

2015 FFA Written Exam

- Alfalfa requires what type of soil for maximum production?
 - Well drained
 - Poorly drained
 - High acid
 - High alkaline
- Alfalfa roots have been found to penetrate to what depth of soil?
 - 5 feet
 - 10 feet
 - 15 feet
 - 20 feet
- Alfalfa plants produce a toxin that can reduce germination and growth of new seedlings. This is called:
 - Phytotoxicity
 - Autotoxicity
 - Acidosis
 - Inoculation
- Due to the toxins being produced as mentioned in the previous question, it is recommended to wait _____ year(s) after plowing under alfalfa before seeding the same field to alfalfa again.
 - 1 year
 - 2 years
 - 3 years
 - It is not necessary to wait, plowing destroys the toxins
- _____ is the single most important fertility concern for establishing and maintaining high quality alfalfa stands.
 - Nitrogen
 - Phosphorus
 - Potassium
 - Liming
- According to the Alfalfa Management Guide, alfalfa stands should only be kept for ____ years for maximum profitability.
 - 2 years
 - 3 years
 - 4 years
 - 5-6 years
- To prevent winterkill, alfalfa should not be cut after:
 - September 1st
 - September 15th
 - October 1st
 - October 15th
- The recommended spring seeding dates for alfalfa in the northern two-thirds of Iowa is:
 - March 1-15
 - March 16-31
 - April 1-30
 - May 1-30
- Rhizobium* bacteria fix nitrogen on the roots of the alfalfa plant in nodules that becomes available to the plant. This nitrogen comes from the:
 - Water
 - Soil
 - Air
 - Nitrogen fertilizer
- For maximum forage quality, alfalfa should be cut at what stage?
 - Bud
 - Flowering
 - Seed pod
 - Stage doesn't affect quality

11. The Late Spring Soil Nitrate Test is specific for soil samples collected when the corn is ____ tall.
 - A. 3-4 inches
 - B. 4-8 inches
 - C. 6-12 inches
 - D. 12-15 inches
12. Nitrogen can move through the soil with water. Studies have shown that the amount of nitrogen that is below the root zone and can enter the groundwater is directly related to:
 - A. Soil texture
 - B. Soil organic matter
 - C. Nitrogen fertilizer rate
 - D. Acidity of the soil
13. When taking soil samples, you should take samples at a depth of:
 - A. 2-3 inches
 - B. 4-6 inches
 - C. 6-7 inches
 - D. 8-10 inches
14. Red clover should be frost seeded at a rate of ____ pounds per acre.
 - A. 5-10
 - B. 10-15
 - C. 15-20
 - D. 20-25
15. Average fertilizer nitrogen replacement for red clover for a subsequent corn crop is ____ pounds per acre.
 - A. 40
 - B. 60
 - C. 80
 - D. 100
16. Several studies have shown that red clover helps suppress:
 - A. Corn rootworm
 - B. Soybean cyst nematode
 - C. Weeds
 - D. All of these
17. A good red clover stand provides how many years of high quality forage?
 - A. 2
 - B. 4
 - C. 6
 - D. 8
18. Red clover is susceptible to drought and will not do well on what type of soil?
 - A. Sandy
 - B. Clay
 - C. Silt
 - D. Loam
19. When applying pesticides, who is responsible for protecting our water resources?
 - A. Farmers
 - B. Lawn care applicators
 - C. Pest applicators in buildings
 - D. Anyone applying pesticides
20. When is leaching more of a problem?
 - A. On gravelly soils
 - B. On sandy soils
 - C. On areas with shallow groundwater
 - D. All of the above
21. Runoff from a section of land would be an example of:
 - A. Point source pollution
 - B. Nonpoint source pollution

