

2012 State FFA Agronomy C.D.E.

Written Exam

- In regard to nitrogen fixation by legumes:
 - The nitrogen comes from fertilizers and is converted by bacteria to a usable form.
 - The nitrogen comes from the atmosphere and is "fixed" by legume plants.
 - The nitrogen comes from the atmosphere and is "fixed" by bacteria on legume roots.
 - All of the above are true.
- Which of the following statement(s) about red clover is/are true?
 - Red clover is more tolerant than alfalfa to poorly drained soils.
 - Red clover performs well on sandy soils.
 - Red clover does not need to be fertilized.
 - All of the above are true.
- Red clover is said to supply how many pounds of nitrogen to the following corn crop?
 - 40 pounds per acre
 - 60 pounds per acre
 - 80 pounds per acre
 - 100 pounds per acre
- When keeping red clover for a second year, the last cutting for this year should be made by:
 - August 1.
 - August 15.
 - August 31.
 - September 15.
- Long -term studies on yields and prices in Iowa and surrounding states indicate winter wheat returns _____ more revenue per acre than barley or oats.
 - \$10-20
 - \$30-40
 - \$50-60
 - More than \$100
- When evaluating soybean hybrids, lodging refers to:
 - Seeds that don't emerge.
 - Seedlings that die shortly after emergence.
 - Plants that break off or fall over.
 - All of these.
- SCN in the Iowa Crop Performance Test refers to:
 - Soybean Cyst Nematodes.
 - Soybean Colored Nodes from iron deficiency.
 - Soybean Chlorosis from (Na) sodium deficiency.
 - Scoring Crown Nodes.
- When discussing the hilum in soybean production, the hilum is:
 - The seed coat.
 - The source of food for the germinating seed.
 - The first root to emerge at germination.
 - The point where the seed attaches to the pod.
- Brown stem Rot is caused by:
 - Phialophora gregata*
 - Phytophthora*
 - Pubescence
 - Rhizobium* bacteria
- Which two categories are evaluated in the Iowa Crop Performance test for soybeans?
 - Carbohydrates and oils
 - Fats and oils
 - Proteins and oils
 - Proteins and vitamins

11. For each corn seed planted, how many new seeds are produced?
 - A. 250-500
 - B. 500-1000
 - C. 1000-1500
 - D. 1500-2200

12. Corn accumulates approximately 275 pounds of N/acre by physiological maturity. How much of the N is in the grain?
 - A. 10-20%
 - B. 20-30%
 - C. 30-50%
 - D. 50% or more

13. At "physiological maturity" a plant has reached:
 - A. Maximum dry weight.
 - B. Maximum per cent moisture.
 - C. Physiological dormancy.
 - D. Total respiration.

14. Nitrogen fertilization rates for corn need to be adjusted for contributions from:
 - A. Manure.
 - B. Previous legume crops.
 - C. Soil nitrate levels.
 - D. All of these.

15. Which nitrogen application would be used more efficiently?
 - A. Fall applied anhydrous.
 - B. Spring applied anhydrous.
 - C. Spring applied urea.
 - D. Sidedress applications of nitrogen.

16. Without nitrogen fertilization, corn yields on productive soils would be ____% the optimum yield in continuous corn?
 - A. 25%.
 - B. 45%.
 - C. 55%.
 - D. 75%.

17. According to a 2002 census, how many acres were dedicated to "organic " production?
 - A. 800,000 acres.
 - B. 1.25 million acres.
 - C. 2.5 million acres.
 - D. Less than 500,000 acres.

18. What GMO crops are allowed in organic production?
 - A. No GMO crops are allowed.
 - B. Roundup-ready crops.
 - C. Bt corn.
 - D. All insect resistant GMOs.

19. Livestock that is marketed as "organic" must:
 - A. Receive 100% organic feed.
 - B. Have access to pasture.
 - C. Not be implanted with synthetic hormones.
 - D. All of the above are true.

20. Allelopathic crops are used in organic production to help control weeds. What two crops are allelopathic?
 - A. Rye and oats.
 - B. Pumpkins and squash.
 - C. Sweet corn and pinto beans.
 - D. All of these crops are allelopathic.

