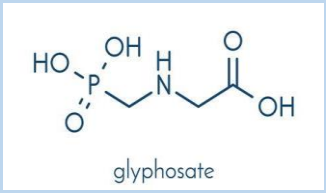
BEST LAWNS NEWS

Winter 2020 Edition

Virginia Cooperative Extension-Prince William Unit

All content was written by Natali Walker and Thomas Bolles except where noted, and is based on university research at Virginia Tech, Virginia State and other partner universities in the Land Grant system.

Featured in this issue



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Glyphosate Safety – Seeing Past the Hype

By Thomas Bolles, based on information compiled by John Brewer, PhD candidate, Virginia Tech and presented by Dr. Shawn Askew, Virginia Tech.

Glyphosate has gotten a lot of attention lately after some high-profile court cases. As an Extension Agent I am frequently asked questions like “Does Tech still recommend using *RoundUp!*?” and “Is *RoundUp!* safe?”. The purpose of this article is to clarify the facts and explain the research.

The first fact we must deal with is what is *RoundUp!?* The first glyphosate on the market was sold under the brand name *RoundUp!* Since then two things have happened. First, glyphosate has gone off patent, so it now appears as an active ingredient in many products under various brand names. Second, the *RoundUp!* has extended its product line and most *RoundUp!* formulations don’t actually have glyphosate in them. So when talking about glyphosate safety, we need to talk in terms of the active ingredient glyphosate and not any particular brand or product.

Glyphosate was first registered with the EPA in 1974. There are 3 main uses of glyphosate – bare ground, in turf renovation, and in row crops. Its widespread use in crops was helped by the introduction of “Roundup Ready” crops in 1996 – crops bred to tolerate glyphosate applications. After decades of use it has become one of the most widely used herbicides in the US. It is also one of the safest and most effective.

Glyphosate is effective on over 100 annual and 60 perennial weeds. There has been talk of “super weeds” that have adapted to be tolerant of glyphosate. This isn’t a glyphosate issue. We were facing the rise of super weeds pre-glyphosate. Adding glyphosate to our toolbox has bought us a few decades on some of these tough weeds but, in nature, the cycle of adaptation is eternal. Weeds, insects and diseases are constantly adapting to natural and man-made controls. This is why prevention through proper cultural controls is our best defense against pests in the long run.

When we’re looking at risk management, two key elements are how dangerous is the product and how much exposure do we have to the product. A highly dangerous product can still be used with minimal risk if the exposure is low. Think about x-rays at the dentist. Short exposure of low doses is common. Longer exposure and high doses can be deadly.

Exposure to glyphosate is managed by limiting the use of the product. It is one tool in the toolbox. Just as you don’t need to use a sledgehammer for every home repair, you don’t need to use glyphosate for every weed problem. Taking an integrated pest management approach to scout for problems regularly, identify the problem correctly and begin with the least harmful approach first can often eliminate the need for glyphosate. Another factor in reducing exposure is using the proper personal protective equipment (PPE). Product labels on all pesticides specify what the proper PPE is for mixing and applying that specific product. Think about your use around your landscape. Do you know the proper PPE for all the pesticides you use? Do you actually use that PPE?

Another factor in pesticide exposure is what happens to it once its in the environment. Glyphosate vapor can be mobile in the environment, which is why the label has recommendations for what air temperatures to apply it. Once glyphosate is applied to a plant, the plant absorbs it. Any glyphosate that reaches the soil is bound to the soil and is

basically rendered inert. Glyphosate is very water soluble. While glyphosate bound to the soil is not leached with rainfall.

In the above picture you can see a very poorly thought out application of glyphosate. It clearly shows where it was applied and doesn't show signs of moving beyond that. Compare that to the herbicide imazapyr applied to the area in the picture below. It was applied to the bare area in the foreground, but you can see how the herbicide has moved downslope into the turf, causing considerable collateral damage.

Glyphosate becomes a concern in water because of some of the surfactants used with it. Surfactants help the herbicide stick to the plant longer so there is more time for it to be

absorbed. Many surfactants are not friendly to aquatic animals. When using any herbicide product in/over water, it is important to use those products that say there are safe to use in aquatic situations.

In terms of acute toxicity to animals, including humans, glyphosate is considered a low risk. LD_{50} – the amount needed to kill 50% of test subjects for glyphosate is 5,600 mg of active ingredient per kg of body mass (197.5 oz. (12.34 lbs.) per 2.2 lbs. body weight).

