

# The GMO case in France: Politics, lawlessness and postmodernism

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**Abbreviations:** ANSES, Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail; CGB, Commission du Génie Biomoléculaire; CRII-GEN, Comité de recherche et d'information indépendantes sur le génie génétique; CRII-rad, Commission de recherche et d'information indépendantes sur la radioactivité; CRI-REM, Centre de recherche et d'information indépendantes sur les rayonnements électromagnétiques; EFSA, European Food Safety Authority; EU, European Union; FNSEA, Fédération Nationale des Syndicats d'Exploitants Agricoles; INRA, Institut National de la Recherche Agronomique; MP, Member of Parliament

The GMO debacle in France is analyzed in the light of the balance of forces around this controversy, the changes in position of governments and the opponents' strategic use of intimidation. These factors have caused insurmountable difficulties for scientific experimentations and assessment of the technology, as well as for farmers attempting to grow GM maize in this country. The change from a "modern" to a "postmodern" framing of official public debates and scientific institutions has not appeased confrontations concerning GMOs.

## An Unfavorable Political Context

In the 90s, France was the leading agricultural economy in Europe. Therefore, it is reasonable to assume that the adoption of GMOs in this country would have changed the fate of biotech crops in Europe. The present article sheds light more specifically on the GMO debacle in France.

The arrival in Europe of the first cargo of transgenic soybeans from the United States could not have been at a worse time since it was concomitant to the "mad cow" crisis and the food mistrust that followed.<sup>1,2</sup> On November 1, 1996, the French leftist newspaper *Libération* launched the media lynching of GMOs by its front page headline "*Beware of mad soya (Alerte au soja fou)*". The crisis took short the government which was rather supportive of agricultural biotechnology.

To understand the attitude of French politicians, it is necessary to mention the HIV-tainted blood scandal in the country in the mid 80s when hemophiliacs were given blood products known to be contaminated<sup>3</sup>: it not only sparked legitimate emotions because the perpetrators were medical doctors, but also because many considered that the government did not react appropriately (subsequently a former Prime Minister, a Health Minister and a

Social Affairs Minister stood trial before a special court). Subsequently, politicians were not willing to take any risk for their own career when a technological risk—even hypothetical and even when scientifically refuted—was subject to media attention. This has not changed since and the precautionary principle is often perceived as a means of protecting the decision makers.<sup>4</sup>

In addition, GMOs also lacked support from the main agricultural Union (FNSEA) and its associated organisms, which are usually open to innovation. One of the reasons being that the "mad cow" crisis was associated in the public perception to "modern" agriculture and "unnatural" practice. Therefore, the priority of these farming organizations was to restore public trust, not to push for a modern innovation.

On the GMO opponents' side, environmental organizations like Greenpeace have teamed up with a movement defending a "peasant" agriculture, which then joined forces with an heterogeneous but highly vocal coalition of anti-capitalism and anti-globalization groups, and including certain consumer organizations (see Fig. 1A).

## The Pusillanimous Phase of Governmental Action

On December 18, 1996, following recommendation by the French authorities, the European Commission (EC) authorized the marketing of GM maize Bt-176 (resistant to lepidopteran pests) developed by Novartis. The first retreat of the French government in the GMO case can be dated as early as February 12, 1997, when Prime Minister Alain Juppé suddenly decided that cultivation of this GM maize could not be authorized. Since this contradicted the positive opinion of the official risk assessment Commission (*Commission du Génie Biomoléculaire*), its Chairman Axel Kahn (a human geneticist and a respected personality in the country) resigned the next day. Kahn considered that the government fooled him personally after having asked him to work on the authorization procedure at the European level, an option initially backed by the French government. Juppé's decision was influenced by the Environment Minister Corinne Lepage (notoriously opposed to GMOs; see below) who found rhetorical arguments to explain this U-turn by presenting it as an opportunity for politicians to regain their independence from scientists.

