



***The World's Largest Open Access Agricultural & Applied Economics Digital Library***

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from AgEcon Search may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*

Short Communication

## **“GMO” maize and public health – A case of Schumpeterian policy vs. free market in the EU**

GIOVANNI TAGLIABUE

Independent Researcher, Italy

*Date of submission: 2016 3rd, July; accepted 2016 25th, October*

**Abstract.** EU lawmakers have long refused the cultivation of “Genetically Modified Organisms”. An example of this struggle is the revision of the accepted level of contaminants in maize: rather than admitting that Bt maize is safer than “non-GMO” varieties, and therefore European farmers should be allowed not only to import it, but also to produce it, politicians have raised the threshold of the poisonous fumonisins that may be legally present in food and feed. This decision is an example of a “Schumpeterian” approach to policy, where public choices are not inspired by a science-based mindset, but are substantially dictated by a calculus of consent; economic/commercial protectionism has also been considered as a motivation. While scholars must continue to explain that every policy decision should have a basis in sound science, no way out of the “GMO” imbroglio seems to be foreseeable, as long as politicians stick to the Schumpeterian iron law.

**Keywords.** GMO maize, Fumonisins, EU biotech regulation, Schumpeterian policy, free market

**JEL codes.** K32, Q18

---

### **1. Background: The incoherent “GMO” policy in the EU**

For more than a quarter of a century (1990s to today), the approach of the European Union to so-called “Genetically Modified Organisms” has been steered by a steadfast rejection. Such ongoing approach led to disruption of the international market: in the years around the turn of the millennium, the block on commercialization in the EU of certain genetically engineered agricultural products, appealing to the alleged inherent riskiness of “GMOs”, triggered recourse to the WTO by countries which claimed that their exports were unjustly discriminated. The EU lost the dispute (World Trade Organization, 2006; Bernauer and Aerni, 2008) and authorized the import of quite a few recombinant

---

Corresponding author: giovanni.tagliabue@uniedi.com

DNA crops and vegetables, but did not stop prohibiting the cultivation of them<sup>1</sup> – a sort of *de facto* compromise.

Therefore, a clear double standard is currently applied in “GMO” EU politics: on the one hand, we see the persistent refusal to allow the *cultivation* of such cultivars; on the other, there is a regular, huge stream of *importation*, above all “GM” soybeans and corn as animal feed, accounting for several million tons annually. European farmers are not allowed to grow GE [genetically engineered] crops, even if they are identical to imported cultivars; apparently against all logic, numerous products are “safe to eat, but only if imported”! (Masip *et al.*, 2013, p. 319) The paradox by which the cultivation of “GMOs” is substantially banned in Europe, while enormous quantities of recombinant DNA cereals and legumes are imported to be used as feedstuff, can be explained (Tagliabue, 2016b): cultivation of them is prohibited in order not to harm the old-fangled products of EU farmers (Graff *et al.*, 2014, p. 13-14), to gain the political and electoral consensus of “organic” food producers (Masip *et al.* 2013, p. 319), to protect the interests of the traditional herbicide/pesticide chemical industry (Zilberman *et al.*, 2015, p. 215) and to appease the “anti-GMO” brigade; it is necessary to import them to allow animal breeders to work. Europeans must hope that there are no significant drops in the availability of “GMO” animal feed for import, or very serious economic problems would occur, as the European Commission itself warns (European Commission, 2007a).

The costs of such schizophrenic rules are shown by a particularly bizarre example: “Extraordinarily, in Romania before they joined the EU, GM soybeans were extensively grown and exported to Europe. Since they joined the EU, Romania is now forbidden to grow GM soy as it is not authorized for cultivation in Europe. Instead, the EU pays farmers in Brazil, Argentina and US to grow GM soy, and provides subsidies to Romania from regional funds.” (Baulcombe *et al.*, 2014, p. 35)

The path of special regulation for “GMOs” took the form of two Directives in 1990; the one regarding agricultural products is 90/220 (European Community, 1990), whose approach was broadly reiterated, a decade on, in Directive 2001/18 (European Union, 2001), regarding “deliberate release into the environment” (i.e. cultivation); a partial change was introduced by Directive 2015/412 (European Union, 2015), but its significance is outside the scope of this article.

