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JOHN'S CORNER: WEEDS and HERBICIDES (Part 1)

by John Ferguson

Last December I attended a advanced soil conference up in Kansas City. The presenters were scientists from several major universities, the Center for Disease Control to the head of the USDA research station. The over whelming message is we have to change the toxic chemical methods we use in agriculture and horticulture if we are going to survive as a species. A couple days of the conference were spent on the problems both in horticultural and with health (animal and human) related to common herbicides. Since Round-Up is the most used herbicide we will start here.

Over the last few weeks we have seen additional countries like France, Netherlands, Sri Lanka and others continue to ban the sale and use of a herbicide called Round-Up. The active ingredient in Round-Up is a very toxic chemical called "Glyphosate".

A few weeks ago the World Health Organization declared Glyphosate a probable carcinogen. Research has been appearing for decades showing that Round-Up is related to many types of cancer and dozens of animal and human health issues. People and independent researchers have known the truth for years. As an article on the Alternet stated, "*Industry and government regulators have conspired to bury copious evidence for toxicity for decades.*" At the conference in a side conversation with a USDA researcher (whom was retiring in a couple weeks) whom stated, "I can finally tell the truth without getting fired and what scares me the most is the inert ingredients found in Round-Up".

Over the last decade or so I have collected dozens (hundreds?) of papers and a few books on the dangers and health problems caused by Round-Up. I have so much information that I am not even sure where to begin. Since this is primarily a gardening newsletter I will begin with the horticultural side and later discuss the numerous health problems and environmental destruction it causes.

Glyphosate has two main modes of action to kill plants. First it chelates major and minor nutrients and prevents plants and microbes from taking them up. These include phosphorus, potassium, iron, calcium,

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magnesium, manganese, zinc, copper, and others. This greatly weakens the weeds (plants) and slows or stops microbial activity as they need these nutrients also. It also chelates many enzymes of both plants and microbes and prevents them from working.

Secondly Glyphosate stimulates the rapid growth of soil pathogens! Some of these are Fusarium, Phytophthora, Pythium, Rhizoctonia, and dozens more (over 40 plant pathogens have been documented as stimulated by Glyphosate). Now the plant in its weakened state easily succumbs to the soil diseases and is killed. In addition it has been found that Glyphosate stimulate soil diseases to jump plant species that previously were not affected and increases the virulence of the disease.

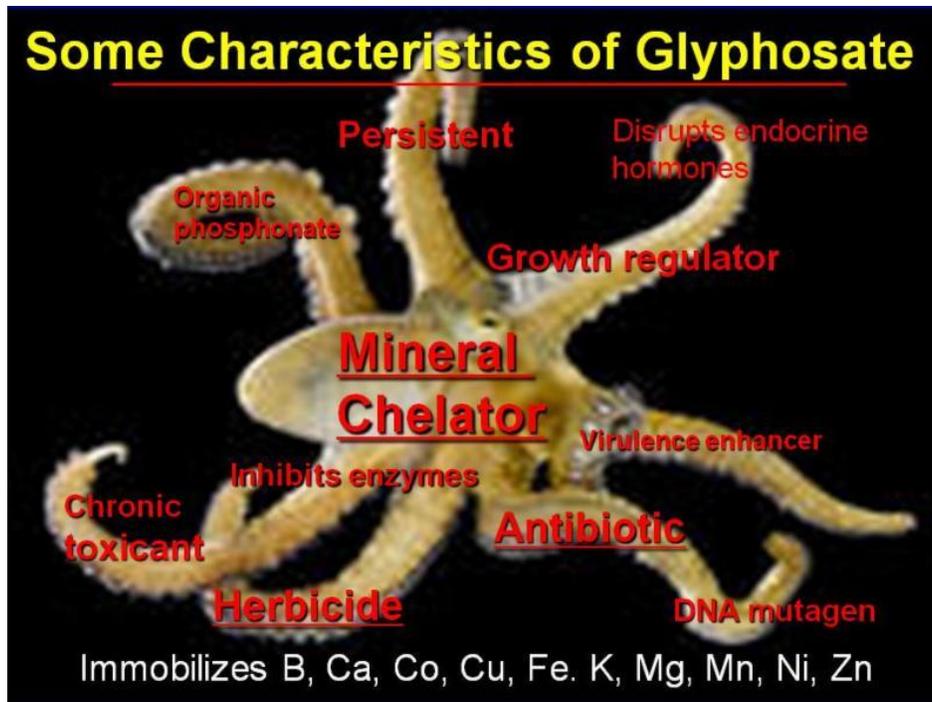
This slide is courtesy of Dr. Don Huber , Purdue University:



Note: In the sterile soil with no soil pathogens present in the soil the plant was not killed only weakened due to nutrient tie-up. When the field soil with microbes (both good and bad) was used that allowed pathogens to

grow the plant was killed.

This slide is courtesy of Dr. Don Huber , Purdue University



A few other side effects of using Round-Up are:

- as microbial activity declines then soil structure also declines
- less air and water in soil leads to secondary problems
- eliminates the bacteria that control human pathogens like salmonella
- causes a reduction of plant growth hormones (auxins - 96%, gibberellic -32%, etc.)
- the soil pathogens can easily spread to areas adjacent to where Round-Up was applied and cause problems for years (see slide below)

This slide is courtesy of Dr. Don Huber , Purdue University

Some SYMPTOMS of Glyphosate Damage
(Sub-herbicide depending on rate and exposure time)

- ✓ Low vigor, stunting, slow growth
- ✓ Leaf chlorosis (yellowing) - complete or between the veins
- ✓ Leaf mottling - sometimes with necrotic flecks or spots
- ✓ Leaf distortion - small, curling, strap, wrinkling, 'mouse ear'
- ✓ Abnormal stem proliferation ('witches broom')
- ✓ **Bud, fruit abortion**
- ✓ Retarded regrowth after cutting (alfalfa, perennial plants)
- ✓ Lower yields, lower mineral value
- ✓ Predisposition to infectious diseases - **NUMEROUS!**
- ✓ Predisposition to insect damage
- ✓ Induced abiotic diseases - drought, winter kill, sun scald
- ✓ Root stunting, poor growth, inefficient N-fixation and uptake
- ✓ **Bark cracking**

after Univ. of Hawaii; Univ. of Connecticut, Ohio State University