

***What's for Dinner? Variations in European Support for Genetically Modified Food***

Paulette Kurzer  
Department of Political Science  
University of Arizona  
Tucson AZ 85721  
[Kurzer@arizona.edu](mailto:Kurzer@arizona.edu)

Alice Cooper  
Department of Political Science  
University of Mississippi  
Oxford, MS  
acooper@olemiss.edu

## ***What's for Dinner? Variations in European Support for Genetically Modified Food***

In the last decade, genetically modified food and crops have provoked public outrage and consumer resistance in Europe but only indifference in the US (Bernauer 2003; Pollack and Shaffer 2001; Vogel 2003; Young 2003). European objections to agricultural or “green” biotechnology (as opposed to medical or “red” biotechnology) have hindered American exporters from marketing genetically modified (GM) crops and foods in the EU. Following the ban imposed by six member states - Austria, Denmark, Luxemburg, Greece, France and Italy – on genetically modified organisms (GMO) in 1998, the Commission was forced to revise existing regulatory procedures and design a system that addressed the concerns of the anti-GMO governments. In 2003, the European Parliament, Council, and Commission agreed on approval procedures that scrutinize each request for the sale of GM plants or products and lay out in great detail conditions for authorization.<sup>1</sup> The new rules went into effect in spring 2004, yet in spite of their rigor they have failed to quell consumer mistrust or to persuade certain member states to lift their ban on individual GM products or plants.

In this paper, we examine why some member states are more hostile to GMO than others. A considerable literature has analyzed why the US and EU have taken different approaches to GMO and why American consumers placidly ingest thousands of products containing GM matter while their European counterparts reject the same technology and food products as risky. Explanations range from different economics of farming and food production, consumer fears about food safety, different regulatory climates, the strength of the green biotechnology industry, strategies of non-governmental organizations, trust in public agencies, and food culture (Bernauer 2003; Gaskell, Bauer, Durant, and Allum 1999; Joly and Marris 2003; Levidow, Carr, and Wield 2000; Meins 2003; Gaskell, Allum, and Stares 2003). Other analysts stress cycles of regulatory activity and retrenchment, claiming that the EU finds itself in the midst of a precautionary regulatory phase while the US has become more leery of extensive federal government intervention in the fields of consumer and environmental protection (Dunlop 2000; Vogel 2003).

While many studies have focused on the gap between Europe and the US, differences within Europe have received much less attention. As table 1 shows (and as will be elaborated further below), the old EU of fifteen member states hardly represents a monolithic, unified, anti-GMO bloc. Instead, average popular acceptance of GM foods ranged from 36.5% in Greece to 77% in Spain. Similarly, voting records of member states in the EU's Council of Ministers and Standing

---

<sup>1</sup> 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 [http://europa.eu.int/eur-lex/en/lif/dat/2001/en\\_301L0018.html](http://europa.eu.int/eur-lex/en/lif/dat/2001/en_301L0018.html) Regulation (EC) No 1831/2003 of the European Parliament and of the Council of 22 September 2003 concerns the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms.

Committees on GM issues also exhibit considerable variations in the number of “no” votes cast against specific GMO approval requests.

[Table 1 on public opinion and government voting about here]

What explains this striking variation among the EU-15? At first glance, the most obvious explanation is that government officials tend to vote in accord with societal preferences; thus, in countries with highly skeptical publics governments are more likely to reject authorization requests. However, this observation, though perplexing since elites have a tendency to ignore societal preferences in Community affairs, begs the question -- why does public acceptance of GM food vary across the EU-15? Here our argument is that the strongest and most widespread resistance is found in countries where environmental non-governmental organizations forged an alliance with associations representing ‘extensive’ family farming specializing in organic products or regional specialties. The formation of an anti-GMO bloc consisting of food producers and environmentalists – a so called green-green bloc - heightens popular opposition and allows campaign strategists to frame risk in a concrete socio-cultural context. Green-green protest movement frame GMO not “merely” as a threat to the environment and possibly health, but also as a threat to culinary traditions, food culture, food safety, consumer choice, and a certain way of life.

Societal perceptions of GMO determine the extent to which scientific experts and elected officials have room to carefully support and encourage green biotechnology research and development. In countries with intensely hostile publics, the biotech industry, scientific experts, and government officials are outmaneuvered by anti-GMO voices, who reclaim the debate by introducing new concepts concerning the risks inherent in experimenting with technological innovations to the country's food production regime. To some extent, the entire GMO controversy is linked to the dramatic structural and symbolic changes taking place in European agriculture. Interpretations of genetic engineering overlap with a reassessment of the impact of productivist commercial farming on the environment, landscape management, rural development, regional differentiations, quality of food, lifestyle choices, and so forth.

Furthermore, in Europe, commercial agriculture did not neutralize or deflect the growing storm about GMO because it had not yet embraced green biotechnology. For technical reasons, corn/maize in particular is suited for gene splicing techniques because of certain unique biological properties. However, corn is not a significant cereal crop in Europe. Because of this, European agriculture had not yet switched to GM crops and did not derive any financial or agricultural advantages from using these seeds. Second, in the 1990s, research and development took place across the EU in different settings (university laboratories or private chemical/seed companies) and had different targets in mind (crops, trees, horticulture). It was not until much later into the controversy that the European green biotech industry coalesced into a trade association, at which point the terms of the debate has been cast by entrepreneurial NGOs and frightened consumers (Bernauer 2003). At key points, big agriculture was conspicuously absent and it failed to defuse anti-GMO protest (Ansell, Maxwell, and Sicurelli, forthcoming)

We will elaborate our argument below. First, we sketch the current situation in Europe's agricultural sector, which has been subject to multiple pressures and has undergone substantial restructuring. Next, we classify countries according to the presence or not of a visible alternative farming sector. Last, we single out a few case studies in order to illustrate the argument and discuss a few anomalies.

## **Agriculture in Europe**

Our aim is to explore why EU member states take differing stances on the issue of safety and benefits of genetic engineering of crops and plants. We measure variations by comparing the votes cast by national officials in EU committees that deal with applications for authorization to import or sell products containing GMO. Our justification for highlighting votes in official Community bodies is that decisions made by officials encapsulate policy preferences on whether to support the development of this technology or not. Moreover, the GMO controversy is one of the few case studies where elites appear to listen to the public; a hostile public generally produces 'no' votes in EU permanent committees and council. Thus, the votes are also, on the whole, indicative of popular sentiment.

Why would some publics be more hostile than others? We claim that the most powerful and intense resistance is found in countries where traditional consumer protection or environmental NGOs combine forces with associations representing small-scale traditional food producers. When environmental NGOs and consumer associations find common cause with food producers, their argument gains greater salience, attracts heightened consumer attention, and puts decision makers on the spot. The fusion of environmental priorities with concerns about agriculture spurs an emotional debate that makes explicit references to the link between GMO and quality of food, regional food cultures, fragile farming communities, the homogenization of mass produced food, sustainable farming, and to an earlier era when consumer and producer were directly connected.