The method of systematic obstructionism has worked. Indeed, the EU has approved the cultivation of just one recombinant DNA variety, Bt corn MON810 (European Commission 2013), which has not stopped various countries constantly blocking it with bureaucratic hurdles, or even (illegally) banning it. For example, the EU Court of Justice condemned France twice: 1. Court of Justice, case *C-419/03 of 15 July 2004, Commission of the European Communities against French Republic, OJ C 275 of 15 November 2003*, where the Court of Justice held that France had infringed Community law by failing to transpose Directive 2001/18/EC. 2. Court of Justice, case *C-121/07 of 9 December 2008, Commission of the European Communities v French Republic, OJ C 95, 28 April 2007*, in which France

<sup>1</sup> The EU’s official list of authorized “GMOs” is not so short: 58 items were imported until recently, plus 19 cleared on 24 April 2015 ([http://europa.eu/rapid/press-release\\_IP-15-4843\\_en.htm](http://europa.eu/rapid/press-release_IP-15-4843_en.htm), accessed 8 August 2015), and some 40 requests are still pending; but for all the cultivars – except maize MON810 – use (importation) is allowed for “Marketing of food and feed and derived products”, “with the exception of cultivation”: [http://ec.europa.eu/food/dyna/gm\\_register/index\\_en.cfm](http://ec.europa.eu/food/dyna/gm_register/index_en.cfm) (accessed 8 August 2015).

was condemned for failing to comply with the previous judgment (Mereu, 2012). Various national governments have imposed this constant opposition by appealing to the only legal instrument apparently available until 2015, the "safeguard clause" (European Union, 2001, Art. 23), by which an EU Member State can refuse a "GMO" only when there are well-grounded reasons which are scientifically proven by adequate studies regarding the negative impact of the product on the environment and/or on human health. The European Food Safety Authority is responsible for assessing the grounds claimed by governments; more than once, it has declared as invalid dossiers which this or that country has presented (for MON810, see European Food Safety Authority 2009. The ban by the German and French governments is discussed in Ricroch *et al.*, 2010).

The EFSA's outcomes are in line with the current consensus: "The main conclusion to be drawn from the efforts of more than 130 research projects, covering a period of more than 25 years of research, and involving more than 500 independent research groups, is that biotechnology, and in particular GMOs, are not *per se* more risky than e.g. conventional plant breeding technologies." (European Commission, 2010a) However, since the opinion of the EFSA, even if it is required by law, does not green light products when unjustified requests to block them are rejected (unlike the situation, for example, with similar American agencies), in many cases the «safeguarding» countries have preferred to risk an infringement procedure – which in any case the European Commission, for political and diplomatic reasons, is very slow and reluctant to implement – rather than give "GMOs" their due go-ahead.

To be clear, the Commission itself declared that the "anti-GMO" manoeuvres of certain EU countries are inappropriate: "The fact that Member States have currently no margin of appreciation on cultivation of authorised GMOs has led in several cases some Member States to vote on the basis of non-scientific grounds. Some of them have also invoked the available safeguard clauses, or used the special notification procedures of the Treaty under the internal market, as ways to prohibit the cultivation of GMOs at national level." (European Commission, 2010b) Such instrumental use of a clause that was designed for other purposes has been blamed again by the same European Commission, which underlines that no negative data have emerged regarding any genetically modified product previously authorized: "No Member State which had adopted a so-called "safeguard clause" had ever been in a position to put forward new evidence." (European Commission, 2015)

It is therefore worth noting that, regarding "GMO(s)", there has always been a cleavage between the "executive" approach of the Commission and the more "political" EU bodies, first of all the Parliament – the actual decision-maker which passed the Directives.

## 2. A dubious decision

We will now look at a terribly toxic phenomenon: we will see how the inflexible "anti-GMO" stance of Europe's politicians can inspire regulatory approaches that explicitly increase some small but significant risks for public health.

