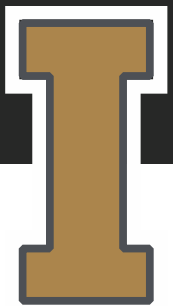


What's up with Roundup™? (glyphosate)

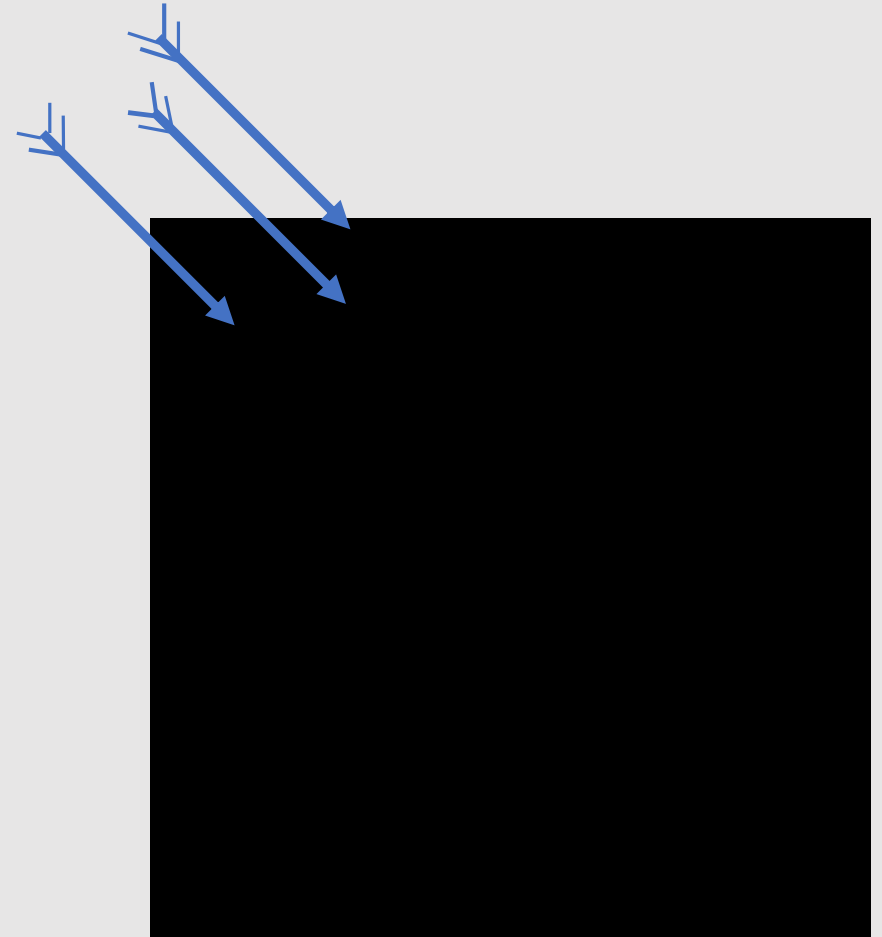
DOUG FINKELNBURG

AREA EDUCATOR – CROPPING SYSTEMS



Disclaimer:

- This presentation is intended to summarize common misunderstandings related to glyphosate use and describe the latest news related to ongoing controversies.
- This presentation is not intended to make any claims or conclusions relating to unresolved health and safety concerns or environmental impacts.
- US EPA considers glyphosate safe to use as directed by the product label.



RUMORS, MYTHS, FACTS?

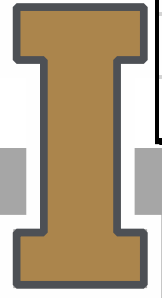
- Claims:
 - “Glyphosate causes gluten intolerance”
 - “Wheat is drenched in glyphosate”
 - “Glyphosate is in our food”
 - “Glyphosate is in children's vaccines”
 - “Glyphosate causes autism”
 - “Glyphosate causes cancer”



