



## BLOGS

# Herbicide Damage to Woody Plants



Herbicide damaged foliage (top) vs. healthy foliage (bottom)

What is killing my trees? This has been a common thread of some calls our office, and other departments within the County, have received recently. Distorted growth, severe stunting, and shoot proliferation have all been reported on mature Gumbo Limbo's and Buttonwoods. Initially,

the problem appears to be Witches Broom, though these cases are far worse than normally encountered. Witches broom is an unusually dense and compact cluster of growth within individual shoots, and can be caused by a number of factors including mites, viruses, nematodes, or insects. Typically, it is more of an aesthetic problem and does not cause death to plants; nor is it widespread throughout a landscape.

### Herbicide Injury

So what could be other causes of entire landscapes with this distorted growth? Herbicide damage. Many homeowners in the Florida Keys enjoy a landscape comingled with mature trees, landscape beds, and copious amounts of gravel covering otherwise rocky soils. However, this creates a perfect opportunity for weeds to exploit and take advantage of the open, barren space. Since many prefer a weed-free landscape, herbicides are often used. Herbicides are pesticides used to control unwanted vegetation in landscapes, ball fields, rights-of-way, farms, forests, aquatic environments and natural areas. They are very important management tools when used in addition to other types of control mechanisms. However, homeowners in many cases, pay little attention to label instructions, which includes site restrictions and rates. Presumptions are made that if it is available at retail stores, it must be safe to use.



Gumbo limbo impacted by Imazypr

## Imidazolinones

Imidazolinone herbicides are a family of herbicides that include Imazapyr, Imazapic, Imazaquin, and others. They



Ortho GroundClear

are powerful herbicides that inhibit the enzyme acetolactate synthase (ALS), which is critical in plants. Products found locally in retail stores containing one of these active ingredients include GroundClear, RoundUp 365, and RoundUp Extended Control. In almost all cases brought to our office, homeowners confirmed use of herbicides containing Imazapyr. Imazapyr is a non-selective herbicide used to

control a broad range of weeds in aquatic and terrestrial environments and has great potential to damage and kill non-target plants. It is quickly absorbed through plant tissue and taken up by any roots that come into contact. Even though these products contain very little amounts of Imazapyr, the chemical can persist (stay active) in the soil for over a year and even longer in drought conditions. A common method for measuring soil persistence is half-life, the length of time for half the amount of a pesticide to breakdown or no longer be present in the soil. In aquatic environments, Imazapyr is quickly degraded by sunlight (within several days). However, in soils, the primary mechanism for degradation is through microbes and the half-life ranges from one to seven months, with soil type, temperature, and soil moisture all playing a role. Imazapyr is a weak acid and its chemical structure and adsorption capacity is affected by the pH of the soil. The higher the pH, the longer it can be available for plant uptake since it doesn't bind strongly to soil particles in high pH environments.

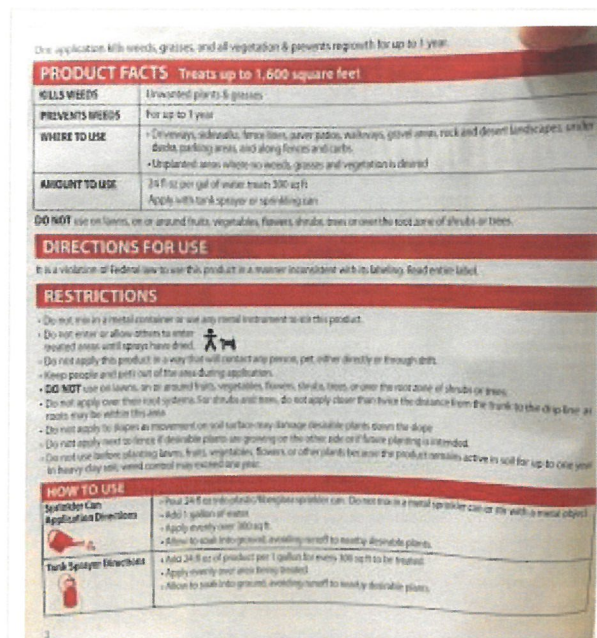
This also means a potential for leaching through soil into groundwater.

## Read the Label

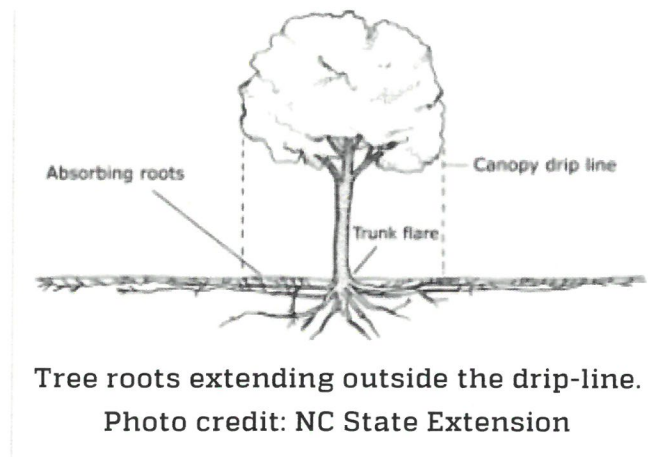
These products are labeled for use on driveways, sidewalks, fence lines, and paver patios, and are not intended to be used in areas comingled with plant roots such as in landscapes. Some products mention use on gravel areas, which could be confusing as that would include many landscapes in the Keys.

However, not only is it the law, but it's very important to pay attention to any restrictions listed on the label. For instance, restrictions mentioned in the GroundClear label clearly state: **DO NOT** use on lawns, on or around fruits, vegetables, flowers, shrubs, trees or over the root zone of shrubs or trees. **Do not** apply over their root systems. For shrubs and trees, do not apply closer than twice the distance from the trunk to the drip line as roots may be within this area.

Pesticide product labels are legal documents. This statement is on all registered pesticide product labels, "It is a violation of federal law to use this product in a manner inconsistent with its labeling." Violating this law could result in fines.



GroundClear label restrictions



## Plant Recovery

Dr. Chris Marble, an assistant professor in ornamental and landscape weed management at the University of Florida, IFAS said, "I have had at least 50 instances (conservative estimate) over the past 5 years where either GroundClear with imazapyr or RoundUp 365 with imazapic caused damage or killed ornamentals. These can be useful herbicides if the label directions are followed, but they can cause serious damage if people do not use them properly."

It is recommended to immediately stop using products containing any of the active ingredients listed in areas where plant roots may come into contact. Depending on the extent of the damage, plant recovery could take up to a year or longer.

For more information on homeowner herbicide use and considerations visit the EDIS publication <http://edis.ifas.ufl.edu/pdf/EP/EP57500.pdf> or contact the Monroe County Extension Service at [monroe@ifas.ufl.edu](mailto:monroe@ifas.ufl.edu) or (305) 292-4501.

by **Michelle Leonard-Mularz** 

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Institute of Food and Agricultural Sciences and University of Florida

P.O. Box 110180 Gainesville, FL 32611-0180 | Phone: (352) 392-1761

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