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**Figure 1. A.** An illustration of the rhetoric of the initial anti-GMO coalition. Translation of panels from left to right: “Get up for farmers’ rights to use and exchange seeds. Stop smothering peasants.” “The fight against GMOs is a political fight. Peasants and citizens facing an attack by globalized capitalism and liberalism.” A consumer organization’s magazine: “The truth on health risks. Eat healthy.” **B.** The world’s second largest retailer chain teaming up with a parallel “science” association. Left panel: the original administration board of CRII-GEN included Carrefour as well as a milling company and an organization promoting organic farming (circled). Right panel: Food labeling (the original background color was bright green). Translation: “Fed without GMOs. For Carrefour, GMO-free is a commitment since more than 15 y.”

After the Parliamentary election (National Assembly) in May–June 1997, a Left coalition (including the Green party) came to power. On November 27, 1997, the new government (led by Prime Minister Lionel Jospin) authorized the cultivation of GM maize, but implemented a moratorium on GM rapeseed and beet, arguing possible risks of dissemination in the environment. The explanation given during a press conference by the Environment Minister Dominique Voynet (Green party) is worth citing: “awaiting the public debate, we must continue the moratorium on GMOs, except for some species showing no risk. This is the case for maize, where there is a consensus of scientists, medical doctors and environmentalists” (translation).

The public debate mentioned by Voynet took place on June 20–21, 1998, as a postmodernist “conference of citizens” on the “use of GMOs in agriculture and food,” organized by a parliamentary institution (*Office Parlementaire d’Evaluation des Choix*

*Scientifiques et Technologiques*). The procedure was inspired by the “consensus conferences” invented in Denmark. From a randomly chosen group of lay-people, a panel of 15 people (actually 14 since one person choose to quit the debate at an early stage) were selected in order to be representative of society and were scientifically trained before the start of the debate with experts. These “citizens” actually turned out not to be opposed to GMOs on principle. They asked for clear regulations, including liability and independent risk assessments ([www.annales.org/re/1998/re07-98/05%20OGM\\_05%20OGM.pdf](http://www.annales.org/re/1998/re07-98/05%20OGM_05%20OGM.pdf)). The panel even recommended “research aimed at creating, in some cases, sterile transgenic plants incapable of self-reproducing”, i.e., the later demonized “Terminator” technology!<sup>5</sup>

The Ministry of Agriculture authorized by listing on the seed catalog the cultivation of 3 maize varieties (Bt-176) developed by Novartis on February 5, 1998, and 2 new varieties on July 30 (T25:

herbicide-tolerant, and MON810: another Bt event providing resistance to lepidopteran pests, produced by Monsanto), while continuing a 2-year moratorium on rapeseed and beet. Thus, France became the first European country to grow GMOs on 1500 ha in 1998. On September 25, 1998, following an appeal by Greenpeace (whose argument was based on the non-evaluated risk of an antibiotic resistance gene in Bt-176), the highest French administrative court (*Conseil d'Etat*) suspended the marketing of the transgenic maize authorized in February, invoking the "precautionary principle" (on November 22, 2000, the *Conseil d'Etat* re-validated the February 1998 authorization). On October 7, 1998, the European Commission declared the moratorium on rapeseed illegal and initiated an infringement procedure against France.

On May 25, 1999, Voynet pushed for a suspension of all new marketing authorizations and a re-assessment of all previous ones. The next day, the Agriculture Minister, Jean Glavany, stated in Parliament that the moratorium on GM plants, already in place for rapeseed and beet, could be extended to maize if new evidence appeared justifying the application of the "precautionary principle." He asked the Monitoring Committee (*Comité provisoire de Biovigilance*) to examine the consequences of the Losey et al.<sup>6</sup> paper on the impact of Bt maize on the Monarch butterfly (a risk found negligible for most Bt events by subsequent research, but higher for Bt-176; see, for example, Sears et al.<sup>7</sup>). On June 23, 1999, the Jospin government decided to support, at the European level, a moratorium on all new GMO authorizations, whereas existing authorizations were to be maintained. A new research program on the environmental impacts and the economic and social effects of GMOs was announced.

