

CEI - Agricultural and the Environment Questions 2019

- 1) If a field has a 20 foot elevation change over a distance of 1000 feet, the fields slope percentage is:
 - a. 20%
 - b. .2%
 - c. 2.0%**
 - d. 50%
- 2) Genetic modification helps modern farmers to maximize yields and minimize disease and pest damage. What technology can edit plant genomes by targeting genes and modifying them by deletion or insertion?
 - a. Crispr Cas-9**
 - b. Gmo's
 - c. RNA
 - d. Endoplasm
- 3) Which is an issue with growing genetically modified crops?
 - a. Higher yields
 - b. Less tolerant to drought
 - c. Some countries don't allow their sale**
 - d. Can't handle wet weather
- 4) Soybeans, like other legumes, have the ability to fix what nutrient using rhizobia bacteria?
 - a. Phosphorus
 - b. Calcium
 - c. Potassium
 - d. Nitrogen**
- 5) What are UAV's (unmanned aerial vehicles) not used for in agriculture?
 - a. Harvesting**
 - b. Digital Imaging
 - c. Infra red Imaging
 - d. Yield prediction
- 6) All are benefits of precision farming, except:
 - a. More efficiency
 - b. Higher yields
 - c. More production data
 - d. Low equipment cost**
- 7) What signal word for pesticide labels is required for high toxicity category I pesticides?
 - a. DANGER**
 - b. CAUTION
 - c. WARNING
 - d. None of the above
- 8) Growing two stands of production crops in the same field one after the other, over a one year period, is called:
 - a. Companion crops
 - b. Double Cropping**
 - c. Multi-field system
 - d. No-till

- 9) GMO's, or Genetically Modified Organisms, include:
- a. Natural mutation
 - b. Transgenic crops
 - c. Mutated crops from radiation
 - d. All of the Above**
- 10) Which is higher, seeding rate or plant population?
- a. Plant population
 - b. Seeding rate**
 - c. They are equal
 - d. Depends on the year
- 11) A plant that produces a flower in its second year and then dies is considered a:
- a. Winter Annual
 - b. Summer Annual
 - c. Biennial**
 - d. Perennial
- 12) What is the benefit of quick canopy closure?
- a. Less chance for weed growth
 - b. More light interception
 - c. Less damage when spraying
 - d. a & b**
 - e. All of the above
- 13) What practice would help keep phosphorus from moving off site?
- a. Avoiding soil overloading with nutrients
 - b. Avoiding nutrient application on frozen or snow-covered soil
 - c. Injecting or incorporating nutrients in soil
 - d. All of the above**
- 14) What is the heat index used to best predict when a crop will reach certain points in its lifecycle?
- a. Growing Degree Days (GDD)**
 - b. Days After Plant
 - c. Heat Hours
 - d. Degrees Fahrenheit
- 15) Even with modern technology, fields under continuous no-till can have rills and gullies form because of water erosion. Choose the soil characteristics that are most susceptible to this land management concern.
- A) soils with low infiltration rates and slow permeability within the soil profile**
 - B) soils with high infiltration rates a good permeability within the soil profile
 - C) soils with low infiltration rates and good permeability with in the soil profile
 - D) soils with high infiltration rates and slow permeability within the soil profile

