2016 KANSAS STATE CDE AGRONOMY EVENT
LABORATORY PRACTICAL

Contestant # _____ **Name** _____ **Score** Key

PRINT OR WRITE LEGIBLY (4 points each)

1. a. cotyledon b. hypocotyl
2. velvetleaf
3. C (phosphorus)
4. A
5. a. D. b. B
6. D (ergot)
7. F (alfalfa weevil)
8. grain moisture meter
9. yellow foxtail
10. a. C b. D
11. D (soybean rust)
12. C (tuber)
13. D (wheat scab)
14. wild sunflower
15. a. C b. A
16. E
17. yellow nutsedge
18. 4
19. a. C b. B
20. a. 0.3 gpm b. A
21. Silty Clay loam
22. rye
23. D (chinch bug)
24. a. V4 b. V2
25. Swather
26. A (corn earworm)
27. A (charcoal rot)
28. C
29. a. R1 b. silking
30. A
31. C (berry)
32. field bindweed
33. A
34. a. C b. B
35. E
36. Soybeans
37. C
38. C (square) (2 pt)

PLANT STRUCTURE – SEEDLINGS

1. **TWO PARTS** Use the soybean seedlings shown to complete these statements.

   a. The structure marked by the WHITE pin is called the _____.

   b. The structure marked by the YELLOW pin is called the _____.

   Word bank for this question:

   radicle, coleoptile, hypocotyl, endosperm, cotyledon, mesocotyl, first true leaf

   List both answers in correct order.

VEGETATIVE WEED ID

2. This weed is _____

NUTRIENT DEFICIENCY

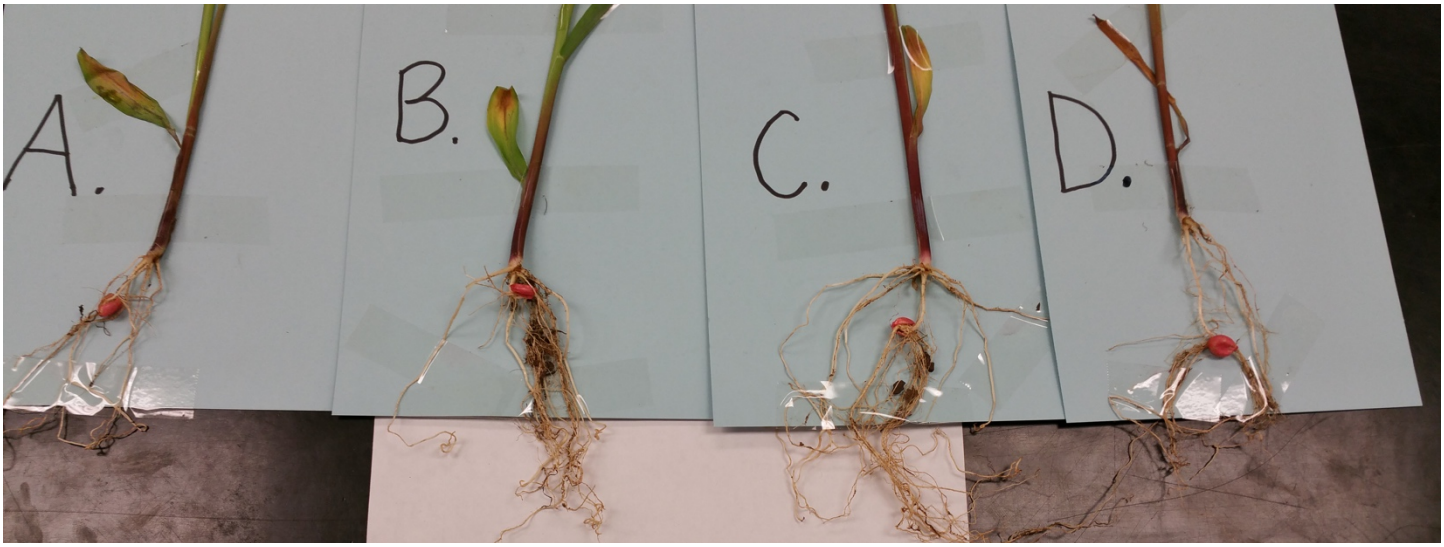
3. The purple coloration on the lower leaves of these corn and corn plants is typical of a deficiency of which of the following nutrients:
   A) Nitrogen
   B) Potassium
   C) Phosphorus
   D) Iron
   E) Sulfur

FERTILIZERS

4. Which is of the above fertilizers would be best to correct the purple leaf nutrient deficiency on the plants in question number 3?

