Non-GMO and the New Frontiers of Sustainability

GMOs Around the World

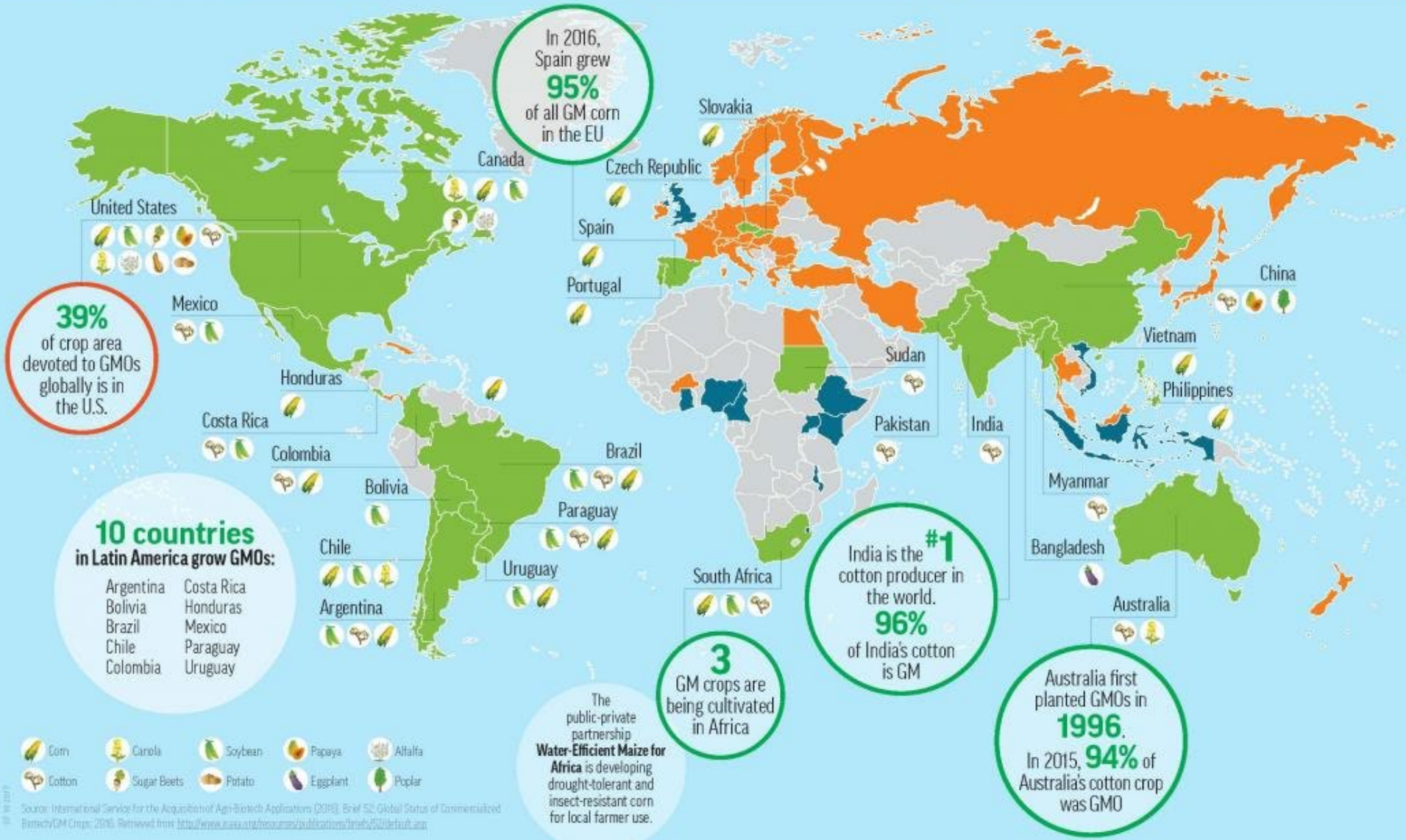
gmo answers

18 million farmers grew GMO crops in 2016. Most were from small farms in developing countries.

