

**2016 State FFA Crops Contest
Management Exam**

Do not write on Test!

Bubble answers in the Exam section of the scantron

Corn (Questions 1-25). Circle one answer for each question.

1. The range of planting rates most commonly used for corn production in Minnesota:
 - a. 17,000 to 27,000 seeds/acre
 - b. 28,000 to 38,000 seeds/acre
 - c. 39,000 to 49,000 seeds/acre
 - d. 50,000 to 60,000 seeds/acre

2. Corn development is related to growing degree days (GDD), which measure heat accumulation based on daily high and low air temperatures. The high daily temperature threshold used when calculating GDD is:
 - a. 32 degrees Fahrenheit
 - b. 50 degrees Fahrenheit
 - c. 65 degrees Fahrenheit
 - d. 86 degrees Fahrenheit

3. The minimum soil temperature for corn germination is.
 - a. 32 degrees Fahrenheit
 - b. 44 degrees Fahrenheit
 - c. 50 degrees Fahrenheit
 - d. 56 degrees Fahrenheit

4. The decision regarding whether to replant corn should take into account all but which of the following?
 - a. Remaining corn plant population
 - b. Potential yield of the existing corn crop
 - c. Replanting costs
 - d. Severity of damage to the corn unifoliate leaves

5. The growing point in corn remains below the soil surface until what developmental stage?
 - a. VE (emergence of the first leaf)
 - b. V5 (5 leaf collar stage)
 - c. V12 (12 leaf collar stage)
 - d. VT (tassel emergence)

6. A corn plant typically produces _____ leaves.
 - a. 18
 - b. 28
 - c. 38
 - d. 48

7. The secondary root system in corn which becomes visible by V2 (2 leaf collar stage) and becomes dominant by V6 (6 leaf collar stage):
 - a. Seminal root system
 - b. Lateral root system
 - c. Nodal root system
 - d. Brace root system

8. The potential number of kernels per row on a corn ear is determined during what developmental stages?
 - a. VE to V5 (emergence to 5 leaf collar stage)
 - b. V5 to V8 (5 to 8 leaf collar stages)
 - c. V12 to VT (12 leaf collar stage to tassel emergence)
 - d. R1 to R3 (silking to milk stages)

9. What is the developmental stage in corn when rapid vegetative growth and nitrogen uptake begins?
 - a. VE (emergence)
 - b. V6 (6 leaf collar stage)
 - c. V12 (12 leaf collar stage)
 - d. R1 (silking stage)

10. Severe drought at which developmental stage in corn is most damaging to corn grain yield?
 - a. V6 (6 leaf collar stage)
 - b. V12 (12 leaf collar stage)
 - c. Silking (R1 stage)
 - d. Dent (R5 stage)

11. What is the growth stage of corn where drought stress causes kernel abortion?
 - a. R1 (silking)
 - b. R2 (blister)
 - c. R4 (dough)
 - d. R5 (dent)

12. Which of the following is a typical symptom of plant growth regulator herbicide (such as 2,4-D) injury in corn?
 - a. Bottle brush root system
 - b. Necrosis of margins on lower leaves
 - c. Fused brace roots and leaning stalks
 - d. Bleaching of leaf tissue

13. Decisions regarding postemergence herbicide application timing in corn should take into account all but which of the following?
- The potential to tank-mix an iron chelate fertilizer
 - The weather forecast
 - Weed density
 - Weed size
14. Which of the following is a common potassium deficiency symptom in corn?
- Chlorosis and necrosis of leaf tips and along the mid-rib of the oldest leaves
 - Chlorosis and necrosis along the margins of the oldest leaves
 - Interveinal chlorosis of the youngest leaves
 - Purple discoloration on the oldest leaves
15. Managing this nutrient for corn production can be challenging because it is susceptible to leaching following heavy rainfall.
- Magnesium
 - Nitrogen
 - Phosphorus
 - Zinc
16. Which insect pest can reduce the number of planted corn seeds that emerge?
- Corn rootworm
 - Dingy cutworm
 - Stink bug
 - Wireworm
17. Which of the following is a beneficial insect in corn?
- Armyworms
 - Lady beetles
 - Slugs
 - White grubs
18. Damage to corn roots by nematodes is most likely to occur on:
- Coarse-textured sandy soils
 - Medium-textured loamy soils
 - Fine-textured clayey soils
 - High organic matter peat soils
19. Common rust is a foliar disease of corn. Which statement below is true about this disease?
- Crop rotation is effective for controlling this disease in Minnesota
 - Rust spores are blown into Minnesota from southern states
 - This disease is favored by hot weather (above 86 degrees Fahrenheit).
 - This disease is transmitted by corn leaf aphids