If glyphosate has such low toxicity, why are people saying its not safe?

Where the safety of glyphosate has been called into question concerns cancer. One body of the UN, the International Agency for Research on Cancer (IARC) has said glyphosate is a cancer hazard.

This is based on the review of 19 public studies with a limited number of participants. The IARC classified glyphosate as a 2A hazard. This is defined as "probably carcinogenic". To qualify for IARC's 2A status a) there is limited evidence of cancer in humans and sufficient evidence of cancer in animals; b) inadequate evidence in humans and sufficient evince in animals and strong evidence that the initiation of cancer formation is brought about by a mechanism that also operates in humans; **or** c) "clearly belongs, based on mechanistic consideration, to a class of agents for which one or more members has been classified in Group 1 or 2A". This leaves a lot of room for inclusion on to the list. Some other items in the 2A classification include fried foods, red meat, and working the night shift.

In contrast to the IARC report, there are 14 other agencies – include several other UN agencies – that concluded the research on glyphosate does not clearly show glyphosate is a cancer risk. This is based on the review of over 50 studies, most with methods and methodology more robust than the 19 IARC chose to base its findings upon. Studies with higher participant numbers show the number of people exposed to glyphosate and did not develop cancer versus the number who were exposed and got cancer was not statistically significant.

The US EPA, the European Food Safety Authority, the Australian Pesticides and Veterinary Medicine Authority, the New Zealand Environmental Protection Authority, Health Canada and the Food and Agriculture Organization of the UN have all found that when used according to label directions, it is unlikely that glyphosate causes cancer.

Glyphosate is an herbicide. All herbicides have some inherent danger. The label directions are there to protect the user. Virginia Tech continues to recommend glyphosate as an herbicide option based on the EPA's findings that it is safe when used as directed. In the end, the decision to use glyphosate or any other herbicide is an individual one. It is part of Virginia Cooperative Extension's mission to provide consumers the unbiased information, so they can make informed decisions that are right for each individual.

More from Virginia Tech on Glyphosate:

SPES-113NP *Glyphosate Q & A Sheet*. See https://www.pubs.ext.vt.edu/SPES/SPES-113/SPES-113.html.

SPES-63NP *Glyphosate: Health Controversy, Benefits and Continuing Debate*, 2018. See https://www.pubs.ext.vt.edu/SPES/SPES-63/SPES-63.html.

Japanese Stiltgrass

By Natali Walker, based on information compiled by Rutgers, University of Maryland Extension, NC State Extension & NPS.gov

Japanese stiltgrass also known scientifically as *Microstegium vinineum* is an invasive summer annual. You may also have seen it called by a variety of other common names: Nepalese Browntop, Chinese packing grass, Asian stiltgrass, annual jewgrass, bamboograss, Nepal microstegium, Eulalia and last but not least, Mary's grass. Stiltgrass flourishes in moist shady areas and tolerates low mowing heights. It prefers forest edges, damp fields, ditches and lawns. Stiltgrass forms dense stands and outcompetes native species in the eastern U.S. It was first documented in 1919 and believed to have been introduced to the US via packing material. It is native to Japan, China and Central Asia. Stiltgrass has look-a-likes and can resemble many other plants. Proper weed control requires the proper weed identification. If you are unsure if its stiltgrass, bring in a sample to the extension office and we will help identify it for you.

Stem

Flower

Silver colored hairs on leaf blade

Seedlings- emerge in early spring through mid-summer

Stiltgrass germinates in late winter and early spring, several weeks before Crabgrass, but flowers and seeds much later in mid-September through October. It can grow up to 3 feet tall and will die back in the fall. One of the most notable features is the silvery colored stripe of hairs on the leaf surface. Stiltgrass has a weak and shallow root system. The seeds are tiny and sticky and can spread by attaching to the fur of deer and also the shoes and clothes of humans. Research has shown that stiltgrass can produce 16,000 to 50,000 seeds per square meter. Seeds can remain viable in the soil for 5 or more years.

Look-a-Likes

Virginia Cutgrass (*Leersia virginia*) is a native which can grow intermingled with stiltgrass. Deer-Tongue grass is native to eastern North America.

