

**2009 AGRONOMY KANSAS FFA CDE  
AGRONOMIC QUIZ**

CONTESTANT NUMBER \_\_\_\_\_

SCORE \_\_\_\_\_

**USE CAPITAL LETTERS**

- C 1. Physiological maturity in corn is indicated by:  
A) half of the leaves have turned brown  
B) grain moisture is less than 15.5%  
C) a black layer has formed at the base of the kernel  
D) the silks have turned brown  
D) all of the above have occurred
- A 2. The mineral nutrient usually needed in the largest amount for corn production is:  
A) nitrogen    B) phosphorus    C) potassium    D) iron
- C 3. Which of the following crops produce seeds with the highest percent protein?  
A) corn    B) wheat    C) soybean    D) grain sorghum
- C 4. Soybean varieties adapted to Kansas are commonly in maturity groups:  
A) 00, 0, I    B) I, II, III    C) III, IV, V    D. V, VI, VII
- B 5. The standard test weight per bushel for grain sorghum is:  
A) 48 pounds    B) 56 pounds    C) 60 pounds    D) 100 pounds
- C 6. The practice of no-till planting soybeans into the stubble of a wheat crop immediately after wheat harvest in late June is called:  
A) fallowing    B) intercropping    C) double cropping    D) monoculture
- C 7. The greatest yield reduction due to drought stress in grain sorghum generally results when the stress occurs during the:  
A) vegetative stage resulting in less tillering  
B) growing point differentiation stage resulting in fewer heads initiated  
C) boot stage resulting in poor head emergence  
D) grain filling stage resulting in low test weight grain
- D 8. Broadcast application of liquid nitrogen solution fertilizer to a growing crop of wheat in late February is called:  
A) banding    B) sidedressing    C) fertigation    D) topdressing
- C 9. Corn reproductive growth stages start with silking (R1) and end with physiological maturity (R6). The descriptive terms for the other four reproductive stages, in sequential order from R2 through R5, is:  
A) blister → dent → milk → dough  
B) milk → dough → blister → dent  
C) blister → milk → dough → dent  
D) dent → blister → milk → dough

- B 10. The major acid which acts as the preserving agent in good quality sorghum or corn silage and gives the silage its unique, sweet smell is:  
A) propionic    B) lactic    C) acetic    D) butyric
- B 11. Weeds like field bindweed are not allowed in any quantity in seed for sale according to state law. These legally regulated weeds are called:  
A) resistant weeds    B) noxious weeds    C) common weeds    D) perennial weeds
- C 12. From the following list, the oral LD50 value representing the least toxic pesticide is:  
A) 585 mg/kg    B) 320 mg/kg    C) 6200 mg/kg    D) 27 mg/kg
- D 13. The purpose of adding agricultural lime to soil is to:  
A) prevent runoff of excess phosphorus into lakes and streams  
B) add *Rhizobium* bacteria to insure nitrogen fixation  
C) lower the pH of alkaline soils  
D) raise the pH of acidic soils
- B 14. The stored food energy used for germination in a corn or wheat kernel is located in the:  
A) cotyledon    B) endosperm    C) coleoptile    D) mesocotyl
- D 15. In Kansas, freezing injury to winter wheat is most likely to occur:  
A. during the tillering stage in late fall  
B. during the dormant stage in the middle of winter  
C. before the jointing stage in early spring  
D. after the jointing stage through the flowering (anthesis) stage in the spring
- B 16. Winter wheat must be exposed to cold temperature to initiate head formation for flowering. This process is called:  
A) germination    B) vernalization    C) scarification    D) inoculation
- A 17. Kansas usually ranks A) first    B) second    C) third    D) fourth in the U.S. in winter wheat production.
- D 18. Because most soybean varieties grown in Kansas continue to produce more leaves and stems after they begin flowering, their growth habit is called:  
A) dioecious    B) monoecious    C) determinate    D) indeterminate
- B 19. A horizontal creeping stem growing above the soil surface that roots down at the nodes, such as found in buffalograss and white clover, is called a:  
A) rhizome    B) stolon    C) tiller    D) bulb
- D 20. The term "inoculated seed" when used in soybean production refers to:  
A. seed treated with a fungicide to prevent 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. inoculated seed would include treatment for all of the above

