FFA Crop Management Examination
Iowa State University
June 10, 1994

Instructions: (1) Each contestant must place his/her name on the answer sheet in the appropriate space. You need not darken the circles. (2) Place 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 place your answer in the appropriate circle by completely darkening the choice of answer. (4) In answering true or false questions, darken the circle completely with an answer of true in the A circle and an answer of false in the B circle. (5) If you change an answer be sure you erase fully the choice of answer.

Section A - Multiple Choice

1. Canada thistle, field bindweed, and quackgrass are primary noxious weeds, and these 3 species are _____ plants.
   a. annual
   b. biennial
   c. perennial
   d. winter annual

2. A soil with a pH of 6.5 is ____ acid than a soil with a pH of 5.5.
   a. more
   b. less

3. To reduce the acidity of a soil, a farmer will add ____ to the soil.
   a. nitrogen
   b. iron
   c. lime
   d. zinc
   e. water

4. A ___ herbicide is one which is translocated from the site of application on the plant to the site within the plant where killing action occurs.
   a. systemic
   b. contact
   c. selective
   d. pre-emergence
   e. post-emergence

5. Seed coats of some crop and weed species are waterproof and may prevent the seed from absorbing water and germinating. Seed that fails to germinate because of a waterproof seed coat is called ___ seed.
   a. inert
   b. certified
   c. pure live
   d. non-viable
   e. hard

6. Mowing can effectively prevent seed formation on tall annual and perennial weeds, ___ food reserves in perennial weed vegetative reproductive organs, and favor competitive crops adapted to mowing.
   a. deplete
   b. increase

7. The overwintering stage of the European Corn Borer in Iowa is the ___.
   a. egg
   b. larva
   c. pupa
   d. adult

8. An acre of land is equivalent to an area of ___ square feet.
   a. 43
   b. 435
   c. 4,356
   d. 43,560
   e. 435,600

9. Eggs of insects which remain hatchable for 2 or more years rather than the normal hatchable period of one year is an example of ____.
   a. vernalization
   b. extended diapause
   c. mineralization
   d. nitrogen fixation
   e. pollination

10. Corn planted early in Iowa, i.e., April 27, is ___ subject to drought during pollination than corn planted later, i.e., May 20.
   a. less
   b. more

11. A single cross of corn is a hybrid derived by crossing ___ inbred lines.
   a. 2
   b. 3
   c. 4

12. Corn populations in Iowa will normally range from ___ plants per acre.
   a. 80 to 280
   b. 1,800 to 2,800
   c. 18,000 to 28,000
   d. 180,000 to 280,000
   e. 1,800,000 to 2,800,000

13. Soybean populations in Iowa will normally range from ___ plants per acre.
   a. 1,300 to 2,000
   b. 13,000 to 20,000
   c. 130,000 to 200,000
   d. 1,300,000 to 2,000,000

14. Barley yellow dwarf, also known as red leaf, is a disease in oats caused by a virus which is transmitted by ____.

a. aphids
b. wind
c. nematodes
d. water
e. racoons

15. The label on a given lot of alfalfa seed provided the following information: 90% germination, 2% other crop seed, 1% inert, 1% weed seed, and 96% purity. What is the percent Pure Live Seed?

a. 84
b. 86
c. 89
d. 92
e. 100

16. A farmer purchased seed of oats from a seed dealer at $5 per bushel which had 90% Pure Live Seed. What is the cost per bushel on a Pure Live Seed basis?

a. $5.00
b. $5.35
c. $5.45
d. $5.56

17. A farmer wishes to spray a field of oats with 2, 4-D to control mustard. The field measures 510' X 1200', and the farmer needs to know the acreage in preparation for spraying. How many acres does the farmer have in the field?

a. 7
b. 14
c. 21
d. 28

18. A farmer harvested 2800 pounds of shelled corn from 0.3 acre. What is the yield of corn on a per acre basis in bushels per acre?

a. 137
b. 147
c. 157
d. 167
e. 177

19. What is the cost per pound of nitrogen if 34-0-0, at $185 per ton, is used as the source of nitrogen?

a. $.27
b. $.24
c. $.21
d. $.18

20. The soil test recommendation for a field of corn is 120 pounds of nitrogen per acre. How many pounds of 46-0-0 per acre are required to meet the nitrogen recommendation of 120 pounds per acre?
    a. 92 pounds
    b. 120 pounds
    c. 240 pounds
    d. 260 pounds
    e. 300 pounds

