

Required Report: Required - Public Distribution

Date: November 13, 2023

Report Number: GM2023-0015

Report Name: Agricultural Biotechnology Annual

Country: Germany

Post: Berlin

Report Category: Biotechnology and Other New Production Technologies

Prepared By: Antonia Rudolf & Kirsten Luxbacher

Approved By: Kirsten Luxbacher

Report Highlights:

Decision making around GE crops is highly politicized in Germany. The German government is conflicted and has not issued an official statement on the EU Commissions proposal to deregulate the genetic engineering law yet. Society is divided as well. Recent polls indicate that the former strong public rejection of GE foods may become more differentiated. At the moment, there is no commercial GE crop production and practically no food labeled as containing “genetically modified organisms” (“GMO”) on the market. Despite this, Germany is home to world-class companies that develop and supply GE seeds globally from facilities outside the European Union. Germany’s livestock industry is a major consumer of imported GE soybeans for use as animal feed.

Executive Summary:

Germany is the most populous and economically powerful country in the European Union (EU). It is influential in agricultural policy, both within the EU and globally. Germans are generally open to new technology and willing to innovate but farming and especially agricultural biotechnology occupies a unique political space. German society is conflicted regarding agricultural biotechnology, and this is reflected in mixed government policies and messaging. For nearly a generation, German environmental and consumer activists have protested the use of biotechnology in agriculture – both in Germany and globally. Biotech test plots, which are used both as a research tool and are a required part of the EU regulatory approval process, were destroyed by vandals so often that test plots are no longer attempted in Germany today. Public rejection of GE crops has been widespread for decades and still prevails. However, recent polling results indicate that public opinion of GE foods may be becoming more differentiated. A representative survey conducted by the German Food without Genetic Engineering Association (Verband Lebensmittel ohne Gentechnik e.V.; VLOG) from January 2023 shows that around 58 percent of the German population are still in favor of strict regulation of agricultural biotechnology and oppose the European Commission's proposal to deregulate the genetic engineering law.¹ In earlier surveys, well over 80 percent expressed this opinion.² However, the topic remains highly controversial.

In the current environment there is still little prospect of developing a German market for GE crops or foods, other than the existing feed market for soybeans. Political, business, regulatory, and social barriers raise questions about the long-term competitiveness of the German agricultural biotechnology sector. Additionally, Germany's coalition government does not appear to have a consensus position on the European Commission's "New Genomic Techniques" proposal.

There are about 130 companies engaged in the breeding and marketing of agricultural and horticultural crops in Germany, among them are the headquarters of world-class, international seed companies such as Bayer, BASF, and KWS. Corteva and Syngenta, the other major international players in the market, also have a strong footprint in Germany. These international companies are major suppliers of both GE and conventionally bred seeds to markets outside of Europe. However, the companies have since moved research and development operations for GE crops to sites outside of the EU, for example the United States. Bayer made this move in 2004 and completed the acquisition of Monsanto in June 2018. BASF followed Bayer in 2012 and KWS opened its U.S. biotech research center in 2015. This is a reaction to negative attitudes toward biotech crops in Europe as well as non-existent consumer markets. Germany, nonetheless, remains a major consumer of GE products since it imports nearly six million metric tons of soybeans and soybean meal for animal feed annually.

For more information on EU policies and regulation please see [EU Agricultural Biotechnology Report](#).

¹ <https://www.topagrar.com/acker/news/eine-umfrage-zwei-meinungsbilder-zur-gentechnik-1-13286940.html>

² Lebensmittel: Weniger Widerstand gegen Gentechnik auf dem Teller - Wirtschaft - SZ.de (sueddeutsche.de)

CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: PRODUCTION AND TRADE

- a. **RESEARCH AND PRODUCT DEVELOPMENT:** German seed companies such as Bayer Crop Science, BASF, and KWS develop GE plants or crops. However, as multinational companies they have moved production sites outside of Europe to the United States and other countries such as Brazil, Argentina, South Africa, India, China, and Japan. Other multinational companies like Corteva and Syngenta are also present in Germany.

- b. **COMMERCIAL PRODUCTION:** There is no commercial production of GE crops in Germany. Additionally, GE seeds are not produced in Germany for sale abroad. However, German seed companies including Bayer CropScience, BASF, and KWS supply biotech seeds to farmers worldwide from production sites in the United States and elsewhere. In the United States, Bayer and BASF moved research to North Carolina, while KWS opened a research center in Missouri. Bayer acquired Monsanto and its U.S. facilities in June 2018.

- c. **EXPORTS:** There is no commercial production of GE crops in Germany. Germany does not export GE crops to the United States or other countries.

