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# Zero sense in European approach to GM

The European Union's zero-tolerance of trace amounts of unapproved genetically modified material in imported food and feed is scientifically unsound and could lead to economic ruin

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European Union (EU) policies regarding genetically modified (GM) crops and food have increasingly isolated its member states from much of the rest of the world in this regard over the past decade. The discussion in European countries over whether to grow and eat GM crops and food has stalled plant research, while the rest of the world has been growing and using an increasing number of GM pest- or herbicide-resistant plants. In fact, the EU has only approved two GM crops (Bt maize in 1998 and Amflora potatoes in 2010) for cultivation and some member states have banned the agricultural use of GM crops altogether.

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The EU is also reluctant to allow the import of GM food or feed from beyond its borders, let alone permit farmers to grow it. Only a few GM maize, soy, rapeseed and sugar beet varieties are approved for import as animal feed or food products, and the EU, under pressure from member states that are adamantly opposed to GM, has adopted a zero-tolerance policy towards even trace amounts of non-approved GM content in imports. In practical terms, as of January 2007, any shipment of food or feed must be completely free from even trace amounts of GM crops that have not been approved.

These policies have already led to a prolonged trade war with the USA, and as more countries worldwide approve and grow an increasing number of GM crop varieties, Europe is running an ever-increasing risk of damaging itself in economic terms. Indeed, the zero-tolerance policy, which is both scientifically unsound and impracticable, is unenforceable and in the future might result in a Europe that is unable to import any crops whatsoever. In short, Europe's import restrictions on GM feed and food is a 'zero-sense' policy that is very likely to have major repercussions for the European livestock industry and consumers alike.

In fact, the EU is becoming increasingly isolated internationally, as its authorization procedures have not kept pace with the rapid adoption of new GM crops elsewhere. A decade ago, when the USA was the only country growing GM crops on a large scale, the gap in approval periods between the USA and the EU was tolerable. Today, however, 25 countries grow GM crops and new varieties are coming to the market. Other, non-EU countries have developed approval systems for GM crops and food that mean the approval of a particular GM variety in different countries can vary by years. This asynchronous approval situation has led to expensive and unnecessary trade disruptions because the EU zero-tolerance policy means that even non-GM imports that contain trace amounts of unapproved GM material are rejected. In 2007, a report by the European Commission's (EC) Directorate-General for Agriculture and Rural Development warned that: "With the more widespread cultivation of GMOs [genetically modified organisms] that are approved in exporting countries but not (yet) in the EU [...], potential trade disruptions could become more severe, more frequent and affect more products" (EC, 2007).

The Directorate's fears were realized in 2009 when several bulk shipments of soy from the USA were turned away from European ports. Approximately 180,000 tonnes of GM soy was rejected not because the GM variety itself was forbidden—the soy was approved for import into the EU—but because test results showed barely detectable trace amounts of unapproved GM maize residue from a previous shipment. News agencies reported last autumn that, as a result of this ban, all imports of soybean and soybean meal from the USA to Europe had been halted. Although the USA is a minor supplier of soy products to the EU—2.2 million tonnes during the marketing year 2008/2009—it is likely that the story will repeat itself in the not-too-distant future with soy products from Argentina and Brazil; Europe's main suppliers of soy.

South America exports 35 million tonnes of soy products to Europe each year and it would be virtually impossible to replace these imports if they are turned away. Nevertheless, such a scenario seems likely to happen. A single Panamax container ship—the largest ships that can pass through Panama Canal—can hold 45,000 tonnes of bulk grain, which corresponds to 38 barges, 2,200 semi-trailers, 2 million bushels or 330 trillion soybeans. Bulk shipments have always suffered unavoidable contamination with trace amounts of other crops, but the EU's zero-tolerance policy means that low level presence of unapproved GMOs will force European authorities to reject affected soy shipments from South America, which will almost certainly cause further trade disruptions and shortages in the EU.