ANSWER: A, B, C, or D

CROP GROWTH AND DEVELOPMENT



5. **TWO PARTS** ANSWER: A, B, C, or D for both.

a. Which corn seedling emerged from the greatest depth?

b. Which corn seedling will be most susceptible to “rootless corn syndrome”?

List both answers in correct order.

CROP DISEASE

6. This seed disease is:

A) blacktip
B) blue eye mold
C) corn smut
D) ergot
E) loose smut
F) Northern corn leaf blight

CROP INSECT

7. This insect is:

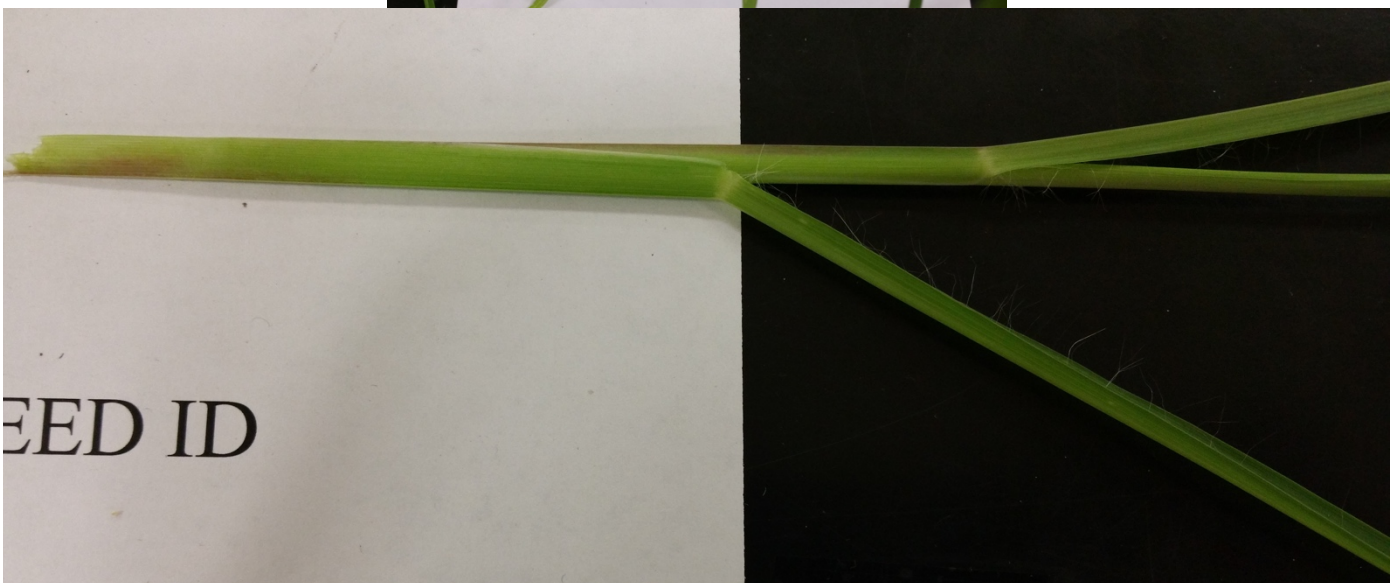
A) stinkbug
B) lady beetle
C) blister beetle
D) aphid
E) painted lady
F) alfalfa weevil

