



LSP Myth Buster #28

An ongoing Land Stewardship Project series on ag myths and ways of deflating them.

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Myth: Roundup in not a long-term environmental threat.

Fact:

Much of the basis for society's (and government's) acceptance of Roundup Ready GMO technology centers around the belief that the herbicide glyphosate (a linchpin in the Roundup Ready system) is safer for the environment than many of the pre-emergent

herbicides it was supposed to replace. This is based on the idea that its greater volatility makes it less likely to hang around long enough to create environmental and human health problems. So, goes the argument, applying more glyphosate is less of a threat than applying less atrazine, for example.

But there are signs the herbicide glyphosate is threatening the soil's long-term ability to create a healthy growing medium for crops. That's not just a regrettable side effect that puts a bit of a tarnish on a silver bullet—it's a potential bombshell that changes everything farmers (and environmentalists) have been led to believe about this ubiquitous herbicide.

Don Huber, a Purdue University emeritus professor of plant pathology, has recently been making minor waves within the world of no-till/minimal till agriculture by highlighting glyphosate's ability to make the growing environment for plants an unhealthy one. In a summary paper of the latest research in this area, Huber documents how glyphosate has significantly changed nutrient availability and plant efficiency. Some of these changes are brought about by glyphosate's direct toxicity, while others are caused indirectly through changes in soil organisms.

It seems one of the indirect effects of glyphosate is that it ties up or "chelates" the micronutrients necessary for healthy plants. For example, it can consistently inhibit plant enzymes responsible for disease resistance. It does this to plants engineered to resist being killed outright by glyphosate, as well as their non-GMO counterparts.

Huber's 13-page paper has this chilling conclusion: "The introduction of such an intense mineral chelator as glyphosate into the food chain through accumulation in feed, forage, and food, and root exudation into ground water, could pose significant health concerns for animals and humans and needs further evaluation." Huber's warnings are being taken seriously by a sector of the farming community that benefits greatly from Roundup Ready technology: no-till and minimum-till farmers. In an effort to reduce tillage-based weed control as much as possible, these types of crop producers have adopted glyphosate-resistant plant technology in droves.

But in an article tellingly called "Are We Shooting Ourselves In the Foot With a Silver Bullet?", the March 2010 issue of *No-Till Farmer* magazine quotes Huber and other researchers who are quite concerned that Roundup Ready is becoming a detriment to crop farming. It turns out farmers and crop consultants are

reporting more incidents of entire fields showing signs of disease and stress in general. Crops may not die outright, but will do things like mature earlier, turning yellow and losing the bright green coloring that shows they are still adding to their final yield.

"For the last 2 to 3 years, corn plants have been losing color about 7 to 10 days earlier each year," Iowa crop consultant Bon Streit told *No-Till Farmer*. "In 2009, we often saw corn yellowing up by August 1 even where nitrogen deficiencies weren't the problem."

Up until now, such signs of stress were automatically blamed on weather or some other "outside" culprit. But Huber and others

are now saying no-till and minimum-till farmers need to look at their own spray tanks as a source of problems.

Perhaps the most troubling point that Huber makes is that contrary to conventional wisdom, glyphosate is not a temporary presence in the environment. It can actually stick around in the soil for long periods of time.

"We see a buildup of glyphosate in the soil in part from glyphosate-tolerant crops and weeds," Huber told *No Till Farmer*. "When we add phosphate fertilizers for corn, soybeans or wheat, for example, the phosphorus

reacts to release the glyphosate back into the soil, where it's available for uptake by plants."

And that build-up, along with the negative results of that build-up, gets worse over the years. One German study found that wheat planted in soil where glyphosate had been used for a decade yielded 46 percent less than wheat planted where glyphosate had been used for only a year. And since no-tillers disturb the soil less, they are at greater risk of seeing the herbicide accumulate to levels where crops will be negatively affected.

As Huber's paper makes clear, we need research on the long-term effects of GMOs now more than ever. And we're upping the ante by the minute. Consider this: the USDA is now considering whether to approve use of Roundup Ready alfalfa in this country. A perennial crop that can be sprayed with glyphosate? If that isn't a recipe for overuse, nothing is.

More information:

◆ To read Don Huber's summary paper on glyphosate, see www.geertsonseedfarms.com/pdfs/agchemicalandcropnutrientinteractions.pdf.

◆ The article, "Are We Shooting Ourselves In the Foot With a Silver Bullet?", is in the March 2010 issue of *No-Till Farmer*: www.no-tillfarmer.com.

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