Photo: Virginia Cutgrass leaves. https://www.minnesotawildflowers.info/grass-sedge-rush/white-grass


Photo: Deer-Tongue grass, https://www.illinoiswildflowers.info/grasses/plants/deertg_grass.html

Cultural/Mechanical Controls

Hand pulling when populations are small and throughout the growing season, especially when the soil is moist. Hand pulling of plants will need to be repeated and continued for many seasons until the seed bank is exhausted. Pulling may be easier in mid-summer when the plants are taller.

Mowing in late summer (August-September) when plants are flowering but before they go to seed. Because stiltgrass is primarily an annual plant, cutting late in the season before the plants would die back naturally avoids the possibility of regrowth. Recent information suggests that stiltgrass plants that are cut early in the summer respond by regrowing and flowering soon after cutting, much earlier than they would normally flower. This is another reason to consider cutting in late summer to fall rather than during the early summer months.

Chemical Controls: should be used a last resort because of the potential risks to the environment

Crab grass preemergent- can be applied in early March, weather permitting. Timing will be earlier than that of Crabgrass. Products that contain pendimethalin or prodiamine can be used.

Glyphosate may be applied, however be aware that it will harm turf and other desirable plants.

Fluazifop applied as a post emergent. Spot treat for emerged grasses. Larger plants may need reapplication**.**

Fenoxaprop applied as a post emergent. Apply to the foliage of young actively growing annual grassy weeds.

Biological Control

There are no know biological controls for Japanese Stiltgrass.

Some of these products cannot be used near waterways, including small streams and wetlands. It is important that you read and carefully follow the directions of any pesticide you choose to use. Glyphosate, for example, needs to be in a formulation specific for aquatic use.

Please Read and Follow All Label Directions for Any Pesticide You Choose to Use.

Spring Lawn Care

	Cool Season Turf Fescues, Bluegrass, Rye	**Warm Season Turf** Zoysia, Bermuda
Measure Your Turf	**Yes** – Fertilizer and Herbicides are applied at rates based on 1,000 sf. If you don't know the size of the turf you can be over or under applying product.	
Soil Test	**Maybe** – This should be done every 3 years for heavy soils or annually for very sandy soils	
Lime	**Maybe** – Apply only if you have a current soil test indicating it's needed. This is NOT annual maintenance.	
Compost	**Yes** – This can be in done in Spring, Summer and/or Fall. Apply ¼ inch of compost over the entire turf area.	
Fertilizer	**Rarely** – See below	**Yes** – See below
Pre-Emergent Herbicide	**Maybe** – Thick, high cut turf should not need it. Thinner turf may benefit from it if applied at the correct time – see below.	
Post-Emergent Herbicide	**Maybe** – Depends on the target weed(s) as weeds are more effectively treated at different times of year – see below	
Insecticide	**No** – Grubs are our main turf insect problem and treatment is only effective for late July-August with synthetic insecticides	
Fungicide	**No** – Fungicides are usually NOT recommended for home lawns as they often do more harm to soil health than provide benefit to the turf	
Aeration	**No** – Wait until early fall	**Yes** – Wait until after green up in late spring/early summer
De-Thatching	**No** – Cool season grasses that are over fertilized usually don't need it.	**Maybe** – Only if there is excessive thatch (1/2 inch or greater). Also back off the fertilizer.
Seeding	**Rarely** – Only in an emergency to prevent erosion. Spring seeded turf has low survival and will likely need to be reseeded in the fall.	**No** – Seeded varieties are generally of lower quality than sodded varieties. Seed is also expensive and hard to find.
Sodding	**Maybe** – Spring sodded turf survives better than spring seeded turf but will need watering throughout the summer	**Yes** – Late spring/early summer is the time to sod warm season turf. Warm season sod is hard to find locally.

Lime

- Total Amount Needed is Based on Soil Test
- Total amount of lime needed does NOT change with the type of lime used
- Apply a maximum of 50 lbs. per 1,000 sf per application when using Ag Lime and Dolomite
- Apply a maximum of 30 lbs. per 1,000 sf per application when using Fast Acting Lime
- When multiple applications are needed, applications need to be spaced 1-6 months a

Pre-Emergent Herbicide

- Only use Pre-Emergent that does **NOT** contain Nitrogen
- Timing is everything – it must be applied before the target(s) germinate
- Reapplication is often needed for full season control