Some European politicians believe that all is well with regard to GMOs, given the recent approval of one or two GM crops—bringing the total to 17 out of 118 global GM crops (www.gmo-compass.org/eng/gmo/db). But this position is difficult to understand given that dozens of GM crop varieties are grown commercially around the world and are not approved for import in the EU (Table 1). The detection of any amount of any of these would trigger the rejection of whole shiploads of food and feed imports.

The danger of this has already been raised with the EC. A 2009 report from the EC's Joint Research Centre (JRC) on the global research and cultivation of GM crops warned that: "Currently there are five new soybean events in the commercial and regulatory pipeline that could result in potential situations of AA [asynchronous approval] already in the next 2–3 years. In the longer term further AA incidents could arise from nine new events that are currently in the advanced R&D pipeline" (Stein & Rodriguez-Cerezo, 2009). Given the rejection of US soy imports to Europe last summer owing to the low-level presence of GM maize, the four new GM maize events in the pipeline further increase the likelihood of more import rejections at EU ports in the short term. The situation becomes even worse for EU imports when stacked traits—GM varieties with two or more inserted foreign genes approved elsewhere—are added to the equation. The current EU policy of separate mandatory regulatory approval for all stacked GM events will further widen the gap between Europe and the rest of the world.

**Table 1** | Differences in event authorization

| Event | Date of approval | Status in EU (start of approval) |
|---|---|---|
| *Canola* | | |
| 23-18-17 | Canada and USA 1994–1996 | No approval |
| Mon-89249-2 | Canada 1996–1997, USA 2002 | No approval |
| GT 73 | Canada 1995, Japan 1996, China 2004 | Feed only (2005) |
| MS8xRF3 | Canada 1996, Japan 1998, China 2004 | 2005 |
| T45 | Canada 1996, USA 1998, China 2004 | 2009 |
| *Maize* | | |
| Bt11xGA21 | Canada and USA 1996 (Bt11), 1998 (GA21), Brazil 2009, Japan 2007, Mexico 2007 | Level one (2007) |
| Mir162 | USA 2008, Brazil 2009 | No application |
| Bt11xMir162 | USA 2009 | Level one (2009) |
| Mir604 | Canada, USA, Japan and Philippines 2007, China 2008 | Level two (2005) |
| Mon810xNK603 | Canada 1997, USA 1996 (Mon810), Japan 2004, Canada 2001, USA 2000 (NK603), Brazil 2009 | 2007 (2004) |
| Mon810x88017 | Canada 2006 (880170), USA 2005 (88017), Japan 2005, Korea 2006, Philippines 2006 | Level two (2006) |
| *Soy* | | |
| ACS-GM005-3 | Canada 1999, USA 1998, China 2002, Japan 2003 | 2008 (2005) |
| 89788 | Canada and USA 2007 | Level one (2009) |
| Mon04032-6 | Canada 1996, USA 1994, China 2004 | Expired, reapplied |

**…in mid-September 2009, the USA temporarily stopped all shipments of soy to Europe because so many ships were held up or rejected**

China in particular is pushing forward with GM technology and has successfully tested more than 1,000 GM events. Its third largest seed producer Origin Agritech anticipates approval from Chinese government authorities for a new GM maize event in 2010 or early 2011 (Kaskey, 2009). There is little likelihood that the Chinese will apply for European approval to import into the EU; news that should worry those who believe the EU's zero-tolerance policy is either sensible or sustainable.

The zero-tolerance policy, aside from being scientifically unsound and problematic for trade, is also prone to causing severe disruptions for the EU's livestock industry (Chaffin, 2009), as detailed in a report by the EC's Directorate-General for Agriculture and Rural Development, which considers three scenarios for disruptions of feed imports into the EU (EC, 2007).