- d. **IMPORTS:** Germany is a major livestock producer and is dependent upon imported soy as a feed protein source. Germany imported more than 5.8 million metric tons (MMT) of soybeans and soybean meal in 2022, nearly all of it produced from GE varieties. Soybean imports totaled 3.4 MMT in 2022. It is estimated that more than half came from the United States either directly or channeled through the Netherlands. Together, this would add up to over \$1.2 billion in U.S. soybean sales to Germany in 2022. This made soybeans the top U.S. agricultural export to Germany. In addition to soybeans, Germany also imported nearly 2.4 MMT of soybean meal in 2022. For soybean meal, traditionally the United States has a small market share with most of it coming from Argentina and Brazil.

- f. **FOOD AID:** Germany supports the assistance provided by the European Union and is the second biggest donor of the United Nations World Food Programme (WFP), after the United States. The Federal Ministry for Economic Cooperation and Development (BMZ) is spending about 2 billion Euros a year on food security and rural development. In 2022, the BMZ's new core strategy "Sustainable Agri-Food System Transformation" was published. Part of this new strategy are projects promoting gender equality, transforming food systems towards healthier diets and conserving biodiversity. In addition to the regular programs, the German government made 1.4 billion euros available for the fight against global hunger in 2022.

- g. **TRADE BARRIERS:** EU policies and legislation lead to GE-related trade barriers that negatively impact U.S. exports.

PART B: POLICY

a. **REGULATORY FRAMEWORK:** Within the EU, GE crops and their products are authorized on a case-by-case basis for the uses defined by the applicant. Member States carry out initial risk assessments for the cultivation of GE crops and for food and feed imports. After weighing the available information, at the EU level, Member States take a majority vote to approve or deny the authorization for imports or to cultivate the GE variety throughout the EU. Currently, 94 genetically modified plant varieties are approved for import into the EU. However, only one genetically modified plant variety (maize MON810) may be cultivated in the EU. In Germany, no genetically modified plants have been cultivated since 2012, neither for commercial purposes, nor for research purposes.

i. Table of legal terms

Legal Term (in official language)	Legal Term (in English)	Laws and Regulations where term is used	Legal Definition (in English)
Gentechnisch veränderte Organismen (GVO)	Genetically Modified Organisms (GMO)	<ul style="list-style-type: none"> • Gentechnikgesetz (GenTG) • Gesetz zur Durchführung der Verordnungen der Europäischen Gemeinschaft oder der Europäischen Union auf dem Gebiet der Gentechnik und über die Kennzeichnung ohne Anwendung gentechnischer Verfahren hergestellter Lebensmittel 	An organism, other than a human being, whose genetic material has been altered in a manner not occurring under natural conditions by cross-breeding or natural recombination; a genetically modified organism also means an organism resulting from cross-breeding or natural recombination between genetically modified organisms or with one or more genetically modified organisms, or from other means of propagation of a genetically modified organism, provided that the genetic material of the organism has characteristics attributable to genetic engineering operations. (§ 3 Nr. 3 GenTG)

ii. Responsible government ministries and their role in the regulation of GE plants

The Federal Office of Consumer Protection and Food Safety (known by its German abbreviation BVL) is the German authority responsible for regulating agricultural GE products. The BVL is an autonomous part of the Federal Ministry of Food and Agriculture (BMEL).

Germany does not independently approve GE products; approvals are made via the EU approval process. In this process, applications for a GE approval can be submitted to the competent authority in any given member state. If a company decides to apply in Germany, it must file the application with BVL, who then passes the notification of a GE approval request and the notification dossier to the European Food Safety Authority (EFSA). After checking the completeness and quality of the data supplied in the dossier, EFSA evaluates the risk potential. At this stage, all member states may submit comments. In Germany, BVL prepares national comments in consultation with the Federal Agency for Nature Conservation (BfN) and the Robert Koch Institute (RKI). In addition, the BVL obtains comments from the Federal Institute for Risk Assessment (BfR) and the Julius Kühn Institute (JKI). EFSA takes the national comments submitted by the member states into consideration and issues its safety opinion.

BVL also evaluates the safety of biotech crops that are used in contained systems (i.e., for research or industrial production), and issues environmental release permits and conducts environmental monitoring. BVL does this under the authority of Germany's *Genetic Engineering Act*, which implements EU guidelines as national legislation. While primary responsibility for GE policy in Germany rests with BMEL, the ministries for Economic Affairs and Climate Action (BMWK), Health (BMG), Education and Research (BMBF), and Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) are also involved in the opinion and decision-making process and need to approve Germany's voting decision in EU committees and councils.

iii. Biosafety Committee and its Role

BVL hosts the Central Committee for Biological Safety (Zentrale Kommission für Biologische Sicherheit, ZKBS, https://www.zkbs-online.de/ZKBS/EN/Home/home_node.html), which examines and assesses applications for approval of biotechnology facilities on safety-relevant questions of genetic engineering and for the classification of microorganisms as donor and recipient organisms for genetic engineering. It examines applications for approval of a release and placing on the market of GE organisms and prepares responses and opinions as well as the procedures for decision-making on the applications.