26 countries grew GMOs in 2016

19 developing countries grew GMOs

7 industrialized countries grew GMOs



Source: International Service for the Acquisition of Agri-Biotech Applications (2016). Brief 52: Global Status of Commercialized Biotech/GM Crops: 2016. Retrieved from http://www.isaaa.org/resources/publications/briefs/52/default.asp

As of 2016, GMOs are **GROWN**, **IMPORTED**, and/or used in **FIELD TRIALS** in more than **75 countries.**

GROWING BIOTECH AND GRANTING IMPORT APPROVALS

Argentina, Australia, Bangladesh, Bolivia, Brazil, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Honduras, India, Mexico, Myanmar, Pakistan, Paraguay, Philippines, Portugal, Slovakia, South Africa, Spain, Sudan, United States, Uruguay, Vietnam

GRANTING IMPORT APPROVALS

Austria, Belgium, Bulgaria, Burkina Faso, Croatia, Cuba, Cyprus, Denmark, Egypt, Estonia, France, Finland, Germany, Greece, Hungary, Iran, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Malaysia, Malta, Netherlands, New Zealand, Norway, Panama, Poland, Romania, Russia, Singapore, Slovenia, South Korea, Sweden, Switzerland, Taiwan, Thailand, Turkey

APPROVING RESEARCH FIELD TRIALS

Cameroon, Ethiopia, Ghana, Indonesia, Kenya, Malawi, Nigeria, Swaziland, Uganda, United Kingdom

CENTER FOR
FOOD SAFETY

GE-free

Official ban on genetically engineered (GE) food imports and cultivation.

Mandatory GE Food Labeling Laws

Mandatory labeling of nearly all GE foods and a labeling threshold of 0.9-1% GE content. Threshold refers to content per ingredient in each food item.

Mandatory labeling of many GE foods and a labeling threshold higher than 1% or undefined. This includes laws with a threshold of 1% for the entire food item.

Mandatory labeling of some GE foods, but with numerous exceptions and no labeling threshold defined; or a vague mandatory GE food labeling law that lacks implemention and enforcement provisions.

No GE Food Labeling Law

http://www.centerforfoodsafety.org/ge-map/

Brazil – labeling at or above 1% GMO content

Any content must be declared by decision of Supreme Court May 2016

Elected senator Luiz Heinze wants to ban the symbol identifying GMOs in food from Brazil supermarket shelf products

Shifting Trends in the Food Industry

- Many large food companies originally opposed to GMO labeling have since embraced federal GMO labeling and even pushed to include highly processed ingredients from GM crops in scope
  - Commitment to transparency
  - Harmonization

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GMOs:

Are they safe?

Are they sustainable?

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Every GMO is different

- Every different GMO event is created by engineering a unique set of changes to the genome of the targeted plant or organism. No two GMO events have the same health or environmental issues.

- The process of creating those changes will often result in a set of alterations to the physiolog of the plant such that new proteins may be created while certain genes may be turned off or their functioning

- altered in some unintended way. As we know today, almost all genetic expression is the result of dozens or hundreds of networked genes working in concert. Thus, altering some part of that network has the potential to cause significant unintended consequences in the target plant, in its relationship to the soil, in its effect on the animals eating it and to the impact on the environment.

- These changes may be benign or they may be deleterious. It would take many years of scientific study to determine all such possible consequences to the plants, to animal and human health and to the environment.

- Asking if “GMOs” are safe is the same as asking if “drugs” are safe. Each one is different and must be tested extensively to verify both its safety and effectiveness.

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All Technology has risk

- Every new technology introduces new risks.
- Studying and understanding those risks hopefully allows society to make informed decisions on whether the benefits of the technology outweigh its risks.
- However, not all risks are created equal. Some technologies can be "taken back" while others may make permanent changes to our delicate global ecosystem.
  - A bad drug can be taken off the market or a harmful chemical can be discontinued
  - A genetically altered plant's DNA may spread into the environment in such a way that it permanently alters the gene pool and continues to spread uncontrollably
- As a society, we make these choices about tradeoffs all the time.
  - We choose to use a technology, the car, that kills tens of thousands of people every year, but we deem that the benefits outweigh the costs.
- There are countless technologies we use in the production of food that society has accepted as worth the risks and tradeoffs. Is GMO such a technology where the risks outweigh the benefits?

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Are GMOs Safe?

YES

- Government regulations require that they be studied for safety before they are approved.
- Hundreds of peer-reviewed published studies indicate no major problems.
- There is a “scientific consensus” among major international scientific organizations that they are safe to eat.
- Billions of meals with GMO ingredients have been eaten with no noticeable health impacts.

NO

- In most countries (e.g. the U.S.) safety studies are voluntary and are conducted by the companies themselves.
- Hundreds of peer-reviewed published studies show serious concerns.
- There is no such consensus with hundreds of scientists and dozens of global organizations disagreeing.
- A scientifically unsupportable statement. Dramatically rising rates of autism, food allergies, cancer, obesity, and male infertility may be the result of increased toxins in our environment, but it is extremely difficult to establish cause and effect for any one factor.

