

GM Crops Around the World – an accurate picture June 2008

This briefing sets out in detail the amount of land growing GM crops around the world following recent exaggerated claims regarding the extent of GM cultivation. It is based on two sources of information:

1. The International Service for the Acquisition of Agri-biotech Applications (ISAAA) (www.isaaa.org/) report on GM planting for 2007. The ISAAA is funded by industry but appears to be the only compilation of data on GM cropping currently available. Some of its data has been challenged¹. The ISAAA data uses <50,000ha and <100,000ha for the same country for the same year in different sections of their website. This briefing is based on <50,000ha using the figure 50,000ha in all calculations.
2. The Nation Master Website (www.nationmaster.com/statistics), which compiles global statistics from CIA World Factbook, UN, and OECD.

Global GM Planting

There are only 23 countries growing GM crops in the world, covering only 2.4% of global agricultural land. Six countries account for 95% of that area – USA, Brazil, Argentina, Canada, India and China. India and China only grow a limited area of GM cotton. The ISAAA data² for China included GM poplar trees in 2007 for the first time and some GM flowers and vegetables. No breakdown by area of either poplars or the other crops was provided.

GM soya, Monsanto's Roundup Ready soya tolerant to the herbicide glyphosate – called Roundup – makes up by far the largest areas of GM crops being grown, mainly in USA, Argentina, Brazil and Canada (51% of GM commercial planting and 64% of total soya crop). Paraguay is also significant for GM soya because 85% of arable land is under Monsanto's GM RR soya. GM Maize is grown in USA, Argentina, South Africa and Canada (making up 31% of GM crop area and 24% of the global maize crop). GM oilseed rape is grown in the USA and Canada.

There are many ways to look at the significance of GM crops to the world food supply. **None of the current generation of GM crops have increased yield beyond what has been achieved using traditional plant breeding in previous decades, and increases since 1996, when GM crops were first grown commercially, can be attributed to traditional breeding improving varieties.** Of the GM crops produced, the majority of soya beans (60-90%) and a significant amount of maize is fed to farm livestock and poultry (with a conversion rate of 5-9kg of plant protein to produce 1kg of animal protein in intensive systems). Also importantly, some soya oil is being diverted for bio-diesel, and maize is being used for agro-fuel production in the USA.

The majority of the world's agricultural land is not under arable crops or vegetables but is used to grow fodder for feeding animals. As these grazing and fodder production systems feed animals, to get an accurate comparison we must first look at GM cropping area as a total of all agricultural land – arable, permanent crops and forage land. Table 1 shows the results.

¹ Friends of the Earth International, 2007, *Who Benefits from GM crops?* Available at www.foei.org/en/publications/pdfs/gmcrops2007full.pdf

² www.isaaa.org/resources/publications/briefs/37/pptslides/default.html

Table1. GM crops as a percentage of agricultural land

	Total agricultural land ha ³	Total GM crops ha ⁴	GM as percentage of total
Global	4,803,385,400	114,300,000	2.4%
27 EU countries' agricultural land	192,276,000	400,000	0.21%
23 GM countries' agricultural land	2,494,141,000	114,300,000	4.5%

Table 2 shows the percentages of arable⁵ land under GM crops

Table 2. - GM crops as a percentage of arable land

	Total arable land ha ⁶	Total GM crops ha ⁷	GM as percentage of total
Global	1,365,069,800	114,300,000	8.4%
27 EU countries' arable land	110,849,000	400,000	0.36%
23 GM countries' arable land	745,685,000	114,300,000	15.3%

Thus even in countries growing GM crops over 84% of arable land is used for traditionally bred varieties. **Globally over 91% of arable land grew traditional crops in 2007, and 97.6% of agricultural land was non-GM.** Traditional crops are overwhelmingly dominant in the EU. Despite industry attempts to hype the expansion in 2007⁸, GM crops make up a tiny percentage of arable land (0.36%) and of all agricultural land (0.21%) in the EU.

The USA's GM cropping skews the global figures

The USA grew over 50% of the world's GM crops in 2007. If the USA data is not taken into the calculations the percentages for all agricultural land under GM crops in 2007 was just 1.2% in the rest of the world. For arable land, the corresponding figure was just 4.8% under GM crops. Table 3 shows the percentage all agricultural land and arable land under GM crops in all the countries growing GM crops.

³ www.nationmaster.com/graph/agr_agr_lan_sq_km-agriculture-agricultural-land-sq-km

⁴ ISAAA, 2008. www.isaaa.org/resources/publications/briefs/37/pptslides/default.html

⁵ Arable land includes land used for annual crops, such as soya and wheat. Not including permanent crops such as orchard and vineyards.