What is striking is that not all countries possess an alternative food sector that represents a different agricultural regime. Whether a country will acquire a different type of agriculture depends on decisions made by officials in the ministry of agriculture, which has to release funds and supervise regulations to create or sustain small scale farming. In turn, public authorities are more likely to favor the expansion and maintenance of an alternative agricultural regime if the country is already in possession of a distinct food culture or if the country perceives it as a survival strategy for marginalized undercapitalized farmers.

In Europe, increased attention to alternative food production regimes emerged in the late 1980s once it was widely recognized that conventional farming and environmental protection were incompatible. For a long time, the Common Agricultural Policy and European society perceived agriculture in harmony with environmental conservation. Conventional thinking held that the countryside stood to benefit from farming because farmers helped preserved rural areas. However, by the late 1980s, public agencies and environmental actors began to recognize that farming harmed the environment by contributing to the excessive mineralization of the soil, water pollution, disappearance of historic landscapes, unsafe food practices, and so forth. In the late 1980s, the Commission announced that European farmers could not continue as before and

the Common Agricultural Policy made tentative steps to move away from food security (the principal post-war objective) to food safety (the main concern of consumers). In 1992, under the rubric of multifunctionality, aside from protecting farmer's income, Commission objectives attempted to balance the income needs of the farmer with rural development, conservation of the countryside, and restoration of historic landscapes. Subsequently, farmers were supposed to deliver public goods in terms of preserving the particular cultural history of a region and redirecting agricultural practices considered harmful to the environment, habitat, landscape, or animal welfare (Huylbroeck and Durand 2003).

In this climate, national governments began to create support schemes to encourage a different sort of food production regime more in tune with environmental standards and consumer demands. Small scale niche farming accounts for a modest proportion of Europe's total agricultural production because most farms are modern commercial establishments reliant on the latest technologies and heavily integrated in agro-food industry. Such farms are found in the UK, Northern France, Western Germany, Northern Italy, Denmark, and the Netherlands. Livestock is usually the main specialization, which requires considerable inputs of capital and technology, and a highly educated workforce. But political and financial support for 'traditional' farming has grown, mostly because educated middle class households are more demanding about the quality, taste, safety, and origins of food products while small farmers are more likely to survive by focusing on value added products.

Unquestionably, the front runners in agri-environmental legislation were the UK, the Netherlands, and Germany. All three countries passed laws prior to 1990 offering farmers payments if they agreed to practice environmentally friendly agriculture. Moreover, Austria passed in the early 1990s an "eco-social market" policy to secure the livelihood of a shrinking farming sector. Aside from the Austrian arrangements, all of these early schemes were modestly funded, with modest consequences, and dwarfed payments transferred to regular farmers. But they set a precedent, and the Commission adopted Regulation 2078/92 to create provisions for an EU network of protected countryside and nature conservation in 1992. Subsidies were made available for countryside protection and farmers were regarded as providers of environmental services (Potter 1998 115-127). A decade later, all fifteen member states had arrangements in place to 'extensify' (rather than intensify) agricultural production (Belletti et al 2003; Buller 2000; Durand 2003).

But not all countries made efforts to encourage diversification by highlighting eco-farming or bolstering marginal farming in poor regions. Ministries of agriculture are critical players in decisions on whether to promote niche farming or not, since the formation and maintenance of this type of agriculture requires financial support and market regulations. Organic farming can only thrive if government agencies employ a mix of instruments such as market regulations, food labeling rules, and subsidy/conversion schemes. Food labels must be developed by private actors or public agencies in conjunction with private parties in order to establish the authenticity of organic products, and public funds are necessary to compensate farmers for lost income when they convert from conventional to organic farming (Hofer 2000).

Table 2 lists countries according to the size of their organic farming sector. Organic farming is popular in northern countries because it grew out of eco-consciousness and the environmental

movement. Its growth accelerated in the wake of consumers' fears triggered by food scares. More consumers demand quality assurance and information about production methods. In addition, public awareness of the irreversible damage done to the environment by practices that lead to soil and water pollution has increased the popularity of organic farming. In the EU-15, the organic farm sector grew by about 25 percent a year between 1993 and 1998 and, since 1998, is estimated to have grown by around 30 percent a year. The Commission has promoted organic farming and two programs, housed under Regulation 2092/91 (organic farming) and Regulation 2078/92 (agri-environmental program), contain measures to stimulate organic farming or traditional food production (Buller 2002).

[Table 2 on organic farming about here]

At the same time, it is clear from the Table 2 that organic farming is first of all a genuine niche sector, and second, its popularity is uneven because only half a dozen countries have a 'sizable' number of eco-farmers, most of whom are in Austria, Denmark, Finland, Italy, and Sweden.

Instead of organic farming, Mediterranean countries have taken advantage of Community funding and state regulations to revitalize and protect traditional food specialization. Again, the Commission has encouraged this type of farming by introducing in 1992 a system known as PDO (Protected Designation of Origin), PGI (Protected Geographical Indication) and TSG (Traditional Specialty Guaranteed) to promote and protect food products. The purpose of this designation is to protect the reputation of a product from unfair competition by products which pass themselves off as the genuine article and take the same name. This unfair competition not only discourages producers but also misleads consumers. France, Italy, Greece, Spain, and Portugal have been granted a significantly larger number of designations for geographically protected food products than northern states and lie above the EU-15 median in this regard.

[Table 3 on PDO designations about here]

In these Mediterranean states, small farmers and citizens in general are heirs to a rich tradition of local food specialties and strong culinary identities (Boy and de Cheveigné 2001; Echols 1998). Here, too, a mixture of direct support, marketing strategies, and regulations keep this niche sector alive. While Northern countries express greater concerns about farm pollution management and view organic farming as a possible solution, Mediterranean countries are preoccupied with the social and territorial implications of farm abandonment (Buller 2002). Introduction of the PDO system is a way to combat depopulation of the countryside.

In all countries, alternative farming is genuinely small compared to the size of conventional agriculture. But what gives this small sector a public presence are organizations that represent the viewpoint and interests of farmers who cater to a consumer market that appreciates 'natural' food with fresh or authentic taste, texture, and pure nutrition and is grown under gentler conditions less harmful to the environment. If small niche farmers lack representation or are deprived of political recognition, they cannot counter the dominance of commercial farming and will not survive.

To summarize, the argument we wish to make is that the European consumer considers GM food 'risky' because its ultimate impact on the environment and public health is unknown while the direct benefits to the consumer are negligible. However, understandings of risk always emerge within a social and political context. Broader social and political factors contribute to the identification of particular environmental or health risks. ( Nelkin 1989; Lupton 1999; Douglas 1992). The existence of traditional or natural food producers contributes to divergent interpretations of the potential costs of green biotechnology. Genetic engineering provokes strong opposition once it is perceived as an attack on a way of life and on the lifeblood of a critical component of the food production regime. While publics in countries with weak organic farming and weak alternative farmer associations worry about the lack of information regarding the presence of GM matter in the food chain and therefore demand labeling and tracing, consumers in countries with food producers who uphold traditional and biologically responsible farming techniques are bothered by the possible destruction of this (struggling) sector.