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Are GMOs Safe?

Datapoints

YES

- The National Academy of Sciences in the United States has twice reviewed the safety of GM crops — in 2000 and 2004. Those reviews, which focused almost entirely on the genetic aspects of biotechnology, concluded that GM crops pose no unique hazards to human health. However, they did note that genetic transformation has the potential to produce unanticipated allergens or toxins and might alter the nutritional quality of food.

NO

- The International Agency for Research on Cancer (IARC, a UN agency) has classified glyphosate, the herbicide most widely used on GM crops, as a “probable human carcinogen” and classified a second herbicide, 2,4-dichloro -phenoxyacetic acid (2,4-D), as a “possible human carcinogen.”

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Are GMOs Sustainable?

YES

- Round-Up Ready and BT traits allow for fewer passes for spraying, using less pesticides and producing higher yields.
- Glyphosate is a relatively benign pesticide and degrades rapidly in the environment.
- GMOs allow “no till” farming that reduces greenhouse emissions and lessens soil erosion.
- Less spraying means less energy used for tractors, etc. and savings for farmers.
- BT traits mean less spraying of pesticides and therefore less environmental pollution.

NO

- There has been a dramatic increase in overall global pesticide usage, particularly in countries using GMOs.
- Glyphosate has been found extensively in air, water and human urine samples globally.
- USDA data show that GM crops did not significantly increase no-till adoption.
- Weed and pest resistance have increased dramatically worldwide decreasing the effectiveness of GM crops and increasing the amount of spraying .
- Widespread Roundup use may be causing the extinction of the Monarch butterfly.
- GM crops lead to monocultures and a loss of biodiversity.

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Are GMOs Sustainable?

Datapoints

YES

- The United Nations and experts say global food production will have to double by 2050, at which point the world population is expected to have grown from 7 billion today to well beyond 9 billion. That's just 35 years away, and there will be no new arable land then. In fact, there probably will be less. For example, 73 million acres of arable land in the U.S. were lost between 2002 and 2012, according to the U.S. Department of Agriculture (USDA); more was certainly made fallow during the last several years of severe drought. Looking ahead, growing conditions will only get harsher.

NO

- Even as the United States government continues to push for the use of more chemically-intensive and corporate-dominated farming methods such as GMOs and monoculture-based crops, the United Nations is once again sounding the alarm about the urgent need to return to (and develop) a more sustainable, natural and organic system.

  That was the key point of a new publication from the UN Commission on Trade and Development (UNCTAD) which included contributions from more than 60 experts around the world.

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There is an ongoing scientific debate

- There is substantial evidence and credible scientists and organizations on both sides who disagree as to whether GMOs are either safe or sustainable.
- This debate has been going on for over 30 years, is entirely unsettled and is unlikely to be for the foreseeable future.
- Over 1 billion hectares have been planted with GMO plants while over 70 countries have regulations restricting the planting of GMOs and on the labeling of GMO foods.
- In the face of such widespread disagreement, the only appropriate approach is to provide transparency and information and to allow consumers to decide for themselves whether or not they wish to consume foods that are made with GMOs
- Labeling programs such as Ohne Gentechnik in Europe or the Non-GMO Project in America, allow consumers to make those choices in the face of ongoing uncertainty.

Ohne Gentechnik

NON GMO Project VERIFIED

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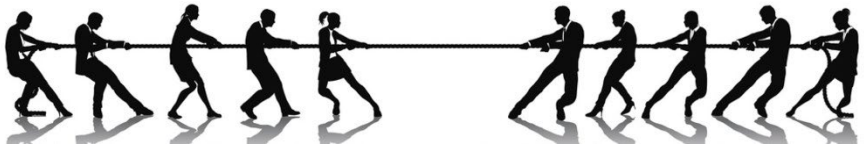
Rational vs. Emotional

- Labeling those who support GMOs as “rational” and those who oppose them as “emotional” is unjustified by the facts and is a disservice to the many scientists, professionals, government regulators, and consumers who are extremely well-informed of the facts but who simply disagree that the issues of either safety or sustainability are settled.

- There are certainly consumers who react with fear to new technologies in their food without a deep understanding of the scientific issues, but there are also commercial interests that strive to rush these new technologies to the market with inadequate research.

- One day, most consumers may come to accept GMOs as an essential technology for feeding the world. However, it may also come to pass that over time the impacts of GMOs on health and the environment may emerge to be far more concerning than was originally believed.