- 16) Ammonia (NH_3) volatilization, leaching, and denitrification are the three dominant pathways where soils lose nitrogen fertilizers impacting air and water quality. To mitigate this concern nitrogen fertilizers are treated (stabilized) to enable slow release over time. Choose the most correct statement about stabilized nitrogen fertilizers.
- A) Nitrogen stabilizers cannot regulate different forms of plant available nitrogen.
 - B) Nitrogen stabilizers treat nitrogen fertilizers with urease inhibitors and/or nitrification inhibitors.**
 - C) Nitrification inhibitors and urease function the same way.
 - D) Nitrogen stabilizer and urease efficiency are not affected by soil type.
- 17) Non-chemical weed-management practices are sometimes used in place of chemical treatment. Choose the most correct statement.
- A) At some point herbicides will not be needed for weed control.
 - B) Weeds have not developed herbicide resistance therefore non-chemical weed control is less often used for weed control.
 - C) The goal of non-chemical weed control is to limit the weed "seed bank" in the soil.**
 - D) Tillage, a form of non-chemical weed control, cannot reduce weed population densities sufficiently enough in modern agricultural operations.
- 18) Areas of the United States with low precipitation, declining ground water levels, pumping restrictions, and persistent droughts demand farmers adopt new management practices when using irrigation. Choose the most correct statement.
- A) Soil texture and soil structure do not affect irrigation practices.
 - B) Conservation tillage is difficult to use when irrigation is necessary for crop production.
 - C) When irrigating farmers establish a target level of evapotranspiration based on acres farmed and gallons of water available.**
 - D) Surface furrow irrigation is more efficient than subsurface drip irrigation.
- 19) Farmers are more concerned now with water quality issues than at any other time in the history of farming. Fertilizer management directly affects air and water quality. Soil tests and plant tissue analysis are tools used when developing fertilizer management plans. Choose the most correct statement.
- A) Soil tests are the most reliable method for preventing plant nutrient deficiencies.**
 - B) Nutrient deficiency symptoms must appear on plant foliage before plant issue analysis can determine the nutrient status of the soil.
 - C) Plant tissue analysis is similar to and interchangeable with soil testing for measuring nutrient amounts when making fertilizer management program decisions.
 - D) Observed visual symptoms on plant foliage reflect soil nutrient deficiencies and not environmental conditions such as soil compaction.
- 20) Which food category gives us the highest food production in the world?
- a. Legumes
 - b. Meat
 - c. Grain Products**
 - d. Sugars & Sweeteners

- 21) The 2012 Census of Agriculture survey finds that the average age of farmers in the United States is slightly more than 58 years of age, so the next generation of farmers appears to be changing. What demographics fit the next generation of farmers?
- a. **70% have completed degrees beyond a high school education and 75% have not grown up on a farm.**
 - b. 85% have completed high school and 70% were raised on a farm growing up.
 - c. 100% have completed high school and 50% grew up on a farm and 50% did not.
 - d. 100% have completed degrees beyond a high school education and 100% were raised on a farm growing up.
- 22) 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
- 23) Soil test reports are the best way for farmers to know what nutrients are in their soil right now. Look at the following soil test report. What nutrient level needs adjusted the most for the best crop?
- a. **Soil pH**
 - b. Phosphorus
 - c. Potassium
 - d. Magnesium
 - e. Nitrogen
- 24) According to the report, what was the projected crop for year 2?
- a. Corn
 - b. Soybeans
 - c. **Hay**
 - d. Peas
 - e. pumpkins
- 25) How many total lbs of Nitrogen will the farmer need to purchase for year 1 for this field based on the expected yield?
- a. 100 lbs
 - b. 500 lbs
 - c. 1,000 lbs
 - d. **10,000 lbs**
 - e. No need to add nitrogen



SOIL TEST REPORT FOR:				ADDITIONAL COPY TO:			
DATE	LAB #	SERIAL #	COUNTY	ACRES	ASCS ID	FIELD ID	SOIL
06/27/2018	S18-30515		OH-ASHTABULA	100		20180001	

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
¹ Soil pH	8.0				
² Phosphorus (P)	32	ppm			
² Potassium (K)	139	ppm			
² Magnesium (Mg)	298	ppm			

RECOMMENDATIONS:	(See back messages for important information)
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Limestone*: NONE

*Calcium Carbonate equivalent

Magnesium (Mg): NONE

Plant Nutrients: (If manure will be applied, adjust these recommendations accordingly. See back of report.)

Year	Crop	Expected Yield	Nitrogen (lb N/A)	Phosphate (lb P ₂ O ₅ /A)	Potash (lb K ₂ O/A)	
1	Planting Mixed Grasses	2 T/A	100	20	60	See ST2 for other crop recommendations

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

2	Planting Mixed Grasses	2 T/A	100	20	60	See ST2 for other crop recommendations
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For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

3	Planting Mixed Grasses	2 T/A	100	20	60	See ST2 for other crop recommendations
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For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

ADDITIONAL RESULTS:						Optional Tests:			² Trace Elements		
² Calcium (ppm)	³ Acidity (meq/100 g)	⁴ CEC (meq/100 g)	% Saturation of the CEC			Organic Matter %	Nitrate-N ppm	Salts mmhos/cm	See back for comments		
			K	Mg	Ca				Zinc ppm	Copper ppm	Sulfur ppm
2657	0.0	16.1	2.2	15.4	82.4				9.3	7.0	24.1

Test Methods: ¹1:1 soil:water pH, ²Mehlich 3 (ICP), ³Mehlich Buffer pH, ⁴Summation of Cations