The ZKBS consists of 20 independent members with a designated deputy for each member. The members are divided into two groups a) experts in the field of microbiology, cellular

biology, virology, genetics, plant breeding, hygiene, ecology, toxicology, and safety technology; and b) competent persons of a social interest group (labor unions, occupational safety and health, economy, agriculture, environmental protection, nature conservation, consumer protection, research, and funding organizations). The members of the ZKBS and their deputies are appointed for the duration of three years by the BMEL in agreement with the following ministries: BMBF, BMWK, Labor and Social Affairs (BMAS), BMG, and BMUV.

iv. Political factors that may influence regulatory decisions

As the largest EU Member State, Germany plays a significant role in the regulatory acceptance of GE crops in Europe. This includes voting at the EU level on approvals; transferring and incorporating EU laws into German legislation; establishing liability for GE ‘contamination’ (the inadvertent comingling of unapproved GE products with conventional products); and enforcement. Germany also exerts its influence in the politics of biotechnology when it abstains from voting because a quorum of countries is necessary for legislation to pass in the EU. This abstention has become a regular occurrence in recent years due to disagreements between Germany’s government ministries and a lack of consensus on the topic within the current government coalition, composed of Greens, Social Democrats (SPD) and Liberal Democrats (FDP).

Decision making around GE crops is politicized. While the Greens traditionally support strict regulation of GM crops and explicitly take a stand for GMO-free agriculture in their party positions³, the Liberal Democrats (FDP) are in favor of deregulation⁴ and acknowledge the potential of GMO crops in their party positions.⁵

v. Regulatory distinction between GE plant products containing DNA in the final form of the product and those that do not

This is regulated on the EU level, please refer to the respective section in the EU report.

vi. Regulatory distinction between GE plant products considered living versus non-living

This is regulated on the EU level, please refer to the respective section in the EU report.

vii. Distinctions between regulatory treatment of the approval for food, feed, processing and environmental release

EU regulations provide a detailed approval process for GE products. Requirements differ depending on whether the GE products are intended for import, distribution, processing, or cultivation in the EU. For details, please refer to the EU report.

³ <https://www.gruene.de/artikel/wahlprogramm-zur-bundestagswahl-2021>

⁴ <https://www.fdp.de/74-bpt/antrag/foerderung-der-gentechnik-auf-moeglichst-breiter-basis>

⁵ <https://www.fdp.de/nie-gab-es-mehr-zu-tun>

viii. Pertinent pending legislations or regulations

The EU Cultivation Directive 2015/412, adopted in March 2015, allows Member States to ban the cultivation of GE crops in their territories for non-scientific reasons. Although the so-called “Opt-Out” Directive (2015/412) was not transposed into national law until now⁶, Germany obtained (among others) a ban on the cultivation of the maize variant MON810 for the entire German territory on the grounds of this directive in 2015.⁷ Furthermore, the federal states (Länder) of Bavaria in 2019 (BayNatSchG, Art. 11b) and Hesse in 2023 (HeNatG, § 18) banned the cultivation of genetically modified plants. The ban only affects cultivation and not U.S. exports to Germany.

ix. Timeline followed for approvals

This is regulated at the EU level, please refer to the respective section in the EU report.

- b. APPROVALS/AUTHORIZATIONS: There is no GE cultivation or open field trials in Germany. Germany has restricted GE authorizations for several crops ([Overview GE Authorizations in EU](#)).
- c. STACKED OR PYRAMIDED EVENT APPROVALS: Stacked events are subject to risk assessment at the EU-level. The approval process is the same as for single events. Risk assessment of stacked events follows the principles provided in EFSA’s *Guidance Document*, which stipulates that where all single events have been assessed, the risk assessment of stacked events should focus mainly on issues related to stability, expression of the events, and potential interactions between the events. Please refer to the EU Agricultural Biotech Report for more details.
- d. FIELD TESTING: Basic plant science research is very strong at German universities, where biotech plants are routinely created to test gene function and answer other biological questions. However, scientists face a strong incentive to work outside of Germany if they wish to develop new crop varieties using biotechnology. In the past, German companies and universities conducted small field trials of biotech plants, but the number has decreased dramatically over the last years. In 2007, experimental releases totaled nearly 70 hectares. Today there are no field trials. German law requires researchers to publicly publish the exact location of a test plot on the internet. This made it easy for activists to vandalize the plots. Vandalism is a significant barrier to conducting field trials in Germany.

