

Iowa FFA CDE - Agronomy Examination
Iowa State University
Agronomy Department
June 9, 2005

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) Grain is in the harvestable moisture range for a longer period to facilitate harvest with minimum field loss when:
 - a. short-season hybrids are planted first followed by mid-season and then full-season hybrids
 - b. short-season hybrids are planted first followed by full-season and then mid-season hybrids
 - c. **full-season hybrids are planted first followed by mid-season and then short-season hybrids**
 - d. All of the planting sequences will produce similar results

- 2) Corn producers in Iowa should strive to begin planting corn on _____
 - a. **April 20**
 - b. May 1
 - c. May 15
 - d. June 1
 - e. June 10

- 3) A majority of the corn acres in Iowa are planted in rows spaced _____ apart.
 - a. 20 inches
 - b. **30 inches**
 - c. 40 inches
 - d. 50 inches
 - e. 100 inches

- 4) Which of the following phosphorus sources for corn production may cause germination problems if high rates are applied in direct contact with seed?
 - a. Rock phosphate
 - b. Phosphoric acid
 - c. Normal superphosphate
 - d. Triple superphosphate
 - e. **Diammonium phosphate (DAP)**

- 5) What N rate is recommended by ISU Extension if corn is planted after established alfalfa and all N is applied preplant or before crop emergence?
 - a. **0-30 lbs/acre**
 - b. 100 lbs/acre
 - c. 150-200 lbs/acre
 - d. 300 lbs/acre

- e. 400 lbs/acre
- 6) When should soil samples for late spring nitrogen testing be collected?
- a. Before the corn is planted
 - b. Within 7 days after the corn is planted
 - c. When corn plants are just emerging from the soil
 - d. When corn plants are 6 to 12 inches tall**
 - e. When corn plants are tasseling
- 7) Which of the following statements regarding soybean varieties is NOT true?
- a. All soybean varieties and brands should emerge well when planted less than two inches deep and soil crusting is not a problem.
 - b. Varieties susceptible to lodging should be planted at lower seeding rates than resistant types.
 - c. Iron chlorosis occurs in susceptible varieties planted in acid soils (low pH) soils in south east Iowa.**
 - d. Varieties will not have yield reductions when they have specific resistance for a Phytophthora race that is present, but they may suffer damage if races are present in the soil for which they do not have specific resistance.
 - e. Cyst nematode susceptible varieties grown on soil infested with soybean cyst nematodes may be stunted and show yellowing of leaf tissue.
- 8) A soybean stand with _____ or more plants per acre should NOT be replanted because it has 90% of the yield potential of an optimum stand.
- a. 10,000
 - b. 50,000
 - c. 73,000**
 - d. 150,000
 - e. 300,000
- 9) Which of the following small grains has the greatest acreage in Iowa?
- a. durum wheat
 - b. oat**
 - c. barley
 - d. spring wheat
 - e. winter wheat
- 10) For safe storage, spring small grains should be harvested at _____ percent moisture or less.
- a. 6
 - b. 13**
 - c. 18
 - d. 24
 - e. 30

- 11) Which of the following small grains may be used for livestock feed?
- oat
 - barley
 - triticale
 - wheat
 - all of the above**
- 12) What winter small grain has the greatest winter hardiness?
- rye**
 - hard red wheat
 - soft red wheat
 - triticale
- 13) Which of the following cool-season forage grasses is LEAST suited for hay production?
- Orchardgrass
 - Smooth brome grass
 - Timothy
 - Kentucky bluegrass**
- 14) Which of the following forage legumes is LEAST suited for wet soil areas?
- Alsike clover
 - Birdsfoot trefoil
 - Alfalfa**
 - Ladino clover
- 15) What is the name of the practice of broadcasting legume or grass seed on existing grass pastures in late winter or very early spring?
- Top dressing
 - Frost seeding**
 - Slot planting
 - Side dressing
 - Complete renovation
- 16) Which of the following months is NOT suitable for seeding grasses and legumes when renovating a pasture?
- April
 - May
 - June**
 - August
 - September
- 17) What is the minimum recommended soil pH for a pasture with grass, clovers, and birdsfoot trefoil?
- 4.0
 - 5.0
 - 6.5**
 - 7.5
 - 9.0