On June 24–25, 1999, the European Environment Ministers proposed a tightening of legislation for the marketing of GMOs. France and Greece—backed by Austria, Belgium, Denmark, Italy and Luxembourg—stalled the authorization procedure by forming a minority group of EU states able to block any vote on a new approval. This led to the new Directive 2001/18/CE on the deliberate release and associated regulations on food and feed in 2003. But France was in no hurry to adopt this new regulation: on 12 December, 2006 (a Right coalition had been in power since 2002), the European Commission asked the European Court of Justice to impose financial sanctions on France for failure to transpose the 2001 Directive. It should also be remembered that a WTO panel ruled on February 7, 2006, that the EU's moratorium on GM products was illegal.

## A Frenzy of Debates and Reports

In 1998, one report was issued by Senator Jean Bizet<sup>8</sup> and another by MP Jean-Yves Le Déaut and Senator Henri Revol,<sup>9</sup> both highlighting the importance of plant biotechnology and proposing regulatory and risk assessment recommendations. In 1999, Philippe Rouvillois and Guy Le Fur<sup>10</sup> published a report on behalf of the official *Conseil économique et social*, which encouraged biotechnological applications. It stated that "*ethical issues and acceptance by the public [...] will find a satisfactory outcome only by clearly informing citizen*" (translation).

On March 29, 2000, a parliamentary report of an "Investigation Commission on transparency and safety of the food chain" was issued by 2 MPs (Félix Leyzour and Daniel Chevallier).<sup>11</sup> The report placed GMOs with real food threats (such as chemical and bacterial risks) and also illustrated the unwillingness of the food industry to incorporate GMO-derived material in their products. A statement by Voynet is worth mentioning: "*Regarding GMOs, I want to say that I do not think the main problem is for health or for environment. GMOs pose, in my opinion, primarily a problem of agricultural policy and especially the autonomy of our farmers in relation to the business strategies of large global food groups*" (translation).

On July 6, 2000, a Green MP, Marie-Helene Aubert, issued a report on behalf of a Commission of the National Assembly which highlighted the risks for human health and the environment allegedly associated with GMOs.<sup>12</sup> It also recommended that "*member states may take into account the likely socio-economic impacts of any marketing application.*" This report recommended increasing the regulatory burden on GMOs, allegedly for the safer adoption of GMOs.

On September 26, 2001, Bernard Chevassus-au-Louis<sup>13</sup> issued a report ordered by Glavany and Voynet entitled "GMO and agriculture: options for public action," which was more balanced than the Aubert report.

On March 6, 2002, Babusiaux et al.<sup>14</sup> issued their report following a "public debate" on GMOs and field trials (February 2002). The authors were presented as "wise men" by the press. One of the authors, Jacques Testart, a former scientist notoriously opposed to capitalism and GMOs, published *before* the start of the debate (December 7, 2001) an article in *Libération* entitled "*Les OGM, un vandalisme libéral*" ("*libéral*" here means "caused by economic liberalism"), illustrating that to chair a "public debate" you do not need to be wise nor impartial. Also illuminating is Bruno Rebelle's (Greenpeace) reply when asked during the round table discussion why Greenpeace is afraid of GMOs: "*We are not afraid of GMOs. We are only convinced that it is the wrong solution... GMOs may be a wonderful solution for a certain type of society project. But precisely it is that society project that we do not want*" (translation).

On May 15, 2003, Senator Jean-Marc Pastor<sup>15</sup> published a report by the "GMO Information Mission of the Senate" on the "economic and environmental issues of genetically modified organisms." This report recommended "*controlled lifting of the moratorium*," whereas Agriculture Minister Hervé Gaymard declared himself against this measure during his testimony on January 14, 2003.