GLYPHOSATE: A REVIEW

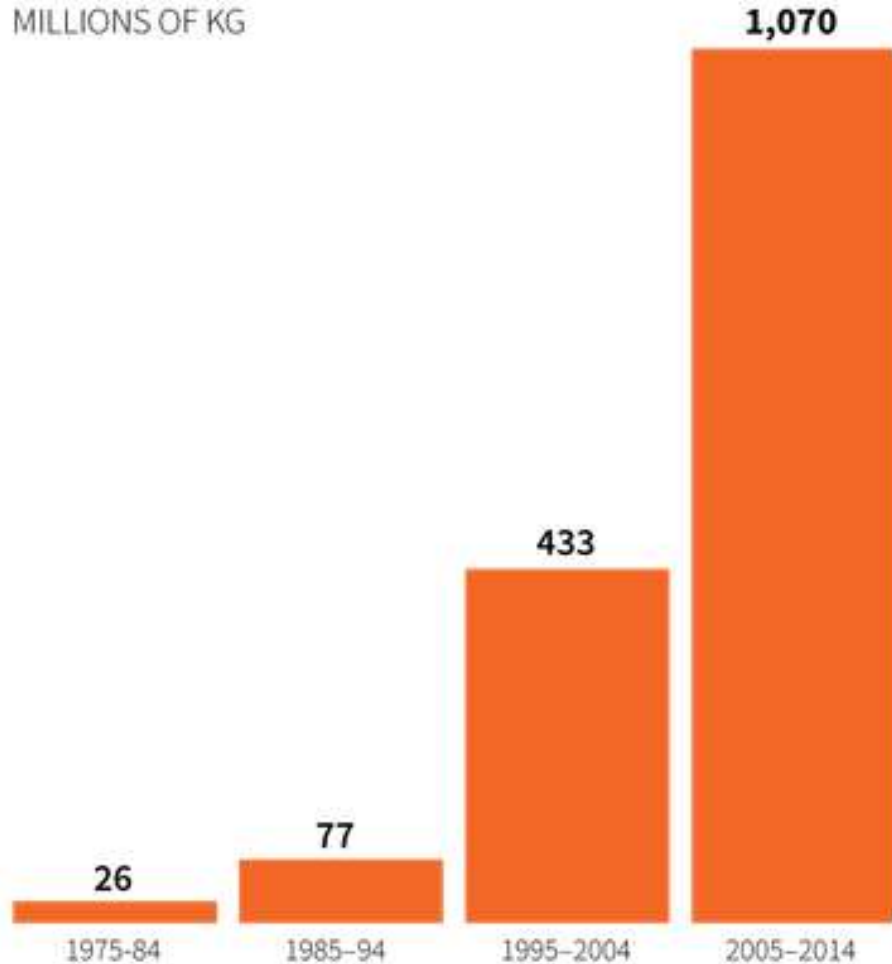
Substance	Toxicity	LD ₅₀ (mg/Kg)
Water	Practically non-toxic	>90000
Sucrose	Practically non-toxic	29,700
Vitamin C	Slightly	11,900
Ethanol	Slightly	7,080
Glyphosate	Slightly	5,600
Sodium Chloride	Slightly	3,000
Aspirin	Moderately	200
Caffeine	Moderately	192
DDT	Moderately	135
Paraquat	Highly	35
Nicotine	Highly	6.5-13.0

- 1970 – Re-discovered by Monsanto
- 1974 – Roundup released
 - Broad spectrum systemic herbicide
 - Low residual activity
 - Low to very low mammalian toxicity



TOTAL GLYPHOSATE ACTIVE INGREDIENT USE IN THE U.S. BY DECADE

MILLIONS OF KG



Note: Estimated from National Agriculture Statistical Service, US Geological Survey, and Environmental Protection Agency data

Source: Charles M Benbrook

GLYPHOSATE: A REVIEW

- 1990's – “Roundup Ready” Soybeans, Corn, Canola, Cotton
- 2000 – Monsanto patent expires
- 2010 – labeled in 130 countries
- 2013-2015 – countries start banning/limiting glyphosate access
 - (El Salvador, Netherlands, Sri Lanka, Bermuda)
 - Efforts to limit use in western nations

GLYPHOSATE IN FOOD?

- US EPA sets US “tolerances” (MRL’s)
 - USDA enforces meat, poultry, & eggs
 - FDA enforces other foods
 - Varies by crop/meat product (0.1-30 ppm)
 - Can differ from other international standards
 - 2006 – latest reassessment of all tolerances

MRL	USEPA	CODEX	EU
	mg/kg		
Banana	0.2	0.05	0.1
Sugar Beet Root	10	15	15
Cereal Grains*	30	30	10-20
Eggs	0.05	0.05	0.05