Annual Grass Pre-Emergent

- Most pre-emergent products will effect spring seeded turf
- When applying to control multiple grasses, apply targeting the 1st to germinate
- For crabgrass control, apply in spring between when forsythia is in full bloom and when it reaches 50% petal drop (which occurs roughly the time native dogwoods are in full bloom
- Goose grass and foxtail typically require slightly warmer soil temperatures and usually start to germinate 1-2 weeks after crabgrass
- Japanese Stiltgrass can germinate in cooler soils and can germinate 1-2 weeks (or more) before crabgrass
- Annual bluegrass (Poa) germinates in the fall and early winter. Spring applications of pre-emergent will not be effective

Broadleaf Pre-Emergent

- Currently only 1 product that specifically targets broadleaf weeds (Gallery – chemical name is isoxaben)
- It is expensive and not always readily available
- Timing of application depends on target weed(s) and can be tricky to get the timing right

Post-Emergent Herbicide

- Only use Post-Emergent that does **NOT** contain Nitrogen
- To use or not to use depends on the weed
- Do not apply when pollinators are actively foraging

Fertilizing Cool Season Turf

- It's best to wait until fall
- A light application (applied at a rate of no more than 0.5 lbs. of nitrogen per 1,000 sf) is sometimes beneficial

Fertilizing Warm Season Turf

- It's best to wait until after green up and the soil is warm before starting to fertilize (June) but can be started at green up
- Zoysia only needs a little fertilizer to thrive – fertilize at a rate of 0.7 lbs. of nitrogen per 1,000 sf in June and in July – excessive fertilizer will lead to turf loss

Final Thoughts

- A healthy lawn with healthy soil will keep most weeds and pests in check
- Always encourage clients to read the label of the products they buy
- Encourage clients to avoid using pesticides when pollinators are actively foraging
- Not all herbicides are effective on all weeds
- Not all weeds are susceptible to herbicides at the same time of the year
- The Extension Horticultural Helpline (703-792-7747, master_gardener@pwcgov.org) is a resource you can direct clients to for free assistance in identifying weeds, insects and diseases in the landscape

VCE Schedule of Classes

VA Household Water Quality Program-Prince William Drinking Water Clinic

1) **The Kick-Off Meeting** on March 30th from 7-8:30 pm at PWC Board Chambers
   Introduces water quality concerns in our area: **kits will be provided**
2) **The Sample Drop Off** on April 1st from 6:30 am-10 am ONLY at the VCE Office
3) **The Results Interpretation Meeting** on May 4th from 7-9pm at PWC Board Chambers.

The number of kits is limited. Pre-payment is the only way to guarantee you will get a kit. Sample kits are $65.00 each

Master Gardener Saturday's in the Garden

Location: The Teaching Garden at Benedictine Monastery, 9:00 am- 12pm

Dates: April 25th: What's that Weed? & Successfully Growing Vegetables and Fruit in Small Space

May 16th: Permaculture & Yoga in the Garden

June 20th: Composting at the Teaching Garden and Your Backyard and Vermiculture

July 25th: The Cut Flower Garden

August 15th: Growing Mushrooms at Home & Cover Crops in the Home Garden

September 19th: New Routines to Protect the Ecosystem with Fall Landscape Management

October 17th: Small native Trees & Shrubs for the Suburban Landscape

"Ask a Master Gardener" Spring Garden Center Plant Clinics

Location: Merrifield Garden Center, Lowes Manassas, Lowes Gainesville, Lowes Woodbridge, Southern States of Manassas
10 am to 1pm
When: April 4th, 11th, 18th, 25th & May 2nd

Master Gardener Clinics at Farmers Markets

Stop by for free seeds, publication, soil test kits and more!

Location: Manassas Farmer's Markets, Saturdays, April 11-October 10, 10 am to 1pm
(with the exception of July 4)

Location: Dale City Farmer's Markets, Saturdays, April 2-October 11, 10 am to 1pm
(with the exception of May 10, May 24 and Sept 6)

Become a Master Gardener Volunteer

There are two info sessions schedules. Please register and plan to attend **one** of these dates:

August 25, 6:30 pm
Development Services Bldg., Room 202
5 County Complex Ct., Woodbridge, VA

August 27, 6:30 pm
McCoy Conference Room
Sudley North Government Building
7987 Ashton Ave., Manassas, VA

PLEASE NOTE: Classes are free unless noted, except the Virginia Household Water Quality Program-Prince William Drinking Water Clinic. Registration is requested by calling the Master Gardener Help Desk at 703-792-7747 or email mastergardener@pwcgov.org