On April 13, 2005, MPs Jean-Yves Le Déaut and Christian Ménard<sup>16</sup> issued a report for the "Information Mission of the National Assembly on GMOs." Their conclusions aimed to be "*nuanced and if possible, reassuring.*" The report reveals clearly the political divide over this topic: Socialists, Communists, and of course the Greens, being opposed to GMOs, whereas the Center and the Right parties being rather in favor (at least supportive of research), with dissenting voices on each side. In an attempt to placate opponents, the report recommended not to allow any new field trial in 2005. It also recommended unpractical burdens

on field trials, such as proposition n° 24 “to perform, during the Bt crops field trials, a study of insect populations including bees (number, behavior, reproduction)” or new obstacles prior to marketing, such as performing socio-economic impact studies (as already recommended in the 2000 Aubert report, illustrating the spread of “Green” views). The report is also embedded in typical post-modernist views (see discussion below) such as “to involve the public and local community representatives and associations” (propositions 53 and 55).

The public debates (which auditioned all “stakeholders”) on which these various reports were based, did not reveal any will for compromise from the opponents, but rather their entrenched postures.

### Low Level Fortuitous Presence of GMOs had Important Consequences

In May 2000, the announcement that seeds of GM oilseed rape accidentally mixed with non-GM seeds had been planted in France on 600 hectares sparked reactions of “Green” lobbies asking for the destruction of these fields, a position supported by the Minister Voynet. Agriculture Minister Glavany first announced on May 19 that such destructions were unnecessary. On May 25 the government decided, nevertheless, to proceed with the destruction.

On June 23, 2000, following revelations made by a newspaper, the Government confirmed the presence of GM maize in conventional seeds imported from the USA and sowed on some 3,000 hectares in south-west France. Voynet was again in favor of destroying these fields, but on July 14 the government announced that it would not proceed with the destruction. However, on August 5, 2000, the government ordered the destruction of 46 hectares of soybean fortuitously containing traces of a GM variety.

These events provided ammunition for the “Green” lobby to request tougher regulations and irreversibly installed the view of a transgene being a “pollution.” As an illustration, on May 29, 2000, after the rapeseed incident, Glavany considered it necessary to apply the principle of “polluter pays.”

On July 23, 2001, the French Food Safety Agency AFSSA (now ANSES) published an opinion on the health consequences of the fortuitous presence of GM seeds in a small proportion of conventional seeds.<sup>17</sup> Although overall reassuring, the report recommended “further studies if the presence of GMOs was confirmed in a large proportion of seeds in order to clarify the origin, possible risks and identify possible new thresholds” (translation). In reaction, the Green lobby stated “that the concepts of traceability and transparency have become “illusory” because of the release of GMOs into the environment” and requested a GMO ban.

### The Difficulty of Scientific Assessments

On December 10, 2002, the French Academy of Science published a report<sup>18</sup> entitled “Genetically modified plants” which

stated that “all criticisms against GMOs can largely be excluded on purely scientific criteria” and that “there is no objective reason to prolong a moratorium on the marketing authorizations for GMOs” (translation). This report sparked the fury of anti-GMO groups. The authors were accused “of being linked to the industry” and Professor Roland Douce, who coordinated the report, received letters of intimidation and even a death threat.<sup>19</sup>

Due to the highly politicized public debate on GMOs, in France and elsewhere, French scientists remain divided, which had consequences on public perception (“scientists do not all agree!”), but also on the functioning of scientific institutions, with increasing consequences over time. For example, in the 2004 annual report of the *Commission du Génie Biomoléculaire* (CGB), one can read this comment (translated): “the essential condition for the quality of CGB’s assessment work is active and constructive participation of its members, including the elaboration of scientifically substantiated reports [...], which has too often been lacking last year in the case of Professor Séralini” (see page 79 of [www.ogm.gouv.fr/IMG/pdf/4partie\\_RA2004\\_cle893a85.pdf](http://www.ogm.gouv.fr/IMG/pdf/4partie_RA2004_cle893a85.pdf)). Reading all CGB’s annual reports it is clear that Séralini was a minority voice. However, the situation has worsened; the Scientific Committee of the High Council on Biotechnology (which replaced CBG from 2008) is plagued by ideology, with constant confrontation between pro- and anti-GMO members. Its second committee (the so-called Economical, Ethical and Social Committee) which is actually a forum of various stakeholders, suffered the resignation of various members in January 2012<sup>20</sup> (read comments by Jeanne Grosclaude who resigned: [http://ddata.over-blog.com/xxxyy/1/39/38/37/Comments-from-J\\_Grosclaude.pdf](http://ddata.over-blog.com/xxxyy/1/39/38/37/Comments-from-J_Grosclaude.pdf)). Ironically, this happened as a consequence of the Committee debating on “coexistence.” Consequently, the Committee recommendations reflect the views of anti-GMO activists.

