Cracking the Code on Egg Production, Marketing

Lisa Gaskalla
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Photoperiod Phenomena
Grade Level(s) - 9 - 12
Estimated Time - 1 hour
Purpose - Students will understand how photoperiodism impacts plants and animals in the environment and learn how egg farms use this science to manage the production of eggs by their hens.
Vocabulary
Clutch – Name of a group of eggs produced by birds, amphibians or reptiles in a series of days.
Photoperiodism – The physiological reaction of organisms to the length of day or night.
Protein – An essential nutrient responsible for building tissue, cells and muscle.

Interest Approach
Scenario [image] to display for class
Scenario #1

The hens in your backyard chicken coop slow their egg production as winter approaches.

Scenario #2

At the grocery store, the cost of free-range eggs goes up in the winter.
Photoperiodism

The physiological reaction of organisms to the length of day or night.

Spring + Summer

Long days and short nights

Fall + Winter

Short days and long nights

Write the name of the plant/animal on the outside of the flaps

Describe the photoperiodic reaction of the plant or animal on the inside of the flaps

react LONG days

react SHORT days
Weighing in on Egg Labels, Supply, and Demand

Grade Level(s) - 9 - 12
Estimated Time - 1 hour

Purpose - Students will apply a basic understanding of the laws of supply and demand, learn about different types of egg laying farms, and recognize the impact labeling has on consumer choices.

Vocabulary

Galius domesticas – Scientific name for a domestic chicken often raised for meat and/or eggs.

Mortality – Death, a term used as a mortality rate referring to a percentage of a population dies.

Selective breeding – Also known as artificial selection, the process by which humans select specific plants or animals for breeding with the hope of developing ideal traits in plants or animals.

Interest Approach/Engagement

Facts about eggs and egg production:
Egg shell color – Determined by the breed of the bird
Breeds, varieties of chickens – 200
How long does it take a hen to produce an egg? – 25-26 hours
CRACKING THE EGG CODE

**Conventional**
- Laid by hens not housed in enclosures or run-outs. Hens are in a building, room, or pen that includes nest space and perches.

**Cage-Free**
- Laid by hens who roam and forage on a maintained pasture area. The USDA does not recognize a labeling definition for pastured eggs as no standards are established.

**Pasture Raised**
- Laid by hens in enclosures that include perch space, dust bathing or scratch areas and nest space.

**Certified Organic**
- Laid by cage-free or free-range hens raised on certified organic feed and have access to the outdoors. The feed is grown without most synthetic pesticides, fungicides, herbicides or fertilizers and 100% of the agricultural ingredients must be certified organic.

**Brown**
- The color of the egg shell has nothing to do with the egg's nutritional value, quality or flavor. Hens with white feathers and white egg lobes lay white eggs; hens with red feathers and red egg lobes lay brown eggs.

**Free-Range**
- Laid by hens not housed in enclosures and with access to the outdoors. In addition to eating grains, these hens may forage for wild plants and insects.

**Pasteurized**
- Eggs heated to a temperature just below the coagulation point to destroy pathogens.

**Omega-3 Enriched**
- Laid by hens fed a special diet rich in omega-3s. These eggs provide more omega-3 fatty acids, from 100 mg to over 600 mg per egg.

**Vegetarian Fed**
- Laid by hens fed a vegetarian diet.
Which carton of eggs has more nutrient value?

A

B

Neither, they are equal

C
Which carton of eggs would *likely* cost more?

A  B
Which carton of eggs would **YOU** choose?

A

$2.05

B

$1.69

Why?
Which carton of eggs would *likely* cost more?
Which carton of eggs would **YOU** choose?

A $1.69

B $3.99

Why?
Which carton of eggs would likely cost more?
Which carton of eggs would **YOU** choose?

A
$3.99

B
$2.05

Why?
Which carton of eggs would likely cost more?
Which carton of eggs would **YOU** choose?

A  
$1.69

B  
$3.49

**Why?**
Graph a Demand Curve

1 dozen white-shelled eggs

Price for 1 dozen eggs

Number of consumers (students) willing to pay

$3.00
$2.75
$2.50
$2.25
$2.00
$1.75
$1.50
$1.25

5 10 15 20 25 30 35 40

$1.25
Supply Curve
1 dozen white-shelled eggs

<table>
<thead>
<tr>
<th>Number (%) of producers willing to sell</th>
<th>12 24 36 48 60 72 84 100</th>
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<tbody>
<tr>
<td>Price for 1 dozen eggs</td>
<td>$1.25 $1.50 $1.75 $2.00 $2.25 $2.50 $2.75 $3.00</td>
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- No producers will sell
- Majority of producers will sell
- All producers will sell