22. The term "persistence" has what meaning when related to pesticides?
- A. How long it kills target pests
 - B. How long it remains in the environment before breaking down
 - C. How long a person must stay out of the area after applying the pesticide
 - D. How rapid it changes to a gas
23. To sell a product as "organic", no synthetic fertilizer or pesticides should have been applied to the land for the last ____ years.
- A. 2
 - B. 3
 - C. 4
 - D. 5 or more
24. A border of _____ feet is recommended between organic and conventional soybeans.
- A. 15
 - B. 25
 - C. 50
 - D. 100
25. In a can of green beans labeled "organic", what is (are) counted as organic ingredients?
- A. Green beans
 - B. Salt
 - C. Added water
 - D. All of these
26. To have the "organic" label on meat, the livestock had to be fed _____ percent organic crops.
- A. 25
 - B. 50
 - C. 75
 - D. 100
27. Manure cannot be applied for a minimum of _____ months prior to the harvest of organic horticultural crops.
- A. 3
 - B. 4
 - C. 5
 - D. 6
28. Separate combines must be used for organic and conventional crops.
- A. True
 - B. False
29. In organic crop production, how many times is a row crop cultivator used?
- A. 2-3
 - B. 3-4
 - C. 5
 - D. 6 or more
30. Which term(s) are defined by law?
- A. Eco-friendly
 - B. Natural
 - C. Organic
 - D. All of these
31. The thickness of the "A" horizon has been linked to yield because the thicker the "A" horizon:
- A. The more water is held in the soil
 - B. The better the drainage is
 - C. The more acidic the soil is
 - D. All of the above are true
32. An increase in plant population can minimize:
- A. Soil erosion loss
 - B. Nutrient loss
 - C. Water loss
 - D. All of these are true

33. Corn yields decline significantly on sloping land when the topsoil is less than ____ inches.
- A. 3-5
 - B. 6-7
 - C. 11
 - D. 15
34. How long does it take switchgrass to become established?
- A. 4-6 months
 - B. 8-10 months
 - C. 1-2 growing seasons
 - D. 2-3 growing seasons
35. Insect control in switchgrass:
- A. Is limited to introducing predator insects
 - B. Is limited to insecticides due to the dense stand
 - C. Is done by using Bt varieties
 - D. Has not been a problem in Iowa
36. Leaf and fungal diseases are occasionally present on switchgrass in years with:
- A. Cool temperatures
 - B. Low rainfall
 - C. High humidity
 - D. All of these contribute to fungal disease problems
37. Switchgrass is a:
- A. Cool season sod-forming grass
 - B. Warm season sod-forming grass
 - C. Cool season bunchgrass
 - D. Warm season bunchgrass
38. Fall applications of manure should not be made until the soil temperature is below ____ degrees F.
- A. 60
 - B. 50
 - C. 40
 - D. Soil temperature doesn't make a difference
39. Which type of manure would contain the most nutrients?
- A. Dry beef manure
 - B. Liquid dairy manure
 - C. Poultry manure
 - D. Liquid swine manure
40. Because all K contained in manure is in the K^+ ionic form, manure K :
- A. Is readily available to crops
 - B. Has limited availability to crops
 - C. Has no availability to crops
 - D. Is leached easily
41. Nutrient loss from manure is greatest for which nutrient(s)?
- A. Nitrogen
 - B. Phosphorus
 - C. Potassium
 - D. All three are equal
42. Which nutrient or nutrients are considered 100% crop available over a long period of time?
- A. Nitrogen and phosphorus
 - B. Nitrogen and potassium
 - C. Phosphorus and potassium
 - D. Nitrogen, phosphorus, and potassium

