

# **Genetically Modified Organisms**

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# Genetically Modified Organisms



- A genetically modified organism (GMO) is an organism whose genetic [material] has been altered using techniques in genetics generally known as recombinant DNA technology.
- Recombinant DNA technology is the ability to combine DNA molecules from different sources into the one molecule in a test tube. Thus, the abilities or the phenotype of the organism, or the proteins it produces, can be modified through the modification of its genes.

# Examples of GMOs



- Genetically modified corn (BT corn) was genetically altered to make corn that produces its own pesticides
  - Round-up-ready soybeans & sugarbeets
- There is also Golden Rice that is made with vitamins for humans in third world countries who do not receive proper nourishment
- The Grocery Manufacturers of America estimate that 75% of all processed foods in the U.S. contain a GM ingredient

## Random Facts



- The first commercially grown genetically modified whole food crop in the U.S. was the tomato.
- Between 1997 and 2005 the total surface area of land cultivated by GMO's went from 4.2 million acres to 222 million acres.
- In the U.S., approximately 54% of all soybeans cultivated in 2000 were genetically-modified, up from 42% in 1998 and only 7% in 1996.  
Genetically-modified cotton varieties accounted for 61% of the total cotton crop, up from 42% in 1998, and 15% in 1996.

# GMO Pros: Plants

- Better resistance to weeds, pests, and disease
- Improved texture, flavor, and nutritional values
- Decreased use of chemicals
- Longer shelf life
- Efficient use of land
- More food produced = Cheaper food



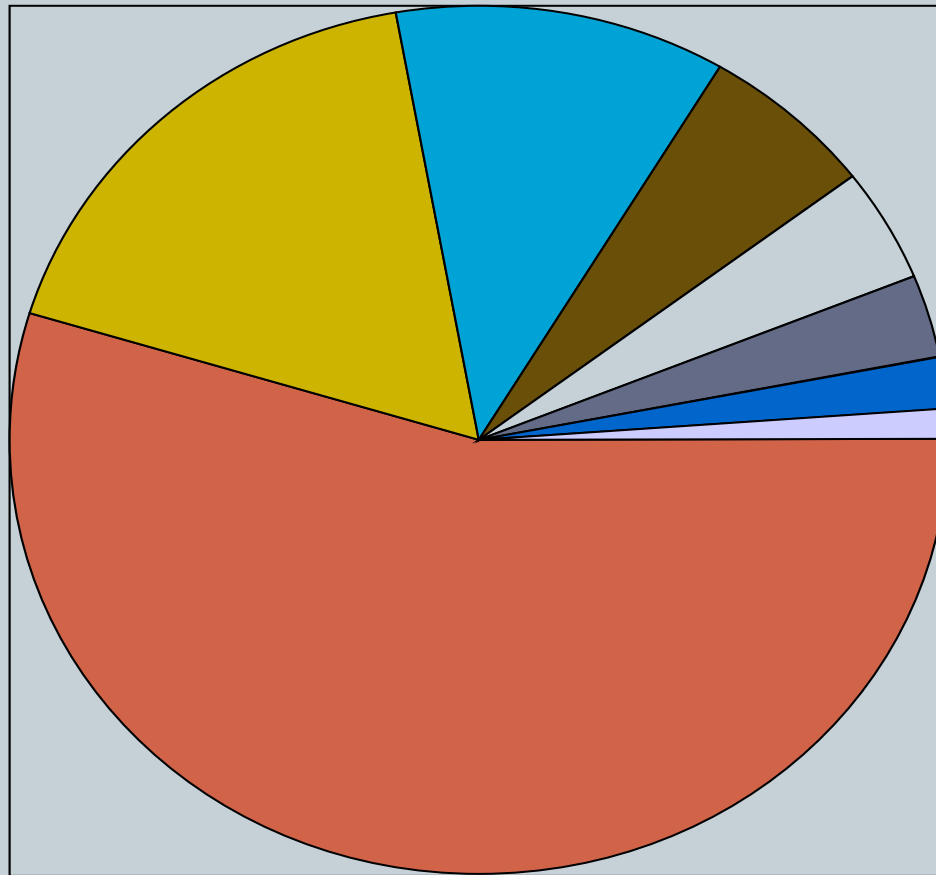
# GMO Pros: Animals



- Better yields of meat, eggs, and milk
- Improved health and diagnostic methods
- Increased resistance, productivity, hardiness, and feed efficiency



# 2006 GM crop production



# GMO Politics



- **Unfair trade practices**
  - ! U.S. vs EU
  - ! limiting trade based on unproven biosafety concerns is a “barrier to trade”
- **Will it actually help hunger stricken nations?**

# Anti GMO Organizations



- **Greenpeace:**
  - ! Campaigns for sustainable agriculture by rejecting genetically engineered organisms, protecting biodiversity and encouraging socially responsible farming.
- **Earth Liberation Front (EFL)**
  - ! To defend and protect the earth by use of direct action to stop the exploitation and destruction of the natural to stop the exploitation and destruction of the natural environment.”

# Effects of GMOs?



Born August 20<sup>th</sup> on the Fettig Ranch in Moffit, ND

# Future of GMOs



## – Pessimists

- ! Science will become obsolete
- ! No trade of GMOs with European Union, Japan, & others

## – Optimists:

### ! Vaccines

- ÷ Now attempting to grow vaccines in produce (HIV, Hepatitis B, Rotavirus, and Rabies)

### ! Shifting European Views

### ! Dual Market Growth