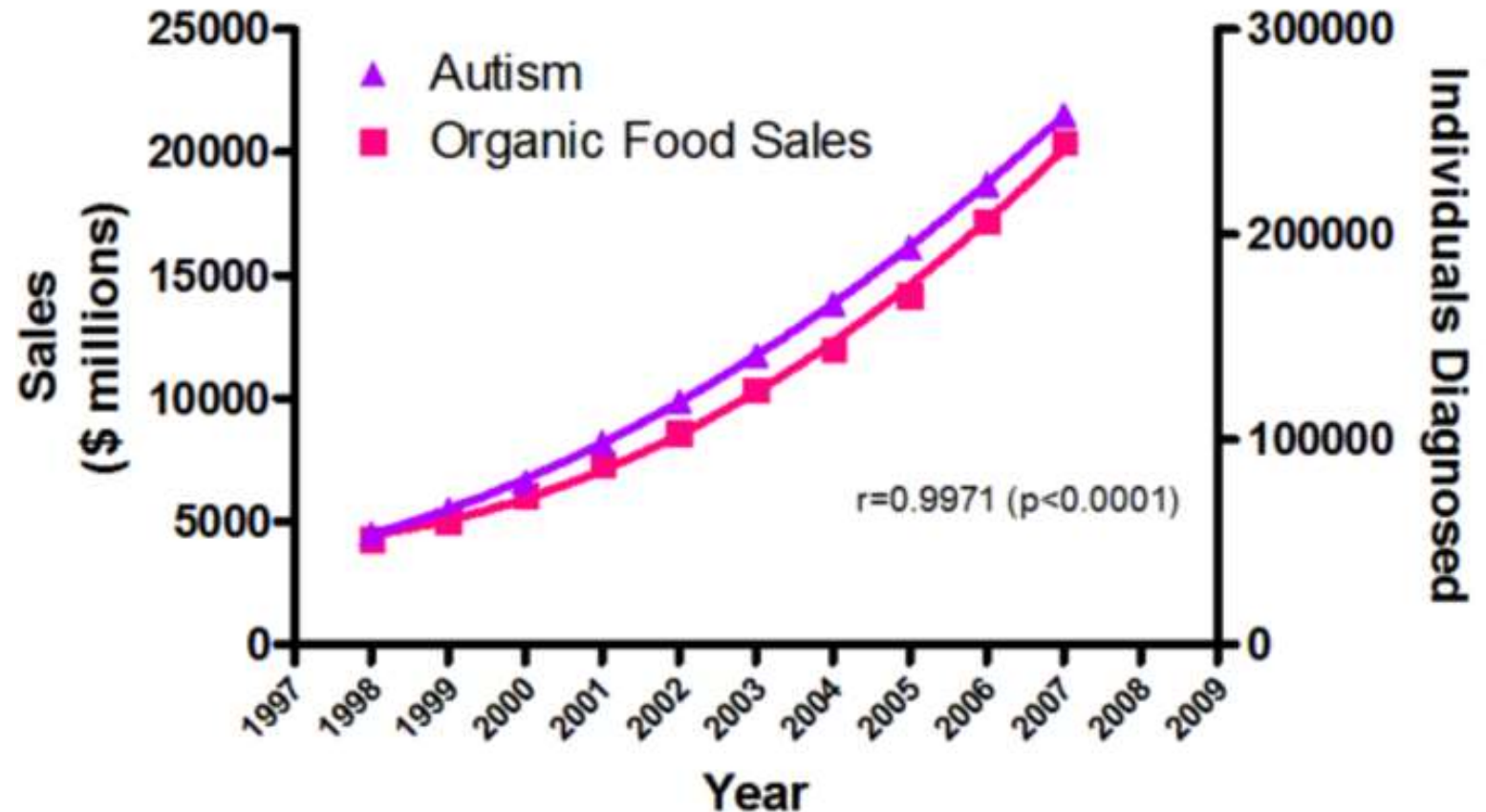
*except popcorn, sweetcorn, wild rice, EU splits wheat & b



Allegation – Glyphosate causes celiac disease/autism

- Source: [Glyphosate, pathways to modern diseases – Samsel & Seneff](#)
 - Interdisciplinary Toxicology
 - Surgical Neurology International
 - Journal of Biological Physics and Chemistry
- Effect:
 - Connected Celiacs, NHL, infertility, miscarriages, autism & birth defects
 - often cited by bloggers as scientific authority
- Reality: conclusions widely disputed & journals questionable

The real cause of increasing autism prevalence?



Sources: Organic Trade Association, 2011 Organic Industry Survey; U.S. Department of Education, Office of Special Education Programs, Data Analysis System (DANS), OMB# 1820-0043; "Children with Disabilities Receiving Special Education Under Part B of the Individuals

MYTH – FARMERS “DRENCH” WHEAT

Source: *The Healthy Home Economist*

- BA Economics, MS Gov. Admin. & Public Financial Information Technology

Effect of myth

- Suggests non-organic wheat is dangerous
- Implies majority of wheat farmers apply chemicals illegally (off label)

Reality

- Pre-harvest application on roughly 5% of US Wheat acreage
- Typically used in Dakotas
- Practice is legal and strictly defined on label



Fact Check > Food

The Real Reason Wheat is Toxic

Are U.S. farmers saturating wheat crops with Monsanto's Roundup herbicide as a desiccant to facilitate a quicker harvest?