20. Which of the following is a bacterial disease of corn that appears as long, grayish-green to black, water-soaked lesions with wavy edges that may grow together?
- Anthracnose leaf spot
 - Eyespot
 - Goss's wilt
 - Northern leaf blight
21. Root lodging in corn is favored by which of the following?
- Burning of leaf tissue from foliar fertilizer application
 - Drought stress
 - Early planting followed by a late spring frost
 - Saturated soil conditions followed by strong winds
22. Corn silage is typically harvested during what developmental stage?
- Blister
 - Milk
 - Dough
 - Dent
23. On a dry weight basis, which is the most accurate description of the composition of a corn kernel?
- 10% fiber, 10% oil, 10% protein, 70% starch
 - 10% fiber, 20% oil, 20% protein, 50% starch
 - 10% fiber, 30% oil, 10% protein, 50% starch
 - 10% fiber, 10% oil, 30% protein, 50% starch
24. Once corn grain has reached physiological maturity, grain moisture content is typically:
- 15%
 - 24%
 - 32%
 - 65%
25. Which of the following hybrid traits is not associated with more rapid in-field dry-down of grain after physiological maturity?
- Early ear drop from an upright position
 - Later relative maturity
 - Looser husks
 - Thinner seed coats

Alfalfa (Questions 26-50). Circle one answer for each question.

26. Which of the following winterhardiness ratings is best suited for an alfalfa variety adapted to Minnesota conditions?
- a. 00
 - b. 2
 - c. 4
 - d. 6
27. The preferred time of alfalfa seeding is:
- a. Spring
 - b. Late summer
 - c. Fall
 - d. Late winter (frost seeding)
28. Successful establishment of alfalfa by direct seeding is favored by all but which of the following?
- a. Seeding prior to April 1
 - b. Planting in a field with low potential for soil erosion
 - c. Effective weed management
 - d. Harvesting the first cutting of alfalfa at about 60 days after germination
29. Alfalfa seeding rates should be between _____ pounds/acre.
- a. 5 to 8
 - b. 12 to 15
 - c. 19 to 22
 - d. 26 to 29
30. The ideal seedbed for alfalfa establishment at the time of planting should have a soil surface that is:
- a. Fluffy
 - b. Firm
 - c. With a crust
 - d. Free of crop residues
31. With favorable conditions of soil moisture and soil structure alfalfa should be planted at a depth of:
- a. Less than 1 inch
 - b. 1 to 2 inches
 - c. 3 to 4 inches
 - d. As deep as necessary to place the seed in moist soil

32. The risk of stand failure with alfalfa reseeding due to autotoxicity is greatest when:
- The soil is sandy
 - There is no tillage prior to reseeding
 - Age of the previous alfalfa stand is less than 1 year
 - Reseeding is delayed by at least 12 months following termination of the previous alfalfa stand
33. Alfalfa prefers a soil pH of:
- 3.5 to 4.5
 - 4.5 to 5.5
 - 5.5 to 6.5
 - greater than 6.5
34. Alfalfa does not need to be fertilized with this nutrient if the seeds have been properly inoculated prior to planting.
- Nitrogen
 - Phosphorus
 - Potassium
 - Boron
35. Phosphorus-deficient alfalfa will show these symptoms:
- Chlorotic leaves and shortened stems
 - Interveinal chlorosis on upper leaves
 - Necrotic spots on lower leaves
 - Blue-green leaves and stunted growth
36. Which of the following nutrients is removed in the greatest quantity with alfalfa production?
- Phosphorus
 - Potassium
 - Sulfur
 - Boron
37. If alfalfa is planted with a small grain companion crop, a good stage to harvest the companion crop that provides optimum forage quality and forage yield of the small grain and results in minimal damage to the alfalfa is the _____ growth stage of the small grain.
- Tillering
 - Boot
 - Jointing
 - Milk
38. Weed control in alfalfa is most important for:
- Annual weeds
 - Perennial weeds
 - Broadleaf weeds
 - The last year of alfalfa production