The "minimal impact" scenario in the report considers the problems that arise if only US soy products are affected, as these could be fully substituted by importing more from other countries. As US soy exports to the EU have fluctuated between 2 and 3 million tonnes in the past 5 years, the approval of a new GM soybean in the USA is unlikely to cause a major market disruption. The report concludes that Brazil and Argentina could fill the resulting gap if "illegal plantings" of GM soy and a growing Chinese demand for soybeans do not materialize. The net effect on EU soybean and soybean meal supply would therefore be minimal. However, the "minimal impact" scenario is improbable because drought in South America—resulting in smaller yields—and increased demand from China already make its assumptions moot.

The "medium impact" scenario considers disruptions to the import of soy from both the USA and Argentina, both of which could be partly compensated by increasing imports from Brazil. It is reasonable to assume that Brazil could export an additional 7 million tonnes of soybean meal to the EU, which would still leave an import deficit of 9.9 million tonnes. Taking into account an assumed increase in production and imports of rapeseed meal and sunflower meal, the net shortage of soybean meal equivalent could be reduced to 3.3 million tonnes. However, this scenario is overly optimistic as drought has reduced the soybean harvest in Brazil.

The "worst case" scenario expects a disruption to all three major sources of soy imports to Europe without any compensation from other exporting countries. This

would leave an import deficit of 32.3 million tonnes in soybean meal equivalent. Taking into account an assumed increase in rapeseed meal and sunflower meal production and imports, the net shortage of soybean meal would still be 25.7 million tonnes.

**Some European politicians are beginning to realize the potential severity of the consequences of the zero-tolerance policy**

"While it can not be expected that the USA will limit the use of novel GMOs, Brazil and Argentina are more likely to be willing to wait with the introduction of EU-non approved soybean varieties," the Directorate's report commented (EC, 2007). Nevertheless, this assumption might also prove moot, as Brazil recently approved two GM maize varieties that are not (yet) approved for import into the EU. The same unapproved GM maize issue that has halted US soy shipments is therefore likely to repeat itself with Brazilian soy shipments.

The enduring drought in South America has reduced the continent's soy production and left the EU with an import shortfall of between 5 and 6 million tonnes. The Directorate's report concludes that only 10–20% can be compensated for by increased production in Europe itself. This situation comes close to the "worst case" scenario: it is conceivable that the EU will face a 600% cost increase in feed, which could drive up pork prices for consumers by 35% in 2010. The EU poultry industry would suffer even more, with a projected 44% drop in production by 2010 (EC, 2007). Worse still, Europe might lose the choice to stop importing as shipping companies, fed up with EU regulations, could refuse to ship to Europe; in mid-September 2009, the USA temporarily stopped all shipments of soy to Europe because so many ships were held up or rejected (Reuters, 2009).

Some European politicians are beginning to realize the potential severity of the consequences of the zero-tolerance policy. Eva Kjer Hansen, the Danish Minister for Food, Agriculture and Fisheries, has been quoted as saying: "The rigid interpretation of the zero tolerance policy is a technical problem that may have serious economic consequences for food supplies in the whole of the EU" (Anonymous, 2009a). Similarly, the European Agriculture Commissioner, Mariann Fischer Boel, was quoted saying: "Over the summer I have become even more worried about this [zero-tolerance policy] because of the fact that we are importing into Europe a lot of soybean, and we desperately need soybean for our pig and meat production" (Shanley, 2009). Still, a meeting of the EU Agriculture Ministers in September last year brought no change to the zero-tolerance policy.

In response to the increasing economic liability posed by the EU approval of so few GMOs, some European politicians have suggested an expedited authorization process for GM crops to solve trade disruptions. This is a laudable suggestion, but it is difficult to see how it might be achieved considering the long list of issues that remain with the processes governing the approval of GMOs in Europe.