21. A farmer wants to know the percent slope of a field which has a 4-foot difference in elevation between 2 points which are 50 feet apart. What is the percent slope between these 2 points?
    a. 4%
    b. 8%
    c. 12%
    d. 16%

22. A farmer has agreed to rent land from a neighbor for a cash rent of $13,200. The field measures 2500 feet X 2615 feet. What is the cash rent per acre for this land?
    a. $ 88
    b. $ 98
    c. $108
    d. $118
    e. $128

23. A farmer wishing to plant 26,000 kernels of corn per acre will require how many bags of seed corn to plant 400 acres of corn if each bag of seed corn averages 72,000 kernels?
    a. 125
    b. 130
    c. 135
    d. 145

24. A farmer with a 160-acre field of corn has a field cultivator that can cultivate 12 acres per hour. How long would it take to cultivate this field if everything is working well?
    a. 10.3 hours
    b. 11.3 hours
    c. 12.3 hours
    d. 13.3 hours

25. If the farmer's production costs for corn totals $253 per acre, and the selling price of corn is $2.30 per bushel, how many bushels per acre must the farm produce to cover production costs?
    a. 100
    b. 105
    c. 110
    d. 115

26. 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 100 soybeans in a 10 square foot rectangle?
    a. 1.5
    b. 2.0
    c. 2.5
    d. 3.0

27. A farmer needs to know the number of bushels of grain in a 26-foot diameter steel bin. The farmer measures the depth of the grain and finds that there are 16 feet of grain in the bin. If one bushel occupies 1.25 cubic feet, how many bushels are in the bin?
    a. 5876
    b. 6254
    c. 6792
    d. 7160

28. A farmer needs to measure off 14.5 acres in a field for the farm program. The farmer measures the field and finds that it is 1250 feet long. What is the width required to get the needed 14.5 acres?
    a. 478.8
    b. 505.3
    c. 584.5
    d. 612.9

29. A herbicide sprayer holds 500 gallons. The farmer measures the output of the sprayer and determines 22 gallons per acre are being applied. The farmer wants to apply 1 quart of Basagran per acre postemergence to control weeds in soybeans. How much Basagran should the farmer put in a full sprayer load?
    a. 4.5 gallons
    b. 5.7 gallons
    c. 6.7 gallons
    d. 7.4 gallons

30. The farmer uses a corn-soybean rotation. In a normal year, the farmer wants to have 140 pounds of nitrogen per acre available for corn. Soil tests show that decomposing organic matter should provide 15 pounds of nitrogen per acre. The field yielded 55 bushel of soybeans per acre last year. How much additional nitrogen needs to be supplied to the corn?
    a. 70 pounds
    b. 85 pounds
    c. 125 pounds
    d. 140 pounds

31. An agriculture student combined an area in the oats field for his/her Quaker Oats project that measured 1160 feet long and 85 feet wide. After the oats had been weighed and corrected for moisture and foreign material, the student had 7,145 pounds of harvested oats. What was the yield per acre?
    a. 75.4 bushels
    b. 89.1 bushels
    c. 98.8 bushels
    d. 109.3 bushels

32. A farmer is going to plant 250 acres of corn next year and wants to contract the anhydrous ammonia this fall for application next spring. The farmer plans on applying 75 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. 12.8
    b. 15.6
    c. 17.4
    d. 19.1

33. Pollen is produced in the ____ of a flower.
    a. stigma
    b. anther
    c. ovary
    d. ovule
    e. pistil

34. The first structure of an emerging corn seedling to break through the soil surface is the ____.
    a. hypocotyl arch
    b. coleoptile
    c. xylem
    d. phloem
    e. tassel

35. The first structure of an emerging soybean seedling to break through the soil surface is the ____.
    a. hypocotyl arch
    b. coleoptile
    c. xylem
    d. root hair
    e. tassel

36. Average annual rainfall in Central Iowa is approximately ____ inches, with lesser amount falling in Northwest Iowa and larger amount falling in Southeast Iowa.
    a. 2
    b. 32
    c. 62
    d. 92
    e. 112