At the other side of the spectrum, pro-GM forces are underrepresented and disorganized. Green biotechnology was pioneered by American seed companies, which experimented with gene splicing in order to make commodity crops like corn and soybeans (used for animal feed) resistant to herbicides or common pests. European laboratories and the private sector trailed behind and were, moreover, spread out over a dozen jurisdictions and politically fragmented. European farmers had not yet switched to GM farming and did not constitute a powerful voice in favor of genetic engineering. What emerged was an unequal match between a vocal protest movement invoking emotional images of "Frankenfood" versus a meek, fragmented, and disorganized green biotechnology sector that lagged behind its American counterparts.

All large member states possess a biotech sector. But only a few of the smaller countries developed research and development capabilities in this field. An immature biotech industry can be understood as both the cause and effect of a different orientation in agriculture. In countries where government agencies opted to nurture and promote organic farming, official support for biotechnology is modest. In turn, a modest biotechnology industry provides further stimulus to deem regional or organic specialization as a viable economic strategy for particular groups of farmers. In this setting, cabinet officials are not subject to cross pressures, as consumers and producers do not insist on contradictory courses of action. For officials, rejecting applications for GM plants/products does not cost domestic goodwill or provoke powerful business leaders. It makes financial to shun GMO in order to protect agriculture from contamination by genetically engineered seeds and political sense to avoid GMO in order to heed consumer objections. Table 4 shows the number of notifications of environmental releases of GMOs under Directive 2001/18/EC by member states. Many of the most hostile countries do not have an impressive biotechnology industry.

[Table 4 on GMO releases about here]

We turn now to an actual description of how our model works. In the next two sections, we examine two sets of case studies, namely one set that fits the theory and another set that seems to fall outside our model.

## **Cases that confirm the theory: Austria - the Netherlands – France & Italy**

Austria, France, Italy, and the Netherlands represent cases that match our model. Austria and the Netherlands are both environmental pioneers with strong traditions of civic action and participation. But Austria is completely and unrelentingly hostile to the entire concept of genetic engineering of plants and crops while the Netherlands is more tolerant and supportive. Of course, Austria has an impressive organic farm sector while the Netherlands excels in modern commercial farming. Protest in the Netherlands centered on environmental risks and possible long-term health implications while in Austria NGOs focused on those risks but also on food quality, superior Austrian ingredients, and struggling Alpine farmers.

### **Austria**

Central to Austria's position of "absolutely not" is the Austrian environmental movement (Wagner et al. 1998). Under its influence many citizens came to regard green biotechnology as analogous to nuclear energy, with both having incalculable risks and minimal consumer benefits. In 1978, societal groups organized a people's initiative to ban development of nuclear power in Austria. Chernobyl proved doomsayers right in 1986, which later increased the risk perception of GM food (Torgersen 2001). The aftermath of the successful fight against nuclear power spilled over into mass protest against green biotechnology. Building on earlier strategies, the environmental movement convinced twenty-one percent of the population to sign a people's petition (1.23m signatures) to ban GM food in spring 1997 (Torgersen 2001). The Austrian government subsequently banned GM plants and food and required that products with GMO be correspondingly labeled. Austrian retailers also pulled products containing GM matter off their shelves.

Austrian governments sided with the anti-GMO movement because they had already quietly opted for another kind of agriculture and GM technology did not mesh with the new agri-environmental direction. Agricultural policy took on a strong ecological dimension, with organic farming -- which can be profitable on a small cultivated area -- becoming the survival strategy of low intensity Alpine farmers. The ministry of agriculture and established corporatist agricultural organizations ignored the first wave of organic farmers in the early 1980s. But the ministry of agriculture switched direction in the late 1980s under the leadership of the People's party and established a special subdepartment to extend direct assistance to this farm sector in the shape of general subsidies, marketing strategy, certification and issuance of the "eco-label." In the early 1990s, the social democratic-Christian Democratic government adopted an "eco-social market" policy to secure the livelihood of a shrinking farming sector. Subsequently, the organic farming association expanded its membership rapidly and grew from 200 to 20,000 farmers (Hofer 2000: 159).

To encourage organic farming and make this sector viable and profitable, official campaigns celebrated locally grown food starting in 1994 and required labeling to indicate the product's origin, its quality and independent (i.e. family-owned) control. Public messages reiterated that organic farming equaled superior food quality, which was part of Austria's national identity and which represented a better option than EU productivist, polluting, agro-business (Hofer 2000; Sassateli and Scott 2001).



The success of organic farming fostered pride in Austria's food production. Austrians believe that they enjoy higher food standards than other countries. This faith in the superiority of Austrian-grown products came into play when the debate on GMO began. Opponents of GMO pointed out that organic farming and good food quality were part of Austria's national identity (Wagner 1998). This advantage was first threatened by a precipitous drop in food prices after accession in 1995. Farmers and consumers who favored ecologically sustainable farming worried about the long-term consequences of this downward price pressure. In addition, green biotechnology would hasten the demise of this vulnerable sector if it was not confined or banned altogether from Austria.

Political consensus on how to address declining farm incomes and preserve delicate landscapes emerged in the early 1990s and centered on encouraging value added food production. Under pressure by consumers, organic farmers, and NGOs, politicians yielded to demands to keep Austria GM-free. Moreover, this concession meshed with prevailing orientation of decision makers. Ministries of the environment and agriculture each lent support to the campaign to ban GM technology because of the threat to organic farming. In the Netherlands, in contrast, the ministry of the environment was ignored while agriculture dominated and controlled agricultural policy. In Austria, a consensus prevailed across the political spectrum that GMO constituted a threat to the livelihood of a small group of farmers who occupied marginal land but grew food deeply appreciated by the Austrian consumer.

## **Netherlands**

One in eight Dutch adults belongs to Greenpeace Netherlands. According to some, Greenpeace has been the most prominent NGO in the fight against GMO. Yet its considerable presence and popularity in the Netherlands has not turned the Dutch public or government passionately anti-genetic engineering. Dutch officials supported each application to import or sell GM product. Dutch citizens compared to their counterparts in other 'green' countries are surprisingly accepting of GM technology.

The Netherlands has a negligible organic farming sector and no tradition of regional specialty foods, and it has a sizable green biotech sector based on the number of releases of GM experiments. In fact, officials are on record as supporting green biotechnology because it can combat world hunger. Of equal if not greater importance is the fact that the Netherlands has a significant agro-science industry and it is the third largest exporter of food products in the world, after France and the US (Mudeva 2004). In 2004, the Ministry of Environment gave permission to continue field trials of GM apple trees while the Ministry of Agriculture has urged relevant interest groups to reach voluntary agreements on financial compensation in case of accidental GMO contamination of conventional crops.<sup>2</sup> This would clear the way for the commercialization of GM plants.

As in Austria, agriculture was well organized and integrated in decision making thanks to typical corporatist networks. After 1945, farmers and the Ministry of Agriculture determined policy and

---

<sup>2</sup> <http://www.consubiotech.nl>

kept outsiders away. While in Austria the emerging problem in the 1980s was what to do with marginal undercapitalized farms, the Netherlands faced the opposite challenge: what to do about chronic overproduction and excessive waste from livestock farming? Eventually, the Ministry of Agriculture was forced to enter into cooperation with environmental organizations and other public bodies to address the agri-environmental crisis. But it resisted the idea of encouraging organic farming and of establishing conversion funds for farmers eager to switch. Officials expressed little interest in establishing a uniform eco-label. (Hennis 2005: 87-94).

