

# General outline

- The 5 key crops grown in the country, if possible in terms of hectares grown country, annual turnover for those crops, etc.
- Key challenges in each of those crops, such as pests and diseases,
- Ongoing and planned biotechnology research aimed at addressing the above challenges.
- Experiences of farmers with GM crops and/or with the regulations and policies in their countries
- Experiences of scientists with GM field trials and with the regulations and policies in their countries
- Any explicit policy of the Government regarding GMOs
- Any explicit policy of your organization regarding GMOs
- “Take home” messages.

# Practical experiences in European countries

## Overview Germany

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# Main crops

- Wheat (3,300 \* 1000 ha) (7.3 t/ha)
- Maize (2,300 \* 1000 ha) (39 t/ha silage maize, 9 t/ha grain maize)
- Barley (1,6 \* 1000 ha) (6 t/ha)
- Rapeseed (1,45 \* 1000 ha) (4 t/ha)
- Rye (630 \* 1000 ha) (4.6 t/ha)
- Sugar beet (360 \* 1000 ha) (40 – 70 t/ha)
- Potato (255\* 1000 ha) (40-45 t/ha)

(<http://www.destatis.de>, <http://de.statista.com>)

# Challenges

- **Weeds** are a problem in many cultures, but which species is dependent not only on the culture but also on regional aspects.
- **Wheat:** flies and midges, aphids, nematodes; fungi; viruses
- **Maize:** European corn borer, Western corn rootworm, wireworms, frit fly; fungi
- **Barley:** flies and midges, aphids, nematodes; fungi; viruses
- **Rapeseed:** curculionid and chrysomelid beetles; flies; fungi
- **Rye:** fungi; viruses
- **Sugar beet:** nematodes, wireworms; fungi, viruses
- **Potato:** late blight (*Phytophthora infestans*), Alternaria

