A, 1B, and 2).

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Photo 1A

Photo 1B

Photo 2

**Photos 1A, 1B & 2:** Both commercial/professional applicators and homeowners have made serious miscalculations in the applications of herbicides. In Photos 1A & 1B, professional, licensed applicators applied an Imazapyr-containing product to an award-winning government landscape. Photo 1A shows that the herbicide was not likely agitated and mixed properly in the solution before application, because trees on the right were drastically affected while trees on the left were not affected at all. The dead/declining trees in Photo 2, initially thought to be caused by the dreaded disease Oak Wilt, represent the results of a well-intention homeowner who applied an Imazapyr-containing product for weed control in his landscape. The property owner has persistently refused to acknowledge he applied any herbicide.

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### HERBICIDE DILEMMA

While recently visiting an Oak Wilt site where I had provided advice for remediation in 2021 as a follow up for the effectiveness of my Glyphosate/Stump Cup 'Chaser' recommendation, I noticed that several oaks that had been healthy in 2021 were now either dead or in dramatic decline (Photo 3). Was the problem the continued spread of Oak Wilt? Or was the culprit collateral damage from the application of the Glyphosate/Stump Cup 'Chaser' technique to oak tree afflicted with Oak Wilt? Last year (2021), when diagnosing Oak Wilt on this property, I had purposely asked the property owner what herbicides he had applied, not only because mulched areas in his landscape were weed-free (Photo 4) but also knowing that Red Oak trees were extremely sensitive to Imazapyr, one of the active ingredients in many herbicide combination products. He produced a container of Ortho Ground Clear (Photo 5B), which he claimed he had just applied to his landscape (Photo 4). The active ingredients in Ortho Ground Clear, which had previously for many years been Glyphosate and Imazapyr, were now Pelargonic Acid and Imazapyr. Upon seeing this product in which Pelargonic Acid had been substituted for Glyphosate but where Imazapyr was still a primary active ingredient, I warned the property owner of the dangers of Imazapyr in his landscape, specifically informing him that he would probably not witness toxicity from Imazapyr until 2022 (this year). I believe that the damage to several oak trees on his property (in addition to prior Oak Wilt) was due to Imazapyr applied within the root zones of affected trees. During my most recent visit (2022), I saw that he was still using Ortho Ground Clear but now he proudly pronounced that the product formulation contains Ammonium Nonanoate and not Imazapyr (Photo 5C).

**Photo 3:** At this property in 2021, oak trees afflicted with Oak Wilt (not visible in photo) were treated using the author's Glyphosate/Stump Cup 'Chaser' technique. In 2022 (present photo), several oaks appeared dead or in serious decline. Was the problem the continued spread of Oak Wilt or collateral damage from the 'Chaser' technique? It turns out that the property owner applied Ortho GroundClear (Photo 5B) to the mulch in his landscape in 2021 (Photo 4); the symptoms on the trees were not revealed until 2022.

**Photo 4:** Ortho GroundClear (Photo 5B) had been applied to the mulched areas in this nice landscape in 2021. Trees were apparently affected by the herbicide but did not exhibit symptoms until 2022.

### HERBICIDE LABEL CONFUSION

As many readers of my Tree Doctor/Plant Doctor Column know, I have been writing about unwanted herbicide impacts in nursery and landscapes for decades. Because formulations of common herbicide products from manufacturers are changing at a rather alarming rate, I thought it might be useful to review a couple of popular products that are widely used in our industry, not only by professionals but by homeowners as well.

