

Presented by:
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The “Seedy Side” of Gardening





WARNING!

THIS PRESENTATION





My Goal ...

**The Differences
Between
Heirloom, Hybrid,
Organic and
GMO Seeds!**

Quiz Question # 1?

Which of the following statements is not true about GMO seeds?



- A. GMO seeds improve resistance against insects.
- B. GMO seeds are regulated by Food and Drug Administration.
- C. GMO seeds produce crops that are drought tolerant.
- D. GMO seeds require more land for growing crops.

USDA and FDA

Plant GMO's are regulated by the **U.S. Department of Agriculture's Animal and Plant Health Inspection Service** under the Plant Protection Act.



GMO's in food, drugs, and biological products are regulated by the **Food and Drug Administration** under the Federal Food, Drug, and Cosmetic Act and the Public Health Service Act.



What Is a GMO?

GMOs are the product of a specific type of plant breeding where precise changes are made to a plant's DNA to give it characteristics that cannot be achieved through traditional plant breeding methods.



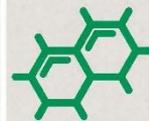
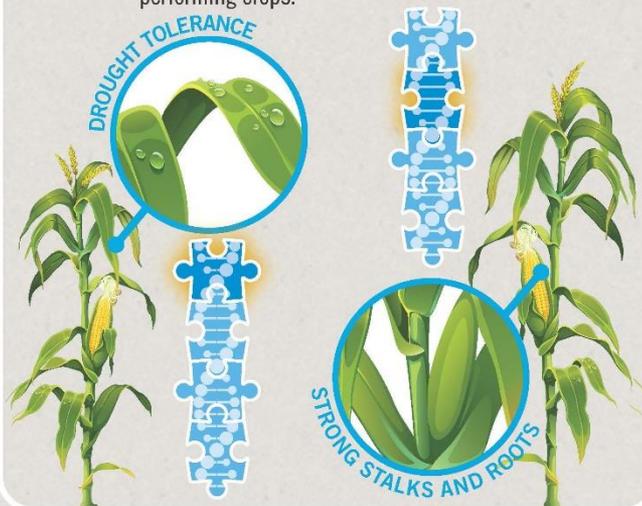
SELECTIVE BREEDING

Plant breeders look for, select and cross-breed the best performing plants in the field, similar to how farmers have naturally improved the crops they grow since farming began.



ADVANCED BREEDING

Breeders identify and tag desirable characteristics (traits) within a plant genome. They use this information to pick which plants to cross-breed and create better performing crops.

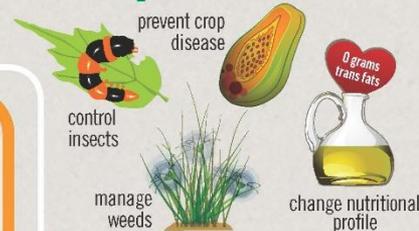


GM PLANT BREEDING

If a plant needs a trait that can't be achieved through advanced breeding, a gene can be turned off or moved, or a gene from another source can be inserted.



GMOs can help farmers ...



There are 10 GMO crops commercially available in the U.S. today:

Corn
(field and sweet)