France has also been an experimentation field for “Green” activists to develop parallel “science” and parallel “expertise” producing data to suit their views.<sup>20</sup> Thus, “Committees for Independent Research and Information” (CRII) were founded: *CRII-Rad* on nuclear energy, *CRII-REM* on non-ionizing electromagnetic radiation, and *CRII-GEN* on genetic engineering. The latter was founded in June 1999 by the politician Corinne Lepage, with the participation of the retailer chain Carrefour (Fig. 1B demonstrates the involvement of Carrefour, which sells “GMO-free products,” a milling company and an organization promoting organic farming in the original *CRII-GEN* administration board) with Séralini as its scientific leader. Thus, a small minority organized as a tentacular lobby, with generous public and private funding, could exert a major influence, not only on political decisions, but also on “scientific” risk assessment.

It is out of the scope of this article to analyze the way the press has reported on GMOs, since “Words of mass destruction”<sup>21</sup> are not a phenomenon specific to France. Highly influential media, such as TV channels, the so-called “reference” newspaper *Le Monde* and more generally the Leftist press have all contributed to a negative perception of green biotechnology in general, of seeds and plant biotech companies and more specifically of Monsanto which has developed most of the transgenic plants currently on the market.

## Vandalism Against Field Trials and Confined Experiments

Commencing on June 17, 1997, when members of a radical and minority farmers' Union (*Confédération Paysanne*) and "Green" activists destroyed a Monsanto rapeseed trial, such vandalism has become strategically planned. It has not been limited to private companies' trials, nor to outdoor experiments.<sup>22</sup> Vandalism against public research started in June 1999 (rapeseed field trials from INRA and glasshouse-confined rice experiments from CIRAD).

Anti-globalization activist José Bové was the leading figure of these destructions. He was sentenced to jail for violence (he served 6 weeks in 2002) after the vandalism of a McDonald's restaurant in Millau on August 12, 1999, which allowed him to protest against the "*criminalization of trade union movements*" and to obtain support from a large part of the Left. Despite being found guilty in court several times for the destruction of scientific experiments, he only once actually served a jail sentence, for the destruction at CIRAD (from June 22 to August 2, 2003; he was released after receiving a pardon from President Chirac).

Activist campaigns for the publishing of field trial sites and the judgment of the Administrative Tribunal of Paris on March 1, 2001, asking the Agriculture Ministry to provide a list of municipalities where GMO cultivation experiments were conducted in 2000, led to the subsequent systematic publishing of such sites. Consequently, without protection from the authorities, this opened widely the doors to destruction year after year. The authorities' condemnations were merely verbal and sometimes gave the impression that the regulation was insufficient and consequently that the destructions were not fully unjustified. For example, in August 2001, following an ultimatum to the government by *Confédération Paysanne*, calling for destruction of GMO field trials by the authorities, activists destroyed various sites. On August 22, Roger-Gérard Schwarzenberg, Research Minister, denounced an "*obscurantism*" detrimental to scientific research. On August 23, Yves Cochet, Environment Minister (Green party), condemned the "*illegal acts*" and asked for a debate on the outdoor cultivation of GMOs, while Glavany pleaded for extra precautions on research trials in the field. On August 28, Prime Minister Jospin reaffirmed the illegal nature of such destructions and wished for better regulation of field experiments. On September 11, President Jacques Chirac denounced the GMO destructions, expressed his support for research in this area and wished for it to be performed "*transparently*."

Reactions from public researchers were rare. On September 18, 2003, following the destruction of 25 field trials during the summer, French researchers published a petition "*to defend research*."