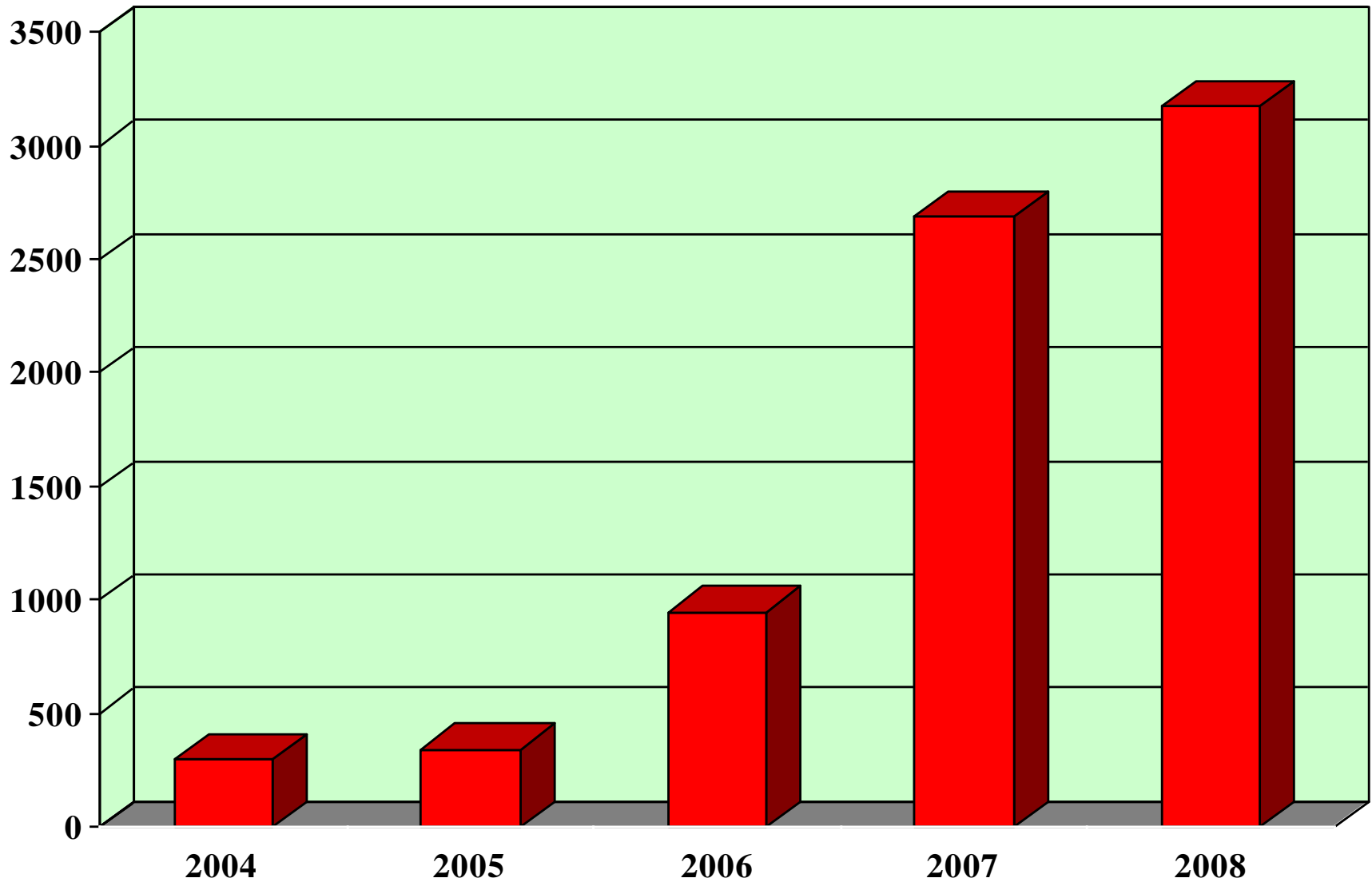
# Biotechnology research

- Wheat: development of grain with **increased protein content** (<http://www.gmo-safety.eu/archive/465.wheat-grain-protein.html>)
- Maize: **biosafety research** on Bt-maize varieties (<http://www.gmo-safety.eu/science/maize.html>)
- Barley: development of **fungal resistance** (field trials destroyed by activists: <http://www.gmo-safety.eu/news/505.destruction-barley-trial-field.html>)
- Rapeseed: **biosafety research** on outcrossing/confinement (<http://www.gmo-safety.eu/science/oilseed-rape.html>)
- Pees: **resistances** against fungi and insects; moved abroad (Der Spiegel 34/2011, “Der nächste Ausstieg”)
- Poplar: increased **productivity, adaptation** (<http://www.vti.bund.de/de/startseite/institute/fg/projekte.html>)

# Interesting Biotech-products for farmers to use

- **Weeds:** Roundup Ready (RR) corn and sugar beet
- **Maize:** Bt-corn resistant against European corn borer, Western corn rootworm
- **Potato:** late blight resistant potato

