

**FFA Crop Management Examination**  
**Iowa State University**  
**Agronomy Department**  
**June 3, 2004**

**Key**

Instructions: (1) Each contestant must print her/his name on the answer sheet in the appropriate space. You need not darken the circles. (2) Print your contestant number in the section entitled IDENTIFICATION NUMBER, beginning with the first digit of your number under letter A, the second digit under letter B, etc. You need not darken the circles. (3) Select the best answer from each multiple-choice question and darken the appropriate circle completely on the answer sheet. (4) If you change an answer be sure you fully erase the corresponding answer on the answer sheet.

- 1) Which of the following situations is most likely to result in the greatest corn yield?
  - a. **Full-season hybrid planted on May 1**
  - b. Mid-season hybrid planted on May 1
  - c. Short-season hybrid planted on May 1
  - d. Full-season hybrid planted on May 20
  - e. Short-season hybrid planted on May 20
  
- 2) Which of the following planting sequences maximizes grain production and quality of corn for the central and northern Corn Belt?
  - a. **Planting full-season hybrids first, followed by mid- and short-season hybrids**
  - b. Planting short-season hybrids first, followed by mid- and full-season hybrids
  - c. Planting short-season hybrids first, followed by full- and mid-season hybrids
  - d. All of the planting sequences will produce similar results
  
- 3) Corn producers in Iowa should strive to have their corn planting done by \_\_\_\_\_.
  - a. April 20
  - b. May 1
  - c. **May 15**
  - d. June 1
  - e. June 10
  
- 4) What is the ideal planting depth for corn under average conditions?
  - a. 1 inch
  - b. **2 inches**
  - c. 3 inches
  - d. 4 inches
  - e. 5 inches
  
- 5) What is the source material for essentially all of the commonly available P fertilizers?
  - a. **Rock phosphate**
  - b. Phosphoric acid
  - c. Normal superphosphate
  - d. Triple superphosphate
  - e. Monoammonium phosphate (MAP)

- 6) There are \_\_\_\_\_ pounds of nitrogen (N) and \_\_\_\_\_ pounds of phosphate ( $P_2O_5$ ) in 5 tons of 18-46-0 fertilizer.
- 900, 4600
  - 0, 4600
  - 1800, 0
  - 1800, 4600**
  - 4600, 1800
- 7) Which of the following situations requires the least amount of nitrogen fertilizer application?
- Corn after established alfalfa**
  - 2<sup>nd</sup> year corn after alfalfa
  - Corn on recently manured soils
  - Corn after soybean
  - Corn after corn
- 8) The late-spring nitrogen test for corn is based on concentrations of \_\_\_\_\_ in the soil sample.
- Nitrate-nitrogen ( $NO_3^-$ -N)**
  - Organic nitrogen
  - Urea [ $CO(NH_2)_2$ ]
  - Anhydrous ammonia ( $NH_3$ )
  - Ammonium Nitrate ( $NH_4NO_3$ )
- 9) How much nitrogen should you sidedress on your corn if a late-spring nitrogen test has found 18 ppm-N? (Using Iowa State University Extension recommendations you will apply 8 lbs of N/acre for each 1 ppm below 25 ppm).
- None
  - 28 lbs/acre
  - 56 lbs/acre**
  - 84 lbs/acre
  - 112 lbs/acre
- 10) Which of the following statements regarding characters evaluated in the Iowa Soybean Performance Test is NOT true?
- Yields are reported at a moisture content of 13 percent.
  - Seven to 10 days of good drying weather were required beyond the maturity date before the soybeans were ready to combine.
  - Lodging score were based on the average erectness of the main stem of the plants at maturity.
  - Emergence scores were based on the ability of seedlings to emerge when seeds were planted 4.5 inches deep in a laboratory test.
  - Chlorosis score was used as a measure of susceptibility to sclerotinia stem rot (white mold).**
- 11) Brown stem rot is a disease of
- alfalfa
  - corn
  - oats
  - soybeans**
  - sunflowers