⁶ <https://www.bmu.de/FA2027>

⁷ https://food.ec.europa.eu/system/files/2016-10/gmo_auth_cult_de_mon810.pdf

e. **INNOVATIVE BIOTECHNOLOGIES:** Germany is governed by a coalition government composed of the Social Democrats (SPD), the Greens, and Liberal Democrats (FDP). Soon after the formation of the government in 2021, the coalition partners (SPD, the Greens, and FDP) developed and published a policy program outlining their objectives for the four years of their tenure. While this document is not legally binding, it provides a good indication of the position of the three-party coalition on a variety of topics. The chapter on agriculture covers in detail issues like livestock farming, animal welfare, and crop protection. However, there is just one sentence related to plant breeding: “The coalition wants to support the breeding of climate-robust plants, ensure transparency about breeding methods, and strengthen research on risks and detection methods.” This single sentence leaves much room for interpretation. It is noteworthy that the agreement does not mention genetic engineering or commonly used terms like “biotechnology”, “genome editing”, or “new breeding techniques”. This is likely because the three parties have divergent views.

In the Federal Government’s National Security Strategy released in 2023, it signaled support for plant breeding research that includes new breeding techniques in order to achieve global food security goals. The strategy states: “The Federal Government will enhance the framework conditions for plant breeding research. We will among other things, promote the breeding of climate-proof, locally adapted, hardy, and high-yield strains. Germany can take a leading role in Europe in this field of research. We will also focus on opportunities and risks presented by new breeding techniques, such as CRISPR/Cas.”⁸

At the same time, reactions of leaders within the ruling coalition to the European Commission’s “New Genomics Techniques” proposal were mixed⁹, demonstrating a continued lack of consensus within the coalition. The range of views included Environment Minister Steffi Lemke¹⁰ (Greens) and Development Minister Svenja Schultze¹¹ (SPD) who criticized the proposal; Research Minister Bettina Stark Watzinger¹² (FDP) who welcomed it; and a warning against the introduction of bio-patents by Agriculture Minister Cem Özdemir¹³ (Greens). Besides the conflicted topic of patent law, a concern repeatedly addressed by politicians and NGOs rejecting the European Commission’s proposal, is freedom of consumer choice. They criticize that consumers would not be able to decide whether they want to consume GMO products or not if the new law was adopted. Other than that, critics highlight a conflict between the new

⁸ Source: Integrated Security for German, National Security Strategy, German Federal Government, p. 70: National Security Strategy of the Federal Republic of Germany (EN) (nationalesicherheitsstrategie.de)

⁹ Source: Range of media outlets including: Frankfurter Allgemeine: Ein Meilenstein für die Gentechnik in der Pflanzenzucht - F.A.Z. (faz.net); POLITICO Pro Morning Agri & Food Europe, July 6, 2023.

¹⁰ <https://www.bmuv.de/meldung/bundesumweltministerin-steffi-lemke-zu-den-plaenen-der-eu-kommission-zur-neuen-gentechnik>

¹¹ <https://twitter.com/SvenjaSchulze68/status/1676517544717426693>

¹² https://twitter.com/BMBF_Bund/status/1676593758085734402

¹³ <https://www.bmel.de/SharedDocs/Pressemitteilungen/DE/2023/095-gentechnik.html>

regulation and the precautionary principle, set out in Article [191](#) of the Treaty on the Functioning of the European Union.¹⁴

f. **COEXISTENCE:** Germany's policy of “coexistence” between GE, conventionally grown, and organic crops is biased against the use of GE crops. Since there is no GE cultivation in Germany, coexistence regulations are currently theoretical. In the past, German federal and local governments put into place an assortment of planting bans, buffer zones, and other requirements. For instance, Germany requires a minimum distance of 150 meters – one and a half U.S. football fields – between biotech and conventional fields, and a minimum distance of 300 meters between biotech and organic fields. For the Federal Minister of Agriculture, Cem Özdemir (Greens), coexistence is one of the two key topics (the other being bio-patents) not adequately addressed by the current “NGT” proposal of the European Commission.¹⁵

g. **LABELING AND TRACEABILITY:** Germany applies EU regulations for labeling GE food (Regulations EC 1829/2003 and 1830/2003). No food labeled as “containing genetically modified organisms” is sold in Germany. Under EU rules, a food item requires a GE-label only if it contains GE-ingredients. There is no required labeling for meat or dairy products coming from animals fed with GE feed. In May 2008, the German government initiated a voluntary “*Ohne Gentechnik*” (GE-free) labeling program to help consumers better identify products and to standardize the information consumers receive. The current national label was introduced by BMEL’s predecessor, the Ministry for Food, Agriculture and Consumer Protection (BMELV) in August 2009. BMEL has transferred the trademark rights to the seal to the Association for Food without Genetic Engineering (VLOG) who now awards exclusive licenses for use. Sales under the label generated \$ 16.9 billion¹⁶ in Germany in 2022, with the vast majority (68.9 percent) consisting of dairy products, followed by poultry products (19.2 percent) and eggs (8.6 percent).