- 18) For grass pastures to be productive, first priority should be given to meeting _____ fertility needs.
- phosphorus
 - potassium
 - magnesium
 - zinc
 - nitrogen**
- 19) What is the best month for applying phosphorus or potassium fertilizer to pastures?
- September
 - October
 - March
 - April
 - Any of these months is appropriate.**
- 20) Which of the following interpretation categories is NOT used by Iowa State University to describe nutrient (P, K, etc.) levels in Iowa soils?
- adequate**
 - very low
 - low
 - optimum
 - high
- 21) Which of the major fertilizer nutrients for crop production is NOT considered an environmental pollutant?
- nitrogen
 - phosphorus
 - potassium**
- 22) Which of the following soil test categories for soil nutrients is the most profitable to maintain?
- low
 - optimum**
 - high
- 23) What is the best method for determining the total amount of nutrients in animal manure?
- Calculate storage capacities and multiply that by the average estimated nutrient content from a published table.
 - Have a sample of the manure chemically analyzed and measure the volume of the manure storage unit.**
 - Calculate the average amount of manure produced/day by the animals, multiply that by the number of animals at the site, and assume standard storage and handling losses.
- 24) Virtually all the N in poultry manure is in the form of _____
- phosphate or phosphoric acid
 - urea or uric acid**
 - anhydrous ammonia
 - protein
 - potassium chloride

25) According to the Iowa Weed Law, a person shall not sell, offer for sale, or distribute _____ plants or seeds in any form in Iowa.

- a. sunflower
- b. teasel**
- c. rose
- d. pin oak
- e. morningglory

26) _____ weeds complete their life cycle within one year.

- a. Noxious
- b. Annual**
- c. Biennial
- d. Invasive
- e. Perennials

27) Which of the following is an example of cultural weed management strategy?

- a. rotary hoeing
- b. herbicide application
- c. interrow cultivation
- d. crop rotation**
- e. hand pulling

28) Which of the following statements regarding soil erosion and crop productivity is NOT true?

- a. Water available for crop growth is lowered as the topsoil erodes.
- b. Up to a point, there is a strong relationship between soil A horizon thickness and crop yield.
- c. Soil A horizon thickness influences crop yields similarly in years when rainfall is adequate during the growing season and in years when rainfall is deficient.**
- d. Row spacing, when used with other conservation tillage practices, is effective in reducing soil erosion on sloping areas.
- e. Improving yield on slope areas with additional fertilizer subsequently improves the crop canopy and minimizes soil erosion.

29) You want to apply 20 fluid ounces of Roundup WEATHERMAXTM herbicide per acre for postemergence weed control in soybeans. The sprayer output is 10 gallons per acre and the herbicide sprayer tank holds 800 gallons. How much Roundup WEATHERMAXTM should you put in a full sprayer load? (Hint: 1 gallon = 128 ounces)

- a. 4.5 gallons
- b. 6.25 gallons
- c. 8 gallons
- d. 10.75 gallons
- e. 12.5 gallons**

30) A farmer's production costs for corn totals \$380 per acre and the selling price of corn is \$2.25 per bushel. If her corn yield averages 170 bushels per acre, what is his/her profit per acre above production costs?

- a. \$2.50**
- b. \$12.50
- c. \$22.50

- d. \$42.50
 - e. \$62.20
- 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 142 soybeans in a 10 square foot rectangle?
- a. 1.15
 - b. 1.55
 - c. 2.15
 - d. 3.55**
 - e. 4.15
- 32) A farmer needs to know the number of bushels of grain in a 24-foot diameter steel bin. The farmer measures the depth of the grain and finds that there are 15 feet of grain in the bin. If one bushel occupies 1.25 cubic feet, about how many bushels are in the bin?
- a. 2,420
 - b. 5,430**
 - c. 6,790
 - d. 8,560
 - e. 10,070
- 33) A farmer needs to determine the acreage of an area of his field. The area is in the shape of a triangle with its longest side measuring 1240 feet and the widest point measuring 660 feet. How many acres are there in this area of the field? (Hint: 43,560 ft²/acre)
- a. 6.2
 - b. 9.4**
 - c. 18.8
 - d. 26.4
 - e. 32.8
- 34) A farmer is going to plant 500 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 50 pounds of nitrogen per acre. If anhydrous ammonia is 82% N, how many tons of anhydrous ammonia will the farmer need?
- a. 23
 - b. 34**
 - c. 42
 - d. 51
 - e. 60
- 35) You are calibrating your drill for oat planting. You want to plant 30 oat seeds per square foot with a grain drill that has 6-inch row spacings. The oat variety has 12,000 seeds per pound. How much oat seed should be collected per drill row while driving 100 feet to calibrate the drill? Your scale weighs in grams and there are 454 grams in a pound.
- a. 57 g**
 - b. 114 g
 - c. 176 g
 - d. 204 g
 - e. 235 g

