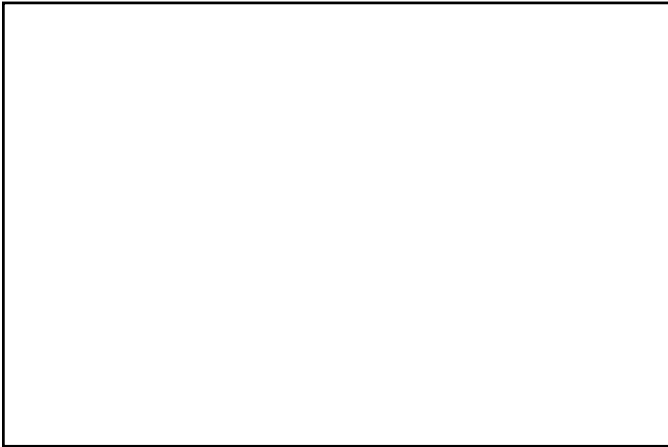


**Roundup Alert
Perhaps Not!**

**Clint Waltz, Ph.D.
Professor
The University of Georgia**



*All pesticides are dangerous
and should be respected!*

The Label

Signal Words

★ **Caution**

- ✓ Slightly toxic or relatively nontoxic

★ **Warning**

- ✓ Moderately likely to cause acute illness
- ✓ Moderate skin or eye irritation

☠ **Danger**

- ✓ Highly toxic – likely to cause acute illness
- ✓ Severe eye or skin irritation

Glyphosate – Roundup

History & Uses

★ **Discovery**

- ✓ 1950
- ✓ Swiss pharmaceutical company

★ **Agricultural use**

- ✓ 1974
- ✓ Novel, non-selective herbicide

★ **Uses**

- ✓ Agricultural, landscapes, aquatics, etc.

Glyphosate – Roundup

Roundup Ready Crops

★ **Adoption & plantings**

- ✓ 1990's
- ✓ Corn, cotton, soybeans, others

★ **Genetically modified organism (GMO)**

- ✓ Meet demand for food production
- ✓ Cost effective
- ✓ Causes some angst of unknown & poorly understood, especially Europe

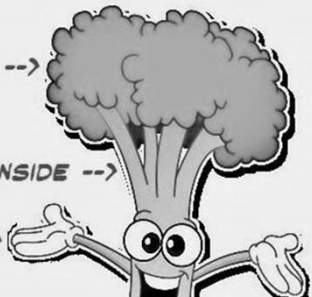
Glyphosate – Roundup

Roundup Ready Crops

GLYPHOSATE INSIDE -->

GLYPHOSATE INSIDE -->

GLYPHOSATE INSIDE -->



Glyphosate – Roundup


Mechanism of Action

★ Prevents selected amino acid & protein synthesis


✓ Shikimic acid pathway

WHAT IS GLYPHOSATE?

Glyphosate, an active ingredient in some herbicides, inhibits an enzyme that is essential for plant growth.



This enzyme is not present in humans or animals.



Thus contributing to the low risk to human health when used according to label directions.

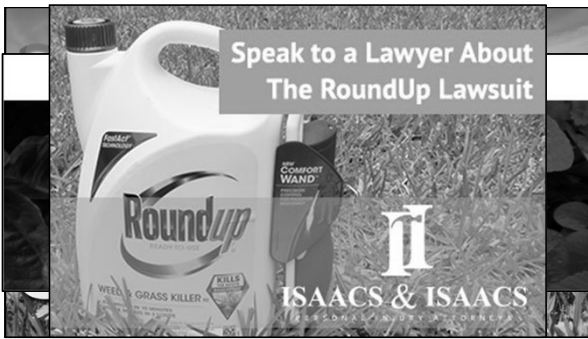
The Label

Signal Word - Roundup

★ **Caution**

- ✓ Slightly toxic or relatively nontoxic
- ✓ Keep out of reach of children
- ✓ Causes moderate eye irritation
 - ☞ Avoid contact with eyes
- ✓ Relatively nontoxic – dogs & other domestic animals

Have you seen?



Why?

International Agency
Research on Cancer



World Health
Organization

WHO – IARC

2015

- ★ **Glyphosate as “a probable human carcinogen”**
 - ✓ Group 2A – “limited evidence” of carcinogenicity
 - ☹ Group 2B – “possibly carcinogenic” cell phones & coffee
- ★ **European organization**
 - ✓ No regulatory, oversight, or jurisdiction in U.S.
 - ? Activist with an agenda – possibly
 - ? Anti-GMO – possibly
- ★ **Not the European Food Safety Agency**

WHO – IARC

Position Called into Question

- ★ Regulatory agencies & other scientific groups
 - ✓ Disregard total weight of available evidence
 - ✓ Cherry picking data
 - ✓ Gross data misinterpretation
 - ✓ Sensationalism

U.S. EPA & EFSA

Stance on Glyphosate

- ★ U.S. EPA – September 2016
 - ✓ 3rd time
 - ✓ “Not likely to be carcinogenic to humans” Group 5
- ★ EFSA - 2015
 - ✓ “found no grounds to classify glyphosate for carcinogenicity”

Why Review Pesticides?

U.S. EPA

- ★ EPA periodically reviews existing registered pesticides to ensure they can be used safely, without unreasonable risks to human health and the environment. The registration review program is intended to make sure that, as the ability to assess risk evolves and as policies and practices change, all registered pesticides continue to meet the statutory standard of no unreasonable adverse effects.

EPA Pesticide Review

2018 Registration Review Schedule for Biopesticides Cases (as of 09/18/2017)		
Final Work Plans	Draft Risk Assessments/Proposed Interim Decisions	Interim Decisions
Quarter 1		
<ul style="list-style-type: none"> Sucrose octanoate Indole Acetic Acid Eugenol 	<ul style="list-style-type: none"> Sucrose Atonik Aspergillus flavus 	<ul style="list-style-type: none"> Menthol
Quarter 2		
Black Pepper		
<ul style="list-style-type: none"> Verticillium dahliae isolate WCS 850 Colletotrichum gloeosporioides 2-Butane, 4(4-acetyloxy) octanoate Citronellol Black Pepper 	<ul style="list-style-type: none"> Myrothecium species Bacillus licheniformis Metarhizium anisopliae Bull Weevil Attractant Ethylene 	<ul style="list-style-type: none"> BT com lepidopteran BT com coleopteran Aspergillus flavus Verbenone

Latest Data & Research

Journal of National Cancer Institute

- ★ **Glyphosate use and Cancer Incidence in the Agricultural Health Study**
- ✓ **Published online – November 2017**
- ✓ **Licensed applicators in North Carolina & Iowa**
- ✓ **54,251 applicators – 44,932 used glyphosate**
- ✓ **5,779 incident cancer cases – not stat. significant**
- ✓ **Conclusion – “no association was apparent between glyphosate and any solid tumors or lymphoid malignancies overall, including NHL & its subtypes”**

Does Data Kill This?

Other Repercussions from WHO - IARC

- ★ **July 2017 – California’s Office of Environ. Health Hazard Assessment**
- ✓ **Glyphosate on its list of “Cancer-causing Agents”**
- ✓ **CA will require all products with glyphosate to carry a cancer warning on the label – intended for 2018**
- ? **Will manufactures make CA-only labels?**
- Ⓜ **Pay attention! Controversial decisions in other states may affect you.**

*All pesticides are dangerous
and should be respected!*

Important Dates in 2018

Field Day – August 9

For other local programs contact your CEA

Thank You



Visit

www.GeorgiaTurf.com
