

## 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.
- 11.
  - 15.
  - 20.
  - 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%?
- 3.16 bushels
  - 4 bushels
  - 7.9 bushels
  - Greater than 10 bushels
43. Soil erosion is directly related to:
- Amount of plant residue on the soil.
  - Tillage practices.
  - Duration and intensity of rainfall.
  - All of the above.
44. The late spring nitrate test is used to assess:
- Plant available nitrogen.
  - Anhydrous ammonia levels.
  - Soil micro-organism activity.
  - All of the above are true.
45. Nitrogen in the form of \_\_\_\_\_ is a concern in drinking water.
- Urea.
  - Anhydrous.
  - Nitrite.
  - 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?
- Clay.
  - Loam.
  - Silt.
  - Sand.
47. Anhydrous ammonia can be applied in the fall if the soil temperature is below:
- 20 degrees.
  - 50 degrees.
  - 60 degrees.
  - 70 degrees.
48. Agronomy is the study of:
- Crops.
  - Soil chemistry.
  - Soil biology.
  - All of these are part of Agronomy.
49. From which of the following sources is nitrate added to or formed in the soil?
- Green manure crops
  - Animal manure
  - Inorganic fertilizers
  - All of these
50. When taking soil samples in a conventional tilled system, one should sample at a depth of:
- 2-3 inches.
  - 4-5 inches.
  - 6-7 inches.
  - 9-10 inches.