# Bt-corn cultivation in Germany (hectars)

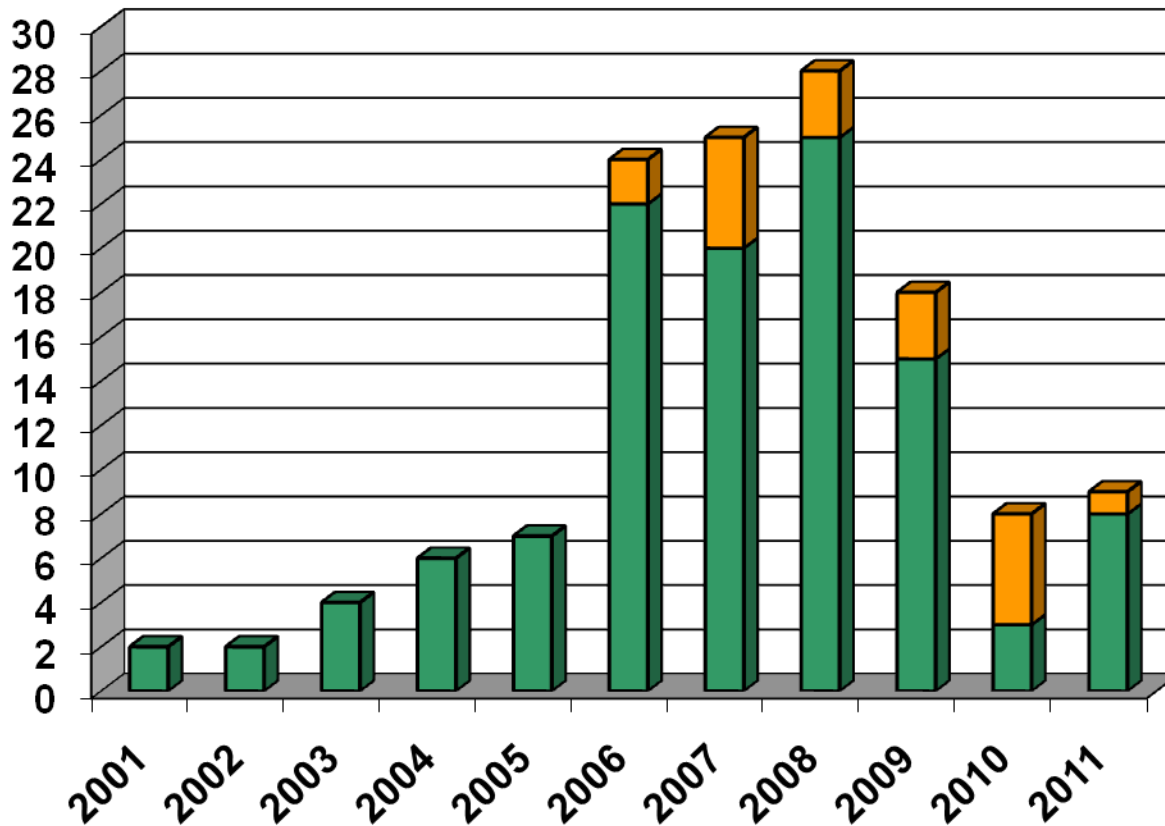


# Experiences of farmers

- Limited cultivation of MON810 (2006-2008) ( 80 farmers, about 3000 ha), **positive experience**
- In April 2009 Bt maize ban by the agricultural ministry (safeguard clause). It seems to be a **political decision, not science-based.**
- **Co-existence** of GM and non GM **is possible**
- Problems because of **field destructions** (field register accessible through the internet)
  - Social pressure



## Feldzerstörungen 2001 bis 2011 in Deutschland



sonstige Straftaten

Feldzerstörungen

\* Sonstige Straftaten: Sachbeschädigung an Gebäuden, Maschinen, etc.

**Note that in 2011 there were only 15 trials!**



Protest gegen Gentechnik im mecklenburg-vorpommerschen Bütow 2010: „Bio ist cool, Gen ist scheiße“

INNOVATIONEN

## Der nächste Ausstieg

Die Bundesregierung sieht in Gentech-Pflanzen weiter Zukunftsprodukte. Doch die Anbauflächen schrumpfen, Bundesländer lehnen die grüne Gentechnik ab. Firmen und Forscher flüchten.

Pflanzen hätten ein „großes Potential“, sagt Bundesforschungsministerin Annette Schavan (CDU) unverdrossen. Ihre „Nationale Forschungsstrategie BioÖkonomie 2030“, in die 1,4 Milliarden Euro fließen, weist der Pflanzenbiotechnologie eine zentrale Rolle für Welternährung und Bioenergie zu – in der Praxis aber sieht es anders aus.  
 Schon Bundeskanzler Gerhard Schröder (SPD) hatte versucht, den Deutschen

(Der Spiegel 34/2011, “Der nächste Ausstieg”)



(Foto: Dipl.-Ing. Florian Hackelsperger, FLI)