h. **MONITORING AND TESTING:** Germany fully enforces EU rules relating to GE crops. The Rapid Alert System for Food and Feed (RASFF) is used to report food safety issues to consumers, the trade, and other Member States. In the case of biotech crops, Germany’s 16 states test for unauthorized GE products and report violations via the RASFF. Germany has a decentralized system for testing and controlling the illegal entry of GE products into Germany. Each German federal state (*Länder*) has a competent authority that ensures that no unauthorized biotech product enters the German retail market. Each state has its own monitoring and sampling plan. Since the experts know the kind of products that potentially contain GE events, they

¹⁴ <https://www.bmuv.de/meldung/bundesumweltministerin-steffi-lemke-zu-den-plaenen-der-eu-kommission-zur-neuen-gentechnik>

¹⁵ <https://www.bmel.de/SharedDocs/Pressemitteilungen/DE/2023/095-gentechnik.html>

¹⁶ Exchange Rate USD/EUR, 2022 Average: 1.053

(https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/eurofxref-graph-usd.de.html)

specifically sample for these products. Sampling is primarily done at the wholesale and the processing level.

i. **LOW-LEVEL PRESENCE (LLP) POLICY:** Germany does not have its own LLP policy. Rather, it fully implements EU Regulation 619/2011, which details official sampling methods and analysis. This “technical solution” threshold is 0.1 percent, which defines zero (as in zero tolerance). The EU “technical solution” is not an actual LLP policy.

j. **ADDITIONAL REGULATORY REQUIREMENTS:** German farmers producing GE crops must register their fields with the governmental body BVL three months before planting. However, GE cultivation is de-facto banned in Germany as the country is using the "opt-out" option (Directive 2015/412) provided by the EU for the only GMO variety allowed for commercial cultivation in the EU.

k. **INTELLECTUAL PROPERTY RIGHTS:** German intellectual property law mainly consists of the Copyright Act (UrhG), Patent Act (PatG), Trademark Act (MarkenG), Utility Model Act (GebrMG) and Design Rights Act (GeschMG), flanked by some provisions of the Civil Code (BGB) and the Act Against Unfair Competition (UWG). All these bodies of law have histories dating back to before German membership in the EU but have since been revised and amended several times to implement European Directives and Guidelines or treaties. However, in Germany, the Plant Variety Protection Act protects the intellectual property of new varieties of plants. A breeder can apply for plant variety protection for a new variety at the Federal Office of Plant Varieties (*Bundessortenamt*, BSA). In Germany, plant variety protection is an intellectual property right separate from a patent.

l. **CARTAGENA PROTOCOL RATIFICATION:** Germany signed the Cartagena Protocol on Biosafety on May 24, 2000. It was ratified in November 2003 and entered into force in February 2004. The contents of the Protocol are governed by Regulation (EC) No. 1946/2003 in the European Union. This regulation is directly applicable in the EU Member States, i.e., it does not require transposition into national legislation. As the national competent authority, the BMEL carries out political tasks and is the national focal point for Germany. BMEL represents Germany at the regular Conference of the Parties.

m. **INTERNATIONAL TREATIES/FORUMS:** Germany is a member of several international organizations dealing with plant protection and plant health. This includes the European and Mediterranean Plant Protection Organization, the Organization for Economic Cooperation and Development (OECD), The Food and Agriculture Organization of the United Nations (FAO), and Codex. The Federal Republic of Germany is the host country for a subsidiary body of the Codex Alimentarius Commission, the Codex Committee on Nutrition and Foods for Special Dietary Uses. Germany does not actively participate in discussions related to GE plants.

n. **RELATED ISSUES:** The German Green Party generally takes an anti-GE stance. In the past it has introduced policy proposals to end the import of GE-soybeans to Germany, that were supported by a range of non-governmental organizations (NGOs). Several proposals sought to replace soy imports with domestically produced pulses and other protein crops. However, since entering the ruling coalition, it has not put forward such proposals. The Government has been relatively quiet on this topic, likely due to divergent views within the coalition. However, based on European growing conditions and competing land use for other crops, a full replacement of imported protein feeds does not appear to be a realistic option in the near term.