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The Precautionary Principle

- According to Wikipedia: The **precautionary principle** to risk management states that if an action or policy has a suspected risk of causing harm to the public, or to the environment, in the absence of scientific consensus (that the action or policy is not harmful), the burden of proof that it is *not* harmful falls on those taking that action.[1]

The Precautionary Principle

Should GMOs fall under the Precautionary Principle?

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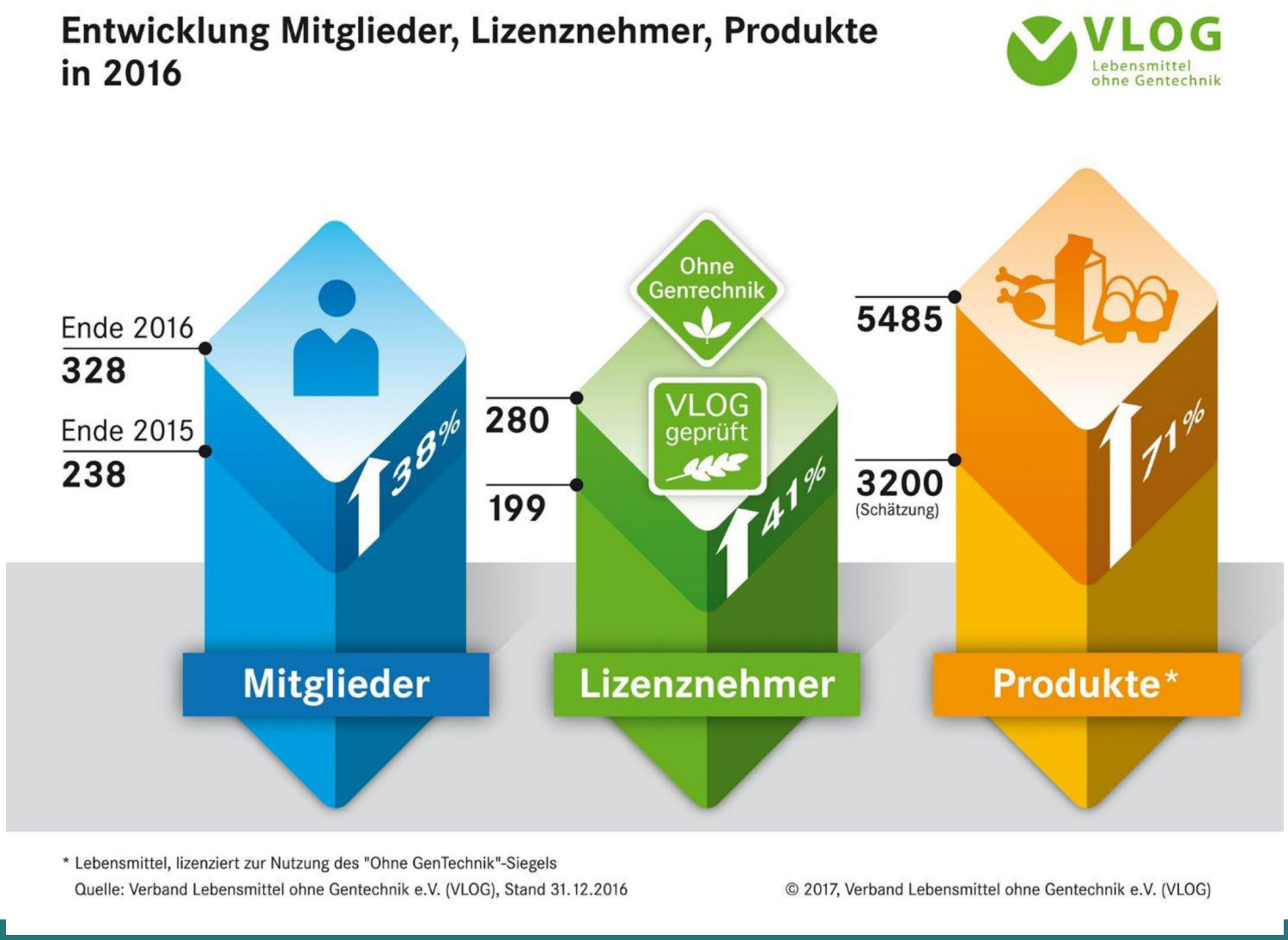
Ohne Gentechnik in Germany



