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Nature fights back against GM crop technology - study explains development of superweeds

Nature has found a new way to fight back against GM crop technology, according to a recent study[1]. The study looked at the new superweeds growing in GM crops[2] to find out how they were resisting the herbicide Roundup (active ingredient glyphosate).

Glyphosate works by preventing the action of a natural plant protein, resulting in death of the plant. But many GM crops have been manipulated to produce an additional mutated bacterial protein that can carry out the necessary action in place of the natural protein. This means that farmers can spray Roundup over GM crops, killing only the weeds.

But the superweeds have adapted and the study, in December, found they have a greatly increased number of genes in their DNA to code for the natural protein (5 to 160 times). They have dramatically increased production of the natural protein to a point where they could survive heavy doses of glyphosate.

The study concluded "This occurrence of gene-amplification […] is particularly significant because it could threaten the sustainable use of glyphosate-resistant crop technology."

MADGE Australia researcher Madeleine Love said "GM crops, designed to be sprayed with glyphosate (Roundup), are making that herbicide useless for both GM and conventional farmers."

"Farmers have been previously blamed for causing weed resistance. There are claims that they have sprayed too much, too little, haven't followed a crop management plan or haven't allowed enough diversity in crops or herbicide use on their farm. However this research shows that nature is more than a match for GM crop systems."

"The current strategy seems to be to spray more concentrated doses of Roundup to knock out weeds in new GM crop plantings, but the downside is increased residues in food, feed and environment. GM systems have been shown to increase pesticide use."

"Australian cropping systems seem vulnerable because weedy ryegrass has already developed two other means of resistance to glyphosate – one that reduces movement of the glyphosate through the plant, and the other being a slight change in the natural protein to make it less susceptible.

"Monsanto may make a short term financial gain by the introduction of their GM technology in Australia, but farmers, environment, human health and economy will endure a long term loss."

MADGE is a voluntary group of concerned individuals.

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[1] **Gene amplification confers glyphosate resistance in Amaranthus palmeri;** Gaines TA et al; www.pnas.org/cgi/doi/10.1073/pnas.0906649107; http://www.pnas.org/content/early/2009/12/10/0906649107.full.pdf+html free download of full text

[2] After years of GM crops the US is now suffering an outbreak of un-poisonable pigweed. The weeds are affecting nearly a million acres of soy and cotton crops. This almost unbelievable TV news clip http://abcnews.go.com/Video/playerIndex?id=8767877 shows some farmers in the US can no longer use their combines or cotton pickers. The pigweed, which has stems as thick as a baseball bat, also breaks hand tools. The cotton crop may have to be picked by hand.