By the mid-1990s, the corporatist system of interest representation ceased to function, as farmers' organizations fell apart and reconstituted themselves into sectoral federations and regional organizations no longer representing agriculture as such but rather different product and production interests. At the same time, state agencies have taken a more market-oriented attitude and have withdrawn from direct intervention in agriculture. While proposals were circulating to foster organic farming, the Ministry of Agriculture paid scant attention and only reluctantly began to promote organic farming in order to tap EU support for conversions from conventional to eco-farming. In reality, food processing industries were more interested than public agencies in finding a substitute for intensive farming (Hofer 2000). Because few efforts were undertaken to establish a consumer market for 'superior' food products, public campaigns did not mention any risks posed by GMO to 'superior' Dutch produce/products. Consumers demanded choice in the form of labeling and tracing information. They cared less about the impact of green biotechnology on farming itself, since Dutch society is accustomed to viewing farming as a capital-intensive enterprise. Green biotechnology blended in with the orientation of Dutch farming, which is still heavily vested in competing on international markets. Pollution and environmental degradation are major concerns, but the solution envisioned does not lie with converting Dutch farming into a bio-dynamic sector. Rather, technical solutions are sought to get rid of excessive manure and overuse of chemicals, and the mental map of policy makers does not include a vision of the Netherlands as a primary producer of ecologically friendly products and produce.

## **France and Italy**

France and Italy have enclaves of agricultural sectors still devoted to traditional methods of farming and producing a sizable array of PDO products. They are also countries with probably the strongest culinary identities and Italy is home to the "slow food" movement and the largest organic farming sector in Europe. This sector developed locally as committees of consumers and producers established a system to market organic produce (mostly fruits, vegetables, but also some livestock) and introduced certification/inspection labels. Growth in organic farming in Italy has been exponential and the numbers of farmers has increased from 1300 farmers in 1990 and over 44,000 in 2003. Because growth of organic products/produce was local, at some point there was a veritable tapestry of dozens of associations of organic farmers found in every region of Italy. In the late 1990s, a federative network emerged with sixteen certification agencies to bring transparency and rationalization to the system. Still, compared to many other countries, organic farming is a grassroots movement led by local interests and monitored by separate parapublic agencies.<sup>3</sup>

---

<sup>3</sup> [http://www.organic-europe.net/country\\_reports/italy/default.asp](http://www.organic-europe.net/country_reports/italy/default.asp)

France had an impressive organic farming sector in the 1980s and the first standards for organic agriculture were published in 1972 by the producers' association *Nature & Progrès*. The state passed legislation on organic agriculture in 1981 and the state logo for organic products, the AB-Logo (*Agriculture Biologique*), was launched in 1985. In the 1980s, France was the most important European supplier for organic products, and 40 per cent of the Western Europe's organic land was located in France. However, by 2004, a mere 2 percent of utilized agricultural area was dedicated to organic farming and 11000 farmers were certified, which amounted to about 2 percent of all farms.<sup>4</sup> For the most part, as in the Netherlands, state agencies and public officials are focused on increasing export value of French food products and take a productivist approach.

Nevertheless, in spite of the underdeveloped organic farming sector, France (and Italy) are a good example of how popular opinion views the risks or dangers of GMO in wider agro-social terms. In both France and Italy, a connection is laid between innovations related to the advances of green biotechnology and the livelihood and survival of a marginal farming sector, representing some essential part of the nation's identity.

Governments were on the whole supportive of genetic engineering and both countries have sizeable agricultural biotech industry. The French government poured public funds into laboratories with the hope of becoming a leader in the field. Accordingly, by 1996 French research and development centers planted test crops of transgenic rice. Moreover, Novartis' GM corn seeds were authorized in France in 1997 (Boy and de Cheveigné 2001). Thus, potential conflicts of interest and/or sentiment between the green biotech industry and traditional agriculture and culture exist. This conflict may help explain why the governments of France and Italy were less opposed than their respective publics to GM foods -- at the EU level France and Italy cast only four and five "no" votes respectively, despite considerable public opposition to GMO in France in particular.

Eventually, public pressure forced French governments to make a 180 degree turn. Civic mobilization did not come about because of strong environmental activism. Greenpeace France went into the GM controversy small, in financial straits, and with falling membership compared to other European countries (Bonny 2003). Instead, conflicts between different kinds of farmers had led to the formation of a new interest organization, *Confédération Paysanne*, to defend the view of farming as sustaining employment, rural life, and quality of regional products. Although not opposed to modernization, the CP was founded in 1987 to lobby for farmers who do not share the capital-intensive business model of commercial cereals farmers or livestock entrepreneurs and to promote the idea of sustainable agriculture (Hennis 2005: 111).

For a while the French state excluded CP from its corporatist network and ignored the particular agenda of small scale farms in regions other than where intensive farming was practiced. But the CP continued to attract members and in 1995 it won 20 percent of the votes in the Agricultural Chamber, which negotiates and interacts with state agencies. At the same time, the organic

---

<sup>4</sup> <http://www.agencebio.org/upload/actu/fichier/Chiffres2004%2Epdf>

farming sector also set up its own organization in 1992, which includes food processors as well as producers. Its financial resources are limited and its membership is modest. However, the member organizations are regularly consulted with respect to the subsidies and promotion schemes available through the CAP (Hennis 2005: 124-25).

The main issue, here, is that Greenpeace France was insignificant but it cemented an alliance with *Confédération Paysanne*, which proved a potent combination. The CP stands in sharp contrast to commercial farms, which are business establishments and which were considered by many French as major polluters in the 1990s. The French state also recognized in the early 1990s that farming itself accelerated depopulation of the countryside because only modernized large units were able to take full advantage of the support system of the CAP. Public authorities were also forced to acknowledge that farming causes pollution and degradation of the soil and natural water supply. The emergence of CP, which fights on behalf of sustainable farming and preservation of the French culinary tradition, resonated strongly with the French public and it thus exerted influence over and beyond its organizational reach and its members' economic importance (Heller 2002).

In France, GMO is ideologically linked with the dangers of economic liberalization, commodification, and the loss of autonomy -- issues at the heart of contemporary French social and political debates (Heller 2001). Many French associate autonomy with the distinctiveness of their particular system of food production. As the second largest food exporter in the world, agriculture is important to the French economy. But many consumers stress the superior quality of home-grown French products, something that is not mentioned by Dutch consumers. For example, in a public opinion survey from December 2000, 64 percent of respondents were of the opinion that French agricultural products were better than similar products from other large exporting countries such as the US, New Zealand, Argentina, etc. Moreover, 69 percent agreed with the statement that French consumers care more about quality than price. Accordingly, 81% of respondents thought French farmers deserved aid even if it meant French products were more expensive than imports.<sup>5</sup>

This view of agriculture is not representative of the actual structure of French farming, which consists of huge agri-businesses competing in international markets with monocultures such as cereals and livestock. But these sentiments were exploited by CP and NGOs and convinced French leaders to abandon green biotechnology and keep GM products off the market. It can be argued that the anti-GMO campaign is a defeat for big agriculture. Commercial farms dominate and determine government policy, and they are not opposed to green biotechnology (Hennis 100-101). Though big agriculture is not strongly in favor, it is capital-intensive and so would not be opposed to biotech technology in principle. But it would be difficult if not suicidal for French decision makers to ignore the entreaties of the French people to protect the "French patrimony" against American agricultural innovations.

