

**2010 AGRONOMY KANSAS FFA CDE
AGRONOMIC QUIZ**

Contestant No. _____ Contestant Name _____ Score _____

USE CAPITAL LETTERS

- C 1. The four classes of seed recognized by the Kansas Crop Improvement Association, in order of generation of production are:
A) breeders, registered, foundation, certified
B) breeders, foundation, certified, registered
C) breeders, foundation, registered, certified
D) breeders, registered, certified, foundation
E) breeders, certified, registered, foundation
- C 2. A concern with regard to moldy corn at harvest is the potential presence of toxic levels of:
A) nitrate B) Salmonella C) aflatoxin D) E. coli
- D 3. Which of the following crops produce seeds with the lowest percent protein?
A) hard white wheat B) hard red winter wheat C) soybean D) grain sorghum
- B 4. For which of the following Kansas crops would seed selection involve picking a variety/hybrid with the correct "maturity group" rating?
A) corn B) soybean C) wheat D) alfalfa
- C 5. The standard test weight per bushel for wheat is:
A) 48 pounds B) 56 pounds C) 60 pounds D) 100 pounds
- C 6. A crop planted to protect the soil from erosion, add nitrogen to the soil (if a legume is used), and "trap" nutrients to reduce losses during the time between two crop seasons is called a:
A) fallow crop B) intercrop C) cover crop D) pulse crop
- C 7. The greatest yield reduction due to drought stress in corn generally results when the stress occurs during the:
A) vegetative stage resulting in shorter plants with less leaves
B) ear formation stage resulting in fewer ears per plant
C) silking/pollination stage resulting in reduced kernel number per ear
D) grain filling stage resulting in low test weight grain
- A 8. Application of diammonium phosphate starter fertilizer placed below and beside the seed with a fertilizer unit on a row crop planter while planting grain sorghum is called:
A) banding B) sidedressing C) fertigation D) topdressing
- C 9. Which of the following standard abbreviations for pesticide formulations indicate a liquid product?
A) WP B) DF C) EC D) G
- D 10. From the following list, the oral LD50 value representing the most toxic pesticide is:
A) 585 mg/kg B) 320 mg/kg C) 65 mg/kg D) 30 mg/kg
- A 11. Alfalfa weevil are generally most damaging in the:

- A) larval stage prior to the first spring cutting
- B) adult stage prior to the first spring cutting
- C) larval stage prior to the second or third summer cutting
- D) adult stage prior to the second or third summer cutting
- E) none of the above, both larval and adult stage can be equally damaging all season

D 12. Which is a proper value for moisture content of chopped corn or sorghum forage to insure proper silage making?

- A) 15-20%
- B) 25-30%
- C) 45-50%
- D) 65-70%
- E) 85-90%

E 13. Which of the following forage crops would produce hay with the highest protein content if cut at the optimum time and baled properly?

- A) native range
- B) smooth brome grass
- C) tall fescue
- D) sudangrass
- E) alfalfa

A 14. The stored food energy used for germination in a soybean seed is located in the:

- A) cotyledon
- B) endosperm
- C) coleoptile
- D) hypocotyl

A 15. A farmer is selecting flat fan spray nozzles to spray weeds. Which of the following numbers on the nozzle tip would have the highest nozzle delivery rate in gallons per minute at standard pressure?

- A) 8004
- B) 8001
- C) 9503
- D) 11002
- E) 11003

D 16. Winter wheat must be exposed to cold temperature to initiate head formation for flowering. This process is called:

- A) nitrification
- B) nodulation
- C) stratification
- D) vernalization
- E) transpiration

C 17. The top two crops in \$ value in the US are _____; and in Kansas are _____:

- A) corn and soybeans in the US; wheat and soybeans in Kansas
- B) corn and wheat in the US; corn and wheat in Kansas
- C) corn and soybeans in the US; corn and wheat in Kansas
- D) wheat and soybeans in the US; corn and wheat in Kansas
- E) corn and wheat in the US; corn and soybeans in Kansas

C 18. Because oilseed and confectionary sunflowers grown in Kansas do not produce additional new leaves after they begin flowering, their growth habit is called:

- A) dioecious
- B) monoecious
- C) determinate
- D) indeterminate

A 19. A horizontal, creeping stem growing below the soil surface that produces new shoots and roots at the nodes, such as found in smooth brome grass and johnsongrass, is called a:

- A) rhizome
- B) stolon
- C) tuber
- D) bulb

C 20. The term "safened seed" when used in grain sorghum production refers to:

- A) seed treated with a fungicide to prevent root-rot and other seedling diseases
- B) seed treated with an insecticide to prevent wireworm damage in the soil
- C) seed treated with a chemical to protect the seedlings from herbicide injury
- D) seed treated with nitrogen fixing bacteria to insure nitrogen fixation
- E) safened seed would include treatment for all of the above

D 21. Syngenta corn hybrids are marketed under the Agrisure[®] product name with the genetically

engineered traits coded by abbreviations (ie. Agrisure[®] GT/RW, Agrisure[®] CB/LL/RW). Which of these abbreviations indicates the presence of a trait for glufosinate herbicide resistance (most commonly marketed under the trade name Ignite[®] or Liberty[®]).

