

Abiotic Turf Issues & Alternatives to Glyphosate

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Common Turfgrass Problems

- Biotic Agents
 - Weeds
 - Insects
 - Fungi
 - Vertebrates
- Abiotic Agents
 - Water
 - Shade
 - Fertility
 - Traffic
 - Soil Conditions
 - Fertilizer or herbicide burn


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Shade



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Drought/Compacted Soils



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How to identify potential abiotic issues?

- What do the symptoms look like? When did the symptoms show up? Have they gotten worse?
- What grass species is affected?
- Are there other healthy plants present within the symptoms?
- What have the recent weather conditions been like?
- Are there any obvious abiotic issues present?

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Lawns & Turf

Care (27), Diseases, Weeds, Insects & Other Problems (16)

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Sort

Calibrating and Using Lawn Fertilizer and Lime Spreaders
A2306
\$0.50
ANR
add to cart

Black Catworms in Golf Course Turf
A3735-E
\$0.00
ANR
more details

Common Weed Seedlings of the North Central States
NCR107
\$5.75
ANR
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Cuidado alternativo del césped tipo "básculo"

Turfgrass Diagnostic Lab

Kurt Hockemeyer
608-845-2535
hockemeyer@wisc.edu
www.tdl.wisc.edu

Turfgrass Diagnostic Lab
2502 Highway M
Verona, WI 53593



What we look for in a submission

- Take a 4" diameter sample with half the sample being affected grass and half being healthy
- Go down into the soil approximately 3-4" to include some roots
- Wrap in tinfoil (NOT PLASTIC BAG) and ship overnight to TDL
- Submit pictures!!!



www.tdl.wisc.edu

Common Mistakes

- Not filling out the submission form completely
- Not leaving contact information
- Packing sample in plastic bag
- Packing submission form with sample
- Spraying right before shipping the sample
- SENDING DEAD GRASS!!!



www.tdl.wisc.edu

Additional Resources

- Turf Pest Management Mobile
 - Turfpests.wisc.edu
 - Pesticide efficacy ratings for herbicides and fungicides, list of labeled insecticides
 - Herbicide ratings based on research from Dr. Aaron Patton and published annually in 'Turfgrass Weed Control for Professionals'

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Alternatives to Glyphosate

Slide provided by Dr. Mark Rens, UW-Madison

What is Glyphosate?

- Herbicide discovered in 1950s, used since 1970's
 - Active ingredient in many herbicides (Roundup)
- Most widely used pesticide in United States
 - >250 millions lbs applied annually
 - Agriculture accounts for 90% use
 - Non-Agriculture accounts for 10% use



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Top Home & Garden Pesticides in 2007

1. 2,4-D (8 to 11 million lbs)
2. Glyphosate (5 to 8 million lbs)
3. Carbaryl (4 to 6 million lbs)
4. MCPP (4 to 6 million lbs)
5. Pendimethalin (3 to 5 million lbs)

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Does Roundup Cause Cancer?

International Agency for Research on Cancer (IARC)
March 2015
Working group evaluation
Glyphosate is classified as "Probably carcinogenic to humans"
"Limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals"

European Food Safety Authority (EFSA)
2015
Peer review of initial risk assessment, in response to IARC's findings
"Glyphosate is unlikely to pose a carcinogenic hazard to humans"

Food and Agricultural Organization of the United Nations (FAO) and World Health Organization (WHO)
May 2015
Joint meeting of the Joint FAO/WHO Working Group on the WHO's International Agency for Research on Cancer (IARC) review of available studies on glyphosate
"Glyphosate is unlikely to pose a carcinogenic risk to humans at expected levels of exposure"

European Chemicals Agency (ECHA)
March 2017
Reclassification of glyphosate's classification
"The available scientific evidence did not meet the criteria to classify glyphosate as a carcinogen, as a mutagen, or as toxic for reproduction"

U.S. Environmental Protection Agency (EPA)
Dec. 2015
Press release for the draft human health and ecological risk assessments for glyphosate
"Glyphosate is not likely to be carcinogenic to humans"

National Institutes of Health (NIH)
May 2016
Update to the Agricultural Health Study (AHS)
"No association was observed between glyphosate and any solid tumors or lymphoid malignancies overall, including WBC. These findings are reassuring and to be expected."