- D 21. A corn hybrid named Producers 5624VT3 contains YieldGard VT Triple® technology, which means that it has genetically engineered genes for resistance to:  
A) Roundup herbicide    B) corn borers    C) corn rootworms  
D) all of the above
- D 22. Common lambsquarters, pigweed, velvetleaf and cocklebur are problem weeds in Kansas crops. All of them are classified as:  
A) winter annual broadleaves  
B) perennial grasses  
C) summer annual grasses  
D) summer annual broadleaves  
E) perennial broadleaves
- A 23. The fertilizer nutrient most likely to leach through sandy soils and thus may contaminate groundwater is:  
A) nitrogen    B) phosphorus    C) potassium    D) sulfur
- D 24. Which of the following soil parent materials was deposited by flowing streams or rivers?  
A) glacial till    B) residual material    C) loess    D) alluvium
- C 25. Which of the following fertilizer carriers has the highest percent nitrogen analysis?  
A) urea  
B) urea-ammonium nitrate solution (UAN)  
C) anhydrous ammonia  
D) diammonium phosphate (DAP)
- B 26. Planting a crop primarily to protect the soil from erosion (such as rye planted on a sandy soil over the winter) is called:  
A) strip cropping    B) cover cropping    C) stubble mulching    D) fallowing
- B 27. The part of the plant cell where photosynthesis occurs is the:  
A) nucleus    B) chloroplast    C) mitochondria    D) cell wall
- B 28. According to NRCS guidelines, the minimum amount of crop residue which must remain on the soil surface for a cropping system to qualify as conservation tillage is:  
A) 10%    B) 30%    C) 50%    D) 80%
- C 29. Much recent discussion has focused on using corn or sorghum residue after grain harvest as a source of biomass for cellulosic ethanol production in the future. The proper term used to describe the dry corn or sorghum residue after the grain has been removed is:  
A) silage    B) straw    C) stover    D) green manure
- 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, and farmers may now get compensation for these practices through carbon exchange “cap and trade” programs. 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 counting corn stands. He finds an average of 34 plants per 20 foot length of row. The corn is planted in 30-inch rows.

What is the plant population in plants per acre?

29,620 plants/acre

32. Your soil test recommends 90 pounds  $P_2O_5$  per acre. Fertilizers available are UAN solution (34-0-0), TSP (0-45-0), and muriate of potash (0-0-60).

Select the proper fertilizer and calculate how many tons are needed for a 160 acre field?

16 tons/field

33. Prior to harvest, a producer wants to estimate grain yield of corn. The plant population is 32,000 plants/acre. Assume one ear per plant. There is an average of 606 kernels per ear and the estimated kernel weight is 0.3 grams/kernel. (Hint: 454 grams per pound).

Using the standard weight per bushel for corn, what is the estimated yield in bushels per acre? (round to nearest whole number)

229 bushels/acre

34. A farmer delivers a truck load of wheat to the elevator that weighs 12.6 tons. The wheat tests 12.5% moisture and has a measured test weight of 61.5 pounds per bushel. She sells the wheat for \$5.00 per bushel.

What is the total amount of her payment check?

\$ 2100.00

35. You are calibrating a sprayer and you collect 8 ounces of water in 15 seconds from an individual nozzle. Nozzle spacing is 20 inches and the speed of travel is 5 miles per hour. Use the following formula to determine the sprayer application rate in gal/acre (GPA).

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

14.85 gallons/acre

36. A new chemical called superchem is recommended at a rate of 0.6 pounds a.i. per acre for bindweed control. You purchase a product called Kills-All 3L herbicide containing superchem as the active ingredient (3 pounds a.i. per gallon liquid formulation). Your sprayer is calibrated to deliver 20 gallons per acre. You have a sprayer with a 500 gallon tank, a 30-foot boom, and nozzle spacing of 24 inches.

How many gallons of Kills-All 3L product should be added to the tank to apply the correct rate of herbicide?

5 gallons Kills-All/tank