Italy is very similar to France although commercial agriculture is less export oriented. But there is a strong tradition of regional cuisine and food specialties. As in France, GMO is linked with mass production of food and considered inconsistent with the desire of the consumer to preserve

---

<sup>5</sup> [http://www.tns-sofres.com/etudes/pol/120101\\_agri\\_r.htm](http://www.tns-sofres.com/etudes/pol/120101_agri_r.htm)

high quality and unique food products. Likewise, Italian agriculture is split between more capital intensive commodity producers and smaller traditional farmers, and not all farmer associations are opposed to GMO. But the opponents of GMO speak a language that resonates with the public and that is supported both financially and logistically by NGOs with international networks. In both Italy and France, farm organizations claimed that GMO would undermine the value and status conferred by the system of PDO & PGI assignments of products and undermine Italy's international competitiveness in global food markets (Ansell Maxwell, forthcoming; Sassatelli and Scott, 2001).

Like in France, Italy's association of small farmers, *Coldiretti*, forged an alliance with consumer and environmental groups. *Coldiretti* engages in both conventional lobbying and in less conventional action. Its main issue was the defence of unique Italian products from territorial homogenization and delocalization. Considering popular support for this message, local politicians and political groups helped draft legislative bills declaring various regions GM-free. In fact, the associations of organic consumers and producers were at the forefront in pushing for guarantees that their locality will remain GM-free. Politicians joined the debate on the side of the GM opponents. The rightwing *Alleanza Nazionale* proclaimed that the inclusion of GMOs in the agro-food system would destroy Italy's reputation of food excellence. For many Italians, the agro-food patrimony of a nation is part of its broader cultural patrimony and therefore it should not be changed in its nature, but enhanced and affirmed in the global competition (Ansell, Maxwell, Sicurelli forthcoming).

Both French and Italian consumers perceive GMO contrary to national food priorities. This sense of foreboding predated the arrival of policy entrepreneurs who turned GMO into a national issue. But it helps to understand why politicians quickly succumbed to the mobilization of anti-GMO forces. Their apprehension and resistance touch a core facet of what it means to be Italian or French.

### **Cases that fall outside the theory: Finland and Sweden and FRG**

Apparently, three cases do not fit the model, and they will be examined next. Germany, Finland, and Sweden are green states with medium to large organic farming sectors yet express tolerance towards green biotechnology. How to account for these exceptions?

We speculate that agriculture in Northern latitudes acquired an image that is very different from either southern or northwestern Europe. On the one hand, Swedish and Finnish farmers did not metamorphose into export giants competitive in international markets. On the other, food producers are not heirs or conservers of a unique culinary past. Obviously, farmers/peasants are of historical significance in Scandinavia since they are part of the state/nation building narrative. But they are not repository of an ideal past that urban professionals seek to preserve for the sake of remembering a time when consumers and producers formed one symbiotic unit and lived in perfect harmony. In fact, agriculture is mainly recalled for its deep and widespread poverty that many tried to escape by emigrating to North America. Moreover, climatic conditions are unkind to extensive and varied farming and food production consists of a limited array of crops able to thrive in a cold and short growing season. In addition, the cold naturally restricts the incidence of pests and reduces the need for pesticides. Thus, Finnish and Swedish discourse on agriculture

leaves out two distinct issues. Instead of the Dutch/Danish/German concerns about the negative impact of capital-intensive farming on the environment, Swedes and Finns confront an agriculture that is less polluting and less harmful to the ecology. Then, instead of agonizing about losing a distinguished culinary tradition due to the steady abandonment of farms and potential pollution of conventional crops by GM plants, Swedes and Finns worry less since they do not possess this kind of food heritage.

Although Sweden is one of the biggest countries in Europe, its arable land amounts to about 7 percent of the total land area. The rest of the land is covered by forests, mountains, marshlands and lakes. Since accession in 1995, farming has become more intensive and the average size of farms has grown. The use of pesticides and chemical fertilizers has led to nitrogen leakage and soil depletion, and loss of biotopes and plant and animal species are acknowledged as such effects. Attention to the environmental costs of farming accelerated after accession and after the Swedish Parliament introduced a new environmental program in accordance with existing EU regulations.

The largest growth of organic farming took place after 1995.<sup>6</sup> EU support schemes were instrumental in its rapid expansion. However, the Swedish consumer movement had already embarked on a national program to convert 10 percent of arable land into organic farming. The association of Ecological Farmers used its visibility to publicize the benefits of organic farming and to push eco-products into the marketplace. It has good ties with the conventional farmer's federation and they try to coordinate policies. Thanks to a strong consumer movement, Sweden can also claim the biggest ecological food retailer in Europe. (Croall 1999). The Green *Konsum* supermarket chain (founded by the consumer co-operative), with its 450 shops, carries the largest selection of eco-foods, which amount to 4.5 percent of total sales in 2003.<sup>7</sup>

It is thus a puzzle why the public (especially in the 2002 public opinion figures) and in particular the government are not more resistant to GMO, though public opinion is less friendly than that of the Netherlands or Finland. Still, we would expect a public up in arms to keep GMO out of Sweden. Aside from the lack of nostalgic connections to farming/farmers, which describes the relationship between food consumers and producers in France and Italy, another factor could be the kind of organic farming practiced in Sweden. Grass/clover accounts for nearly 70 percent of organic land use. The largest eco-product is milk from cows, which graze on untreated natural grasslands. So there is little danger that pollen from nearby GM crops would contaminate organically or even conventionally grown crops in Sweden, because Sweden barely grows any of the crops for which there are GM varieties available. Organic farming mostly fits with a discussion on nutritious foods and food safety. In fact, KRAV, the semi-public association which represents farmers, processors, trade and also consumer, environmental and animal welfare interests, is in charge of food inspection and certification and defines its objectives as promoting sustainable development and healthy food options. Moreover, it would appear that there is basically no market for products containing GM matter in Sweden. Food labeling regulations in Sweden are strict and under the supervision of KRAV, which opposes GMO. The retail sector is geared to carrying organic products, many of which are imported, and is unlikely to sully its

---

<sup>6</sup> [http://www.organic-europe.net/country\\_reports/sweden/default.asp](http://www.organic-europe.net/country_reports/sweden/default.asp). Accessed March 19, 2005.

<sup>7</sup> [http://www.organic-europe.net/country\\_reports/sweden/default.asp](http://www.organic-europe.net/country_reports/sweden/default.asp). Accessed March 19, 2005.

reputation by selling GM products. Thus, while Swedish citizens resist GMO to about the same extent as the Italians, they are protected from exposure to GM products by the KVAV system and their native climate.