PART C: MARKETING

a. **PUBLIC/PRIVATE OPINIONS:** Years of controversy have produced many polling studies on German and European attitudes toward GE crops. These studies generally find that though opposition to GE foods might vary from poll to poll, opposition in general remains high and steady over time. For consumers, maintaining the precautionary principle is very important as well as the labelling of GE foods. In general, the public demands that societal concerns take precedence over economic interests and scientific assessments on this topic. However, with growing awareness for global challenges (responding to climate change, mitigating biodiversity loss and ensuring food security) possible advantages of new genetic techniques (e.g., their potential for developing more climate-resistant crop varieties) seem to penetrate the public consciousness and result in a reconsideration of GE foods in parts of society.

b. **MARKET ACCEPTANCE/STUDIES:** For a generation, German consumers have been exposed to consistent messaging from NGOs that biotech crops are dangerous, a product of exploitive capitalism and even immoral. As a result, the use of biotech crops in foods is a highly contentious and politicized issue. Since biotech crops were first introduced in the mid-1990s, attempts to educate consumers and opponents about the benefits of biotech crops and about the science in general have proven ineffective. German public opposition to GE foods has run steadily in the 80 percent range. Recent poll results indicate that this opposition has somewhat declined, and public opinion has become more differentiated. Around 58 percent of Germans oppose the EU Commissions proposal to deregulate of “NGTs”, more than 25 percent are in favor and around 17 percent are indecisive according to a representative study conducted in January 2023.¹⁷ Another representative study published in 2023 showed that more than 45 percent is in favor of deregulating laws for new breeding techniques, provided that only the plant's own genes are modified or inserted and controls by government officials are in place.¹⁸

¹⁷<https://www.topagrar.com/acker/news/eine-umfrage-zwei-meinungsbilder-zur-gentechnik-1-13286940.html>

¹⁸ <https://www.presseportal.de/pm/105718/5418331>

According to the German Food Federation, an estimated 60-80 percent of all food in German supermarkets has been exposed to biotechnology in some form. GE-microorganisms such as bacteria and fungi are increasingly used for the commercial production of a diversity of enzymes that are tailored to specific food processing conditions, such as the production of calf chymosin for cheese making with GE microorganisms. The Union of German Academies of Science has concluded that objections to biotech in agriculture lack any scientific basis, and agricultural biotech tends to find stronger support among consumers with postgraduate degrees.

Although the EU has approved numerous biotech plants that would theoretically be legal to sell in Germany, practically no labeled biotech foods are on the market. One contributing factor is the concentration of the food retail sector and its vulnerability to narrowly focused consumer activists. The German retail food sector is dominated by four large retail groups. Germany also has the highest market share of the world's discount retail food stores. Within this low-margin and concentrated industry, anti-biotech NGOs would likely target any retailer offering GE-labeled products. This presents an unacceptable brand risk that hinders the introduction of GE-labeled foods.

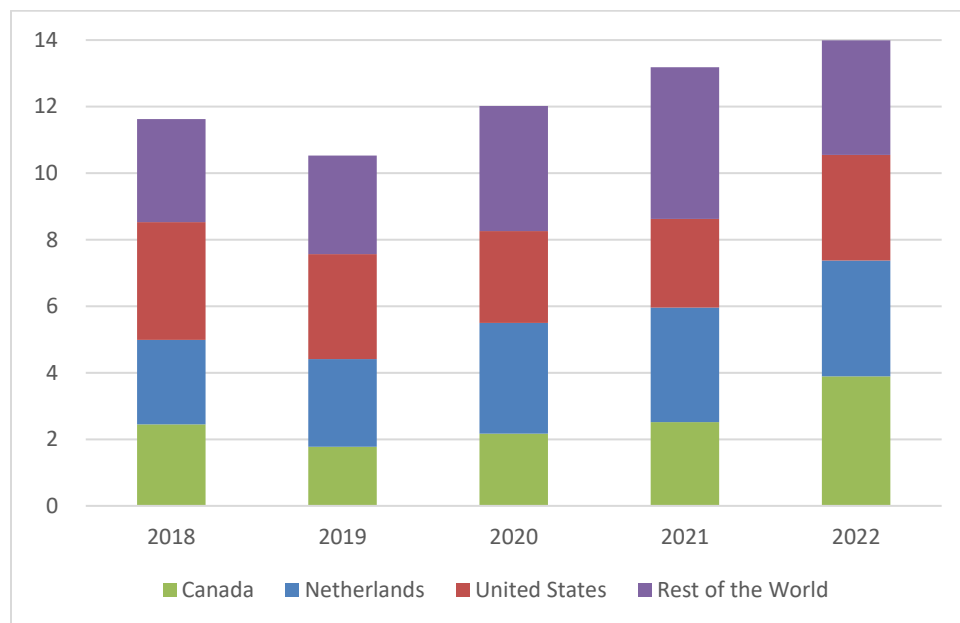
CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

- a. **RESEARCH AND PRODUCT DEVELOPMENT:** In Germany, research into GE animal biotechnology and cloning is mainly located at the Friedrich Loeffler Institute (FLI) in its Animal Genetics unit. This research is conducted in “closed system” laboratories. There is no production of cloned animals in Germany. The cloning of animals is not directly prohibited in Germany, but indirectly regulated by animal protection laws, which means a de-facto ban.
- b. **COMMERCIAL PRODUCTION:** There is no commercial production of GE animals and cloning in Germany.
- c. **EXPORTS:** As there is no commercial production. There are no exports.
- d. **IMPORTS:** This is regulated at the EU level, please refer to the respective section in the EU report. There are no known imports of GE animals or cloned animals for agricultural purposes into Germany. However, Germany has most likely imported semen and embryos from cloned animals as well as from offspring from clones as part of normal herd improvement programs, particularly in the dairy sector. The specific quantity of these imports is not available.