- 12) Soybean cyst nematodes \_\_\_\_\_
- are caused by the soilborne fungus, *Sclerotinia sclerotiorum*
  - are microscopic worms that attack soybean roots**
  - are caused by a fungus that survives in crop residue
  - cause iron chlorosis
- 13) Which of the following statements regarding soybean planting is NOT true?
- Stand reduction occurring during later vegetative stages may result in greater yield loss than those occurring earlier in the growing season.
  - Soybean plants severed below the cotyledons can regrow and produce high yields.**
  - Economically, a soybean stand of 73,000 (or more) healthy, uniformly spaced plants per acre in early June or later is probably worth keeping.
  - Soybeans compensate for low stands, producing yields that differ only slightly across a wide range of planted populations.
- 14) The vector for barley yellow-dwarf virus, which infects oats in Iowa, is
- armyworms
  - cereal leaf beetle
  - aphids**
  - grasshoppers
  - plant hoppers
- 15) Ergot would NOT infect which of the following crops?
- barley
  - rye
  - red clover**
  - spring wheat
  - durum wheat
- 16) Which of the following diseases is a concern when feeding small grains to animals?
- Powdery mildew
  - Scab (*Fusarium*)
  - Ergot
  - Both a and b
  - Both b and c**
- 17) Which of the following forage legumes is most desirable for a field with good drainage, moderate fertility, and pH above 6.5?
- Alfalfa**
  - Lespedeza
  - White clover
  - Alsike clover
  - Birdsfoot trefoil

- 18) Which of the following forage legumes could NOT be established by frost seeding?
- Birdsfoot trefoil
  - White clover
  - Alfalfa
  - Red clover
  - All of these can be established with frost seeding**
- 19) Which of the following is NOT a best management practice for pasture renovation?
- On sloping sites, completely bury the existing sod with tillage to insure a fine seedbed.**
  - Control competition from existing plants with grazing, clipping, or herbicides.
  - Complete spring seedings earlier than June 1 and fall seedings between mid-August and early-September
  - When interseeding legumes and grasses, match the right legume with the proper grass
  - Soil sample to determine lime, phosphorus, and potassium needs.
- 20) Grass-legume pastures have higher requirements for \_\_\_\_\_ than grass pastures.
- Nitrogen
  - Phosphorus
  - Potassium
  - Both a and b
  - Both b and c**
- 21) Adding \_\_\_\_\_ to the soil would be an effective way to increase pH, which would \_\_\_\_\_ iron chlorosis problems in soybean.
- lime, increase**
  - lime, decrease
  - sulfur compounds, increase
  - sulfur compounds, decrease
- 22) Application of preemergence herbicides requires \_\_\_\_\_ to be effective.
- an acidic soil pH
  - a basic soil pH
  - adequate rainfall or irrigation**
  - high soil fertility
  - large amounts of crop residue
- 23) A plant that requires two growing seasons to complete its life cycle is a
- sesquicentennial
  - millennium
  - biennial**
  - perennial
  - annual
- 24) Iowa State University guidelines suggest that a field be soil sampled every \_\_\_\_\_.
- year
  - 3 years**
  - 6 years
  - 9 years
  - 12 years