Fumonisins<sup>2</sup> are powerful mycotoxins, i.e. a highly poisonous product from microscopic fungi: only discovered in the late 20<sup>th</sup> century, their carcinogenic effect has been

---

<sup>2</sup> [http://en.wikipedia.org/wiki/Fumonisin\\_B1](http://en.wikipedia.org/wiki/Fumonisin_B1) (accessed 8 August 2015).

confirmed in horses, pigs, rats and in humans; ingesting such moulds – among other possible pathological consequences – can generate neural malformations in the foetus, increasing the probability of the child being born with spina bifida. The ecological mechanism by which such substances become a real danger is easy to understand: a pestilent butterfly feeds on corn, deposits faeces where fungi of the *Fusarium* genus abound, especially in the small cavities of the grains that have not been completely consumed. Whatever and whoever feeds on the contaminated corn can suffer serious consequences; worse still, the toxic substances can pass into the milk produced by mammals who have digested them. Externally applied pesticides have a limited impact, because it is difficult for them to reach the well-hidden target; moreover, the epidemiological incidence is much higher in poor countries, where the cereal is consumed in abundance and where, at the same time, the price of insecticides and fungicides can be prohibitive for farmers. Bt corn substantially reduces the infestation, for one very simple reason: many of the insects which start to feed on it do not live long enough to generate the holes in which the fungi can take root. (Kaplan, 2000; Kershen, 2006; Ostry *et al.*, 2010; Pazzi *et al.*, 2006).

As can be imagined, in many nations healthcare provisions establish clear limits to the acceptable levels of fumonisins in corn destined for human and animal consumption, and impose strict controls. The quantity of toxic substances present in maize varies significantly, depending in part on the climate (it is relatively higher in hotter countries) and above all on seasonal weather trends (higher temperatures encourage the proliferation of the insects that accompany moulds).

Europe established contamination limits in 2001, then in 2005 (European Commission, 2005) and then again in 2006 (European Commission, 2006), to come into force on 1 October 2007. It was a wise decision, because incidents are possible: "In the UK in September 2003, the analysis of 30 samples of maize products in supermarkets led to the removal of ten of them because of excessively high levels of fumonisin content. The contaminated samples with the highest fumonisin contents were those labelled 'organic'" (Heldt, 2010, p. 25). But here we must insert a disturbing tale. Corn crops in recent years, in particular in Italy and France, show a level of fumonisins which makes it impossible to use most of the product for human and animal consumption: the consequent obligation to send hundreds of tons to be destroyed or, in the best-case scenario, to produce energy, is a source of serious damage for agricultural firms; for this reason politicians in Italy and France would have liked greater flexibility on the thresholds of the contaminants (for Italy, see Camera dei deputati, 2007). As a result of the Italo-French pressure, the EU Food Chain and Animal Health Committee unanimously recommended raising the tolerance levels for fumonisins (European Commission, 2007b); the related regulation with looser limits was approved *in extremis*, two days before the coming into force of the law it was amending (European Commission, 2007c). Probably this decision does not entail a significant risk for consumers, because the new levels should still be low compared to the threshold for real toxicity, but what we want to stress here is the rationale of the political decision, which can be summarised as follows. 1) There are thresholds for tolerance to certain natural poisons, established on scientific bases. 2) In some seasons, it is found that an agricultural product exceeds these thresholds. 3) Instead of banning the consumption of the illegal foodstuff, which would entail significant economic losses, let's raise the allowed toxicity limits: in other words, we choose what seems to be the lesser evil.

But let's go back for a moment to point 2. The presence of unacceptable levels of moulds is not a law of nature; a cultivar which is almost immune to those pests which attacks other varieties exists, it is indeed the only "GMO" authorized for cultivation on the Old Continent (Bt MON810 corn). The only field trial which has been carried out in Italy, by experts from a public organisation, showed that such cultivar was much less subject to the deadly phenomenon; a row even erupted over the late dissemination of the data: the malicious think, probably rightly, that if the results had been unfavourable to "GMOs", they would have been published immediately and with a lot of fanfare in the media (Nature, 2007).

In this specific case, in order not to encourage the use of a "GMO", which moreover is theoretically authorized, the choice is made to adjust the legal limits of the higher toxicity, which is frequent in the traditional product. Yet, European rulers must have known that the cereal whose *cultivation* they are blocking is *imported* in huge quantities for use as animal feed.

### **3. A case of "Schumpeterian" policy**

Why did EU office-holders refuse to embrace a science-based approach in this policy decision, and rather opted to adjust the legally admitted levels of food poison? Rational observers must be very puzzled, if they are not aware that public choices are often dictated by a different kind of logic: politicians always proclaim their approach to be inspired by the search for common good, but a much less idealistic reading was proposed decades ago by Joseph Schumpeter, when he argued that, in a democracy, any political or administrative action is a mere corollary of the opportunistic estimates which every law-maker adopts. "The democratic method produces legislation and administration as by-products of the struggle for political office" (Schumpeter, 1942, p. 286). It is impossible to escape the clear impression that such a disposition is applicable in our case, and maybe most "normal" politics falls into the narrow definition highlighted by the great economic-political thinker.