The United States was the second largest single country supplier of bovine semen to Germany after the Netherlands for many years, with an average market share of 25 percent in value over the past five years. In 2022, Canada’s exports to Germany slightly exceeded the U.S. exports in value for the first time.

Chart: German Imports of Bovine Semen in Million USD



Source: FAS/Berlin based on data from Trade Data Monitor, LLC

e. **TRADE BARRIERS:** Most GE-related trade barriers in Germany have their origins in EU regulation. Public and political opposition to animal biotechnology also play a role.

PART E: POLICY

a. **REGULATORY FRAMEWORK:** Germany implements the EU Regulation on animal biotechnology. Please see EFSA GE animal website:

<https://www.efsa.europa.eu/en/topics/topic/gmanimals>

The cloning of animals is not directly prohibited in Germany, but indirectly regulated by animal protection laws, which means a de facto ban. A general administrative regulation refers to application of cloning techniques for the implementation of chapter 7 of the Animal Protection Act. Please follow link for more information: [Administrative regulation for application of Animal Protection Act](#).

i. Table of legal terms

Legal Term (in official language)	Legal Term (in English)	Laws and Regulations where term is used	Legal Definition (in English)
Embryonen- teilung	Embryo splitting	Allgemeine Verwaltungsvorschrift zur Durchführung des Tierschutzgesetzes	Embryo splitting has already been used for a long time in farm animals and laboratory animals, so that corresponding interventions and treatments are in principle not covered by Animal Protection Act. This is only the case if the procedure is carried out with deviations from the already proven technique, which may lead to increased pain, suffering or damage in the animals, or within the framework of a superordinate animal experimental approach - for example to answer certain scientific questions.
Adultes Klonen auf entkernte tierische Eizellen	Adult cloning on enucleated animal oocytes	Allgemeine Verwaltungsvorschrift zur Durchführung des Tierschutzgesetzes	The transfer of cell nuclei from somatic cells on enucleated animal oocytes
Embryonales Klonen auf entkernte tierische Eizellen	Embryonic cloning on enucleated animal oocytes	Allgemeine Verwaltungsvorschrift zur Durchführung des Tierschutzgesetzes	The transfer of cell nuclei from embryonic cells on enucleated animal oocytes

ii. There is no commercial GE animal production in Germany. Only closed laboratory research is permitted. Responsible authorities and roles within regulation are not defined.

- b. APPROVALS/AUTHORISATIONS: There is no GE animal approved or registered in Germany for use.
- c. INNOVATIVE BIOTECHNOLOGIES: There are no known current or pending German regulations of these technologies in animals. The EU has guidance and EFSA published guidance for food and feed derived from GE animals and a guidance on environmental risk assessment. Please see (<https://www.efsa.europa.eu/en/efsajournal/pub/2501>) (<https://www.efsa.europa.eu/en/efsajournal/pub/3200>)
- d. LABELING AND TRACEABILITY: No policy.
- e. ADDITIONAL REGULATORY REQUIREMENTS: No additional regulatory requirements.
- f. INTELLECTUAL PROPERTY RIGHTS (IPR): German intellectual property law mainly consists of the Copyright Act (UrhG), Patent Act (PatG), Trademark Act (MarkenG), Utility Model Act (GebrMG) and Design Rights Act (GeschMG), flanked by some provisions of the Civil Code (BGB) and the Act Against Unfair Competition (UWG). All these bodies of law have histories dating back to before German membership in the European Union (EU) but have since been revised and amended several times to implement European Directives and Guidelines or treaties. Animal biotechnology has not been part of any of these IPR's.
- g. INTERNATIONAL TREATIES/FORUMS: As a member of the EU, Germany is a member of the Codex Alimentarius. Germany is also a member of the World Organization for Animal Health (WOAH). Germany does not actively participate in discussions related to GE plants or animals.
- h. RELATED ISSUES: The current governing coalition does not mention animal biotechnology in its coalition agreement. It is likely that this government rejects animal biotechnology and the use of cloning, like previous governments. This dates to May 8, 2015, when the German Parliament unanimously voted against the cloning of animals. The motion included cloning of animals for food production and labeling of cloned animals, their offspring, and products derived therefrom.

PART F: MARKETING

- a. PUBLIC/PRIVATE OPINIONS: Animal biotechnology is currently not high on the political agenda, and there is currently no high-profile lobbying for or against the use of livestock cloning or GE animals. However, public views on cloning are widely believed to be similar to those held for GE crops. Past EU-level debates on the regulation of cloning have not received positive media coverage. There has been limited media coverage of cloning in the context of endangered or extinct species. That coverage was fairly balanced.