**Roundup/Glyphosate:** The chemical "Glyphosate" was patented by Monsanto in the early 1970's and first released for sale under the trade name "Roundup" in 1974. In 2000, Monsanto's patent for Glyphosate expired so Monsanto tried to expand upon and take advantage of the rather stellar "Roundup" brand name by expanding its product line. Because Monsanto knew many other chemical companies would now manufacture Glyphosate under their own monikers, the company brought out variations of Glyphosate in combinations with other herbicides to broaden its market appeal. A combination of Glyphosate and Pelargonic Acid (or Diquat Dibromide) was initially sold to demonstrate quick results on weeds; you see, glyphosate was rather slow in its impact on plants requiring 1-2 weeks for plant death while Pelargonic Acid showed nefarious impacts on targeted plants/weeds within hours for the delight of the typical impatient American consumer. As I recall, Roundup Extended Control was subsequently released to provide longer lasting herbicidal effects; Imazapic (=Imazapyr) was added in combination with Glyphosate to provide longer residual impacts because Glyphosate and Pelargonic Acid are comparatively short-lived. An increased concentration of Imazapic was added to Glyphosate in the product Roundup 365, which would provide year-long control of weeds. It was the Imazapic component that was deadly to trees and shrubs and other plants in landscapes and nurseries (Photos 1A, 1B and 2). The long residual of Imazapic plus the tendency of the chemical to be soluble in and move with water, either laterally or downward, leaching into root zones of trees was a grave consequence for professionals and homeowners alike. Many unwary folks did not understand that the impacts of Imazapic was not immediate but tended to show up the following year as death or severe decline in

ACTIVE INGREDIENTS:
GLYPHOSATE
IMAZAPYR

ACTIVE INGREDIENTS:
PELAGRONIC ACID
IMAZAPYR

ACTIVE INGREDIENT:
AMMONIUM NONANOATE

**Photos 5A, 5B & 5C:** These Ortho GroundClear products represent significant changes in their active ingredients in just a few years. The changing active ingredients can affect landscapes and nurseries in vastly differing ways and can be quite confusing to homeowners and licensed applicators alike.

ACTIVE INGREDIENTS:
GLYPHOSATE
PELAGRONIC ACID OR
DIQUAT DiBr

ACTIVE INGREDIENTS:
MCPA
QUINCLORAC
DICAMBA
SULFENTRAZONE

ACTIVE INGREDIENTS:
GLYPHOSATE
IMAZAPIC
DIQUAT DIBROMIDE

ACTIVE INGREDIENTS:
GLYPHOSATE
IMAZAPIC
PELAGRONIC ACID

**Photos 6A, 6B, 6C & 6D:** The different active ingredients in the Roundup brand of products can befuddle users of these products. While Glyphosate, Pelargonic Acid, and Diquat DiBromide herbicides are relatively safe around plants in nurseries and landscapes, Imazapyr can be very dangerous in these environments even though its long residual persistence is quite appealing. Please note that because of the stellar Roundup brand, there are Roundup products on the market that no longer contain Glyphosate (Photo 6D), which was the original "Roundup".

their trees and shrubs; many folks did not connect the application of an Imazapic-containing product the year before with plant death a year later.

**Ortho Ground Clear:** Ortho is an older and well-established company that has provided many fine products for plant culture. When Monsanto's patent for Glyphosate expired, Ortho took advantage of the situation and brought out its own line of Glyphosate-containing products. One common one was marketed as Ortho GroundClear (Photo 5A), which contained Glyphosate and Imazapyr. Most of us know from watching television that Monsanto's (now Bayer's) "Roundup" products encountered legal problems due to suspected health problems in humans. In my opinion. it is unfair to target "Roundup" since Glyphosate went off patent in 2000, and many other companies have been producing Glyphosate under their own trade names. However, "Roundup" is such a commonly recognized name that it is used in many legalistic commercials. Hence, within the past few years, Ortho substituted Pelargonic Acid for Glyphosate in its Ortho GroundClear (Photo 5B), likely to avoid legal issues with Glyphosate. But Ortho GroundClear retained Imazapyr, which has caused so many unwanted repercussions for plants in the nursery and landscape. Lately, as related previously in this article, the active ingredient in Ortho GroundClear became Ammonium Nonanoate (Photo 5C). Confusing? You bet!!!

## WE MUST READ THE LABEL!!!!

Because product formulations are constantly changing, it is imperative that applicators read the label and understand the chemicals and their mode of action in the product formulations. Precautions are sometimes hidden deep in the label or within the fine print. Many products, their packaging, and their labels can be confusing or misleading (Photo 7). Many mistakes have been made over the years that have not only resulted in the death of valuable plants but that have also resulted in litigation. Members of our industry need to become aware of these confusing aspects so that problems can be avoided, even those caused by property owners who might consider an arborist or landscaper at fault.

*Dr. David Roberts has retired from Michigan State University but intends to remain active with the industry. He can be reached at 248-320-7124 or treedoctordave@gmail.com.*