The next section of questions is from the Iowa Soybean Crop Performance Tests

43. When would a variety have 95% of its pods brown, if there was a 40 in the MAT. Date column?
- A. 40 days after flowering begins
 - B. 40 days after flowering stops
 - C. 40 days after August 1st
 - D. 40 days after September 1st
44. A maturity group of 3 would be used in:
- A. Central Iowa
 - B. Northern Iowa
 - C. Southern Iowa
 - D. Could be used anywhere in Iowa
45. Which statement is true about the testing sites for the Iowa Crop Performance Tests for Soybeans in Iowa?
- A. There are 6 districts with four sites per district
 - B. There are 6 districts with three sites per district
 - C. There are 4 districts with three sites per district
 - D. There are 4 districts with four sites per district
46. The "hilum" in soybeans is the:
- A. Site of attachment from the pod to the stem
 - B. Site of attachment of the soybean seed to the pod
 - C. Is the scar left by the flower
 - D. Plant part that attaches each leaflet to the petiolule
47. Yields in the Iowa Crop Performance Tests for soybeans are adjusted to what percent moisture?
- A. 10%
 - B. 12%
 - C. 13%
 - D. 15%
48. Varieties in the Iowa Crop Performance Test for Soybeans are rated for resistance to:
- A. Soybean Cyst Nematodes (SCN)
 - B. Brown Stem Rot
 - C. Phytophthora Root Rot
 - D. All of these
49. Which of the following is not a rating used in the Iowa Crop Performance Test for Soybeans?
- A. % oil
 - B. % protein
 - C. % carbohydrates
 - D. Yield
50. Which maturity rating for soybeans would be adapted to southern Iowa locations?
- A. 1
 - B. 3
 - C. 5
 - D. All of these are adapted to Iowa

FFA State Agronomy CDE – TEAM EVENT

There are four parts to the TEAM Event and each member should complete one part. A member may help others if they finish early. If a team has only three members, a member may complete two parts or the members can work together on the fourth part. All answers should be transferred to the TEAM Event bubble sheet. You have 30 minutes for this activity. This year the TEAM Event is a budget for 80 acres of alfalfa. You are to determine if the fungicide treatment and insecticide treatment are worth the investment. If a treatment isn't profitable enter a zero on the crop budget sheet for the costs for that treatment. **Choose the answer closest to yours. Answers may vary due to rounding.**

Part 1: Tillage and Seeding

Tillage will include a soil finisher that costs \$20/ acre. The seed will be drilled at a cost of \$22.50/acre. You will seed the alfalfa at a rate of 17 pounds/acre. Alfalfa comes in 50 pound bags and costs \$207 per bag.

1. Figure the total tillage costs for the 80 acres.
 - A. \$160
 - B. \$1,600
 - C. \$16,000
 - D. \$160,000
2. How many bags of seed will need to be purchased?
 - A. 5
 - B. 13
 - C. 28
 - D. 235
3. What will be the cost of the seed?
 - A. \$1,035
 - B. \$2,691
 - C. \$5,796
 - D. \$48,645
4. What will it cost to seed the alfalfa?
 - A. \$1,800
 - B. \$3,825
 - C. \$1,235
 - D. \$3,519
5. From the yield trial chart, the yield without treatments for the year was?
 - A. 2.0 tons
 - B. 3.8 tons
 - C. 5.2 tons
 - D. 6.1 tons
6. If alfalfa sells for \$150/ton for first cutting and \$200/ton for second and third cutting, the value of the hay produced without any treatments is:
 - A. \$75,200
 - B. \$83,200
 - C. \$88,000
 - D. \$113,600

Enter costs and income on budget sheet.

Using the Alfalfa Seed Tag answer the following.

7. What is the PLS? (Hint: don't include hard seed)
 - A. 89.9%
 - B. 89.8%
 - C. 79.9%
 - D. 78.4%

8. What is meant by "Hard Seed"?
 - A. Seed that is alive but won't germinate
 - B. Seed that is dead and thus won't germinate
 - C. Seed that can imbibe water
 - D. Small rocks that are in the seed lot

9. Noxious weeds are those that are:
 - A. Resistant to Roundup
 - B. Hard to control by ordinary means
 - C. Spread only by seed
 - D. all of the above are true

10. Inert material in a seed lot could be:
 - A. Chaff
 - B. Stems
 - C. Dead plant parts
 - D. All of the above

11. The date tested is important because:
 - A. Seedling vigor can decrease with seed age
 - B. Germination can decrease with age
 - C. Seed quality can decrease if seed isn't stored properly
 - D. All of the above are true

Part 2: Research has been conducted using Headline on alfalfa. Your task is to determine the effectiveness of this practice. If the practice is cost effective include the costs and returns in the budget. If the practice is not effective enter a zero for the costs and returns in the budget.