- 25) Which of the following statements regarding management of manure nutrients for crop production is NOT true?
- Animal manure contains the major nutrients essential for plant growth.
  - The form of plant nutrients in manure varies between the urine and fecal fractions, depending on the nutrients and the animal species.
  - Nutrients in organic forms must be mineralized to be used by crops.
  - Dry beef manure has greater nitrogen availability to crops in the year of application than does liquid swine manure.**
  - Application of manure phosphorus will have little effect on production if the manure is applied to soils that test "high" or very high" in phosphorus.
- 26) Which of the following statements regarding soil erosion and crop productivity is NOT true?
- Water infiltration rate becomes limited as topsoil erodes.
  - Water availability to crops becomes limited as topsoil erodes.
  - Crop productivity decreases as topsoil thickness decreases below 11 inches.
  - Improving yield on slope areas with additional fertilizer improves the crop canopy and minimizes soil erosion.
  - All of the statements are true.**
- 27) Which of the following is listed as a "Primary Noxious" weed by the Iowa Weed Law?
- wild carrot
  - tall waterhemp
  - yellow foxtail
  - bull thistle**
  - cocklebur
- 28) Which herbicide product would have the greatest likelihood of leaching to shallow groundwater?
- one that is low in water solubility
  - one that is short in persistence
  - one that is weakly held by soil particles**
  - all of the above are equal in their likelihood of leaching
- 29) You want to apply 1/2 pint of MCPA herbicide per acre for postemergence control of common lambsquarters in oats underseeded with alfalfa. The sprayer output is 8 gallons per acre and the herbicide sprayer tank holds 100 gallons. How much MCPA should you put in a full sprayer load?
- 4.5 pints
  - 6.25 pints**
  - 8 pints
  - 10.75 pints
  - 12.5 pints
- 30) A farmer's production costs for corn totals \$425 per acre and the selling price of corn is \$2.52 per bushel. If his/her corn yield averages 185 bushels per acre, what is his/her profit per acre above production costs?
- \$22.00
  - \$30.50
  - \$41.20**
  - \$52.50
  - \$60.20

- 31) Forty soybeans in a 10 square foot rectangle equals 1 bushel lost per acre when calculating harvest losses in soybeans. How many bushels per acre are lost if the farmer finds 86 soybeans in a 10 square foot rectangle?
- a. 1.15
  - b. 1.55
  - c. 2.15**
  - d. 2.55
  - e. 3.15
- 32) A farmer needs to know the number of bushels of grain in a 30-foot diameter steel bin. The farmer measures the depth of the grain and finds that there are 12 feet of grain in the bin. If one bushel occupies 1.25 cubic feet, about how many bushels are in the bin?
- a. 5,340
  - b. 6,790**
  - c. 8,560
  - d. 10,070
  - e. 12,420
- 33) A farmer needs to determine the acreage of an area of his field. The farmer measures the area and finds that it is 2425 feet long and 1760 feet wide. How many acres are there in the area he measured?
- a. 98**
  - b. 111
  - c. 128
  - d. 137
  - e. 151
- 34) A farmer is going to plant 800 acres of corn next year and wants to contract the anhydrous ammonia this fall for application next spring. The farmer plans to apply 60 pounds of nitrogen per acre preplant next spring and will later side dress another 80 pounds of nitrogen per acre. If anhydrous ammonia is 82% N, how many tons of anhydrous ammonia will the farmer need?
- a. 40
  - b. 50
  - c. 60
  - d. 70**
  - e. 80
- 35) You want to seed 15 oat seeds per foot of row with a grain drill that has 6-inch row spacings. Considering that there are 12,000 seeds per pound for your variety, what is the approximate seeding rate in pounds per acre?
- a. 32
  - b. 87
  - c. 109**
  - d. 142
  - e. 160

