

MONSANTO MENACE

GHOST CALLED GLYPHOSATE

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[An explosion of glyphosate resistant weeds forces Monsanto to run away from farmers' rising weed control costs.]

MONSANTO IS surrendering to glyphosate resistant weeds, according to a new briefing by UK based GM freeze. They are spreading at 'exponential' rates in US farms and are increasingly documented in Australia, Argentina, Brazil, Chile, Europe and South Africa.

While Monsanto grandly claims that its GM technologies help the environment by reducing pesticide use, resistant weeds springing up across the world paints a different picture. Glyphosate resistance has developed as the result of large-scale use of their pesticides. Glyphosate is the active ingredient of Monsanto's world best-selling herbicide, *Roundup*.

And now, Monsanto aims to combat this serious agronomic, environmental, socio-economic, and health problem with even further increases in pesticide use.

The company is refusing to accept responsibility for rising weed costs, stating that "Roundup agricultural warranties will not cover the failure to control glyphosate resistant weed populations." Rising costs are burdening farmers across the globe.

This is in contrast to two years ago, when Monsanto denied the scale of the problem and insisted the weeds were "manageable". By 2009, the spread of resistant weeds was already troubling farmers as they escalated the amounts of glyphosate used, while adding other herbicides to try and control rapidly proliferating weeds. Sixteen glyphosate-resistant species had already developed by this point, many of which could not be killed or even uprooted by combine harvesters due to their size and strength. Resistant weeds are not a new problem, but Monsanto is only now coming to terms with the severity and the subsequent harm it may do to their business.

The GM freeze briefing covers findings for the 2010/2011 season so far, documenting two new species of resistant weeds, as the global total reaches 21 species, including two of the most destructive pests: Common Waterhemp (*Amaranthus tuberculatus*) and Palmer Amaranth (*Amaranthus palmeri*), that are infesting cotton and maize fields alike.

Resistant weeds so far cover over 4.5 million hectares in the US alone, while world-wide coverage is thought to have reached at least 120 million hectares by 2010. The US has the worst problem, with 13 different species in 73 different locations. Palmer Amaranth now infests over 1 million separate sites in North Carolina alone, while Horseweeds have infested 100,000 sites in Delaware. In Argentina, 100,000 acres of soya crop lands is now infested with Johnson Grass.

The lack of glyphosate resistant weeds prior to the introduction of RR (Roundup Ready) crops genetically modified to tolerate glyphosate, led GM proponents to argue that glyphosate resistance would not be a likely problem following the introduction of RR crop farming. However, since their commercialisation in 1996, resistant weed species have been emerging at a rate of 1 per year. Most worryingly, the spread of resistant weeds seems to be increasing dramatically. Up until 2003, 5 resistant populations had been documented. Since 2007, there has been a 5-fold increase in the spread of resistant weeds.

Resistance to glyphosate has been studied in numerous laboratories, and research is beginning to enlighten the concerned people to the mechanism of resistance, and has shown that different mechanisms have developed in separate populations of Palmer Amaranth. This suggests that resistance is not due to the spread of resistant seeds from one population to another, but instead, can develop spontaneously wherever glyphosate is overused, as some scientists have long predicted based on past experience.

The cause of glyphosate resistance is primarily the farming of glyphosate tolerant RR crops, which increases the use of pesticides on fields. This introduction of RR crops has destroyed previous farming practices that kept weeds at bay. Crop rotation, pesticide rotation as well as tillage of soils are no longer practiced on GM farms, and with the emergence of glyphosate resistant weeds, Monsanto's solution so far has been to douse plants in ever increasing amounts of Roundup. These practices have resulted in what the director of Cotton Incorporated, Robert Nicols has described as "an exponential spread of resistance". Ever increasing amounts of glyphosate serves only to increase the virulence of resistance in weed populations.

As Einstein famously quoted, 'no problem can be solved with the same consciousness that created it'. That is precisely what Monsanto is doing: advocating more and more herbicides to be used. New guidance published by the company to manage resistance includes:

- The use of a cocktail of pesticides including 2,4-D, prior to sowing crop seeds.
- The production of GM seeds expressing tolerance to more than one pesticide. DuPont has already commercialised seeds tolerant to glyphosate and glufosinate. Monsanto has recently announced an agreement with the German pesticide and biotechnology company BASF to develop crops stacked with glyphosate and dicamba tolerant genes.
- The use of herbicides that remain active in the soil, killing any seedlings as they germinate, including sulfentrazone. The consequences of increasing herbicide use are likely to put the environment and people at further risk. Glyphosate has been shown to damage soil fertility, the crops themselves, human health as well as off-target organisms.

Weed resistance leaves Monsanto in a tricky spot. Farmers are now seeking alternative seeds even though Monsanto have a large control over the seed market, and prospective sales of glyphosate, the biggest selling herbicide in the world, are beginning to look uncertain. Rival companies have already developed alternative GM-herbicide systems and others are in the

pipeline. Monsanto has now started collaborating with companies to create seeds that express tolerance to other herbicides. Glyphosate resistant weeds are destroying crop fields, causing significant agronomic and economic problems for farmers. This cannot be solved through the increased use of herbicides that will further impact human and environmental health, but only with organic/agroecological methods that free farmers from the industrial, monoculture farming that got them into the problem in the first place. □□□

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