Verdict: Toxicity of Glyphosate:
6 studies or reviews from major national or international agencies have concluded that glyphosate is unlikely to cause cancer. 1 biased review concluded glyphosate is "possibly carcinogenic" to workers.

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What is Risk?

Risk: potential for injury

- Risk = Hazard X Exposure



Poison is in everything, and no thing is without poison. The dosage makes it either a poison or a remedy.

(Paracelsus)

izquotes.com

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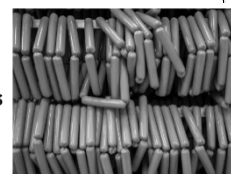
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Risk is not absolute

World Health Organization Says Processed Meat Causes Cancer

Oct 26, 2015



Twenty-two experts from 10 countries reviewed more than 800 studies to reach their conclusions. They found that eating 50 grams of processed meat every day increased the risk of colorectal cancer by 18%. That's the equivalent of about 4 strips of bacon or 1 hot dog. For red meat, there was evidence of increased risk of colorectal, pancreatic, and prostate cancer.

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How can you reduce your risk?

- Follow the label and wear PPE!

Personal Protective Equipment (PPE)

Applicators and other handlers must wear: long-sleeved shirt and long pants, shoes plus socks. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment (PPE). If there are no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

When handlers use closed systems, enclosed cabs or aircraft in a manner that meets the requirements listed in Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240 (d) (4-6)), the handler PPE requirements may be reduced or modified as specified in the WPS.

IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as spill or equipment breakdown.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

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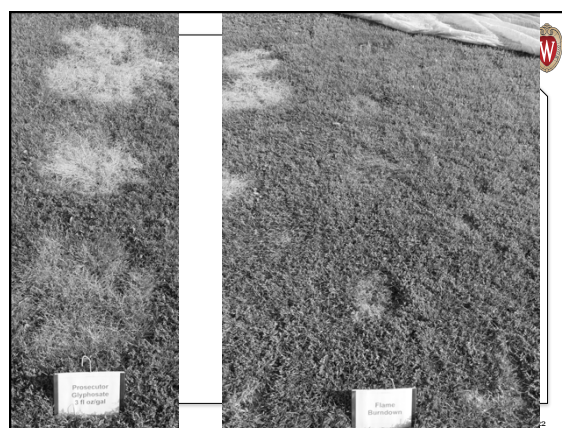
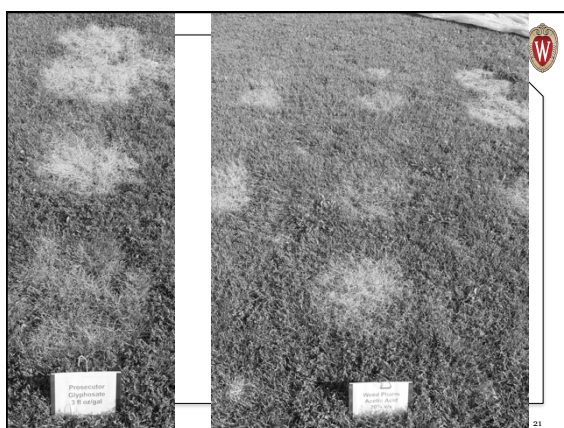
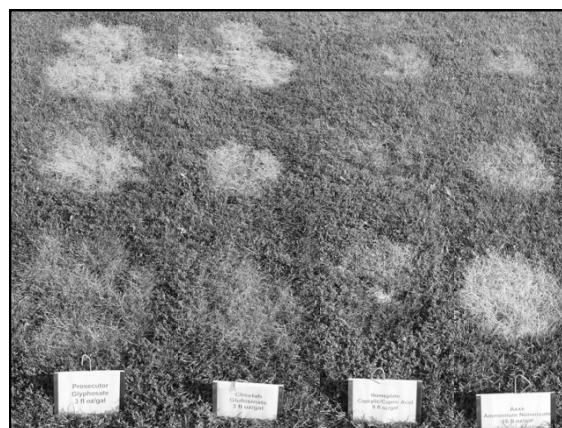
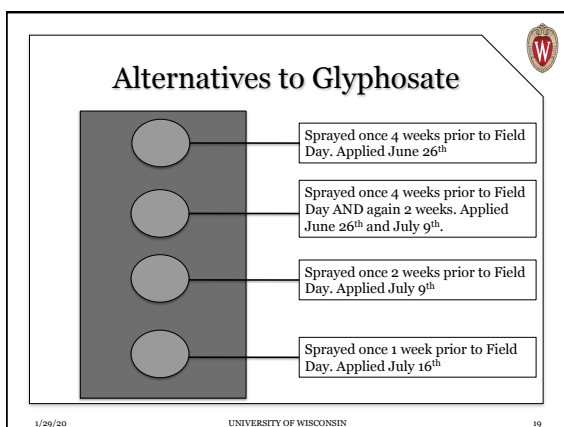
Alternatives to Glyphosate