- b. **MARKET ACCEPTANCE/STUDIES:** There is little awareness of GE animals or cloning among the German public. Post is not aware of studies specific to Germany on the marketing GE animals or clones.

CHAPTER 3: MICROBIAL BIOTECHNOLOGY

PART G: PRODUCTION AND TRADE

- a. **COMMERCIAL PRODUCTION:** German companies commercially produce food ingredients derived from microbial biotechnology. Among them are around 20 companies in Germany producing enzymes, including larger corporations but also small and medium-sized enterprises.

Developments in industrial biotechnology in Germany have gone hand in hand with the steadily growing demand for sustainable solutions in the food sector. A new start-up scene focusing on the production of alternative proteins using precision fermentation and industrial cell technology, as well as the production of agricultural products in bioreactors, is currently emerging in Germany.

In Germany, microbial biotechnology falls under the superordinate term “industrial biotechnology”. It is difficult to estimate the share of microbial biotechnology within the sector. This is because the component of biotechnology in large groups of the food, nutrition, chemical, and pharmaceutical industries is not specifically listed and is therefore not recorded statistically. According to the BIOCOM AG, sales of industrial biotechnology amounted to over \$430 million in 2022.¹⁹

- b. **EXPORTS:** There are no official statistics nor estimates on exports of microbial biotechnology products. The only microbial biotech-derived food ingredients exported by Germany are those traditionally used in the production of alcoholic beverages, dairy products, and processed products. Likewise, Germany exports alcoholic beverages, dairy products, and processed products, which may contain microbial biotech-derived food ingredients.

- c. **IMPORTS:** There are no official statistics nor estimates on imports of microbial biotechnology products. The only microbial biotech-derived food ingredients imported by Germany are those traditionally used in the production of alcoholic beverages, dairy products, and processed products. Likewise, Germany imports alcoholic beverages, dairy products, and processed products, which may contain microbial biotech-derived food ingredients.

¹⁹ <https://www.deutsche-boerse-cash-market.com/dbcm-de/primary-market/biotech-insight/daten-fakten>

d. **TRADE BARRIERS:** In general, most biotechnology related trade barriers in Germany have their origins in EU regulation. There is no information on any additional biotechnology-related trade barriers that negatively affect U.S. exports of microbial biotech-derived food ingredients or processed food products containing microbial biotech-derived food ingredients.

PART H: POLICY

a. **REGULATORY FRAMEWORK:** The Federal Office for Consumer Protection and Food Safety (BVL) is the national competent authority. According to EU Directive 2001/18/EC, the BVL coordinates the exchange of information between consent holder, the public, and the authorities involved in the approval procedure. The BVL is also involved in developing policies and organizational structures for monitoring products of genetic engineering. Holders of authorization to use specified GE products (i.e., placing on the market) are under the obligation to monitor these products. This obligation is based on EU Directive 2001/18/EC on the release of “GMOs” into the environment, and EU regulation 1829/2003/EC on genetically modified food and feed, both of which are transposed into German law in § 16c of the Genetic Engineering Act (GenTG).

b. **APPROVALS/AUTHORIZATIONS:** No national policy specific to microbial biotechnology.

c. **LABELING AND TRACEABILITY:** No national policy specific to microbial biotechnology.

d. **MONITORING AND TESTING:** No national policy specific to microbial biotechnology.

e. **ADDITIONAL REGULATORY REQUIREMENTS:** In general, most biotechnology related trade barriers in Germany have their origins in EU regulation. There is no information on any additional biotechnology-related regulatory requirements that negatively impact U.S. exports of microbial biotech-derived food ingredients.

f. **INTELLECTUAL PROPERTY RIGHTS (IPR):** German intellectual property law mainly consists of the Copyright Act (UrhG), Patent Act (PatG), Trademark Act (MarkenG), Utility Model Act (GebrMG) and Design Rights Act (GeschMG), flanked by some provisions of the Civil Code (BGB) and the Act Against Unfair Competition (UWG). All these bodies of law have histories dating back to before German membership in the European Union (EU) but have since been revised and amended several times to implement European Directives and Guidelines or treaties. Microbial biotechnology has not been part of any of these IPR's.

PART I: MARKETING

- a. **PUBLIC/PRIVATE OPINIONS:** Microbial biotechnology has never been high on the political agenda, and there is currently no high-profile lobbying for or against its use in food. In general, the public is not aware that microbial biotechnology is an essential part of today's food production. Media coverage of the issue is limited.
- b. **MARKET ACCEPTANCE/STUDIES:** There is little awareness of microbial biotechnology in food production within the German public.

Attachments:

No Attachments