- 36) A farmer purchased alfalfa seed with the following seed label information: 92% germination, 1% other crop seed, 2% inert, and 2% weed seed. The farmer desires to plant 15 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?
- 10.5 lb/A
 - 13.7 lb/A
 - 15.5 lb/A
 - 17.2 lb/A**
 - 19.5 lb/A
- 37) You want to plant soybean at 140,000 seeds per acre and have purchased a variety with 3,200 seeds per pound. What combination of 2000-lb bulk bags and 50-lb bags of soybean seed will be required to plant 200 acres of this variety?
- 1 bulk bag and 9 50-lb bags
 - 2 bulk bags and 14 50-lb bags
 - 3 bulk bags and 18 50-lb bags
 - 4 bulk bags and 15 50-lb bags**
 - 5 bulk bags and 7 50-lb bags
- 38) A farmer with a 140-acre field has a 26-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? (Hints: 5280 feet/mile; 43,560 ft²/acre)
- 0.7 hours
 - 2.8 hours
 - 5.7 hours
 - 7.6 hours**
 - 8.6 hours
- 39) In a yield test, a farmer harvested 5940 pounds of soybeans from 2.2 acres. What is the yield of soybeans in bushels per acre?
- 45.0**
 - 51.2
 - 54.6
 - 59.8
 - 64.6
- 40) What is the cost per pound of nitrogen if urea (46-0-0), at \$320 per ton, is used as the source of nitrogen?
- \$0.15
 - \$0.20
 - \$0.25
 - \$0.30
 - \$0.35**

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

Date	High Temperature	Low Temperature
June 14	88°F	60°F
June 15	79°F	53°F
June 16	71°F	49°F

- a. 46.5
- b. 49.5**
- c. 51.5
- d. 54.5
- e. none of the above

42) A soil test reveals a need for 100 pounds of P_2O_5 per acre. How many pounds of monoammonium phosphate (11-52-0) per acre are required to meet the P_2O_5 recommendation of 100 pounds per acre?

- a. 39 pounds
- b. 192 pounds**
- c. 245 pounds
- d. 385 pounds
- e. 444 pounds

43) A farmer wants to know the percentage slope of a field that has a 30-foot difference in elevation between two points that are 500 feet apart. What is the percentage slope between these two points?

- a. 2.7%
- b. 4.6%
- c. 6.0%**
- d. 8.4%
- e. 10.2%

Questions 44 through 50 must be answered using the FirstRate™ herbicide label.

44) What is the signal word on the FirstRate™ herbicide label?

- a. DANGER
- b. HAZARD
- c. WARNING
- d. CAUTION**
- e. ENVIRONMENTAL HAZARDS

45) What is the restricted entry interval (REI) between completion of application of FirstRate™ herbicide and worker entry into the treated area?

- a. no restriction
- b. 4 hours
- c. 8 hours
- d. 12 hours**
- e. 24 hours

46) How many days must you wait after application of FirstRate™ before you can harvest soybeans?

- a. 0 days

- b. 25 days
 - c. 45 days
 - d. 65 days**
 - e. 85 days
- 47) Which of the following is an acceptable application rate for FirstRate™ herbicide applied to control a moderate giant ragweed infestation in an Iowa soil with 2.2% organic matter?
- a. 1.0 oz/acre
 - b. 0.7 oz/acre**
 - c. 0.8 oz/acre
 - d. 0.3 oz/acre
 - e. The FirstRate™ label does not allow this application
- 48) For best results, FirstRate™ herbicide should be applied _____ planting.
- a. the fall before
 - b. at least 8 weeks before
 - c. within 2 weeks of**
 - d. the day of
 - e. in the week after
- 49) How soon after application of FirstRate™ herbicide can you plant field corn?
- a. immediately
 - b. 3 months
 - c. 4 months
 - d. 9 months**
 - e. 12 months
- 50) Which of the following statements regarding a postemergence application of FirstRate™ herbicide is NOT true?
- a. Poor weed control can result if air temperatures before, at, and after the time of application are less than 60°F.
 - b. FirstRate™ can NOT be applied after the 50% flowering stage.
 - c. FirstRate™ can be tank mixed with AAtrex® 4L Herbicide.**
 - d. FirstRate™ should be applied before giant ragweed plants are 10 inches tall.
 - e. Postemergence application of FirstRate™ may provide residual soil activity on broadleaf weeds.