Product	Active Ingredient(s)	Rate/ Conc	OMRI?	Cost per gal (USD)
Ranger Pro	Glyphosate	3 fl oz/gal	N	\$16.00
Cheetah	Glufosinate	3 fl oz/gal	N	\$175.00
Homeplate	Caprylic Acid + Capric Acid	8 fl oz/gal	Y	\$89.00
Axxe	Ammoniated pelargonic salts	16 fl oz/gal	Y	\$46.00
WeedPharm	Acetic acid	20% acetic acid	Y	\$47.00
Mechanical	Flame	Until charred	N	\$4 per canister

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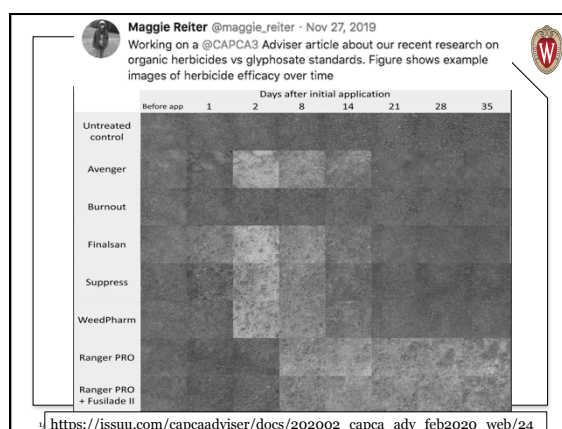
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Alternatives to Glyphosate

Product	Active Ingredient(s)	Rate/Conc	OMRI?	Cost per gal (USD)
Roundup Pro Max	Glyphosate	2 fl oz/gal	N	\$40.00
Ranger Pro	Glyphosate	3 fl oz/gal	N	\$15.00
Cheetah Pro	Glufosinate	3 fl oz/gal	N	\$73.00
Homeplate	Caprylic Acid + Capric Acid	8 fl oz/gal	Y	\$89.00
Axxe	Ammoniated pelargonic salts	16 fl oz/gal	Y	\$46.00
WeedPharm	Acetic acid	20% acetic acid	Y	\$47.00
Mechanical	Flame	Until charred	N	\$4 per canister

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Other glyphosate alternative work

- North Carolina State University
 - <https://content.ces.ncsu.edu/are-there-alternatives-to-glyphosate-for-weed-control-in-landscapes>



NC STATE EXTENSION NC State Extension Publications

Are There Alternatives to Glyphosate for Weed Control in Landscapes?

Introduction


RELATED PUBLICATIONS

- 2) Weed Management
- 3) Controlling Paper Witches in and around Structures
- 2) Weed Control Options for Greenhouse and Pot

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Additional Glyphosate Resources

- National Pesticide Information Center
 - npic.orst.edu



npic NATIONAL PESTICIDE INFORMATION CENTER

Free webinar!

PESTICIDES, PEOPLE, AND POLLINATORS

Answers to tricky pesticide questions for Master Gardeners

What are pests? What are pesticides? Local Contacts