Another quotation may reinforce understanding of the mindset which leads to such apparently illogical policy decisions: "Politically speaking, the man is still in the nursery who has not absorbed, so as never to forget, the saying attributed to one of the most successful politicians that ever lived: «What businessmen do not understand is that exactly as they are dealing in oil so I am dealing in votes»." (Schumpeter, 1942, p. 286) Crude but truthful realism, which explains policy outcomes substantially dictated by a calculus of consent: most probably, in our case EU politicians reckoned that an adjustment of the admitted threshold of maize contaminants would have cost them less than the possible outrage deriving from encouraging "GMO" cultivation. An exquisite example of political expediency.

We could also call it a para-Machiavellian approach: if the end is to conquer and/or maintain power, and in democracy this means anticipating the probable reaction of public opinion (read: voters), it is easy to link a means to an end: avoiding the complaints from the "anti-GMO" brigade was worth a decision which sets science aside, while at the same time those affected by the consequences (consumers, farmers interested in better seeds) were not expected to protest too much. They did not.

#### 4. By way of conclusion

We must distinguish two aspects, i.e. the unscientific approach too frequently used by politicians when they make public choices and the possible ways to correct it. I think that Realpolitik, as explained by Schumpeter, really helps to understand the hidden motivations of apparently illogical decisions. Changing this attitude is a very different story.

Scientists – both life scientists and social scientists, including agricultural economists – should continue in their efforts: explaining to the public that the “GMO” pseudo-category is a major blunder, that an actual scientific consensus on the subject exists (Tagliabue, 2016a) and should be a basis for evidence-based regulation. As for politicians, pleas for a change of policy on “GMO” will probably continue to fall on deaf ears, because Schumpeter’s iron law seems to be insuperable. Schumpeter does not offer a way to coax or nudge lawmakers into choosing a science-based mindset – neither can the author of this little article, in its limited remit, do so.

To imagine a possible development, let’s go back to the beginning of this article: since the European “GMO” policy has already been condemned as a violation of free market, i.e. rules which are voluntarily adopted by the EU, a forced change may come from pressures at the WTO level. The 2003-2006 dispute has been settled with Argentina and Canada, not yet with the USA (WTO, 2010). New challenges are to be expected by EU states from other WTO members (Punt and Wesseler 2015, p. 167). If the Old Continent lawmakers cannot guarantee a coherence between a binding free market framework and certain decisions they have adopted, external forces may drive the EU towards a more consistent agriculture regulation.

#### References

Baulcombe, D., Dunwell, J., Jones, J., Pickett, J. and Puigdomenech, P. (2014). GM Science Update. A report to the Council for Science and Technology, [www.gov.uk/government/publications/genetic-modification-gm-technologies](http://www.gov.uk/government/publications/genetic-modification-gm-technologies). Accessed 8 August 2015.

Bernauer, T. and Aerni, P. (2008). Trade Conflict Over Genetically Modified Organisms. In Gallagher, K.P. (ed.), *Handbook on Trade and the Environment*. Cheltenham: Edward Elgar, 183-193, <http://digamo.free.fr/keving8.pdf>. Accessed 8 August 2015.

Camera dei deputati (2007). Lion: Limite di presenza nel mais delle fumonisine, [www.camera.it/\\_dati/leg15/lavori/bollet/200701/0123/pdf/13.pdf](http://www.camera.it/_dati/leg15/lavori/bollet/200701/0123/pdf/13.pdf). Accessed 8 August 2015.

Europabio (2014). Why does the EU import GM crops? [www.europabio.org/why-does-eu-import-gm-crops](http://www.europabio.org/why-does-eu-import-gm-crops). Accessed 8 August 2015.

European Commission (2005). Commission Regulation (EC) No 856/2005 of 6 June 2005 amending Regulation (EC) No 466/2001 as regards Fusarium toxins, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32005R0856>. Accessed 8 August 2015.

European Commission (2006). Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32005R0856>. Accessed 8 August 2015.

European Commission (2007a). Economic Impact of Unapproved GMOs on EU Feed Imports and Livestock Production, [http://ec.europa.eu/agriculture/envir/gmo/economic\\_impactGMOs\\_en.pdf](http://ec.europa.eu/agriculture/envir/gmo/economic_impactGMOs_en.pdf). Accessed 8 August 2015.