- 36) A farmer purchased alfalfa seed with the following seed label information: 88% germination, 1% other crop seed, 3% inert, and 1% weed seed. The farmer desires to plant 14 pounds of viable alfalfa seed per acre. What should the actual seeding rate on a pure live seed basis be to achieve this desired planting rate?
- a. 10.5 lb/A
  - b. 13.7 lb/A
  - c. 15.5 lb/A
  - d. 16.7 lb/A**
  - e. 19.5 lb/A
- 37) How many bags of seed corn will it take to plant 440 acres of corn at a seeding rate of 32,000 seeds per acre? (Seed corn is sold in bags with 80,000 kernels.)
- a. 176**
  - b. 193
  - c. 208
  - d. 221
  - e. 239
- 38) A farmer with a 140-acre field has a 34-foot wide field cultivator that is pulled at 7 miles per hour. The field efficiency of the field cultivator is 83%. How long would it take to cultivate this field if everything is working well?
- a. 4.2 hours
  - b. 5.8 hours**
  - c. 7.6 hours
  - d. 10.2 hours
  - e. 12.2 hours
- 39) In a yield test, a farmer harvested 2010 pounds of soybeans from 0.69 acre. What is the yield of soybeans in bushels per acre?
- a. 48.6**
  - b. 51.2
  - c. 54.6
  - d. 59.8
  - e. 64.6
- 40) What is the cost per pound of nitrogen if urea (46-0-0), at \$280 per ton, is used as the source of nitrogen?
- a. \$0.10
  - b. \$0.15
  - c. \$0.20
  - d. \$0.25
  - e. \$0.30**

41) How many Growing Degree Days were accumulated in corn for the following three days?

Date	High Temperature	Low Temperature
June 14	72°F	48°F
June 15	80°F	54°F
June 16	89°F	59°F

- a. 48.5
  - b. 50.5**
  - c. 51.5
  - d. 52.5
  - e. none of the above
- 42) A soil test reveals a need for 200 pounds of P<sub>2</sub>O<sub>5</sub> per acre. How many pounds of monoammonium phosphate (11-52-0) per acre are required to meet the P<sub>2</sub>O<sub>5</sub> recommendation of 200 pounds per acre?
- a. 39 pounds
  - b. 174 pounds
  - c. 214 pounds
  - d. 385 pounds**
  - e. 444 pounds
- 43) A farmer wants to know the percentage slope of a field that has an 8-foot difference in elevation between two points that are 300 feet apart. What is the percentage slope between these two points?
- a. 2.7%**
  - b. 5.7%
  - c. 7.7%
  - d. 9.7%
  - e. 11.7%

Questions 44 through 50 must be answered using the STEADFAST® herbicide label.

- 44) What is the signal word on the STEADFAST® herbicide label?
- a. DANGER
  - b. POISON
  - c. WARNING
  - d. CAUTION**
  - e. ENVIRONMENTAL HAZARD
- 45) What is the restricted entry interval between completion of application of STEADFAST® herbicide and worker entry into the treated area?
- a. no restriction
  - b. 4 hours**
  - c. 8 hours
  - d. 12 hours
  - e. 24 hours



- 46) When used alone, STEADFAST® herbicide can be applied to corn up to \_\_\_\_\_ inches tall and exhibiting up to and including \_\_\_\_\_ leaf collars.
- 6,4
  - 4,6
  - 10, 6
  - 10, 6
  - 20, 6**
- 47) Which of the following should be done if less than 0.5 inch of rainfall is received within 5-7 days after application of STEADFAST® herbicide?
- Apply 0.5 inches of water with a sprinkler irrigation system
  - Cultivate
  - Make a sequential application of ACCENT® herbicide
  - b and c
  - a, b, or c**
- 48) How soon after application of STEADFAST® herbicide can you plant winter wheat?
- immediately
  - 3 months
  - 4 months**
  - 8 months
  - 12 months
- 49) Which of the following statements regarding mixing of STEADFAST® herbicide is NOT true?
- The tank should be filled 1/4 to 1/3 full before the herbicide is added.
  - The solution in the tank should be agitated while the herbicide is added.
  - Agitation should continue for at least 5 minutes after the herbicide is fully dispersed in the tank.
  - After adding the herbicide, the solution in the tank should be continuously agitated as the tank is filled with water.
  - Spray adjuvants should be added to the tank before the herbicide.**
- 50) For better postemergence control of prickly sida, STEADFAST® should be tank mixed with \_\_\_\_\_
- Callisto herbicide
  - Exceed herbicide
  - Spirit herbicide
  - Prowl herbicide
  - Herbicides containing atrazine as the active ingredient**