

**2019 State FFA Crops Contest
Management Exam**

Name: _____

FFA Chapter: _____

Contestant No.: _____

Choose one answer for each question. Enter your answers in the “Exam” section of the bubble sheet, numbers 1-50. Soybean (Questions 1-25).

1. During soybean germination, the ____ are pushed aboveground by elongation of the hypocotyl.
 - a. Coleoptile
 - b. Cotyledons
 - c. Radicle
 - d. Unifoliate leaves

2. The soybean growth stage known as VC indicates:
 - a. Emergence
 - b. Unifoliate leaves have just unrolled
 - c. One fully developed trifoliate leaf node
 - d. One fully developed internode

3. The soybean growth known as R3 indicates:
 - a. Beginning seed
 - b. Beginning pod
 - c. Beginning bloom
 - d. Beginning maturity

4. The major “raw” material for photosynthesis by soybean is:
 - a. Oxygen
 - b. Carbon dioxide
 - c. Atmospheric nitrogen
 - d. Carbohydrates

5. Soybean has which metabolic pathway for carbon fixation in photosynthesis:
 - a. CAM
 - b. C3
 - c. C4
 - d. Symbiotic

6. Nitrogen fixation in soybean occurs in specialized root structures called:
 - a. Cotyledons
 - b. Hypocotyls
 - c. Mycorrhizae
 - d. Nodules

7. Which is not an important factor to consider when selecting a variety of soybean to plant?
 - a. Maturity
 - b. Standability
 - c. Pest resistance
 - d. Seed starch content

8. Soybean varieties grown in Minnesota are:
 - a. Long-day types
 - b. Day-neutral types
 - c. Determinate types
 - d. Indeterminate types

9. Highest soybean yield in Minnesota typically occurs when soybean is planted in:
 - a. Rows narrower than 30 inches
 - b. 30-inch rows
 - c. 36-inch rows
 - d. Any row width between 6 and 36 inches

10. Incidence of iron deficiency chlorosis in soybean is most effectively reduced by:
 - a. Application of lime
 - b. Nitrogen fertilization
 - c. Delayed planting
 - d. Variety selection

11. This post-emergence herbicide active ingredient is used on the majority of the soybean acreage in Minnesota:
 - a. Chlrorimuron
 - b. Fenoxaprop
 - c. Glyphosate
 - d. Metribuzin

12. The type of weeds most difficult to control and causing the greatest yield loss in soybean are:
 - a. Cool-season grasses - green and yellow foxtail
 - b. Warm-season grasses - fall panicum and johnsongrass
 - c. Cool-season broadleaves - lambsquarter and pigweed
 - d. Warm-season broadleaves - cocklebur and velvetleaf

13. Which of the following is not a disease of soybean in Minnesota?
 - a. Bacterial blight
 - b. Phytophthora root and stem rot
 - c. Pseudothecia tan spot
 - d. Purple seed stain

14. Symptoms of white mold in soybean include:
- Green to yellow mottling of young leaves
 - Black sclerotinia
 - Powdery mildew on the upper surfaces of leaves
 - Reddish-brown lesions on the under-sides of leaves
15. Which of the following soybean diseases is reduced by crop rotation:
- Asian rust
 - Cyst nematode
 - Powdery mildew
 - Pythium root rot
16. Which of the following soybean diseases is reduced by delayed planting:
- Bacterial pustule
 - Bean pod mottle virus
 - Mosaic virus
 - Stem canker
17. Important soybean pests include all but which of the following?
- Aphids
 - Japanese beetles
 - Spider mites
 - Rootworms
18. Which of the following soybean pests can be controlled with an insecticide seed treatment used as part of an integrated pest management plan?
- Bean leaf beetles
 - Earworm
 - Fall armyworm
 - Stink bugs
19. Edible seeds of legumes such as soybean are called:
- Cereals
 - Corms
 - Pulses
 - Staples
20. Soybean seed typically contains ____% protein at harvest.
- 8.5
 - 13.0
 - 18.5
 - 36.0

21. Soybean seed typically contains ____% oil at harvest.
- 8.5
 - 13.0
 - 18.5
 - 36.0
22. In a field where soybean was recently harvested, an agronomist counts an average of 83 soybean seeds in 10 square feet. Given that one acre contains 43,560 square feet and assuming that there are 3,000 soybean seeds in one pound, what is the harvest loss in bushels per acre?
- 0.25
 - 2.0
 - 8.75
 - 14.5
23. The maximum moisture content at which soybean seed can be marketed without discount is ____%.
- 11
 - 13
 - 15
 - 18
24. The suggested winter storage temperature for soybean in the upper Midwest is ____ °F.
- 20–30
 - 30–40
 - 40–50
 - 50–60
25. Conditions contributing to growth of molds on soybean in storage:
- High relative humidity and low temperature
 - Low relative humidity and high temperature
 - High relative humidity and high temperature
 - Low relative humidity and low temperatures

Barley (Questions 26-50).