European Commission (2007b). Summary record of the Standing Committee on the Food Chain and Animal Health, Section Toxicological Safety of the Food Chain, 20 July 2007, [http://ec.europa.eu/food/safety/reg\\_com/archive/sc\\_toxic\\_summary20072007\\_en.pdf](http://ec.europa.eu/food/safety/reg_com/archive/sc_toxic_summary20072007_en.pdf). Accessed 8 August 2015.

European Commission (2007c). Commission Regulation (EC) No 1126/2007 of 28 September 2007 amending Regulation (EC) No 1881/2006 setting maximum levels for certain contaminants in foodstuffs as regards Fusarium toxins in maize and maize products, <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32007R1126>. Accessed 8 August 2015.

European Commission (2010a). A decade of EU-funded GMO research (2001-2010), [ftp://cordis.europa.eu/pub/fp7/kbbe/docs/a-decade-of-eu-funded-gmo-research\\_en.pdf](ftp://cordis.europa.eu/pub/fp7/kbbe/docs/a-decade-of-eu-funded-gmo-research_en.pdf). Accessed 8 August 2015.

European Commission (2010b). Commission Proposal for a Regulation of the European Parliament and of the Council amending Directive 2001/18/EC as regards the possibility for the Member States to restrict or prohibit the cultivation of GMOs in their territory, July 2010, COM(2010) 375 final, [http://ec.europa.eu/food/food/biotechnology/docs/proposal\\_en.pdf](http://ec.europa.eu/food/food/biotechnology/docs/proposal_en.pdf). Accessed 8 August 2015.

European Commission (2013). Questions and Answers on EU's policies on cultivation and imports of GMOs, [http://europa.eu/rapid/press-release\\_MEMO-13-952\\_en.htm](http://europa.eu/rapid/press-release_MEMO-13-952_en.htm). Accessed 8 August 2015.

European Commission (2015). Fact Sheet: Questions and Answers on EU's policies on GMOs, 22 April 2015, [http://europa.eu/rapid/press-release\\_MEMO-15-4778\\_en.htm](http://europa.eu/rapid/press-release_MEMO-15-4778_en.htm). Accessed 8 August 2015.

European Community (1990). Council Directive 90/220/EEC of 23 April 1990 on the deliberate release into the environment of genetically modified organisms, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31990L0220>. Accessed 8 August 2015.

European Food Safety Authority (2009). Scientific Opinion on Applications (EFSA-GMORX-MON810) for renewal of authorisation for the continued marketing of (1) existing food and food ingredients produced from genetically modified insect resistant maize MON810; (2) feed consisting of and/or containing maize MON810, including the use of seed for cultivation; and of (3) food and feed additives, and feed materials produced from maize MON810, all under Regulation (EC) No 1829/2003 from Monsanto", EFSA Journal, 1149, 1-85, [www.efsa.europa.eu/en/efsajournal/pub/1149](http://www.efsa.europa.eu/en/efsajournal/pub/1149). Accessed 8 August 2015.

European Union (2001). Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC, [http://europa.eu/legislation\\_summaries/agriculture/food/l28130\\_en.htm](http://europa.eu/legislation_summaries/agriculture/food/l28130_en.htm). Accessed 8 August 2015.

European Union (2015). Directive (EU) 2015/412 of the European Parliament and of the Council of 11 March 2015 amending Directive 2001/18/EC as regards the possibility for the Member States to restrict or prohibit the cultivation of genetically modified organisms (GMOs) in their territory, [http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1426590211658&uri=OJ:JOL\\_2015\\_068\\_R\\_0001](http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1426590211658&uri=OJ:JOL_2015_068_R_0001). Accessed 8 August 2015.

Graff, G., Hochman, G. and Zilberman, D. (2014). The Political Economy of Regulation of Biotechnology in Agriculture. In Herring R. (ed.), *Oxford Handbook of Food, Politics,*

*and Society*. Oxford: Oxford University Press, 664-668 (pdf file numbered from page 1), [www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195397772.001.0001/oxfordhb-9780195397772-e-023](http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195397772.001.0001/oxfordhb-9780195397772-e-023). Accessed 8 August 2015.