26K

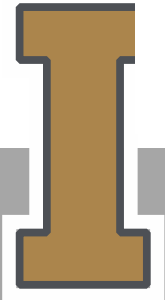
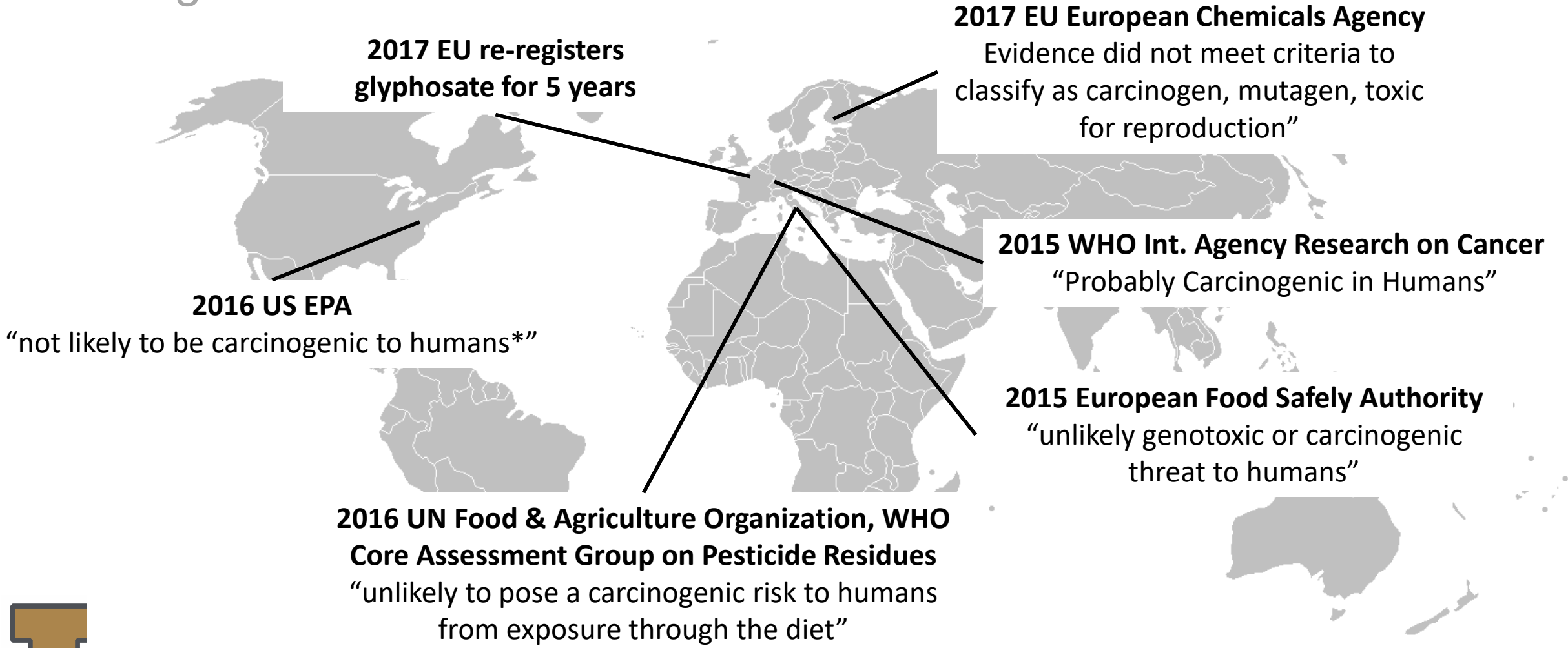


ALLEGATION: GLYPHOSATE IN VACCINES

- Source: Moms Across America
- Claim: Glyphosate found in 5 children's vax
- Facts: Methods disputed, results unpublished/not independently verified
- Effects: fuels anti-vax/anti-gmo/anti-pesticide causes

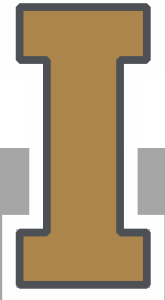


Carcinogenic?



LEGAL WRANGLING

- May 2017 – NHL cancer patients sue Monsanto
 - WHO IARC cited
- June 2017 - California adds glyphosate to list of known carcinogens
 - WHO IARC cited
 - Monsanto sues to remove, California Supreme Court rejects request, case is being appealed
 - Nov 15th new lawsuit vs CA
- December 2017 – Lawsuits ongoing...



SUMMARY

- Bermuda triangle of mistrust
- Science is replicable
- Weak, specious, speculative, shocking info loves the internet
 - Relies on mistrust of institutions
 - Relies on inability to fact check or if facts don't fit, see above
 - Food & Health concerns are motivators
- Who do you trust?

