

Glyphosate (the main ingredient in RoundUp) and: Roundup Resistant "superweeds", human illness and species loss

<http://www.i-sis.org.uk/RRSDSA.php>

Some of the info on the website is copied below:

- Glyphosate application is linked to sudden crop death (this article)
- Roundup-resistant "nightmare" superweeds have emerged (this article)
- Glyphosate is linked to cancers, neuro-defects, spontaneous abortions (reviewed in *The Case for a GM-Free Sustainable World*, www.indsp.org.uk) [4], is toxic to human placental cells at concentrations below agricultural use, Roundup at one-tenths of the recommended agricultural dosage [5] ("Glyphosate toxic and Roundup worse", SiS 26)
- Roundup is especially lethal to most species of frogs [6]. It caused a 70 percent decline in amphibian biodiversity and 86 percent decline in the total mass of tadpoles ("Roundup kills frogs", SiS 26); also lethal to earthworms and beneficial soil bacteria [4].
- Glyphosate application is further linked to acrylamide release from the polyacrylamide added to commercial herbicide mixtures to reduce spray drift [7] ("Acrylamide in cooked food: the glyphosate connection"). A new report released earlier this year by United Nations Food and Agriculture Organisation (FAO) and World Health Organisation (WHO) stated [8]: "The neurotoxicity of acrylamide in humans is known from high occupational and accidental exposure when acrylamide is used in industrial processes in the production of plastics and materials. Studies in animals have also shown that acrylamide causes reproductive problems and cancer." It recommended that, "efforts to reduce acrylamide levels in foodstuffs should continue." But there was still no mention of glyphosate connection
- Allergies to soya rose 50 percent between 1998 and 1999 in Britain as a result of GM soya import [13]. Male rats were stunted by GM soya in Monsanto's study, consistent with an increase of 26.7 percent in a major allergen, alpha-trypsin-inhibitor, which is also a growth inhibitor [14, 15]. Possible new allergens have now been identified in GM soya (this article)

Glyphosate linked to sudden crop death

Fusarium fungus causing sudden death syndrome in soya and wheat was first reported in an article from the New Scientist magazine several years ago describing an unpublished study by Myriam Fernandez and co-workers from Agriculture Canada [16], which has been completed and published recently [17]. Glyphosate application in combination with no till (crop seeds drilled into fields prepared by herbicide treatment alone) had significantly increased Fusarium head blight in spring wheat. The Fusarium infection not only affected wheat production but also increased the risk of mycotoxins harmful to humans and farm animals.

Sudden crop death following *Fusarium* infection is also a problem in soya production. In growth chamber and greenhouse experiments, glyphosate treatment caused significant increases in disease severity and infection of roots [18]. In field experiments with soya, there was increase in *Fusarium* disease after glyphosate application, but the disease incidence did not differ between glyphosate tolerant and sensitive cultivars [19].

Farmers' nightmare in RR superweeds come true

Field of RR crops have been suffering infestation of weeds resistant to glyphosate and Roundup for several years. Now, the farmers' worst nightmare has come true. The dreaded palmer pigweed has become Roundup resistant, Monsanto admits [21]. Pigweed is considered one of the very toughest herbicide resistant weeds to deal with, and palmer pigweed especially so, it can get to six feet tall.

Up until now, Monsanto's Roundup was seen as a particularly effective herbicide for palmer pigweed. This was one of the selling points of Roundup Ready crops. Roundup Ready crops tend to yield less, and it is the ability of Roundup Ready to deal with palmer pigweed that makes it worthwhile.

The palmer pigweed population tolerated "extremely high rates of glyphosate applied in the field under excellent growing conditions," according to Stanley Culpepper, University of Georgia weed scientist. The resistant population infests 500 acres of Roundup Ready cotton in central Georgia.

Common waterhemp, also known as pigweed, from seed collected from suspect fields in 2004 showed high tolerance to glyphosate in greenhouse experiments [22]. The weeds were found in fields planted with Roundup Ready soybeans continuously since 1996. "Common waterhemp is our No. 1 weed problem in corn and soybeans in most of Missouri," said Kevin Bradley, Missouri University extension weed specialist, "With the introduction of Roundup Ready soybean varieties, glyphosate (the active ingredient in Roundup and similar herbicides) became the No. 1 herbicide used in soybean fields."

The problem developed over the past three years at one site and the grower continued to use increasing amounts of glyphosate. The weeds survived a dosage of glyphosate almost 10 times the recommended rate (6lb per acre as opposed to 0.75lb).

Last year, glyphosate-resistant common ragweed was confirmed in Missouri, which was also resistant to 10 times the normal rate of application. Maretail and ryegrass had already developed glyphosate resistance even earlier.

Three years ago, an independent market research study predicted that RR resistance was set to hit the economic value of farmland, wiping around 17 percent off land rentals. More than half of farm managers surveyed placed glyphosate resistance in weeds ahead of weed resistance to other herbicides. Glyphosate-resistant maretail was found in Delaware, Tennessee, Kentucky, Indiana and Ohio. Glyphosate-resistant ryegrass was reported in California. Weed scientists in Iowa and Missouri were then testing waterhemp; and complaints about the marginal control by glyphosate of velvetleaf, ivyleaf, morning glory and lambsquarters had also surfaced. The report, commissioned by Syngenta, had been quietly circulated to farmers and landowners via its PR company, Gibbs & Soell [23, 24]..