A) GT B) RW C) CB D) LL

C 22. Barnyardgrass, large crabgrass, and green and yellow foxtail are problem weeds in Kansas crops. All of them are classified as:

- A) perennial grasses
- B) winter annual grasses
- C) summer annual grasses
- D) summer annual broadleaves

B 23. Phosphorus from fertilizer or manure is most likely to be lost from crop fields, and thus may harm the environment, by:

- A) leaching into groundwater (contaminating wells used for drinking water)
- B) runoff into surface water (contributing to eutrophication of lakes and streams)
- C) volatilization into the atmosphere as a "greenhouse gas" (contributing to global warming)
- D) all of the above are common ways phosphorus is lost from soils

C 24. Which of the following soil parent materials was deposited primarily by wind?

- A) colluvium B) residual C) loess D) alluvium E) lacustrine

D 25. Which of the following fertilizer carriers has the lowest percent nitrogen analysis?

- A) urea
- B) urea-ammonium nitrate solution (UAN)
- C) anhydrous ammonia
- D) diammonium phosphate (DAP)

A 26. Which of the following group of pathogens is responsible for the common diseases called "rusts", "smuts", and "mildew" that infect many different crops?

- A) fungi B) bacteria C) viruses D) nematodes E) adjuvants

C 27. The part of the plant cell where respiration occurs is the:

- A) nucleus B) chloroplast C) mitochondria D) cell wall

C 28. According to NRCS guidelines, the minimum amount of crop residue which must remain on the soil surface for a cropping system after planting to qualify as conservation tillage is:

- A) 80% B) 50% C) 30% D) 10%

D 29. Recent discussion has focused on using sweet sorghum as a feedstock for ethanol production in the future. The stems can be crushed to remove the sugary juice for easy fermentation, and the stalks left could be used for cellulosic ethanol. This stalk material left after crushing is called:

- A) silage B) stover C) straw D) bagasse

A 30. Concern about the potential for global warming due to increasing carbon dioxide levels in the atmosphere is a major environmental issue today. Soil management practices to maintain or increase soil organic matter help counteract this trend by storing carbon in soil. This process of increasing carbon storage in soils is called carbon:

- A) sequestration B) vernalization C) incorporation D) eutrophication

AGRONOMIC CALCULATIONS

Each question is worth 5 points. To receive full credit, show calculations and place correct answer in the box.

31. A crop consultant is calibrating a row crop planter. He finds an average of 82 seeds dropped per 50 foot of travel by one planter unit. The planter has 30-inch row spacing.

What is the seeding rate in seeds per acre?

28,575 seeds/acre

32. Your soil test recommends 45 pounds K_2O per acre for grain sorghum. Fertilizers available are UAN solution (28-0-0), TSP (0-45-0), and muriate of potash (0-0-60).

Select the proper fertilizer and calculate how many pounds are needed for an 80 acre field?

6000 pounds muriate of potash/field

33. Following harvest, a farmer wants to estimate shattering and combine loss for her soybean crop. Random counts in the field result in an average of 14 soybean seeds per square foot on the ground. Assume a seed weight of 3000 seeds per pound.

Estimate the yield loss in bushels per acre using the standard weight per bushel for soybeans. (round to nearest tenth)

3.4 bushels/acre

36. Anhydrous ammonia (82-0-0) is priced at the local dealer for \$520 per ton. Your KSU soil test results recommend 140 pounds of N per acre. You have a 160 acre field and custom application of this fertilizer costs \$10 per acre.

What is the total cost of the fertilizer plus application for the entire field?

\$8702.44 / field

34. You are calibrating a sprayer and you collect 331 ml of water in 15 seconds from an individual nozzle. Nozzle spacing is 20 inches and the speed of travel is 6 miles per hour. Use the following formula to determine the sprayer application rate in gal/acre (GPA). (Hint: 3785 ml per gallon).

$$\text{GPA} = \frac{5940 \times \text{GPM}}{\text{MPH} \times \text{Nozzle Spacing in Inches}}$$

17.3 gal/acre

35. A new chemical called triple bromo is recommended at a rate of 0.5 pounds a.i. per acre for pigweed control. You purchase a product called “Zap-Em-Dead 80 WDG” containing triple bromo as the active ingredient (80% a.i. water dispersible granular formulation). Your sprayer is calibrated to deliver 15 gallons per acre. You have a sprayer with a 600 gallon tank, a 36-foot boom, and nozzle spacing of 20 inches.

How much Zap-Em-Dead 80 WDG product should you add to the tank to apply the correct rate of herbicide?

25 pounds Zap-Em-Dead/tank