39. The insect which induces chlorosis in alfalfa is:
- Thrips
 - Grasshopper
 - Potato leafhopper
 - Pea aphid
40. Alfalfa weevil larvae damage alfalfa by:
- Chewing on leaves
 - Piercing stems and leaves and extracting plant juice
 - Feeding on planted seed prior to emergence
 - Transmitting viruses
41. The decision to spray an insecticide for controlling potato leafhoppers should take into account all but which of the following?
- Age of the alfalfa stand
 - Alfalfa plant population
 - Alfalfa plant height
 - Whether the alfalfa variety has resistance to potato leafhopper
42. Diseases in alfalfa are controlled primarily through:
- Resistant varieties
 - Plant spacing
 - Foliar fungicides
 - Harvest timing
43. Common diseases of alfalfa in Minnesota are:
- Aphanomyces root rot, bacterial wilt, Phytothora root rot
 - Bacterial leaf streak, stem rust, white mold
 - Goss's wilt, Fusarium head blight, net blotch
 - Leaf rust, gray leaf spot, loose smut
44. Which of the following are symptoms of anthracnose in alfalfa?
- Yellow cotyledons
 - Small brown to black lesions on leaves
 - White and fluffy masses growing at the base of stems
 - Stems with large, sunken lesions
45. The severity of which of the following alfalfa diseases can be reduced by harvesting alfalfa at earlier stages of maturity?
- Anthracnose
 - Root-lesion nematode
 - Spring black stem
 - Verticillium wilt

46. Which alfalfa harvest timing provides the most ideal combination of forage yield and nutritional quality?
- Before the first flowers appear
 - 10% bloom
 - 90% bloom
 - After all plants have bloomed
47. Alfalfa should be dried to approximately _____% moisture before it can be safely baled for hay without great risk of mold development.
- 10 to 12
 - 20 to 22
 - 30 to 32
 - 40 to 42
48. The single most important factor in determining the quality of forage from alfalfa is:
- Variety grown
 - Plant population per acre
 - Dry matter yield
 - Stage of maturity when harvested
49. Which of the following management schemes for alfalfa would result in depletion of the root reserves of the crop over the season and potential loss of stand?
- Harvest twice at full bloom
 - Harvest three times at full bloom
 - Harvest four times prior to bud formation
 - Harvest four times at early bloom
50. The decision to rotate from alfalfa to corn should take into account all but which of the following?
- Alfalfa yield level
 - Alfalfa stand density
 - Whether there was recent potato leafhopper injury to the alfalfa
 - Weed density in the alfalfa stand

2016 Crops Exam Key

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| 1. B | 32. B |
| 2. D | 33. D |
| 3. C | 34. A |
| 4. D | 35. D |
| 5. B | 36. B |
| 6. A | 37. B |
| 7. C | 38. B |
| 8. C | 39. C |
| 9. B | 40. A |
| 10. C | 41. B |
| 11. B | 42. A |
| 12. C | 43. A |
| 13. A | 44. D |
| 14. B | 45. C |
| 15. B | 46. B |
| 16. D | 47. A |
| 17. B | 48. D |
| 18. A | 49. C |
| 19. B | 50. C |
| 20. C | |
| 21. D | |
| 22. D | |
| 23. A | |
| 24. C | |
| 25. B | |
| 26. B | |
| 27. A | |
| 28. A | |
| 29. B | |
| 30. B | |
| 31. A | |