In the EU, there is already a backlog of GM applications to receive approval—only 2 of 11 GM soy varieties, 3 of 12 GM canola varieties and 11 of 36 GM maize applications for import have been granted and an average of three years is needed to gain authorization for import to the EU (www.gmo-compass.org/eng/gmo/db). By comparison, the current average in North America is approximately one year, and Brazil has recently authorized two new GM maize events in less than a year. The extremely slow pace of the process in Europe and the apparent reluctance to grant approvals will exacerbate the asynchronous approval situation unless a functional expedited process can be introduced.

**…the political environment in Europe is not ripe for expedited approval, let alone the abandonment of zero tolerance in favour of reasonable thresholds**

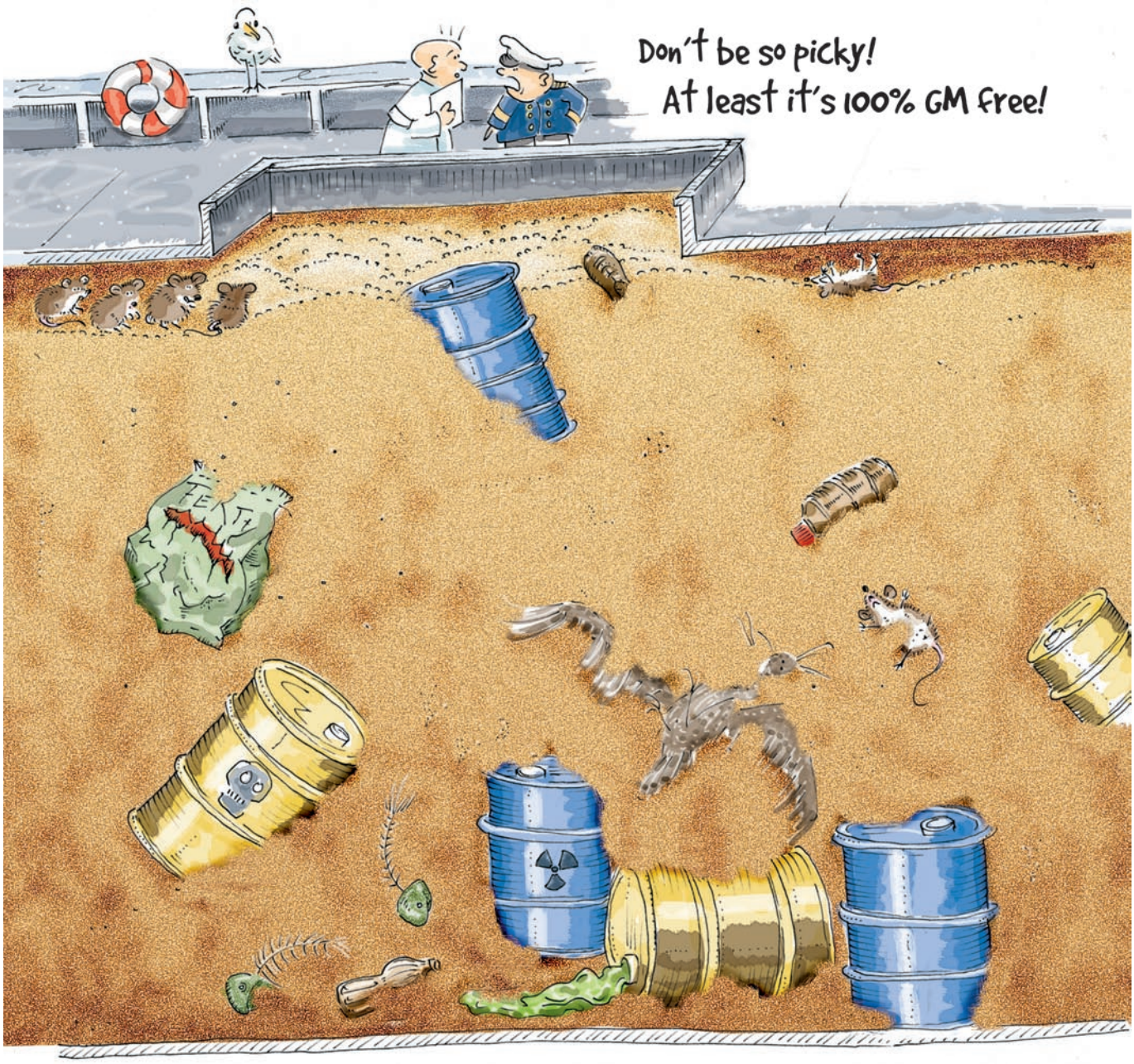
In addition, the increasing pace of technology means that the stacking of two or more approved GM traits in a single crop is becoming more common. This will only add to the backlog in the EU because each stacked variety is considered by the EU to be a completely new GMO and must go through the entire authorization process, even if the constituent events have been approved in the EU. In North America, generating new varieties by combining approved GM traits does not require a new authorization procedure and therefore stacked events are commercialized rapidly.