## Harassment of Farmers Growing GM Maize

GM maize (MON810) cultivation resumed in France in 2005 (492.8 ha) and continued in 2006 (5000 ha) and 2007 (21200 ha)

despite the lack of buyers in this country (the harvested grain were sold to animal breeders in Spain) and despite the incidences of field vandalisms and harvest destruction in elevators. For example, on November 4, 2006, Bové and 150 activists conducted a so-called "GMO traceability" operation at the property of farmer Marc Giblet at Lugos (near Bordeaux). Actually, in the activists' rhetoric, "traceability" meant that they actually poured a toxic black dye extracted from walnuts in an elevator containing 2,000 tons of GM maize. The farmer used his gun as self-defense without injuring anyone and bumped his vehicle into 2 activists' vehicles. All the protagonists (including the farmer) were subsequently fined.

The worst incident was the suicide on August 5, 2007, of Claude Lagorce, father of 4, a farmer at Girac (south-west France), who grew GM maize to feed pigs on his farm. A flyer announcing an activist demonstration in his field the same day was found next to his body.

## The Cynical Phase of Political Action

During the 2007 election of the French President, Nicolas Sarkozy (Right party) was the only candidate not to declare himself opposed to GMOs, which triggered a Greenpeace demonstration in front of his HQ. Once elected he mandated the Environment Minister Jean-Louis Borloo, the Environment State Secretary Nathalie Kosciusko-Morizet and his own counselor for the environment Chantal Jouanno to negotiate the participation of Green lobbies in a national debate on the environment (known as "*Grenelle de l'environnement*"). The debate took place during the autumn of 2007 and concluded by a ceremony in the presence of Al Gore, with political ecologists applauding Sarkozy. This political green-washing came at a cost: during negotiations in the summer of 2007, Green organizations obtained *inter alia* the assurance that GMO cultivation would be banned after the autumn "debate."

The negligible lobbying influence that seed companies, and especially Monsanto, are able to exert in France is illustrated by the fact that the latter company was not even invited to participate as a stakeholder in this "debate" which led to the ban of cultivation of its genetic event MON810.

The manner in which the French government manipulated a temporary commission (chaired by Senator Jean-François Le Grand who made false claims based on a draft document written by scientists from this commission) on January 2008 to fabricate "scientific" justification for a political ban has been analyzed.<sup>23-25</sup> It has also been shown that available knowledge on MON810 contradicted the French government's arguments.<sup>24</sup>

In February 2008, a safeguard clause against MON810 cultivation was sent to the EC by the French government, whose justifications were rejected by the EFSA (2008), despite the government sending 4 anti-GMO scientists (see [www.efsa.europa.eu/en/search/doc/252r.pdf](http://www.efsa.europa.eu/en/search/doc/252r.pdf)) to convince the EFSA GMO panel who remained unimpressed.<sup>26</sup> The European Court of Justice declared the ban illegal in September 2011, as did the French *Conseil d'Etat* in November 2011, following a

complaint from a farmers' organization (*Association Générale des Producteurs de Maïs*, [www.agpm.com](http://www.agpm.com)). Kosciusko-Morizet (then Environment Minister) immediately announced a prolongation of the ban. But it was only on February 20, 2012, that she released her "justifications," this time as an "emergency measures" document produced by anonymous authors and which by-passed the official High Council on Biotechnology. A point-by-point analysis subsequently refuted these "justifications,"<sup>25</sup> as did the EFSA.<sup>27</sup>

On August 1, 2013, the *Conseil d'Etat* again cancelled this ban.<sup>28</sup> In the meantime, Sarkozy lost the Presidential election and François Hollande, from the Socialist Party, came to power. His Agriculture Minister Stéphane Le Foll (who wants to promote "agroecology"), and his Environment Minister Philippe Martin (who publicly supported field trial vandalism), immediately announced the prolongation of the ban. It was only in February 2014 that the government came up with the means to do so: Senator Alain Fauconnier (Socialist) proposed a law (which again was 'justified' by similar false environmental claims) which was rejected by a Senate Commission on February 17, 2014. The next day, recycling the rejected text, Bruno Le Roux (a Socialist MP) proposed the same law to the National Assembly. Realizing that this law would not be passed before the sowing season for maize (it was, in fact, eventually adopted on May 5, 2014), the government then passed on March 15 an "*arrêté*" (a binding decision from administrative authorities, but considered as a rather weak decree from a judicial point of view) to ban GMO cultivation. This allowed the government to ban GMO cultivation until the next canceling by judicial authorities.

