

## **Agriculture and Environment: Knowledge and Technology to Feed the World Area IV**

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1. Which food category gives us the highest food production in the world?
  - a. Legumes
  - b. Meat
  - c. Grain Products
  - d. Sugars & Sweeteners
  
2. What is the definition of agroecology?
  - a. Building and maintaining healthy soil
  - b. The science of managing farms as ecosystems
  - c. The science of minimizing air & water pollution
  - d. The science of managing water wisely
  
3. Placement of nutrients in crop soils result in the best results when?
  - a) Nutrients are broadcast on top of the soil with no tillage.
  - b) Nutrients are broadcast on top of the soil with tillage afterwards.
  - c) Nutrients are sprayed on top of the soil with no tillage.
  - d) Nutrients are banded into the soil during application.
  - e) B and D are correct
  
4. From the following list which is not a benefit from genetically engineered crops?
  - a. Reduced seed costs for farmers
  - b. Farmers can apply less pesticides
  - c. Increased yields
  - d. Increase crop quality
  
5. As we approach a projected 9 Billion world population by the year 2050, it is essential for the next generation of farmer to build organic matter in their soils to continue to keep them sustainable, what are some of the best management practices (BMPs) to make this happen?
  - a. Use as much conventional tillage and limited crop rotation as possible because it has been so successful for so many years to get the highest yields.
  - b. Introduce cover crops, minimal tillage and have a planned rotation of three different crops or more.
  - c. Use conventional tillage and minimal tillage concurrently to spread out how our soil is managed.
  - d. With synthetic fertilizer continuous corn or soybeans is the way to go because we always replace the nutrients we take out

6. In the 1930s, one of the most severe dust storms rolled across the southern plains causing extreme devastation to humans, livestock, and crops and was caused by the continuous use of the plow with the idea that “the rain follows the plow”. Over 80 years later, soil erosion continues to happen all around the globe whether it be water erosion or wind erosion. It is estimated that the world has lost over half of its topsoil in the last 150 years. Which of the following are some effects of this loss of fertile soil?
  - a. Increase in desertification
  - b. Sedimentation in waterways
  - c. Increased crop yields
  - d. Both A & B
  
7. All four of these "rights" are necessary for sustainable management of plant nutrition: management that sustainably increases the productivity of plants and crops. The 4Rs Nutrient Stewardship stand for which of the following?
  - a. Right Plant, Right Feed, Right Light and Right Plot
  - b. Right Sun, Right Row, Right Lime and Right Water
  - c. Right Source, Right Rate, Right Time and Right Place
  - d. Right Way, Right Steward, Right Place and Right Water
  
8. Which of the following agricultural practices is NOT a BMP used to maintain and improve soil structure with the goal of increasing water holding capacity?
  - a. Diverse crop rotations
  - b. Cover crops
  - c. Reduced tillage
  - d. Continuous corn
  
9. The intentional grazing of livestock in a managed wooded setting is called:
  - a. Agricultural forests
  - b. Silvopasture
  - c. High-fiber farming
  - d. Mast-based pasture
  - e. Oak-lot pasturing
  
10. Cover crops are getting more attention as a way to benefit modern agricultural practices. What are some of the benefits touted by proponents of this methodology?
  - a. Weed suppression, maintaining compaction, and increasing organic matter
  - b. Increase water holding capacity in soil, nitrogen capture & fixation, and attracting beneficial insects
  - c. Reducing metal toxicity in soil, carbon storage, and soil erosion prevention
  - d. Manure application sites, reducing earthworm populations, and phosphorous capture and cycling

11. Which of the following is considered a key sustainable agriculture practice?
- Rotating crops and embracing species diversity
  - Installing a heavy use pad
  - Tilling up crop fields each spring
  - Regular use of pesticides to control insect pests
12. In addition to minimizing the risk to bees from pesticide applications, what is another farm management practice that can be used to protect and/or encourage pollinators?
- Create more continuous acres of crop fields by reducing the amount of field margins
  - Stagger planting of a single crop variety or choose multiple varieties with different flowering periods
  - Remove weeds from pasture and hayfields
  - Disk or plow to depths greater than 6 inches
13. With the increase in technological advances, the average farmer in the United States has been able to feed more people with less available land. With the global population expected to hit 9.7 billion people most green plants can use. Plants capable of biologically fixing nitrogen are called\_\_\_\_\_?
- Mint
  - Legumes
  - Sorrel
14. By the year 2050, the amount of food will drastically need to increase. How many people can one US Farmer produce currently and what percent of a production increase will be needed to accommodate the growing population by 2050?
- 100 people, 70% food production increase
  - 125 people, 150% food production increase
  - 166 people, 70% food production increase
  - 200 people, 95% food production increase
15. What is NOT intended for legume cover crops to be used for?
- Fix atmospheric nitrogen for use by subsequent crops
  - Reduce or prevent erosion
  - Roadside beautification
  - Produce biomass and add organic matter to the soil
16. Which of the following has nothing to with No-till farming?
- Reduces soil erosion
  - Eliminates trips across the field
  - Reduces pesticide applications

17. Bioenergy decisions involve wildlife habitat and four general principles need to be kept in mind when making bioenergy decisions. Which statement is false?
- Species that inhabit newly regenerating forest may benefit from bioenergy demands
  - Species that rely on a single, mature type of habitat, such as bottomland hardwood forest are at risk if that type of habitat is harvested for bioenergy
  - Bioenergy demand could exacerbate habitat loss for species that are losing habitat to urbanization
  - Species with small ranges deserve less consideration because they can be more sensitive to landscape changes related to bioenergy harvesting.
18. Research has shown that microbes in the soil have an effect on which plants thrive and which plants die. This research can impact how we
- Plan restoration projects
  - Explain how microbes are similar around the world
  - Microbe populations are the same at the top of a mountain and at the base
  - Plants survive drought because of their physiology and not because of the interaction with the microbes in the soil
19. Which statement is not true about Biotechnology in Agriculture?
- To make Some crops tolerate to certain herbicides which makes weed control simpler and more efficient
  - Two agencies regulate the industry: USDA Animal and plant Inspection Services and the Department of Health and Human Services Food and Drug Administration
  - To make some plants resistant to certain insects which can cut back on pesticides
  - Biotechnology is used in over 90% of planted soybeans in the US
20. Studies have shown that lawns could produce 10% of the world's food. Urban agriculture is growing in popularity in the US. Lawns in the US take up what percent of Land in the US.
- 20-30 million acres
  - 30-40 million acres
  - 10-15 million acres
  - 40-50 million acres
21. When Nitrogen is applied to the soil, it must be converted to a \_\_\_\_\_ to be used by the plant.
- Nutrient
  - Nematode
  - Nitride
  - Nitrate

22. The current trend in production agriculture is
- Increase farm size
  - Decrease farm machinery size
  - Use older, less expensive machinery
  - Decrease farm size
23. Which of the following practices are part of Conservation Agriculture?
- Less tillage, rotation of crops, nutrient management, retain residues, labor management
  - Nutrient management, retain residues, rotation of crops, less tillage, pest management
  - Labor management, nutrient management, retain residues, no-tillage, pest management  
Rotation of crops, retain residues, pest management
24. In Precision Agriculture the acronym "GPS" stands for;
- Global Positioning System
  - Graduated Precision Scenario
  - Global Precision System
  - Global Position Spacing
25. Soil erosion can be managed by which of the following practices
- Grass waterway
  - Seed selection
  - Nutrient placement
  - Type of planting equipment