Thus, the Swedish government supports GMO as a potential growth sector, and Sweden is on the EU-15 median in the size of its green biotech industry. Sweden's climate is not suitable for growing currently available genetically engineered seeds such as soybeans and corn. (Interestingly, KRAV publishes a list of GM seeds on the market and hardly any of the commercially available seeds are likely to be planted in Sweden.<sup>8</sup> So the Swedish government can vote to support GMO at the EU level, knowing that because of Sweden's northern latitude and cooperative consumer movement GM products will not appear in Swedish stores and the most popular GM crops will not be grown. In turn, the Swedish public can tolerate its government's stance on this issue because it and its farmers are well protected from exposure to GM crops and foods.

Finland has a substantial organic agriculture sector by European standards and a weak green biotech sector. Yet Finnish public opinion is characterized by very high levels of acceptance of GM foods and the Finnish government has consistently voted "yes" for GMO applications at the EU level. Here, too, we speculate that farming and agriculture play a different historical and symbolic role. Most of the farming in Finland consists of animal husbandry. About 80 percent of the agricultural area is used as pasture or for arable fodder cropping. Farms are small and most farmers earn extra income from forestry. Based on product specialization and farm size, most of Finland's agriculture is low intensity.<sup>9</sup> In addition, Finland has striven to leave rural poverty and farming behind by embarking on a strategy of economic growth through high-tech products. Late industrialization and the long period of agrarian poverty through the early 1960s seems to have engendered different views than elsewhere on technology, the agent (e.g., Nokia cellphones) which finally brought economic growth and higher standards of living. In the Finnish popular imagination, biotechnology is identified with information technology, which in turn is considered the road to future prosperity. Although biotechnology is a small economic sector in Finland thus far, public officials have targeted this field on par with information technology of the 1990s (Rask 2003; Rusanen 2000).

Whereas farming has played a major role in the collective history of the Finnish people, its association is with extreme poverty and a reminder of how prosperous Finland has become in a short period of time. Finnish farming did not contribute to the emergence of a unique food culture that instilled the consumer with pride for the superior 'quality of food' found in the domestic market. Reliance on capital-intensive farming techniques is low and thus backlash against overuse of chemicals and against pollution is modest. Furthermore, while some small economies specialized in food processing and became major food exporters, Finnish agriculture is at a disadvantage because of the cold and short growing season.

---

<sup>8</sup> <http://arkiv.krav.se/arkiv/internationellt/GMOrisklist.pdf>

<sup>9</sup> [http://www.organic-europe.net/country\\_reports/finland/default.asp](http://www.organic-europe.net/country_reports/finland/default.asp)

Germany is the other odd case. Eco-farming has witnessed enormous growth in the last ten years, going from 1,6 percent to 4.3 percent of utilized agricultural area and from 5.866 farms (1 percent of farms) in 1994 to 16.476 farms (4 percent of farms) in 2003.<sup>10</sup>

As eco-farming took off in the early 1990s, organic farmers created their own umbrella federation with a dozen regional and sectoral member organizations (regional association representing organic farmers in a part of a state or product organization representing organic viticulture). The AGOL (organic farmer federation) has access to relevant public bodies and regularly participates in policy deliberations. However, it experiences serious competition from the main Farmers Union, the DBV, which is extremely well connected and possesses deep pockets. The DBV has coopted organic farming by recognizing it as one of two pillars of German agricultural policy. Together with ministry of Consumer Protection, Food, and Agriculture, in the late 1990s the DBV acknowledged that farmers produce foodstuffs as well as manage landscape, preserve natural areas, and revitalize rural areas. Because of the political weight of the Farmers Union, the organic farming or food interests struggle to be heard and be treated as an independent voice. In fact, the smaller farming interests must work with the DBV if they want to exert any influence (Hennis 160-68).

Although the Farmer's Union has become 'greener' it still supports genetic engineering. But in a situation unusual for Europe, the German federal government combines the policy domain of agriculture with consumer protection under one roof. In charge of this ministry is a Green politician, Renate Künast who is personally opposed to genetic engineering. Yet the single largest constituency of the ministry of agriculture, food, and consumer protection is the highly visible Farmers' Union. Officials are exposed to strong crosscurrents, having to reconcile the agenda of commercial farmers with the expectations raised by environmental and consumer interests. The resulting stand-off has yielded messy compromises. Scientific experts and cabinet ministers abstain from voting in Community settings, reflecting the deep divisions inside the Ministry itself and between different cabinet officials. Its zero 'no' votes are in fact eight abstentions. Agricultural interests have historically controlled the ministry of agriculture and after its reorganization they still constitute a powerful presence, but their political reach is checked by the layer of top officials who represent a very different vision of where German agriculture should be in the next ten years.

On the domestic front, it would appear that consumer interests and environmental concerns have triumphed. In late 2004, Parliament (Bundestag and Bundesrat) passed a law permitting the planting of GM crops, but the law of compensation holds the farmer who plants GM crops responsible for any accidental genetic contamination of conventional fields even if there is no direct proof that the field of a particular farmer contributed to the cross-pollination. The law states that all fields within a certain distance of conventional fields are held jointly liable if the contamination of a GMO-free area is proved. This will discourage many farmers from switching to GM crops (Stafford 2004 & 2005).

It could be that a return of a Christian-democratic coalition would shift the balance to a more GMO friendly climate because a member of the Farmers' Union held the position of minister of

---

<sup>10</sup> [http://www.organic-europe.net/country\\_reports/germany/default.asp#3](http://www.organic-europe.net/country_reports/germany/default.asp#3), Accessed March 18 2005.



agriculture in previous CDU-led coalitions and both the CDU and Liberal party have expressed dismay at Künast's "ideologically conditioned go-it-alone" law.<sup>11</sup> Germany is therefore an exception because of the peculiar organization of its ministry of agriculture, which at this point is firmly in the hands of the Green party and institutionally also oversees the safety and regulation of the consumer market. To some extent, Germany underscores the central role played by agricultural decision makers who control resources that either boost alternative forms of food production or stifle their growth.

## Conclusion

In this paper we argue that the presence of an alternative food production regime and its political organization shape the depth, breadth and strength of anti-GMO sentiments. Opponents paint the risk factors of green biotechnology in broad and dramatic terms and their narrative links agricultural genetic engineering to an attack on a fragile farming sector that offers consumers an alternative to heavily processed homogeneous and undifferentiated (and perhaps unsanitary) agro-industrial products. Because widespread protest and opposition is framed by a visceral discourse about food culture, regional development, habitat preservation, wholesome natural foods, and consumer sovereignty, the choices of government officials are constrained, especially in light of the fact the pro-GMO forces are scattered and inconsequential.

Not all European countries have become equally resistant to biotechnology. Regardless of the environmental consciousness of a country, some member states are clearly more GMO-tolerant than others. We explain this variation by comparing the size of organic farming and regional specialization and then tracing the presence of this traditional 'anti-commercial' sector to decisions made by ministries of agriculture. The existence of alternative or surviving small farms is indicative of an appreciation of good food that is fresh, tastes authentic, and is untreated by chemicals and fertilizers. When officials decide to promote an agriculture that is more in balance with the environment, consumers view genetic engineering as antithetical to the goals of preserving nature, managing landscape, and guaranteeing pure healthy foods.

