Development and Validation of a High School Agricultural Literacy Assessment

[High School 9-12th Grade]

Agricultural Literacy Instruments

Citation:

Judd-Murray, R., Warnick, B. K., Coster, D. C., & Longhurst, M. L. (2024). Development and validation of a high school agricultural literacy assessment. *Advancements in Agricultural Development*, *5*(3), 91–104. https://doi.org/10.37433/aad.v5i3.407

Instrument 1

1. Determine if the statement is true or false: Sustainable agriculture is the practice of producing food, fiber, and fuel in a way that is profitable to the producer, supports quality of life, and protects natural resources.

The statement is true
The statement is false

2. Determine if the statement is true or false: *Agriculturists have few incentives to protect the environment and natural resources.*

The statement is true
The statement is false

3. **Select all** the potential outcomes of practicing sustainable agriculture.

Reduction of world hunger Protection of food supply Wildlife habitat loss Conservation of natural resources

4. Select all the examples of organic nutrients.

Dead/decaying animals Synthetic nitrogen Lawn/grass clippings Manure Silt 5. **Select all** the factors that affect food choices for people.

Cost

Culture

Convenience

Access and/or availability

Taste

6. **Select all** the following practices that provide the best balance for agricultural production while maintaining balance with natural resources.

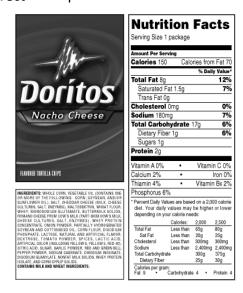
Integrated pest management

Using robots, drones, and global positioning systems

Using radio frequency identification chips

Using advertising strategies

7. Interpret the information given on this food label. Match the correct answer with the correct description.



1661113	20301.ption		
150	Grams of protein in two servings		
2%	Percent of the daily requirement of Calcium per serving		
4	Number of calories per serving		
1	Number of servings in this package		

Description

8. **Select all** the ways that consumers can prevent food-borne illness.

Washing hands

Items

Cooking meat thoroughly

Keeping most food products at room temperature

Using the same knife for cutting meat and vegetables

Thawing frozen meat on the kitchen counter

9. Determine if the statement is true or false: *The American food supply is among the safest in the world.*

The statement is true

The statement is false

10. Determine if the statement is true or false: An adequate global food supply depends on the continued development and appropriate use of science, technology, and engineering.

The statement is true

The statement is false

11. Determine if the statement is true or false: *All types of scientific discoveries and applications of technology are accepted by consumers if they increase food production.*

This statement is true

This statement is false

12. **Select all** the technological advancements in agriculture that contribute to the ability to feed a growing population with a smaller number of producers.

Biotechnology

Availability of organic labeling

Genetic engineering

Animal-powered equipment

Refrigeration

Mechanization of equipment and implements

Reduction of conservation practices

13. Determine if the statement is true or false: *The geographic location of your food source plays a part in determining the price of the food.*

The statement is true

The statement is false

14. Select all factors that affect a country's production and distribution of food.

Economics

Geography

Population size

15. A farmer has 50 acres of land to grow a crop; which factors would need to be considered before making a choice about what to plant? **Select all** the correct choices.

Geographic location

Soil composition

Consumer demand

Climate change

Instrument 2

1. Determine if the statement is true or false: Sustainable agriculture is the practice of producing food, fiber, and fuel in a way that is profitable to the producer, supports quality of life, and protects natural resources.

The statement is true
The statement is false

2. Drag and drop the natural resource into the box with the corresponding sustainability practice.

Water	Selecting drought-tole	Selecting drought-tolerant crop species	
Soil			
Air			
		Reduce tillage	

3. **Select all** examples of sustainable agricultural practices.

Unregulated water use Intensive grazing along stream banks Continuous planting of the same crop Eliminate or reduce soil tillage

4. Determine if the statement is true or false: *The inspection of meat and poultry for wholesomeness is mandatory in the United States of America.*

The statement is true The statement is false 5. Match the name of the production system with its appropriate description.