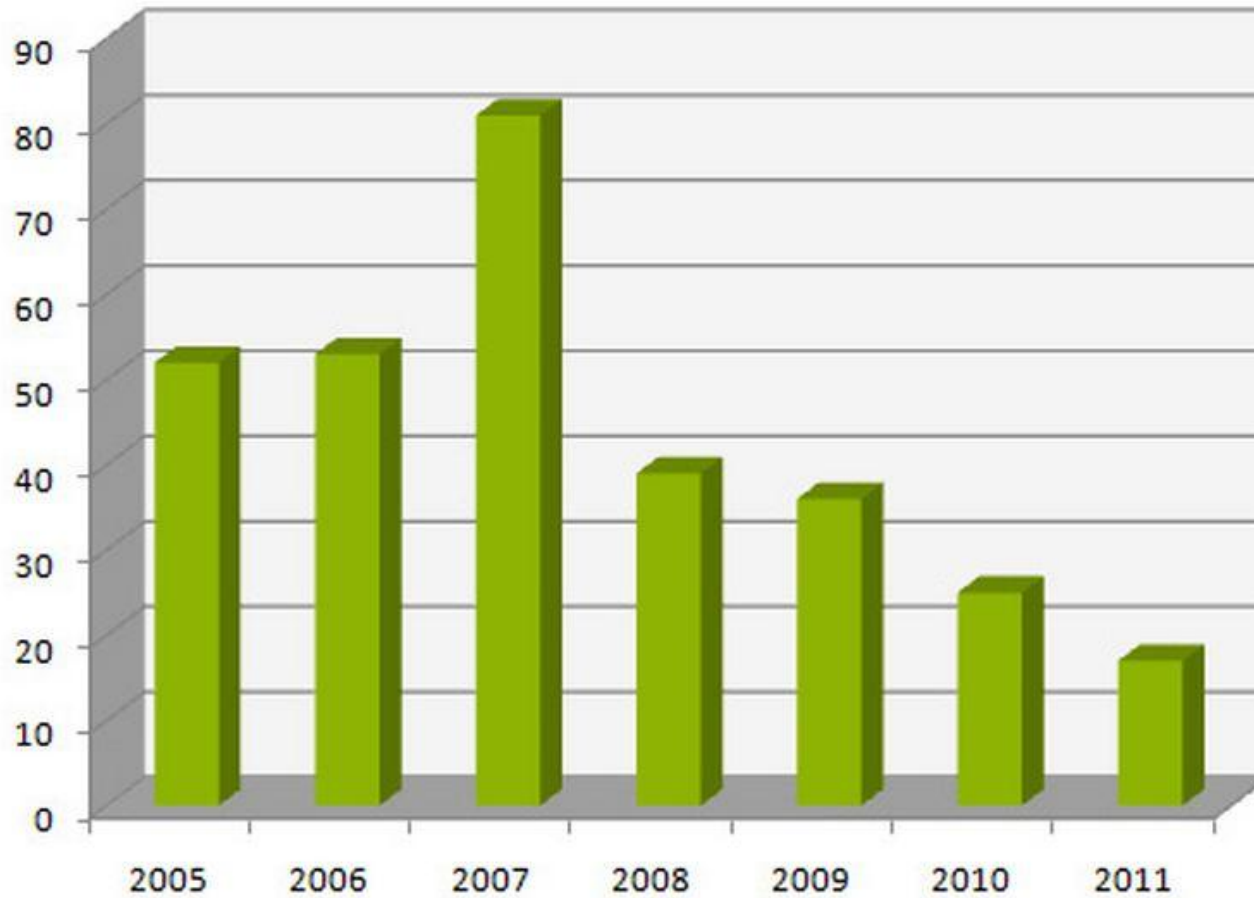
# Experiences of scientists

- Federal Office for Consumer Protection does a good job with applications
- But:
  - applications **take longer** than they legally should
  - Political pressures
  - Field register a big problem: **field destructions** of the majority of field experiments over the last years

# The Government

- Divided over green biotechnology
  - Identified as an important future technology
  - Application is however not wanted in the field
- Strong anti-biotechnology sentiment
- Regional politics influence national ones (e.g. Christian Social Union in Bavaria)

# Field Trial research leaving Germany



Source: Grüne Gentechnik: Deutlich weniger Freilandversuche in Deutschland und Europa <http://www.transgen.de/aktuell/1620.doku.html>

# Our Organisation – InnoPlanta-AGIL

- InnoPlanta-AGIL (Arbeitsgemeinschaft Innovative Landwirte) is an innovative farmer organisation in Germany (about 60 farmers, 100.000 ha).
- Members of AGIL want to use the opportunities provided by plant biotechnology.
- Have experiences with Bt-corn and field trails
- AGIL supports farmers who wish to cultivate GM crops. Helps farmers to voice their needs to politicians, industry leaders and the European farming community.

# Take home messages

- Largest problem is negative attitude in the public and activism by radicals
  - Public field register a major obstacle (vandals know exactly where to go to)
- Farmers demand the freedom of choice between traditional, organic and green biotechnology agriculture
- Decisions on GMO-cultivation should remain at the European level and approvals should be science based.