**Are European consumers aware of just how much the zero-tolerance policy is costing them, both in denied benefits to farmers and increased food and feed costs to everyone?**

The problem of feed import will also worsen given the fast pace of GM research globally matched against the slow EU approval pipeline for GM varieties. Experts predict that the current, approximately 30 commercial events will quadruple to more than 120 by 2015 (Stein & Rodriguez-Cerezo, 2009), and there is every reason to believe that the greatly expanded global variety of GM events will contribute to asynchronous approvals and import difficulties. "[B]y 2015 about half the events in commercial GM crops are expected to come from national technology providers in Asia (and Latin America), designed for domestic agricultural markets. It seems very improbable that all these new GM crops will be submitted for approval in the EU" (Stein & Rodriguez-Cerezo, 2009). In fact, the European Feed Manufacturers' Federation estimates that the present zero-tolerance policy could cost around €200 billion if the USA, Argentina and Brazil begin to cultivate GM crops that are not approved in the EU (Stein & Rodriguez-Cerezo, 2009). This could easily be reduced to €3 billion if the zero-tolerance policy were replaced with a 0.1% threshold for unapproved products (Stein & Rodriguez-Cerezo, 2009).

Unfortunately, the political environment in Europe is not ripe for expedited approval, let alone the abandonment of zero tolerance in favour of reasonable thresholds. This situation, according to the JRC 2009 report, "'may well lead to the collapse of the EU livestock production and its replacement by large-scale imports of meat from animals fed with not-yet EU authorised GMO feed and raised according to lower production standards'. […] The [International Grain Trade Coalition] clearly stated that if the risk cannot be measured or managed, there




simply will be no trade. It also repeated that adventitious presence of GMOs will occur in all trans-boundary shipments of all commodities (both GM and non-GM) shipped from countries having GMOs in commercial production—and that neither IP systems nor grain channelling can manage these events to zero tolerance" (Stein & Rodriguez-Cerezo, 2009).

The EU has the legal authority to deny its farmers the benefits of growing commercial GM crops, but it has no means to guarantee and enforce the zero-tolerance policy towards imported commodities. To put the lunacy of the EU's zero-tolerance policy in perspective, it means that the EU believes it is safer for European consumers to eat more of the poisonous metalloid arsenic—the threshold of which is 2 μg per kg—than to consume trace amounts of GMOs for which there is no evidence of harm to humans. Are European consumers aware of just how much the zero-tolerance policy is costing them, both in denied benefits to farmers and increased food and feed costs to everyone?

The spokesperson for the EU Commissioner for Agriculture, Michael Mann, put it succinctly in an interview with the Australian Broadcasting Corporation: "If we make life too expensive for our farmers by having [to] source really expensive, completely GM free imports, we put up the price and at the end of the day we end up putting our own farmers out of business and having to import meat from elsewhere. In fact from countries that use the very GMs that we're not allowed to use in Europe" (Anonymous, 2009b).

CONFLICT OF INTEREST
The authors declare that they have no conflict of interest.

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