

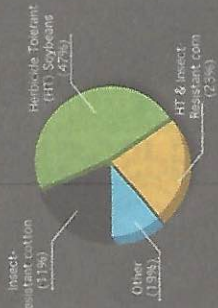
# What do you know about GMOS?

A genetically modified organism (GMO) is an organism altered to incorporate genes with a desirable trait. GM crops are plants whose DNA have been genetically modified and used in agriculture.

## Genetically Engineered... to do what?

### Commercially

GMO crops, as a % of total biotech area



### In Research

- Enhanced Nutritional Content**  
Beta carotene producing "Golden Rice" to help with widespread Vitamin A deficiency in developing nations.
- Salination and Drought Tolerance**  
Drought will likely cause salination of arable lands by 2050. Promising genetic modifications to corn will increase heat and salinity tolerance.
- Non-food Applications**  
GMOs are being explored for medicine (vaccines, monoclonal antibodies) and industry (biofuels, plastics).

## the good

Reduction in insecticide use

As adoption of insect-resistant crops has increased, insecticide usage has decreased

Can produce higher yields

To varying degrees, GMO crops have produced higher yields, largely due to improved pest control.

Benefits for farmers

Many GMO farmers have experienced increased profitability, decreased exposure to pesticides and improved crop management.

Can provide defence against aggressive disease

In the 90s, Hawaii's papaya industry faced a crisis as the die to the Papaya ringspot virus (PRSV). A GMO variety of papaya with resistance to PRSV saved the industry.

May help fix big world problems

"Agricultural biotechnologies provide opportunities to address the significant challenges of ensuring food security without destroying the environmental resource base."  
— Food and Agriculture Organization of the UN

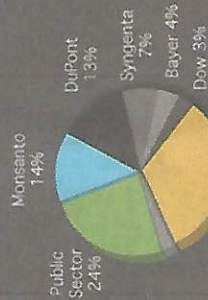
## Who grows it?

% World GMO Crop Area by country



## Who owns it?

Biotech patent ownership



9 of every 10 farmers planting GMOs are resource-poor and living in developing countries.

## the bad

Concerns about health

Use of an allergenic protein in a GMO crop could result in allergic reactions. The WHO raises concerns about potential gene transfer of antibiotic resistance.

Concerns with IP ownership

GMO opponents are concerned that corporations will charge unreasonable rates for GMOs and subsequently hurt economies and the viability of small farms.

Superbugs and superweeds

Herbicide-resistant weeds and insecticide-resistant bugs can arise from the use of the HT and Bt GMOs, potentially negating many future GM benefits.

Lack of transparency

In the US, there is no mandatory labeling of GMOs. While an estimated 70% of foods sold in the US contain GMOs, the lack of labeling prevents consumers from making an informed decision.

May cause big world problems

Gene transfer from GMO crops could contaminate non-GMO crops and wildlife. Genetic modifications could create super-invasive species. Opponents are concerned about these and other unknowns.

## and the ugly

The conversation is confusing & sensational

"In the debate over biotech crops, differentiating fact from fiction is not easy. The debate has been confused by the influence of rigid, absolutist views (both supportive of and opposed to biotech crops)."  
— International Food Policy Research Institute

Major GMO producers are hard to trust

Much of commercially available GMOs are from Monsanto, who has violated the public trust over PCBs and other issues in the past. Without proper regulation, GMO opponents fear that companies producing GMOs will prioritize profits over human welfare and the environment.