

The Economic Impacts of GM Contamination Incidents on the Organic Sector

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Abstract

This paper examines the economic impact of GM co-existence on the global organic sector to date through GM contamination of organic food and crops. A total of 15 GM contamination incidents in the organic sector are identified, occurring either from cross-pollination from GM crops being grown in the area or due to contamination in the post-harvest supply chain. The financial losses incurred by organic farmers and food companies due to GM contamination are considerable, through lost markets, lost sales, lower prices, negative publicity, withdrawal of organic certification and product recalls. It is important that co-existence regimes address all of these impacts, with the GM sector being held accountable.

Introduction

One of the main concerns of the organic sector is the impact of GM contamination on their businesses and ability to continue farming organically. Organic production is more costly so it is essential that produce can be sold as 'organic' to get the higher prices needed to recoup their costs. GM contamination of organic products is therefore a serious issue for retailers and the organic sector, due to its impacts on the trust in organic produce. UK Ministers have publicly promised to protect the organic sector against the impacts of GM crops, as it is valued by the UK Government for its environmental benefits. However, the organic sector is concerned that the UK Government and European Commission have not recognised the full economic damages that can occur through the marketplace, instead focusing on whether legal standards on GM levels are breached. There are now many cases of serious impacts of GM contamination of organic crops and food around the world and these are not or only partially related to legal standards.

Method

GM contamination incidents and their consequences were identified in the organic sector through a literature review covering industry reports, reports from non-governmental organisations, records of organic certification bodies, press reports and government records, with verification from parties involved where necessary.

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Results

Oilseed rape

2002+: Canadian organic farmers sue over contamination of oilseed rape seed by cross-pollination. In Canada, 73% of the oilseed rape area is now GM, resulting in almost complete contamination of non-GM seed stocks. The lack of clean seed has forced farmers in Saskatchewan to all but abandon organic oilseed rape production.ⁱ They now pursuing a class action lawsuit against the biotechnology companies to seek compensation for the millions of dollars of damage to businesses.

Maize

2005: Cross-pollination of Spanish maize by GM crops has caused financial and genetic diversity losses. GM contamination was found in organic maize crops on five separate organic farms in Aragon and Catalonia. The contaminants were Bt176 and MON810, at levels of 0.15% to 12.6%. In all cases, organic certification was withdrawn and farmers suffered economic losses. Two of the incidents involved local varieties of seeds: these varieties have now been lost.ⁱⁱ

2005: Wide contamination of organic maize by cross-pollination in Aragon. Tests of fields and grain silos found MON 810 in 50% of the samples, at levels of 0.03% - 1.9%. Unable to sell the maize as organic, farmers suffered financial losses.ⁱⁱⁱ

2004: Cross-pollination cost organic farmers in Aragon more than €4,000. Samples were taken from three organic maize crops. All were contaminated: one with Bt176 at 34% despite being over 500m from a GM field, and all with MON 810 at levels of 0.1% - 0.5%. Organic certificates were withdrawn and one farmer reported that the incident had cost him €4,000 due to the lower market price for GM maize.^{iv}

2003: GM contamination of maize by cross-pollination led to end of organic production in Navarra. A tiny amount of GM maize was being grown in the region, but tests revealed that two organic fields contained Bt176 at above 0.05%. Organic status was withdrawn but neither farmer had any right to compensation and, as a result, almost all farmers in Navarra have ceased production of organic maize.^v

2001: GM contamination of maize by cross-pollination could cost US organic farmers c. \$90 million/year. Across the USA, organic farmers are being affected by lower prices or loss of sales due to GM contamination from neighbouring farms. It is estimated that contamination of the total organic maize crop would total a potential lost income of over \$90 million annually for organic farmers.^{vi} Organic and Identity Preserved grain elevators in North Dakota and Minnesota regularly test their deliveries for presence of GMOs, and have to turn away 2 - 5 % of all grain due to GM contamination.^{vii}

1998: GM contamination of organic maize cost food company \$150,000. Terra Prima had to recall 87,000 bags of organic tortilla chips found to be GM contaminated, at a cost of \$150,000. The source was traced to an organic farm in Texas that had been cross-pollinated by Bt GM maize. The contamination had been discovered only after the maize had been processed and shipped to Europe.^{viii}

Soya

2007: Post-harvest GM contamination of organic soybeans cost food company \$100,000. Nevada Soy was forced to close their business for a month following a positive GMO test on their organic soybean oil. The following investigation revealed that a shipment of organic soybeans travelling to the organic processor was contaminated by up to 20% GM. The company lost \$100,000 as a result of the contamination incident and was forced to sell their products on the conventional market.^x

2006: Tests show 57% of Japanese organic tofu is GM contaminated. Tests of supermarket tofu revealed that 57% of organic tofu and 30% of tofu samples labelled as '100% Japanese soy' contained GM, even though GM soya is not grown in Japan.^x

2005: GM contamination of Korean organic soya baby milk forced removal of brands' organic labels. Testing by the South Korea Food and Drug Administration found GM contamination in four brands of organic soya baby milk. The companies were ordered to remove their organic labels without compensation.^{xi}

