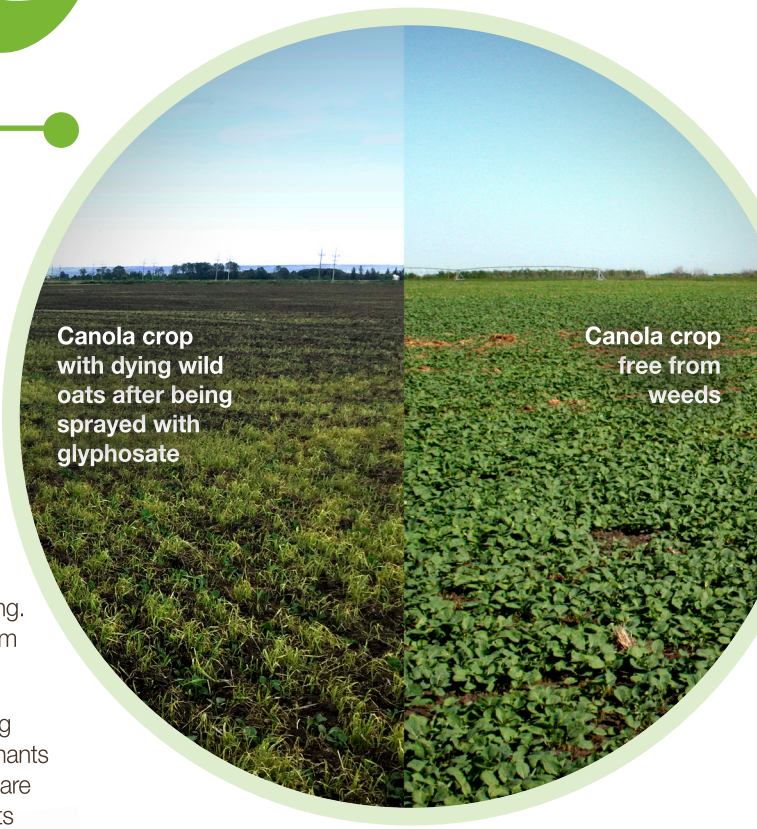
GLYPHOSATE

#5 IN A SERIES OF 6

WHAT is glyphosate?

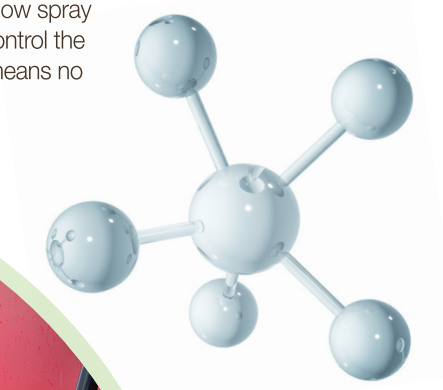
Glyphosate is one of the most effective and widely used herbicides used in the world today. It is **non-selective** (meaning it will kill most plants) and **systemic** (meaning it will travel to all parts of the plant). There are many brands of glyphosate, including the brand **Roundup**.



Glyphosate: changing how farmers farm

Farmers used to till (turn over) soil to control weeds and prepare the soil for seeding. However, frequent tillage resulted in soil erosion and the loss of organic matter from soils.

Using glyphosate and improved seeding equipment have resulted in farmers being able to seed directly into the ground without disturbing soil, which leaves the remnants or **stubble** from last year's crops in place. By using glyphosate, perennial weeds are controlled because the glyphosate circulates to the roots, killing underground roots and reducing the need for tillage. Farmers can now spray glyphosate in the spring and/or fall in order to control the weeds and seed directly into the ground. This means no more soil blowing into ditches and trees!



GLYPHOSATE AND GENETIC ENGINEERING (GE)

Beginning in the mid-1990s, through **genetic engineering**, scientists were able to move genes for glyphosate resistance into crops such as canola. This enabled crops to tolerate applications of glyphosate without being harmed. As a result, weeds are killed when sprayed with the chemical, but the crop remains unaffected. This is called **herbicide tolerance**.

ROUNDUP – AND POP CANS!

Herbicides are usually mixed with water and sprayed on crops. The amount of glyphosate applied to each acre (an acre is about the size of an NFL football field) is roughly the same as one-half to a full pop can diluted with water approximately equal to that of a large 50 L aquarium. Thus most of what is sprayed on fields is water!

GLYPHOSATE

Only in plants

Glyphosate binds to an enzyme, EPSP synthase, preventing it from building essential amino acids that a plant requires to grow. With this enzyme disabled, plants die.

EPSP synthase is found ONLY in plants and certain microbes. Humans and animals do not have it in their bodies. We get the essential amino acids we need from our diet.

GLYPHOSATE AND THE ENVIRONMENT

According to Health Canada, glyphosate does not harm plants or animals when used according to label instructions.[1] Glyphosate binds tightly to soil and is then broken down by soil bacteria, preventing it from getting into groundwater or entering the atmosphere.[2]

Canada thistle grows quickly and can form dense patches in crops.

Glyphosate has reduced the need to use more toxic and less effective herbicides on farms.

Spraying for weeds

Glyphosate and **human health**

In 2015, the International Agency for Research on Cancer (IARC) announced that glyphosate is “probably” carcinogenic to human health.[3]

However, a comprehensive review of existing studies in 2016 by the U.S. Environmental Protection Agency concluded that glyphosate is “not likely to be carcinogenic to humans” at doses that humans are exposed to.[4] The global science community continues to agree that glyphosate does not cause cancer or pose serious health threats to the general population.[5]

Green foxtail, growing on the edge of a canola field, is a weed that spreads quickly and competes with crops for moisture and soil nutrients.

References available @ www.aitc-canada.ca