It should be stressed that while GMO cultivation is banned, GMO-derived raw material is still being imported massively as cattle fodder.

## The Failure of the Postmodernist Approach

The French government moved from a precautionary doctrine in 1997 (which occasionally lost sight of science for political reasons) to the development of its own parallel "science" from 2008 onwards (again for political reasons). While successive governments maintained some rhetorical support for "research on GMOs" for years, the last GMO field trial in France (poplar trees as part of an INRA experiment) was terminated on July 13, 2013 (because Minister Le Foll declined to give an answer to an application by INRA to prolong the experimentation). Such a drift from a precautionary approach in 1997 to a *de facto* ban illustrates the impact of the precautionary principle.

The official "public debates" organized in France also moved from the objective of providing information to the decision makers (with a direct link between the latter and experts), and to the public, to a negotiation-type of debate between "stakeholders" and the government, with a limited role for experts (as was the case for the 2007 "debate" on environment). Public debates also became relativist in nature (scientific knowledge is considered as an opinion just like any other opinion, a characteristic of the postmodern ideology).<sup>20</sup> Obviously, these debates have not

appeased confrontations concerning GMOs. On the contrary, they have encouraged opponents to become more radical asking for more concessions, until the total eradication of GMOs. For example, on May 23, 2011, a group of activists invaded the agronomical research institute (INRA) center in Angers for a "citizen inspection" of a confined experiment using GM pears. This clear act of intimidation was on the pretext that no dialog had been implemented.

In scientific institutions, postmodernist sociologists used this opposition and this demand for "dialog" to increase their influence. They claimed the model of "technical rationality" (whose goal is claimed to be to convince the public through education) had failed and they proposed a "public engagement" approach (i.e., essentially a "concerned" public engagement). Failure of this "participatory" postmodernist approach is illustrated by the GM grapevine field trial debacle.<sup>20</sup> In brief, distraught by the destruction of their GM field trials, INRA conducted an experiment of applied postmodern sociology, in which a transgenic technology of virus resistance (actually an obsolete technology) was field tested under the supervision of "stakeholders" (mainly opponents). This did not stop more radical activists from destroying the field trial twice, and research has since been abandoned. As a further blow to researchers, 54 activists who had been first sentenced to fines were acquitted by a Court of appeal on May 14, 2014 on the grounds that the authorization of this trial (after several positive opinions of the scientific risk assessment committees since 2004) was "a manifest error of assessment of the risk linked to the experiment" according to the judge. In an uncommon reaction, 12 heads of research institutions and universities expressed concern in a joint statement.

## No Exit in Sight?

GMO experimentation sites have gradually become a lawless area for activists. The reason is clear: the strength of the anti-GMO lobbies is directly correlated to the weakness of politicians. With no more GMO fields to destroy in France, they have since started targeting mutagenized varieties employing the same tactics as used against GMOs (they call mutagenized varieties "hidden GMOs").<sup>29</sup> The fact that the term "genetically modified" is semantically vague can be used by opponents to target all new breeding techniques since their final goal is to destroy seed trade which is perceived as "smothering peasants" (see Fig. 1A). Thus, activists have also occasionally invaded Monsanto's facilities (although the company no longer actually sells GM seeds in France) or agricultural organizations' premises for diverse reasons but usually linked to seed business or seed regulation.

In conclusion, GMO cultivation in France is totally blocked (including field trials and GM research) for political reasons, with no foreseeable way to reverse this situation.

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No potential conflicts of interest were disclosed. Being a scientist at a public institution, the author has an obvious interest in freedom of research.

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\*Note: The EFSA rejected the justifications provided by the French government in 2014. (<http://www.efsa.europa.eu/en/efsajournal/doc/3809.pdf>)