2004: Discovery of GM contamination of UK organic soya food prompts negative publicity. 9 samples of organic soya foods were purchased across the UK. 5 showed GM contamination at levels of 0.1% - 0.9%. This resulted in considerable negative publicity and pressure on the UK organic industry. In total 19 samples labelled as either 'GM free' or 'organic' were tested. 8 contained GM material.^{xii}

2004: GM contamination of organic soya in Brazil means farmers unable to sell produce as organic. In Brazil, GMOs contaminated many organic soya crops, despite farmers' spending much time and money in efforts to protect them. Those affected are no longer getting the higher premiums for organic produce.^{xiii}

2002: GM contamination of organic soya animal feed causes losses to feed-mill and organic farmers. The Soil Association found that a batch of organic soya at a feed mill tested positive for GM, despite testing negative in Italy and on arrival in the UK. The removal of organic status from the feed, and livestock that had eaten it, caused major financial losses to the feed-mill and organic farmers.^{xiv}

Papaya

2005: GM papaya seedlings mistakenly supplied to organic farmers in Hong Kong. In early 2005, organic and non-organic farmers received papaya seedlings from the Government, but were not informed they were 'very probably GM' until one year later. The GM fruit had already been sold in markets, breaching organic regulations. Laboratory testing of fruit and leaf samples revealed GM sequences and suggested that there were at least 100 GM papaya trees in the region. The GM papaya variety is not approved for sale and had not passed any long-term safety tests.^{xv}

2004: GM contamination of Hawaiian papaya led to loss of export markets. Nearly 20,000 papaya seeds, mainly from organic farms across the Big Island, showed a GM contamination level of 50%. Further papaya samples from organic farms on Oahu and Kauai^{xvi} also showed contamination. Unable to control the contamination from GM orchards, organic farmers are now forced to sell their papaya at a third of the price they were getting before. Total papaya production in Hawaii has reduced by 30% since the GM varieties were introduced in 1998 and export markets have shrunk rapidly as it is difficult to guarantee non-GM fruit.^{xvii}

Conclusions

GM contamination can give rise to a wide range of economic impacts beyond those related to legal tolerance standards. These include lost markets, lost sales, lower prices, negative publicity, withdrawal of organic certification and product recalls. Adoption of specific standards in the legislation is unlikely to adequately reduce these incidences. These findings highlight the need to control the level of contamination rather than simply adjusting the legal standards for tolerance.

References

- ⁱ 'Seeds of doubt – North American farmers' experiences of GM crops', Soil Association
- ⁱⁱ 'Impossible coexistence', report by Greenpeace Spain, Assembla Pagesade Catalunya and Plataforma Transgenics Fora, April 2006
- ⁱⁱⁱ Research by the Comité Aragones de Agricultura Ecológica (CAAE) presented in conjunction with Unión de Agricultores y Ganaderos de Aragón (UAGA) and Greenpeace, December 2005
- ^{iv} CAAE research, 2004, presented in 'Impossible coexistence', report by Greenpeace Spain, Assembla Pagesade Catalunya and Plataforma Transgenics Fora, April 2006
- ^v 'Failing in the field – GM crops in Spain don't deliver promises but harm farmers and environment', Greenpeace and Friends of the Earth press release, August 26, 2003
- ^{vi} 'Union of Concerned Scientists comments to the Environmental Protection Agency on the renewal of Bt-crop registrations', www.biotech-info.net, 10 September 2001
- ^{vii} 'Seeds of doubt – North American farmers' experiences of GM crops', Soil Association
- ^{viii} 'FDA holds Oakland hearing to discuss genetic labelling', Oakland Tribune, 14 December 1999
- ^{ix} 'Questions of fraud raised by GMO contaminated shipment of soybeans', The Organic and Non-GMO report, June 2007
- ^x 'Results of GMO soy survey', CBIC Bio Journal, March 2006
- ^{xi} 'Korea – organic soybean milk has GM contamination', GM Contamination Register, Greenpeace and Genewatch UK
- ^{xii} Partridge, M. & Murphy, D.J. (2004) Detection of genetically modified soya in a range of organic and health food products: Implications for the accurate labelling of foodstuffs derived from potential GM crops. *British Food Journal* 106:166-180
- ^{xiii} Greenpeace interview with Antonio Wünsch, president of Cotrimaio, a cooperative from Rio Grande do Sul in March 2004. Presentation by Paulo Moraes, from EcoBrazil Organics Ltd at the seminar "Transgênicos: aprofundar o debate para a votação em plenário", November 23, 2004 at the Brazilian National Congress
- ^{xiv} 'GM contamination of organic animal feed', Soil Association press release, 14 November 2002
- ^{xv} 'Unsafe GE papaya seedlings distributed by Hong Kong government', Greenpeace China press release, 13 March 2006
- ^{xvi} 'New research reveals widespread GMO contamination and threats to local agriculture from the University of Hawaii's GMO papaya', Hawaii GEAN and GMO-Free Kauai press release, 9 Sept 2004
- ^{xvii} 'The Failure of GE Papaya in Hawaii', Greenpeace briefing, May 2006