26. The structure that protects the first leaf of barley as it emerges through the soil during germination is the:
- Coleoptile
 - Epicotyl
 - Hypocotyl
 - Mesocotyl

27. Barley forms tillers, which are:
- Additional roots
 - Additional seed-producing stems
 - Multiple spikes from the same stem
 - Needle-like projections attached to the lemma
28. At the boot stage of development, barley is near:
- Heading
 - Maturity
 - Soft dough stage
 - Tillering
29. Barley is considered physiologically mature when:
- The upper internode supporting the head has lost all green color
 - The upper leaves are beginning to turn from yellow to brown
 - The lower leaves have fallen off the plant
 - The entire plant is brown
30. In barley, rachilla hair is attached to the:
- Awns
 - Leaves
 - Seed
 - Stems
31. Threshed barley kernels are covered by:
- Auricles
 - Awns
 - Lemma and palea
 - Ligules
32. When comparing two-row and six-row barley, which of the following is false:
- Two-row barley tillers more extensively
 - Two-row barley produces smaller kernels
 - Two-row barley has more consistent kernel size
 - Two-row barley has lower grain protein content
33. Barley is widely adapted to many growing environments because it has good to excellent tolerance of all but which of the following:
- Acidic soils
 - Drought
 - High altitudes
 - Northern latitudes

34. The recommended seeding rate of barley is about ____ pounds/acre.
- 10
 - 45
 - 85
 - 135
35. An ideal planting depth of barley is commonly ____ inches.
- 0.50
 - 1.00
 - 2.00
 - 2.50
36. Early planting is recommended for barley because it:
- Results in quicker emergence
 - Reduces the potential for early-season phosphorus deficiency
 - Reduces tillering
 - Can help the crop avoid stress from high air temperature
37. Chlorosis (and ultimately necrosis) of the leaf tip that progresses down the leaf edges, beginning with the oldest leaves, is a symptom of ____ deficiency in barley.
- Nitrogen
 - Phosphorus
 - Potassium
 - Sulfur
38. Excess application of ____ fertilizer can increase lodging and grain protein content in barley, which are both undesirable.
- Nitrogen
 - Phosphorus
 - Potassium
 - Sulfur
39. The type of weeds most difficult to control when growing barley:
- Annual broadleaf weed
 - Annual grass weeds
 - Perennial broadleaf weeds
 - Glyphosate-resistant weeds
40. Cool-season grassy weeds such as wild oats can be controlled most effectively by which non-chemical method:
- Cultivation
 - Early planting
 - Delayed planting
 - Increased seeding rate

41. Post-emergence herbicide options in barley are greatest when herbicide application occurs during the ____ stage of barley development:
- Boot
 - Heading
 - Jointing
 - Tillering
42. Seed treatment before planting is effective for the control of which barley disease:
- Barley yellow dwarf virus
 - Leaf blight
 - Loose smut
 - Stem rust
43. A major disease of barley is:
- Charcoal rot
 - Rhizoctonia root rot
 - Scab
 - Sudden death syndrome
44. Important insect pests of barley include all but which of the following:
- Aphids
 - Cutworms
 - Leafhoppers
 - Wireworms
45. The population density of this insect pest of barley is typically greatest in growing seasons following two to three years with dry summer and fall conditions:
- Cereal leaf beetle
 - Grasshoppers
 - Thrips
 - Wheat stem sawfly
46. Once barley has reached physiological maturity, its grain moisture content is approximately ____%.
- 20
 - 25
 - 30
 - 35
47. If barley harvest is delayed and mature grain remains in the field for an extended period of time and is re-wetted, there is increased risk of all but which of the following:
- Lodging
 - Shattering
 - Sprouting of kernels
 - Thin kernels

48. Malting barley grain must have low values of the following:

- a. Color (brightness)
- b. Plumpness
- c. Seed size
- d. Vomitoxin

49. The ideal grain protein content for barley sold to the malting industry market is ____%.

- a. 9.5–12.5
- b. 13.5–16.5
- c. 17.0–20.0
- d. 34.5–37.5

50. The malting industry market typically requires barley to have a minimum test weight of ____ pounds/bushel.

- a. 32
- b. 38
- c. 48
- d. 56

2019 Crops Exam Key

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