⁶ www.nationmaster.com/graph/agr_ara_lan_hec-agriculture-arable-land-hectares

⁷ ISAAA, 2008 *op cit*

⁸ www.fwi.co.uk/Articles/2007/10/29/107908/eu-gm-crop-area-expands.html

Table 3. GM crops as a percentage of all agricultural land and arable land 2007 by country

Country	GM crop area m ha	Agricultural land area m ha	Percentage GM	Arable land area m ha	Percentage GM
USA	57.7	414.78	13.9	174.448	33.1
India	6.2	180.18	3.4	159.65	3.9
China	3.8	554.851	0.7	103.397	3.7
Brazil	15.0	263.6	5.6	59.0	25.4
Australia	0.1	445.149	0.02	49.402	0.2
Canada	7.0	67.505	10.4	45.66	15.3
Argentina	19.1	128.747	14.8	27.9	68.5
Mexico	0.1	107.3	0.09	24.8	0.4
France	<0.05	29.569	0.17	18.507	0.3
S Africa	1.8	99.64	1.8	14.753	1.2
Spain	0.1	29.03	0.3	13.7	0.7
Poland	<0.05	15.903	0.3	12.141	0.4
Germany	<0.05	17.03	0.3	11.903	0.4
Romania	<0.05	14.513	0.3	9.288	0.5
Philippines	0.3	12.2	2.5	5.7	5.3
Czech Republic	<0.05	4.259	1.2	3.047	1.6
Paraguay	2.6	28.436	9.1	3.04	85.5
Columbia	<0.05	42.557	0.12	2.004	2.5
Chile	<0.05	15.242	0.3	1.982	2.5
Slovakia	<0.05	1.941	2.5	1.391	3.6
Uruguay	0.5	14.995	3.3	1.37	36.5
Portugal	<0.05	3.815	1.3	1.534	3.3
Honduras	<0.05	2.936	1.7	1.068	4.7

Worrying trend to monopoly

Even in countries like the USA, Argentina, Brazil and Canada the majority of the land area is growing traditionally bred crops and pasture. Two countries stand out as being worryingly dependent on GM crops – Argentina and Paraguay. In the former over 99% of soya is the RR variety developed by Monsanto. In Paraguay, it appears that 85% of arable land is under just one GM crop, again, Monsanto's RR Soya.

This monopoly of supply is a stark warning of what might happen elsewhere in the world unless governments adopt strong anti-monopoly policies and preserve public plant breeding using traditional methods. It is also of concern from an environmental and agronomic viewpoint. Monoculture on this scale cannot be good for the soil or the environment because to the long-term impacts of repeated use of glyphosate on biodiversity and soil microbes. In Argentina glyphosate (Roundup) resistant Johnsongrass (an arable weed), driven by GM agriculture, is a growing problem and already covers 7-10,000 ha⁹. Research in the USA has already shown glyphosate impedes manganese uptake¹⁰. The Farm Scale Evaluation for GM beet crops in the UK demonstrated the indirect impact of glyphosate on arable food chains leading to the potential decline of bird and insect species which rely on arable weeds for food and cover¹¹. Paraguay is a

⁹ CASAFE & CIAFA, 16 August 2006. Se confirma la resistencia de un biotipo de Sorghum halepense a glifosato en Tartagal, Salta.

www.monsanto.com.ar/h/biblioteca/informes/AlepoResistComunicado2006.pdf

¹⁰ Gordon, B, April 2007. "Manganese Nutrition of Glyphosate Resistant and Conventional Soybeans". *Better Crops* Vol Number 4, pp12-13.

¹¹ www.defra.gov.uk/environment/acre/advice/pdf/acre_advice65.pdf and www.defra.gov.uk/environment/acre/advice/pdf/acre_advice44.pdf

warning of the lengths the biotechnology corporations are prepared to push their products in countries where the government is co-operative. Recent price increase of Monsanto's RoundUp¹² weedkiller in the USA show the danger of allowing monopolies of seeds and pesticides to become established. Governments expose their farmers to big price hikes for inputs, which makes it more difficult to maintain the gross margins needed to survive financially.

Conclusions

Claims that GM crops are covering 25% of arable land (NERC website June 2008¹³) are clearly not supported by the data. If anything the percentages of GM crops provided in this briefing overestimate the significance of GM crops in many countries because precise areas of GM cropping in many countries are not provided by industry sources. **It is clear that the world will depend on traditionally bred cereals, fruit and vegetables for the foreseeable future.** This is not surprising since despite billions of dollars invested in research and development and a decade of hyperbole, GM crops have failed to increase yields.

Traditional plant breeding therefore needs to be supported with public money, especially in areas where it has been neglected in the past, such as Africa. Breeding programmes must be lead by farmers, who require training, as well as specialist plant breeders. The climatic uncertainties that face farmers everywhere suggest that new approaches to traditional breeding are needed to produce seed lots with broader genetic so they are better able to cope with extreme weather or pest outbreaks than the genetically narrow breeding programmes currently practiced around the world. The report of the International Assessment of Agriculture Science and Technology for Development¹⁴ called for a major rethink on the approach to agricultural research and development and plant breeding. In particular, the need for farmers, especially women, to be trained and involved was highlighted.

¹² www.commercialappeal.com/news/2008/mar/30/farmers-feeling-roundup-spike/

¹³ This has now been taken off the website, but not before the figure had been reported by journalists. For a copy of the original website claims contact GM Freeze or Friends of the Earth

¹⁴ www.agassessment.org/docs/Global_SDM_050508_FINAL.pdf