12. Headline is a (an):
 - A. Fungicide
 - B. Herbicide
 - C. Insecticide
 - D. Nematicide

13. When using Headline, what PPE is not required according to the label?
 - A. Chemical resistant gloves
 - B. Protective eyewear
 - C. Chemical resistant footwear
 - D. Respirator

14. Headline would help by treating or preventing:
 - A. Insects
 - B. Diseases
 - C. Nematodes
 - D. Hopper burn

15. What is the REI when treating fields with Headline?
 - A. 6 hours
 - B. 12 hours
 - C. 24 hours
 - D. 36 hours

16. What is the PHI when using Headline?
 - A. 2 days
 - B. 7 days
 - C. 14 days
 - D. 21 days

17. When using Headline what is the maximum application rate per acre for one application?
 - A. 3 ounces
 - B. 9 ounces
 - C. 12 ounces
 - D. 27 ounces

18. What is the maximum amount of Headline that can be applied in one growing season?
 - A. 9 ounces
 - B. 18 ounces
 - C. 27 ounces
 - D. 54 ounces

19. If you applied Headline on each cutting (3 cuttings), how much total could you apply?
 - A. 9 ounces
 - B. 18 ounces
 - C. 27 ounces
 - D. 54 ounces

20. How many gallons of Headline would have to be purchased for the season for the 80 acres?
- A. 7 gallons
 - B. 12 gallons
 - C. 17 gallons
 - D. 34 gallons
21. If Headline costs \$377/gallon, what is the total cost for Headline?
- A. \$2,639
 - B. \$4,524
 - C. \$6,409
 - D. \$12,818
22. Look at the yield trial chart. What is the value of the increased yield from using Headline, if the value of the increased yield was \$200/ton due to increased feeding value? Remember you have 80 acres.
- A. \$11,200
 - B. \$14,400
 - C. \$83,200
 - D. \$97,600
23. Was using Headline profitable?
- A. Yes
 - B. No

Enter costs on the budget sheet.

Part 3: Using the yield trial information, the Warrior label, and cost provided answer the following questions. If using Warrior is profitable enter the costs on the budget sheet, if not enter zero for the costs.

24. What is the "signal" word on the Warrior label?

- A. Caution
- B. Warning
- C. Danger
- D. Poison

25. What type of pesticide is Warrior?

- A. Insecticide
- B. Fungicide
- C. Herbicide
- D. Nematicide

26. What PPE is required when applying Warrior?

- A. Chemical resistant gloves
- B. Long-sleeved shirt
- C. Protective eyewear
- D. All of these

27. What is the REI when applying Warrior?

- A. 6 hours
- B. 12 hours
- C. 24 hours
- D. 36 hours

28. When using Warrior, how many days must you wait to harvest after application?

- A. 2 days
- B. 7 days
- C. 10 days
- D. 14 days

29. If you applied Warrior at a rate of 3.2 ounces per acre, how many gallons would be needed for the 80 acres?

- A. 2
- B. 4
- C. 6
- D. 8

30. If Warrior costs \$242/gallon, what is the total cost for the 80 acres?

- A. \$484
- B. \$968
- C. \$1,452
- D. \$1,936

31. Using the yield trial chart, was using Warrior profitable if the value of alfalfa was \$200/ton?

- A. Yes
- B. No

Enter costs on the budget sheet.

