

TOPIC: NATURAL, ORGANIC, & BIOENGINEERED FOODS

Natural & Organic Foods

- ◆ Many consumers want “natural” or “_____” foods → health or other reasons.

Natural: no set _____.

- ▶ Often no added artificial color or ingredients.



◆ USDA Organic Certification:

▶ USDA Organic requires:

- No _____ pesticides or fertilizers.
- No _____ modified organisms.
- No irradiation.
- No _____ & hormones.
- Animals must have access to _____.

▶ May utilize:

- Naturally derived _____.
- Compost/_____/naturally derived fertilizer.



100% Organic.



- ◆ _____% organic.
- ◆ Excludes water or salt.

Organic.



- ◆ ≥ _____% organic ingredients.
- ◆ Restrictions on other ingredients.

Made with organic ingredients.

- ◆ ≥ _____% organic ingredients.
- ◆ May _____ use USDA Organic label.

- ◆ _____ to no evidence that organic food is nutritionally different than conventional.
 - _____ pesticides.
 - _____ phytochemicals.

EXAMPLE

Anna comes home to her dorm room with a can of soda. She tells her roommate, “I’ve been looking for a healthier soda, and I think I’ve found it! This one is totally organic!” Evaluate her statement.



PRACTICE




Which of the following is NOT allowed to be used on USDA Organic produce?

- | | |
|-------------------|-----------------|
| a) Pesticides. | c) Compost. |
| b) Crop rotation. | d) Irradiation. |

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Genetically Modified Organisms

- ◆ Humans traditionally modify crop genetics through _____.
- ◆ **Recombinant DNA Technology** (_____): DNA _____ to an organism to confer a trait.
 - Transgenic crops must be approved by the _____, USDA, and EPA.
 - _____ requires labeling foods modified using recombinant DNA as “bioengineered”.
 - New genetic technologies (CRISPR-Cas9 gene editing): _____ clearly regulated.
- ◆ Bioengineered for:

<p>_____ production.</p> <ul style="list-style-type: none">◆ Produce “Bt” proteins that are _____ to pests.◆ 90%+ of corn. 	<p>Herbicide _____.</p> <ul style="list-style-type: none">◆ Resistance to weed _____.◆ 90%+ of soybeans. 	<p>Improve _____.</p> <ul style="list-style-type: none">◆ Golden rice with vitamin _____.◆ _____ widely adopted. 
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- ◆ Bioengineering is _____ as a technique.
 - Environmental or health concerns over _____ modifications.
 - _____ concerns over implementation.

PRACTICE

Which statement is true?

- a) Dozens of different GMO crops are grown in the United States.
- b) Bioengineered crops are approved by the FDA for safety, and the USDA regulates their labeling.
- c) Most Bioengineered crops improve the nutrition of food.
- d) Bioengineering regulations cover both Recombinant DNA and CRISPR-Cas9 gene editing technologies.

PRACTICE

Which of the following statements about genetically modified organisms are true?

- I) Transgenic organisms contain DNA from multiple organisms.
 - II) GMOs have both benefits and drawbacks.
 - III) Gene editing is the oldest form of genetic modification.
- a) I & II. b) I & III. c) II & III. d) I, II, & III.