21. According to Iowa State University research, which crop was found to be the most lucrative in an organic system?
- A. Organic dry beans.
 - B. Hay.
 - C. Medicinal herbs.
 - D. Soybeans.
22. Which part of the corn seedling elongates to cause emergence?
- A. Radicle.
 - B. Mesocotyl.
 - C. Coleoptile.
 - D. Hypocotyl.
23. In corn stage R1 refers to:
- A. Tasseling.
 - B. Silking.
 - C. Physiological maturity.
 - D. Denting.
24. Pollination is said to be the most critical stage in corn growth. What is the easiest way to avoid heat stress during this stage?
- A. Plant shorter season hybrids
 - B. Plant early
 - C. Sidedress nitrogen during this stage
 - D. Apply fungicides
25. An early frost in the fall that occurs before the corn plant has reached physiological maturity would most likely cause:
- A. Lower test weights.
 - B. Fewer ears.
 - C. Ear tip die back.
 - D. All of these.
26. Producers determine when a corn plant has reached physiological maturity by:
- A. The plant turning yellow.
 - B. The presence of a black layer.
 - C. Ear drop.
 - D. Corn denting.
27. A late frost after planting may slow maturity, but will not kill a corn seedling because:
- A. The growing point is still below the ground.
 - B. The hypocotyls will make new leaves.
 - C. The seminal roots are not formed yet.
 - D. The radical won't be injured.
28. In corn production which nutrient is returned to the soil in higher levels in the crop residue?
- A. Nitrogen.
 - B. Phosphorus.
 - C. Potassium.
 - D. All of these are equally returned.
29. Flooding of corn at any stage when the growing point is below water level can kill the corn plant:
- A. In a few days.
 - B. In one to two weeks.
 - C. In 12 hours.
 - D. In 6 hours.
30. The seed coat of a corn kernel is called the:
- A. Hilum.
 - B. Pedicel.
 - C. Pericarp.
 - D. Scutellum.

31. When oats or another small grain is seeded with alfalfa, the small grain is called a(an):
- A. Intercrop.
 - B. Nurse crop
 - C. Cover crop.
 - D. Green manure crop.
32. When selecting forage species, first consider the:
- A. Intended use.
 - B. Growth habit.
 - C. Yield.
 - D. Ability to "fix" nitrogen.
33. Seedling death rates in forages are surprisingly high. What would be a likely death rate in forage species?
- A. 15-20%
 - B. 25-30%
 - C. 40-60%
 - D. 70-80%
34. Which forage variety would be best suited for soils with high fertility and good drainage?
- A. Alfalfa
 - B. Red clover
 - C. White clover
 - D. Alsike clover
35. If a forage is expected to be used for three years, what factor should be considered first when selecting seed?
- A. Ability to tolerate acid soils
 - B. Ability to "fix" nitrogen
 - C. Ability to withstand poor drainage
 - D. Winter hardiness
36. Which mixture of legumes and grasses would be considered most desirable?
- A. 2-3 species
 - B. 5-6 species
 - C. 6-8 species
 - D. A pure stand is best
37. Alfalfa may experience winter-kill because of:
- A. Cutting after September 1.
 - B. An ice layer forming on the ground surface (smothering).
 - C. Heaving and thawing breaking the crown.
 - D. All of these.
38. For maximum forage feeding value alfalfa should be cut at what stage?
- A. Pre-bud
 - B. Late bud
 - C. Mid bloom
 - D. Full bloom
39. The thickness of the A horizon in soils has an effect on:
- A. Crop yields.
 - B. The amount of soil moisture stored for crop use.
 - C. Weeds present.
 - D. A & C
40. Reducing row spacing can:
- A. Reduce soil erosion on sloping land.
 - B. Increase weed control from earlier canopy closure.
 - C. Increase soil moisture loss from evaporation.
 - D. All of the above are true.

41. Corn yields decline significantly when topsoil thickness is less than _____ inches.
- A. 11.
 - B. 15.
 - C. 20.
 - D. 24.
42. According to the publication "Soil Erosion, Crop productivity and Cultural Practices" it was found that corn yields decreased 0.79 bu./acre for each one percent increase in slope. One would expect how much yield decrease as a slope went from 3% to 7%?
- A. 3.16 bushels
 - B. 4 bushels
 - C. 7.9 bushels
 - D. Greater than 10 bushels
43. Soil erosion is directly related to:
- A. Amount of plant residue on the soil.
 - B. Tillage practices.
 - C. Duration and intensity of rainfall.
 - D. All of the above.
44. The late spring nitrate test is used to assess:
- A. Plant available nitrogen.
 - B. Anhydrous ammonia levels.
 - C. Soil micro-organism activity.
 - D. All of the above are true.
45. Nitrogen in the form of _____ is a concern in drinking water.
- A. Urea.
 - B. Anhydrous.
 - C. Nitrite.
 - D. Nitrate.
46. Phosphorus and potassium are normally quite immobile in the soil. Which soil textural class would be most apt to have significant movement through the soil of potassium and phosphorus?
- A. Clay.
 - B. Loam.
 - C. Silt.
 - D. Sand.
47. Anhydrous ammonia can be applied in the fall if the soil temperature is below:
- A. 20 degrees.
 - B. 50 degrees.
 - C. 60 degrees.
 - D. 70 degrees.
48. Agronomy is the study of:
- A. Crops.
 - B. Soil chemistry.
 - C. Soil biology.
 - D. All of these are part of Agronomy.
49. From which of the following sources is nitrate added to or formed in the soil?
- A. Green manure crops
 - B. Animal manure
 - C. Inorganic fertilizers
 - D. All of these
50. When taking soil samples in a conventional tilled system, one should sample at a depth of:
- A. 2-3 inches.
 - B. 4-5 inches.
 - C. 6-7 inches.
 - D. 9-10 inches.