Part 4: Fertilizer and lime. Potash costs \$460/ton and lime costs \$35/ton. You need to apply 200 pounds of potash and 2 tons of lime per acre. Figure the costs for the 80 acres.

32. How many tons of potash is needed?

- A. 8
- B. 16
- C. 80
- D. 160

33. Potash costs will be:

- A. \$3,680
- B. \$7,360
- C. \$36,800
- D. \$73,600

34. How many tons of lime are needed?

- A. 80
- B. 160
- C. 200
- D. 240

35. The cost of lime is:

- A. \$2,800
- B. \$5,600
- C. \$7,000
- D. \$8,400

36. Application cost is \$5/ton for each (potash and lime). What is the application cost?

- A. \$840
- B. \$880
- C. \$1,040
- D. \$1,080

37. Legumes (like alfalfa) get most of their nitrogen from:

- A. Nitrogen applied fertilizer
- B. Applied cattle manure
- C. Decaying organic matter in the soil
- D. The air

38. Severe potassium deficiency would show up as:

- A. Reddish or purple leaves
- B. Light green leaves
- C. Shortened internodes
- D. Completely yellow leaves

Enter costs on the budget sheet.

Crop Budget: Questions 39-50 are on the Crop Budget Sheet

**Choose the answers closest to what you have, since rounding errors might have occurred.
Record your answers on the TEAM BUBBLE SHEET.**

39. The rent charge for the land is:
A. \$2,400
B. \$24,000
C. \$240,000
D. None of these
40. The cost for spraying Headline is:
A. \$800
B. \$8,000
C. \$2,400
D. 0 - would not apply because it is not profitable
41. The cost for spraying Warrior is:
A. 0 - would not apply because it is not profitable
B. \$800
C. \$2,400
D. \$24,000
42. The cost for cutting the hay would be:
A. \$1,280
B. \$1,720
C. \$3,840
D. \$5,120
43. The cost for raking the hay would be:
A. \$480
B. \$1,440
C. \$1,920
D. \$3,840
44. The cost for baling the hay would be:
A. \$17,080
B. \$14,382
C. \$6,405
D. \$4,382
45. The cost of transporting the hay would be:
A. \$610
B. \$1,220
C. \$4,260
D. \$4,880
46. Total income from the hay would be:
A. \$75,200
B. \$79,040
C. \$84,200
D. \$89,600

47. Total expenses for the year would be:

- A. \$59,920
- B. \$62,455
- C. \$71,535
- D. \$77,765

48. The net profit for the 80 acres of hay would be:

- A. \$29,681
- B. \$19,875
- C. \$14,874
- D. \$11,835

49. The Economic Breakeven Yield is:

- A. 3.74 tons
- B. 4.15 tons
- C. 4.26 tons
- D. 4.86 tons

50. The Economic Breakeven Price/ton would be:

- A. \$122.79
- B. \$134.53
- C. \$159.35
- D. \$176.56

2015 Team Event Budget

Acreage 80

Income

Expense

Tillage costs (number 1)
 Seed costs (number 3)
 Seeding cost (number 4)
 Rent (\$300/acre) *number 39

Hay value without treatments (number 6)
 Extra value from Headline (number 22)
 Extra value from Warrior (number 31)

Headline cost (number 21)
 Cost to spray (\$10/acre) * number 40
 Warrior cost
 Cost to spray (\$10/acre) * number 41
 Potash cost (number 33)
 Lime cost (number 35)
 Application cost (number 36)

Cost to cut hay (\$16/acre per cutting) *number 42
 Cost to rake (\$6/acre per cutting) *number 43
 Baling costs (\$35/ton) *number 44
 Transportation cost (\$10/ton) *number 45

Total Income *number 46
 Total Expenses *number 47

--

--

Profit or Loss *number 48
 Economic Breakeven Yield (use \$200/ton) *number 49
 Economic Breakeven Price *number 50

Numbers preceded by an * need to be entered on the bubble sheet