---

<sup>11</sup> Regulation: GM policy shift in Europe - Common coexistence rules planned" (30 Jan 2005)  
<http://www.gene.ch/genet/2005/Jan/msg00049.html>

## **Bibliography**

- Allum, Nick and Sally Staes. 2003. *Europeans and Biotechnology*. London: Science Museum.
- Ansell, Chris, Rahsaan Maxwell, and Daniela Sicurelli. Forthcoming "Protesting Food: NGOs and Political Mobilization in Europe," Christopher Ansell and David Vogel, eds. *Why the Beef? The Contested Governance of European Food Safety*.
- Belletti, Giovanni, et. al. 2003. "Possibilities of the New Italian Law on Agriculture." Guido van Yuylenbroeck and Guy Durand, eds. *Multifunctional Agriculture*. Burlington, VT. Ashgate. Pp 143-168.
- Bernauer, Thomas. 2003. *Genes, Trade, and Regulation: The Seeds of Conflict in Food Biotechnology*. Princeton: Princeton University Press.
- Bonny, Sylvie. 2003. 'Why are most Europeans opposed to GMOs? Factors explaining rejection in France and Europe,' *Electronic Journal of Biotechnology*: 6/10. Available at <http://www.ejbiotechnology.info/content/vol6/issue1/full/4/#27>
- Boy, Daniel and Suzanne de Cheveigné. 2001. 'Biotechnology: A Menace to French Food.' in G. Gaskell and M. W. Bauer (eds.), *Biotechnology 1996-2000: The Years of Controversy*, London: Science Museum, 181-190.
- Buller Henry. 2002a. "Re-Creating Rural Territories: LEADER in France." *Rural Sociology*. 191-99.
- Buller, Henry. 2002b. "Integrating EU Environmental and Agricultural Policy." Andrea Lenschow, ed. *Environmental Policy Integration*. Sterling, VA: Earthscan. Pp. 103-126.
- Burchell, Jon. 2002. *The Evolution of Green Politics*. Sterling, VA: Earthscan.
- Commission of the European Communities. 1996. *Eurobarometer: The Europeans and modern biotechnology* 46.1. Brussels, Commission of the European Communities.
- Commission of the European Communities. 2002. *Eurobarometer: The Attitudes of Europeans towards the Environment*, 58. Brussels, Commission of the European Communities.
- Croall, Stephen. 1999. *A new Swedish model: safe, clean food*. Stockholm: Swedish Institute [http://www.sweden.se/templates/cs/Article\\_2287.aspx](http://www.sweden.se/templates/cs/Article_2287.aspx)
- Da Cruz Vilaça, José Luís 2004. *European Public Law* 10: 369-407
- Douglas, Mary. 1992. *Risk and Blame*: New York, Routledge.
- Dunlop, Claire. 2000. "GMOs and Regulatory Styles." *Environmental Politics*, 9: 149-55.

- Durand, Guy. 2003. "The French Experiences with Territorial Farming Contracts." Guido van Huylenbroeck and Guy Durand, eds. *Multifunctional Agriculture*. Burlington, VT: Ashgate. Pp. 129-142
- Echols, Marsha A. 1998. "Food Safety Regulation in the European Union and the United States: Different Culture, Different Laws," *Columbia Journal of European Law* , 4: 525-544
- Fjæstad, B, et.al. 2001. "Sweden: The Lid is on, but for how long?" George Gaskell and Martin W. Bauer, eds. *Biotechnology 1996-2000: The Years of Controversy*. London: Science Museum. Pp. 267-281.
- Heller, Chaia. 2002. 'From Scientific Risk to Paysan Savoir Faire: Peasant Expertise in the French and Global Debate over GM Crops,' *Science as Culture*, 11: 5-33.
- Heller, Chaia. 2001. 'From risk to globalization: discursive shifts in the French debate about GMOs,' *Medical Anthropology Quarterly*, 5: 25-8.
- Hennis, Marjoleine. 2005. *Globalization and European Integration: The Changing Role of Farmers in the CAP*. Boulder: Rowman & Littlefield.
- Hessler, Uwe. 2004. "Schröder's Reluctant Cabinet To Allow GMO Foods," *Die Welt* (Feb. 11, 2004) <http://www.dw-world.de/dw/article/0,1564,1112230,00.html>
- Hofer, Karin. 2000. 'Labelling of Organic Food Products,' A. Mol, D. Liefferink, V. Lauber (eds.), *The Voluntary Approach to Environmental Policy*, New York: Oxford University Press, 156-192.
- Huylenbroeck, Guido van, Guy Durand. Eds. 2003. *Multifunctional Agriculture*. Burlington, VT: Ashgate.
- Joly, Pierre-Benoit and Claire Marris. 2003. 'Les Américains ont-ils accepté les OGM? Analyse comparée de la construction des OGM comme problème public en France en aux États-Unis,' *Cahiers d'économie et sociologie rurales* 68/69:12-45.
- Levidow, Les, Susan Carr, David Wield. 2000. "GM crops in the EU: Regulatory Conflicts as Precautionary opportunities," *Journal of Risk Research* 3: 189-208.
- Liefferink, Duncan and Mikael Skou Andersen, eds. 1997. *European Environmental Policy: The Pioneers*. Manchester University Press.
- Lupton, D. 1999. *Risk*. New York: Routledge.
- Meins, Erika. *Politics of Public Outrage: Explaining Transatlantic and Intra-European Diversity of Regulation on Food Irradiation and Genetically Modified Food*, Hamburg: Lit Verlag,
- Mudeva, Anna. 2004. "Controversial Dutch co-existence rules." *Reuters* (2 Nov).

- Nelkin, Dorothy. 1989. Communicating Technological Risk: The Social Construction of Risk Perspection. *Annual Review of Public Health*, 10: 95-113.
- Pollack, Mark and Gregory Shaffer. 2001 'The Challenge of Food Safety in Transatlantic Relations', in M. Pollack and G. Shaffer (eds.), *Transatlantic Governance in the Global Economy*. Oxford: Bowman & Littlefield, 162–70.
- Potter, Clive. 1998. *Against the Grain: Agri-Environmental Reform in the US and EU*. New York: CAB International.
- Rask, Mikko. 2003. "The Problem of Citizens' participation in Finnish biotechnology policy," *Science and Public Policy*, 30: 440-48.
- Ratzan. Scott. Ed. 1998. *The Mad Cow Crisis*. New York: New York University Press.
- Rusanen, T., et al. 2001. "Biotechnology in Finland: Transcending Tradition," G. Gaskell and M. Bauer (eds.), *Biotechnology 1996-2000: The Years of Controversy*. London: Science Museum, 172-180
- Sassatelli, Roberta and Alan Scott. 2001. "Novel Food, New Markets, and Trust Regimes," *European Societies*, 3:213-44.
- Stafford Ned. 2004. "GM law 'a blow for science,' *The Scientist* (December 1, 2004) <http://www.biothai.org/cgi-bin/content/news/show.pl?0420>
- Stafford, Ned. 2005. GM policy shift in Europe. *The Scientist* (26 Jan) <http://www.biomedcentral.com/news/20050126/02/>
- The New Farm. 2004. "Germany's new GMO law fails to appease either side of the argument" (February 11, 2004) [www.farm.org](http://www.farm.org)
- Torgersen Helge, et.al. 2001. "Austria: Narrowing the Gap with Europe," George Gaskell and Martin Bauer, eds. *Biotechnology 1996-2000: The Years of Controversy*. London: Science Museum. Pp. 131-144.
- Torgersen, Helge et.al. 2000. "Europe the Spoil-Sport: On the Europeans. Reluctance Towards Genetically Modified Food," *Journal of Biolaw and Business* 3: 4-10
- Wales, Corinne and Gabe Mythen. 2002. Risky Discourses: The Politics of GM Foods. *Environmental Politics*, 11: 121-44.
- Wagner, Wolfgang, et al. 1998. 'Austria Biotechnology public sphere,' in *Biotechnology* London: Science Museum. 15-17
- Young, Alasdair. 2003. "Political Transfer and Trading Up? Transatlantic Trade in Genetically Modified Food and U.S. Politics," *World Politics* 55: 457-484.



