# AN EMPIRICAL ROUNDUP EXPERIMENT

imagined and carried out by

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## ABOUT EMPIRICAL ROUNDUP EXPERIMENT

Watching PBS, I have seen footage of farm equipment spraying agricultural fields with *Roundup*, a Monsanto herbicide which either kills completely or hinders the life of plants. It was being used to control weeds which had come up amongst vegetables or alfalfa grown from *Roundup* tolerant GMO seeds. Spray all you like! The crop will not be affected.

But I became worried. The chemical, I assumed, could not be applied above without ending up below, as it would remain in the fiber of dead, dry weeds, or on top of the soil until plowed. A buildup of *Roundup* in the soil could cause poor growth or none at all.

I sent a few e-mails to places such as U. C. Davis, but they were not answered. I was hoping to get someone to do a simple experiment to find out what such soil contamination might be creating for future non-GMO seed sprouting and growth.

Then, I saw another PBS program on *Quest* titled *Next Meal: Engineering Food.* Again, there were clouds of *Roundup* raining down upon rows of commercial farm plants. I decided my suggestion that others might engage in my experiment was something I could do myself. If I found out I was right about a potential threat to soil fertility, perhaps the scientific community would be interested. So here is how I went about it.

First, I used pre-mixed *Roundup for Grass and Weeds.* On the label it says: "Rainproof in ten minutes." The product contains:

2% glyphosate isopropylamine salt
2% pelargonic acid & related fatty acids
96% other ingredients

There are also *Roundup* products called: *Extended Care* 48.7% glyposate; *Pro.Max* 48.7% glyphosate, to be mixed at 2 oz. per gallon; and *Super Concentrate* 50.2% glyphosate plus other ingredients which include imazapic d——.

I bought *American Seed Co.* seeds: radish (because I know it sprouts fast), corn, and bush bean. Sprouting time for seeds as noted on seed package is: radish 4-7 days; corn 5-10 days; bean 8-10 days. Warmth of weather, depth of seed when planted, and soil conditions all affect the time it takes for new shoots to appear.

After several initial attempts I realized I had not waited 1-3 days before planting as it says to do on the *Roundup* container. Then I tried again, being sure to adhere to that rule. I had already seen that radishes, corn, and bean could not make it above ground if a high concentration of *Roundup* was in the soil, such as a tablespoon to a cup, seeded immediately.

The technical data of my experiment is as follows: I got my soil from a nearby hillside, thereby making sure it had no residue of *Roundup* or *Miracle Grow,* or in this case, even animal droppings in it which could affect the outcome. I removed small rocks and other organic debris as needed, and then added various amounts of *Roundup* to 1/4 cup water before stirring into 1 cup dry soil in a clean stainless-steel bowl. This then was transferred to the soil compartments to wait four days before adding seeds. I marked my spots with 0, 1, 2, & 3 for 0 *Roundup,* 1/8 t., 1/4 t., and 1/2 t. Then I put the planter in a plastic bag and cut a few small air holes. I wanted to do what I could to keep the soil moist—not to dilute the *Roundup* I'd added by watering any more than necessary.

When the seedlings had emerged (they all sprouted rapidly), I watered as needed with a teaspoon or eyedropper. My "0" slot got approximately the same amount of water as the others. Sunlight was both direct, filtered, and what could be called "bright shade". I moved the new plants around, as summer sun wilted them if they got too much. Also, use of a clear plastic bag was an on and off event, but definitely on during the night.

*Roundup-soil* seedlings including radishes a few days after appearing.

By the 16th of June, ten days since seeding, though everything came up more or less together, differences in growth had developed. (I took the radishes out after I saw they all sprouted.) With the corn seedlings, the plants in 1, 2, & 3 showed retarded growth respectively compared to the "0" plant. Twelve days after seeding, I measured the corn from soil to longest leaf held in an upright position. "0" = 11 inches and had four leaves; "1" = 7 in. and had four leaves; "2" = 6-1/2 in. and had three leaves; "3" = 4-7/8 in. and also had three leaves.

One point of interest is the difference in the size and shape of the topmost bean leaf in "0" compared to that of beans in the other spots. It's broader and larger.

A further experiment with the corn and beans would be to sow the seeds in larger pots with more soil which could support plants such as these growing for six weeks. With the concentrations of *Roundup* such as I've used in the last try, everything came up. It was only in development that I have proven *Roundup* in soil hinders short-term. Depending upon the degree of concentration, retarded growth will result. *Roundup* sprayed on plants in an amount too slight to kill will still suppress flowering, and I assume, would do the same thing if contacted in soil. If one eats spinach, you don't eat the flower of the vegetable, nor with carrots; but beans and corn are seeds which come from flowering.

Now, an argument might be: "Then we can designate certain fields as GMO *Roundup* fields, and just accept that we'll have to use *Roundup*-immune seeds in them." Or: "We'll have to add more fertilizer or some other chemical to compensate for the effects of *Roundup* if we want to plant regular seeds." I can't say for sure what the future holds in regard to this herbicide's presence in soil, but let us find out today, and not be taken by surprise after the fact. Since I first began my little experiment I've read excerpts from a scientific investigation, and apparently, **glyphosate does not degrade.** This report simply shows that the chemical does not decompose rapidly, as some have claimed. Its long-term life is the greater menace. There are poignant ethical issues to contemplate as to what the human race is allowed to do with the foundation of all food: the earth.

**From the Internet**, about *Roundup* weed and grass killer, Super Concentrate: "Absorbs through the leaf and stem only so killing power won't spread to nontarget plants through soil. Kill to the root! Guaranteed!"

**A radish report:** Radish seeds sowed in a mixture of 1 cup soil to 1 tablespoon *Roundup* did not sprout. Radish seeds sowed in 1 c. soil to 1 teaspoon *Roundup* came up, but leaves were small, fried at edges, and curved in. Radishes are less hardy than corn or beans, having a tiny seed by comparison and tender, thin stems. Using larger amounts of *Roundup* per cup of soil may seem unrealistic, but results from doing this signify effects all the more.

Below is a picture from an earlier experiment. The two corn seedlings on the right came forth with 1 t. *Roundup* in soil, but didn't develop in height or root as those on the left which were growing in the *Roundup*-free container, seeds sown at the same time.

This is the top leaf of the bean in the "0" compartment, photographed from the opposite side. It seems to have a face! Nature spirits? Whatever caused it, I swear *I* didn't do it.

**From the Internet,** found at Ehow.com/about_6797745_toxicity-roundup-wee *"Roundup* killed a majority of cells that were exposed to it. In a study by the Universite' de Caen in France, *Roundup* is highly toxic to reproductive cells, used at lower concentrations than in agriculture—more so than glyphosate on its own." Birth defects and miscarriages are mentioned. *Roundup* is toxic to aquatic life. If it gets into drinking water, it produces kidney ailments, cancer, and reproductive issues.

Aside from my concern that increasing amounts of *Roundup* may be contaminating our agricultural fields for regular seeds, I am very concerned about the use of *Roundup*-sprayed alfalfa and soybean stalk as feed for dairy cows and cattle. To me, this would be the same as eating lettuce which had been so sprayed. Has the FDA approved such lettuce for our table? If not, they should not allow *Roundup* exposed alfalfa for our cows.