Production System Description

Local food system Consumers share the benefits and risks of food

production by purchasing shares of a farm

operation.

Community-supported agriculture The prevailing agricultural production system uses

technological innovation for maximum efficiency.

Organic food system Food produced, processed, and distributed in a

limited geographic area often connects farms and

consumers at the point of sale.

Conventional food system Production promotes biodiversity; food is grown

and processed using little or no synthetic

fertilizers or pesticides.

6. **Select all** the following practices that provide the best balance for agricultural production while maintaining balance with natural resources.

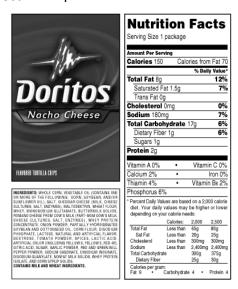
Integrated pest management

Using robots, drones, and global positioning systems

Using radio frequency identification chips

Using advertising strategies

7. Interpret the information given on this food label. Match the correct answer with the correct description.



Items	Description		
150	Grams of protein in two servings		
2%	Percent of the daily requirement of Calcium per serving		
4	Number of calories per serving		
1	Number of servings in this package		

8. **Select all** the processed foods.

Chocolate

Apple

Peanut butter

Artichoke

Yogurt

9. **Select all** the marketing terms used to influence consumer choices.

Barn-free

Non-vaccinated

Cage-free

Non-GMO

10. Determine if the statement is true or false: An adequate global food supply depends on the continued development and appropriate use of science, technology, and engineering.

The statement is true

The statement is false

11. **Select all** the following technologies frequently used in agricultural production systems.

Unmanned aerial systems (drones)

Robotics

Global positioning systems

Cloning

12. Select all: Which of the following practices benefits from precision agriculture?

Wildlife levels

Determining topsoil depth

Variable-rate pesticide application

Animal stocking rates

13. Determine if the statement is true or false: *The geographic location of your food source plays a part in determining the price of the food.*

The statement is true

The statement is false

14. Select all factors that affect a country's production and distribution of food.

Economics

Geography

Population size

15. **Select all** the following jobs related to agriculture.

Bioengineer

Timber grader

Mechanic

Biologist

Nutritionist

Answer Key

Instrument 1

- 1. T
- 2. F
- 3. Reduction of world hunger; Protection of food supply; Conservation of natural resources
- 4. Dead/decaying animals; Lawn/grass clippings; Manure
- 5. All answers
- 6. Integrated pest management; Using robots, drones, and GPS; Using radio frequency identification chips
- 7. 150 = calories; 2% = Calcium; 4 = Grams of protein in two servings; 1 = Number of servings in this package
- 8. Washing hands; Cooking meat thoroughly
- 9. T
- 10. T
- 11. F
- 12. Biotechnology; Genetic engineering; Refrigeration; Mechanization of equipment and implements
- 13. T
- 14. All answers
- 15. All answers

Instrument 2

- 1. T
- 2. Selecting drought-tolerant crop species:

Water Using a methane digester: Air

- Reduce tillage: Soil
- 3. Eliminate or reduce soil tillage
- 4. T
- 5. Local food system: Food produced, processed, and distributed in a limited geographic area, often connects farms and consumers at the point of sale. Community-supported agriculture: Consumers share the benefits and risks of food production by purchasing shares of a farm operation. Organic food system: Production promotes biodiversity, food is grown and processed using little or no synthetic fertilizers or pesticides. Conventional food system: The prevailing agricultural production system uses technological innovation for maximum efficiency.
- 6. Integrated pest management; Using robots, drones, and GPS; Using radio frequency identification chips
- 7. 150 = calories; 2% = Calcium; 4 = Grams of protein in two servings; 1 = Number of servings in this package
- 8. Chocolate; Peanut butter; Yogurt
- 9. Cage-free; Non-GMO
- 10. T
- 11. All answers
- 12. Determining topsoil depth; Variable-rate pesticide application
- 13. T
- 14. All answers
- 15. All answers