37. The ____ which forms near the tip of a kernel of corn indicates maximum dry weight has occurred and physiological maturity has been reached.
    a. transpiration ratio
    b. turgor loss point
    c. pollen-silking interval
    d. embryo
    e. black layer

38. Soybeans are generally planted ___ corn planting, and soil temperature at depth of planting of soybean should be approximately ___.
    a. before, 40° F
    b. before, 55° F
    c. after, 40° F
    d. after, 55° F

39. A farmer who continuously has problem with lodging of soybeans should ____ the planting rate of soybeans to reduce the tendency of lodging.
    a. increase
    b. decrease

40. Weather conditions for cutting, drying, and harvesting an alfalfa-bromegrass crop for high-quality hay would be ___ favorable in a high pressure cell than in a low pressure cell.
    a. less
    b. more

Section B - True or False

41. Many weeds harbor insect and disease organisms that attack crop plants.

42. Weed seeds are scattered by crop seed, feed grain, hay, and straw; wind; water; animals, including man; machinery; and weed screenings.

43. The herbicide, 2, 4-D, is used to control grassy weeds in corn.

44. Corn hybrids with upright leaves tend to be more productive in narrow rows than corn hybrids with less upright leaves.

45. Birdsfoot trefoil is a forage legume which causes bloat in cattle, whereas Ladino clover is less likely to cause bloat.

46. Nitrogen fixation in soybeans most likely will occur in the soybean pods rather than in the nodules located on roots.

47. The soybean cyst nematode is not found in Iowa but probably will be introduced to the state within the next 5 years.

48. Sweetclover as a crop which is plowed under for soil improvement is called a green manure crop.

49. Hard red winter wheat is a crop which is normally planted in Iowa during March and April.

50. In the process of photosynthesis, carbon dioxide and oxygen combine in the chloroplast to form sugar.

51. The nitrogen in the air comprises approximately 78% of the air but is unavailable until it is fixed by nitrogen fixing bacteria in the nodules of both grasses and legumes.

52. Iron chlorosis can be a problem in growing soybeans, and the cause of this problem is too much iron in the soybean plant.

53. Corn plants require more water during mid-July in Iowa when the stomata are closed than when they are open.

54. A sandy loam soil has a higher water holding capacity than a clay soil.

55. Tripping an alfalfa flower is more likely accomplished by honey bees than by ants.

56. Corn for silage should be harvested when the moisture content of the plant is approximately 25%.

57. Butyric acid is a desirable acid to have in good quality corn silage.

58. The six reproductive growth stages in corn are silking, blister, milk, dough, dent and physiological mature.

59. The eight reproductive growth stages in soybean are beginning flower, flower, beginning pod, pod, beginning bean, bean, beginning maturity, and mature.

60. Roundup is a herbicide.

61. Malathion is an insecticide.

62. Prussic acid is a herbicide.

63. Switchgrass is a warm season forage grass.

64. Soybean seed moisture should be between 24 and 26% at harvest.

65. Rotation of soybeans with corn for three years has been an effective control of brown stem rot in soybeans as the pathogen for this disease survives on soybean residue in the soil.

66. Many perennial weed species spread vegetatively by underground stems known as rhizomes.

67. To reduce the hazard of winterkilling in alfalfa, Iowa farmers should cut alfalfa during mid-September to increase the carbohydrate reserves in roots.

68. Both nitrogen fixation and phosphorus fixation are desirable and contribute to increased crop yields.

69. All fungi, viruses, and bacteria are undesirable organisms and have no useful purposes in crop production.

70. All crops of economic importance in Iowa are cross pollinated species.

FFA Crop Management Examination Key
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1. c
2. b
3. c
4. a
5. e
6. a
7. b
8. d
9. b
10. a
11. a
12. c
13. c
14. a
15. b
16. d
17. b
18. d
19. a
20. d
21. b
22. a
23. d
24. d
25. c
26. c
27. c
28. b
29. b
30. a
31. c
32. d
33. b
34. b
35. a
36. b
37. e
38. d
39. b
40. b
41. a
42. a
43. b
44. a
45. b
46. b
47. b
48. a
49. b
50. b
51. b
52. b
53. b
54. b
55. a
56. b
57. b
58. a
59. a
60. a
61. a
62. b
63. a
64. b
65. a
66. a
67. b
68. b
69. b
70. b