Heldt, H.-W. (2010). The Situation Concerning GM Crop Plants in Germany. In Academy of Science of South Africa, *GMOs for African Agriculture: Opportunities and Challenges*, Pretoria: ASSAf, 11-40.

Kaplan, K. (2000). Bt Corn: Less Insect Damage, Lower Mycotoxin Levels, Healthier Corn, [www.ars.usda.gov/is/pr/2000/000426.htm](http://www.ars.usda.gov/is/pr/2000/000426.htm). Accessed 8 August 2015.

Kershen, D. L. (2006). Health and Food Safety: The Benefits of Bt-Corn. *Food and Drug Law Journal* 61(2): 197-235.

Masip, G. et al. (2013). Paradoxical EU agricultural policies on genetically engineered crops. *Trends in Plant Science* 18(6): 312-324.

Mereu, C. (2012). Schizophrenic Stakes of GMO Regulation in the European Union. *European Journal of Risk Regulation* 3(2): 202-211. <http://ejrr.lexxon.eu/article/EJRR/2012/2/200>. Accessed 8 August 2015.

Nature (2007). Another inconvenient truth (editorial). *Nature Biotechnology* 25(12): 1330, [www.nature.com/nbt/journal/v25/n12/full/nbt1207-1330.html](http://www.nature.com/nbt/journal/v25/n12/full/nbt1207-1330.html), Letter by Giovanni Monastra (An inconvenient version of events), [www.nature.com/nbt/journal/v26/n4/full/nbt0408-379a.html](http://www.nature.com/nbt/journal/v26/n4/full/nbt0408-379a.html), "Response" by Nature, [www.nature.com/nbt/journal/v26/n4/full/nbt0408-379b.html](http://www.nature.com/nbt/journal/v26/n4/full/nbt0408-379b.html). Accessed 8 August 2015.

Nedelnik, J., Linduskova, H. and Kmoch, M. (2012). Influence of Growing Bt maize on Fusarium Infection and Mycotoxins Content - a Review. *Plant Protection Science* 48: S18-S24.

Ostry, V., Ovesna, J., Skarkova, J., Pouchova, V. and Ruprich, J. (2010). A review on comparative data concerning Fusarium mycotoxins in Bt maize and non-Bt isogenic maize. *Mycotoxin Research* 26(2): 141-145.

Pazzi, F., Lener, M., Colombo, L. and Monastra, G. (2006). Bt maize and mycotoxins: the current state of research. *Annals of Microbiology* 56(3): 223-230.

Punt, M.J. and Wesseler, J. (2015). Legal But Costly: An Analysis of the EU GM Regulation in the Light of the WTO Trade Dispute Between the EU and the USA. *The World Economy* 39(1): 158-169.

Ricroch, A., Bergé, J. and Kuntz, M. (2010). Is the Suspension of MON810 Maize Cultivation by Some European Countries Scientifically Justified? *Information Systems in Biotechnology* 2010: 8-10, [www.isb.vt.edu/news/2010/Apr/Suspension-of-MON810-Maize-Cultivation.pdf](http://www.isb.vt.edu/news/2010/Apr/Suspension-of-MON810-Maize-Cultivation.pdf). Accessed 8 August 2015.

Schumpeter, J.A. (1942). *Capitalism, Socialism and Democracy*. London: Routledge.

Tagliabue, G. (2016a). The necessary "GMO" denialism and scientific consensus. *Journal of Science Communication* 15(04), 1-11. [http://jcom.sissa.it/archive/15/04/JCOM\\_1504\\_2016\\_Y01](http://jcom.sissa.it/archive/15/04/JCOM_1504_2016_Y01). Accessed 8 August 2015.

Tagliabue, G. (2016b). European incoherence on "GMO" cultivation vs. importation. *Nature Biotechnology* 34(7): 694-695.

World Trade Organization (2006). Reports out on biotech disputes. [www.wto.org/english/news\\_e/news06\\_e/291r\\_e.htm](http://www.wto.org/english/news_e/news06_e/291r_e.htm). Accessed 8 August 2015.

World Trade Organization (2010). Dispute DS291 European Communities – Measures Affecting the Approval and Marketing of Biotech Products, up-to-date at 24 February 2010. [www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds291\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds291_e.htm)

Zilberman, D., Graff, G., Hochman, G. and Kaplan, S. (2015). The Political Economy of Biotechnology. *German Journal of Agricultural Economics* 64(4): 212-223.