Soybeans



Cotton



Canola



Alfalfa



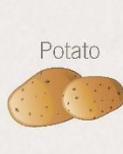
Sugar Beets



Papaya



Squash

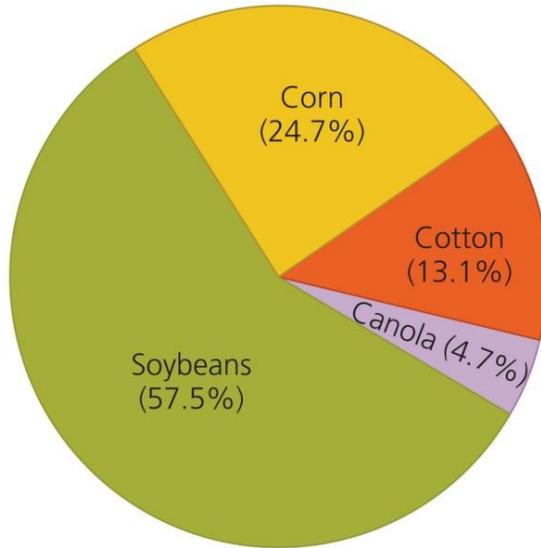


Potato

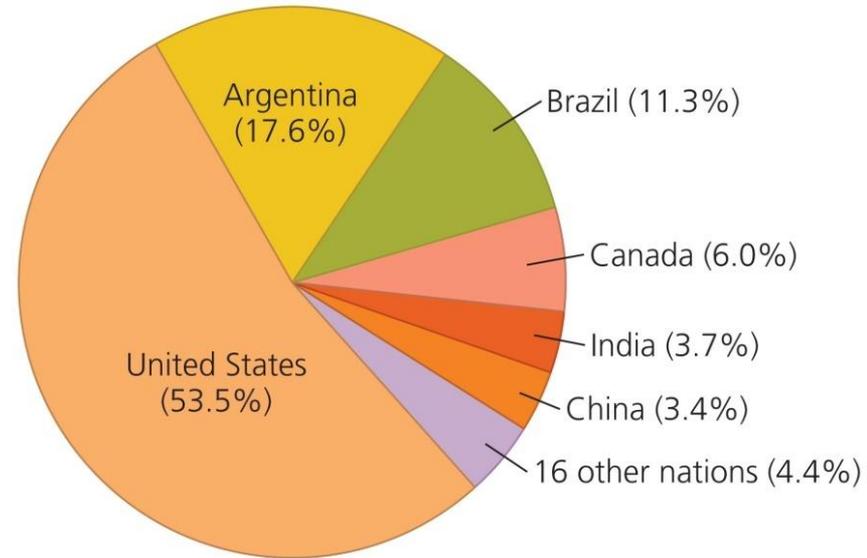


Apple

Most Common GMO Foods



GMO Crops by Type



GMO Crops by Nation



GMO Seeds: You Can't Buy Them!

Please do not be confused when you come across seeds labeled “Non-GMO” seeds.

GMO vegetable seeds are not available to individuals and community gardeners including your local seed stores.





It's All About the Seeds!

Heirloom

The word “Heirloom” refers to the heritage of a seed.

Hybrid

The word “Hybrid” refers to the cross-pollination of different varieties from the same species.

Organic

The word “Organic” refers to a specific growing practice.

Quiz Question # 2?

Which of the following is true about Heirloom seeds:

- A. Always organically grown
- B. Open-pollinated
- C. Come from seeds developed in the last 25 years
- D. Are becoming extinct



Heirloom Vegetable Seeds

- **Heirloom** seeds are those that are **open-pollinated** which means that a plant has been pollinated in natural form: wind, self-pollination, birds or insects.
- These seeds are passed down from generation to generation, lasting over a period of at least 50 years.
- Seeds from **Heirloom** vegetables are true to type, meaning that you can save **Heirloom** seeds and expect to get the same results when you plant those seeds again next season (and each season thereafter).



Heirloom Seed Companies



Quiz Question # 3?

Which of the following is not true about Hybrid seeds:

- A. More vigorous plants
- B. Improved disease resistance
- C. Lower crop yield
- D. Earlier maturities





Hybrid Vegetable Seeds

- Plant breeders intentionally cross-pollinate two different varieties of same plant species, aiming to produce an offspring, or hybrid, that contains the best traits of each of the parents.
- Pollination is carefully controlled to ensure that the right plants are crossed to achieve the desired combination of characteristics, such as bigger size or better disease resistance.
- Seeds you save may revert back to their parent types ... or not germinate at all.

Quiz Question # 4?

What organization regulates the guidelines for “Organic” seeds?

- a. OGA
- b. USDA
- c. FDA
- d. AFL-CIO
- e. DEA





Organic Vegetable Seeds



- The word “**Organic**” refers to a specific growing practice that keeps the seeds from being exposed to any chemicals throughout (a) the growth in the field, (b) the harvesting of the produce, and (c) the processing of the new seeds.
- Organic seeds are derived from plants that comply with organic systems as set up by the USDA and certified as “Organic.”
- Organic seeds can potentially be “hybrids,” meaning that they have been artificially cross pollinated with other varieties to get the best possible characteristics out of each variety.

USDA Organic Seal



DO

- ✓ Keep organic and non-organic foods separate
- ✓ Use only approved pest-control materials

DON'T

- ✗ Use toxic/synthetic fertilizers, GMOs, antibiotics, synthetic growth hormones, artificial preservatives/flavors/colors

The National List of Allowed & Prohibited Substances states what **CAN** and **CAN'T** be used in certified organic products.

CAN

- ✓ Some non-organic substances (fish oil, celery powder)
- ✓ Some non-agricultural substances (citric acid, baking soda)

CAN'T

- ✗ Synthetic substances, **UNLESS** allowed for a reason, such as the lack of an organic alternative

- ✓ USDA-approved, trained agents regularly inspect growers and processors to ensure standards are met.
- ✓ USDA also makes sure labeling info is accurate, not misleading.

USDA's National Organic Program enforces the use of the organic seal. Farmers and businesses must follow USDA standards to have their products labeled and sold as certified organic—from food, cotton and other fibers, to makeup and wine.



Learn more about the seal at www.ams.usda.gov/organic

Agricultural Marketing Service, April 2018

USDA is an equal opportunity provider, employer, and lender.



Comparison of Heirloom and Hybrid

Heirloom	Hybrid
More nutritious	Less nutritious
Exceptional taste	Less tasty
Less uniform so they don't ripen all at once	Produce plants with greater uniformity
Can be saved to reproduce true plants	Saved seed will not reproduce true
Are not very disease resistant	Better disease resistance
Unique appearance and colors that are not found in stores	Cross-bred to preserve variety's best features
Can be Organic	Can be Organic

Questions?



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