Table 1: Levels of government support and public acceptance of GMO: Number of “no” votes on GM issues cast by member states at EU level (first column); and public acceptance of GM foods (columns 2-4), with countries ordered in descending order of number of ‘no’ votes.

Country	Government # “no” votes (out of 8 total)	Public Opinion		
		1996	2002	1996-2002 average
Greece	8	49	24	36.5
Austria	8	31	47	39
Denmark	8	43	45	44
Luxembourg	8	56	35	45.5
Italy	5	61	40	50.1
France	4	54	30	42
Portugal	3	72	68	70
Belgium	1	72	56	64
Britain	1	67	70	68.5
FRG	0	56	48	52 (EU median)
Netherlands	0	78	65	71.5
Ireland	0	73	70	71.5
Finland	0	77	70	73.5
Spain	0	80	74	77
Sweden	0	42	58	50 (below EU median)

Table 2: Organic farming in the EU, with countries ranked from highest to lowest, based on organic farming as a percentage of total utilized agricultural area in 2000.

Country	Organic farming as % of utilized agricultural area	Organic farms as % of country's total farms	Above EU-15 median for column 1
Austria	8	9	Yes
Italy	8	2.5	Yes
Finland	7	6.2	Yes
Denmark	6	6	Yes
Sweden	6	4.5	Yes
Britain	4	1.6	Yes
Germany	3	2.8	Yes
Netherlands	1.6	1.1	Median
Spain	1.5	1	No
Belgium	1.5	1	No
France	1.2	1.4	No
Portugal	1.2	< 1	No
Luxembourg	0.8	1.1	No
Ireland	0.8	< 1	No
Greece	0.4	< 1	No

Table 3: Designations of Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) in the EU, with countries ranked from highest to lowest in such designations, through June 2004, and Percent of agricultural holdings of less than 5 hectares

Country	Number of PDO/PGI Designations	Percentage of total farms under 5 hectares	Above EU-15 median in PDO/PGI designations
France	144	29.1	Yes
Italy	138	78.3	Yes
Portugal	91	78.8	Yes
Greece	83	76.7	Yes
Spain	76	57.5	Yes
Germany	24 & 43*	24.9	Yes
Britain	28	23.2	Yes
Austria	12	36.7	Median
Netherlands	6	31.1	No
Belgium	4	30.7	No
Luxembourg	4	22.5	No
Ireland	3	8.5	No
Denmark	3	3.4	No
Sweden	2	12.0	No
Finland	1	10.5	No

\* 43 different beers and mineral waters.

Source: [europa.eu.int/comm/eurostat/newcronos/queen/display.do?screen=detail&language=...](http://europa.eu.int/comm/eurostat/newcronos/queen/display.do?screen=detail&language=...)  
 Accessed 9/13/04 (pathway: [europa.eu.int](http://europa.eu.int) → statistics → agriculture and fisheries → free data) and  
[http://europa.eu.int/comm/agriculture/qual/en1bbab\\_en.htm](http://europa.eu.int/comm/agriculture/qual/en1bbab_en.htm)

Table 4: Environmental releases of GMOs notified under Directive 2001/18/EC, 1991-2004, countries ranked high to low in terms of numbers of releases.

Country	Number of releases	Years of release notifications	Above EU-15 median in number of releases	# "no" votes
France	541	1992-2004	Yes	4
Italy	295	1993-2004	Yes	5
Spain	273	1993-2004	Yes	0
Britain	231	1992-2004	Yes	1
Netherlands	151	1991-99, 2001-04	Yes	0
Germany	143	1992-2004	Yes	0
Belgium	130	1992-2000	Yes	1
Sweden	79	1995-2004	median	0
Denmark	40	1992-2000	No	8
Finland	21	1995-2001, 2004	No	0
Greece	19	1996-99	No	8
Portugal	12	1993-95, 1997-99	No	3
Ireland	5	1997, 1998	No	0
Austria	3	1996, 1997	No	8
Luxembourg	0		No	8

Source: "Deliberate Field Trials," [http: biotech.jrc.it/deliberate/dbcountries.asp](http://biotech.jrc.it/deliberate/dbcountries.asp), accessed Jan. 11, 2005.

Table 5: Summary of Variables and Classification of Countries

Group One: Against GMO and for moratorium (and independent variables consistent with opposition to GMO)

Country*	Org/ Pdo	PubOp	VS	GrBio	PubOp	Total
A 8/0 *	Y	Y				3:0
L 8/0		Y				2:0
Dk 8/0	Y	Y				3:0
Gr 8/0	Y	Y				2:0
I 5/2	Y			Y		2:1
F 4/4	Y	Y		Y		2:1

Group Two: Friendly or on-balance-friendly to GMO and did not participate in moratorium (and independent variables consistent with that)

Country	Org/ Pdo	PubOp	VS	GrBio	PubOp	Total
NL 0/8				Y	Y	1:2
UK 1/6	Y			Y	Y	1:2
Irl 0/5					Y	0:1
E 0/2	Y			Y	Y	1:2
P 3/4	Y				Y	1:1
B 2/3				Y	Y	0:2

Group Three: Anomaly cases

S 0/7	Y	Y				3:1
Fin 0/8	Y				Y	2:1
D 0/0	Y			Y		2:2

\* The numbers next to the initials for each country are the number of “no” votes/ the number of “yes” votes. So for Austria, 8/0 means eight no votes and 0 yes votes.



**Table 6. Visibility of alternative small scale peasant organic farming associations**

	Organization Level	Recognized by Public Authorities	Subsidies/Marketing Strat. Organic Farming Laws
Austria	Medium - Many organizations	yes	high – private sector eco label
Belgium	few farmers	yes	modest - regionalized
Denmark	high – 65% of organic farmers – allied with one of two mainstream organizations	yes	high – state eco label
France	Organic farming low, but Small scale farming high	organic farming no family farming yes	moderate – focus is still on commercial farms – programs in place to combat depopulation includes support for different agricultural practices
Germany	subordinate to main Farmers union	Green party in control	multiple eco-labels, intensely regionalized, Support varies by State, FGovt 2010→20% of agric organic
Italy	numerous at regional/local level. Different objectives.	yes	high – 16 certification agencies –
Netherlands	low – many organizations		no – except in conformity with EU rules Different eco-labels
Portugal	barely any organic farmers		laggard, agriculture not fully modernized, impetus for organic came late and thru EU
Britain	small, varies by region		early history, but ignored by UK govt