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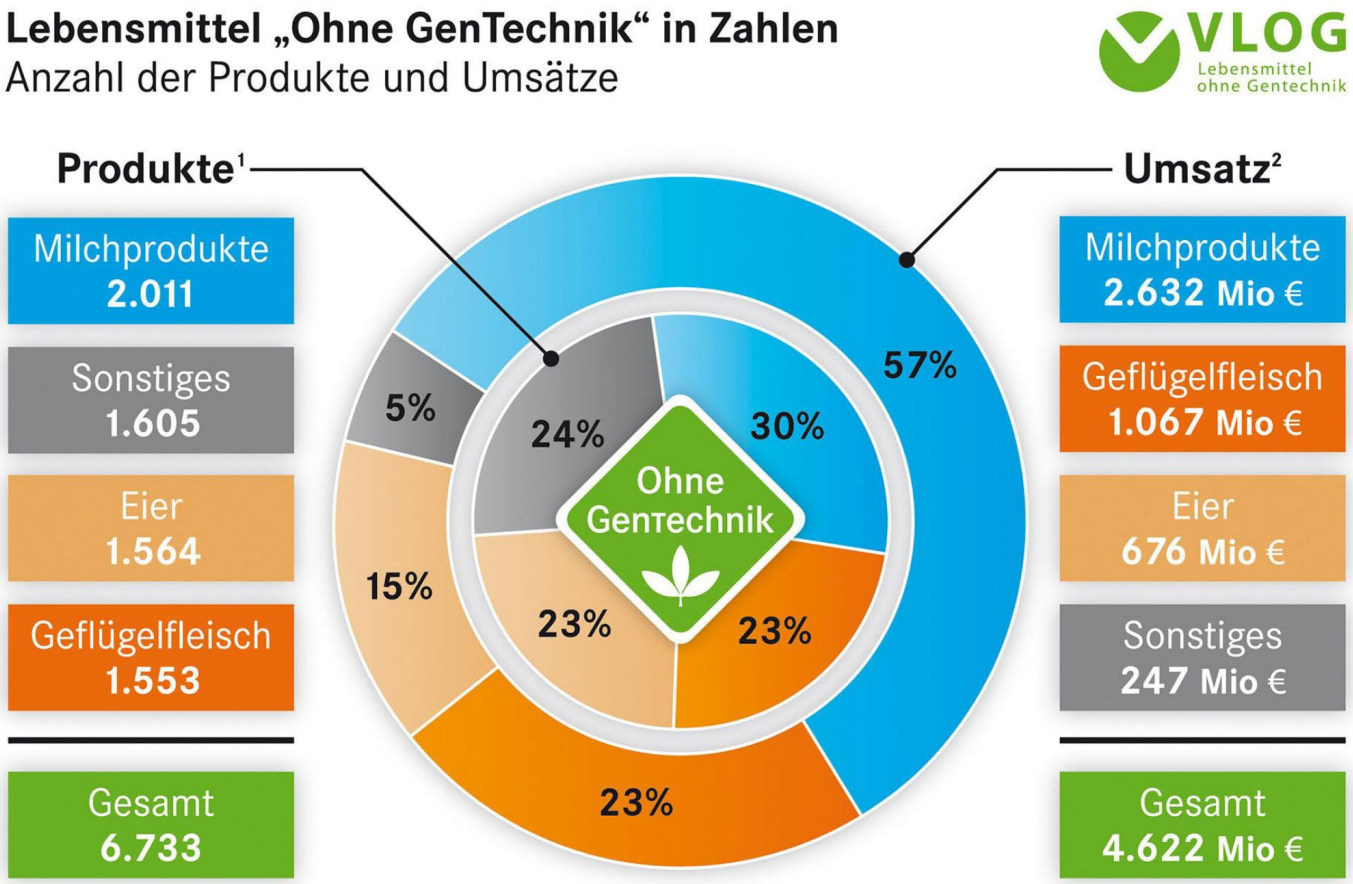
Ohne Gentechnik in Germany



1 Eigene Erhebung, Stand 01.09.2017
2 Umsätze des verarbeitenden Gewerbes von Lebensmitteln mit „Ohne GenTechnik“-Siegel. Prognose für 2017, Stand 01.09.2017
Quelle: Verband Lebensmittel ohne Gentechnik e.V. (VLOG)

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Sustainability

- ProTerra
- RTRS
- Bonsucro
- ISCC
- Europe Soya

Non-GMO

- Testing
- Certification
- Verification
- Non-GMO Project
- Ohne Gentechnik

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Lidl Soja-Initiative

Der Weg zu nachhaltigerem und gentechnikfreiem Soja

Mit der Lidl Soja-Initiative ermöglicht Lidl, in Zusammenarbeit mit ProTerra, die Erhöhung des weltweiten Anteils an zertifiziert nachhaltigerem Soja sowie die Verbesserung der Lebens-, Umwelt- und Arbeitsbedingungen der Landwirte.

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