EQUIPMENT

8. This piece of equipment is a (an) _____

VEGETATIVE WEED ID

9. This weed is _____



CROP PRODUCTS and CROP QUALITY

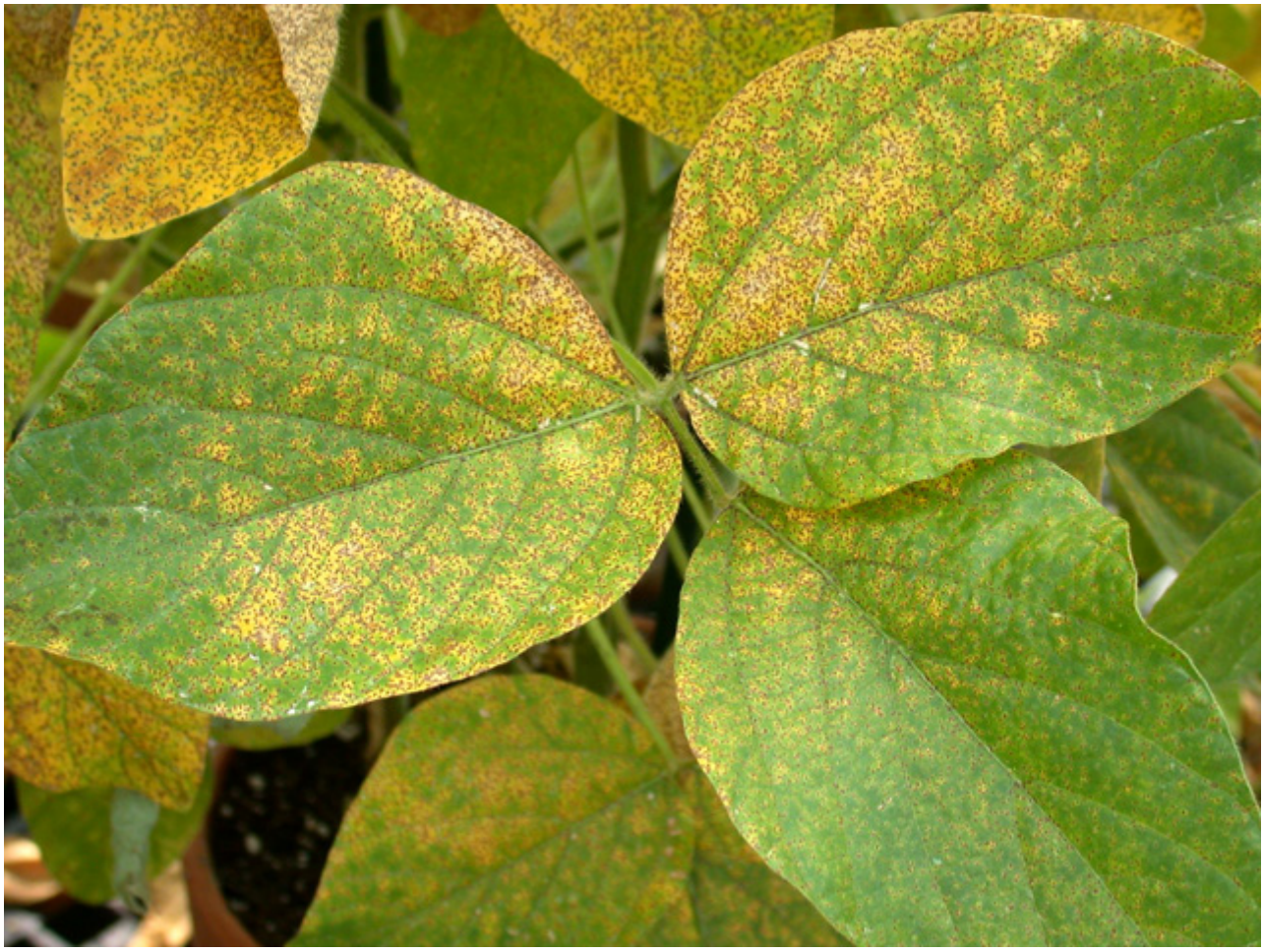
10. **TWO PARTS** ANSWER: A, B, C, or D for each.

a. Which feed ingredient is made from wheat?

b. Which feed ingredient would have the highest percent protein?

List both answers in correct order.

CROP DISEASE



11. This soybean disease is:

A) pod and stem rot of soybean
B) bacterial blight of soybean
C) bean pod mottle virus
D) soybean rust
E) Phytophthora root rot
F) purple seed stain of soybean

PLANT STRUCTURE - SPECIALIZED STEMS

12. The type of specialized stem shown here that was used for asexual propagation of this potato plant is called a:

    A) Rhizome
    B) Bulb
    C) Tuber
    D) Stolon
    E) Crown

CROP DISEASE

13. This disease is:

A) loose smut of wheat
B) barley yellow dwarf virus
C) wheat streak mosaic virus
D) wheat scab
E) stem rust of wheat
F) leaf rust of wheat

VEGETATIVE WEED ID

14. This weed is _____

PLANT STRUCTURE – LEGUMES

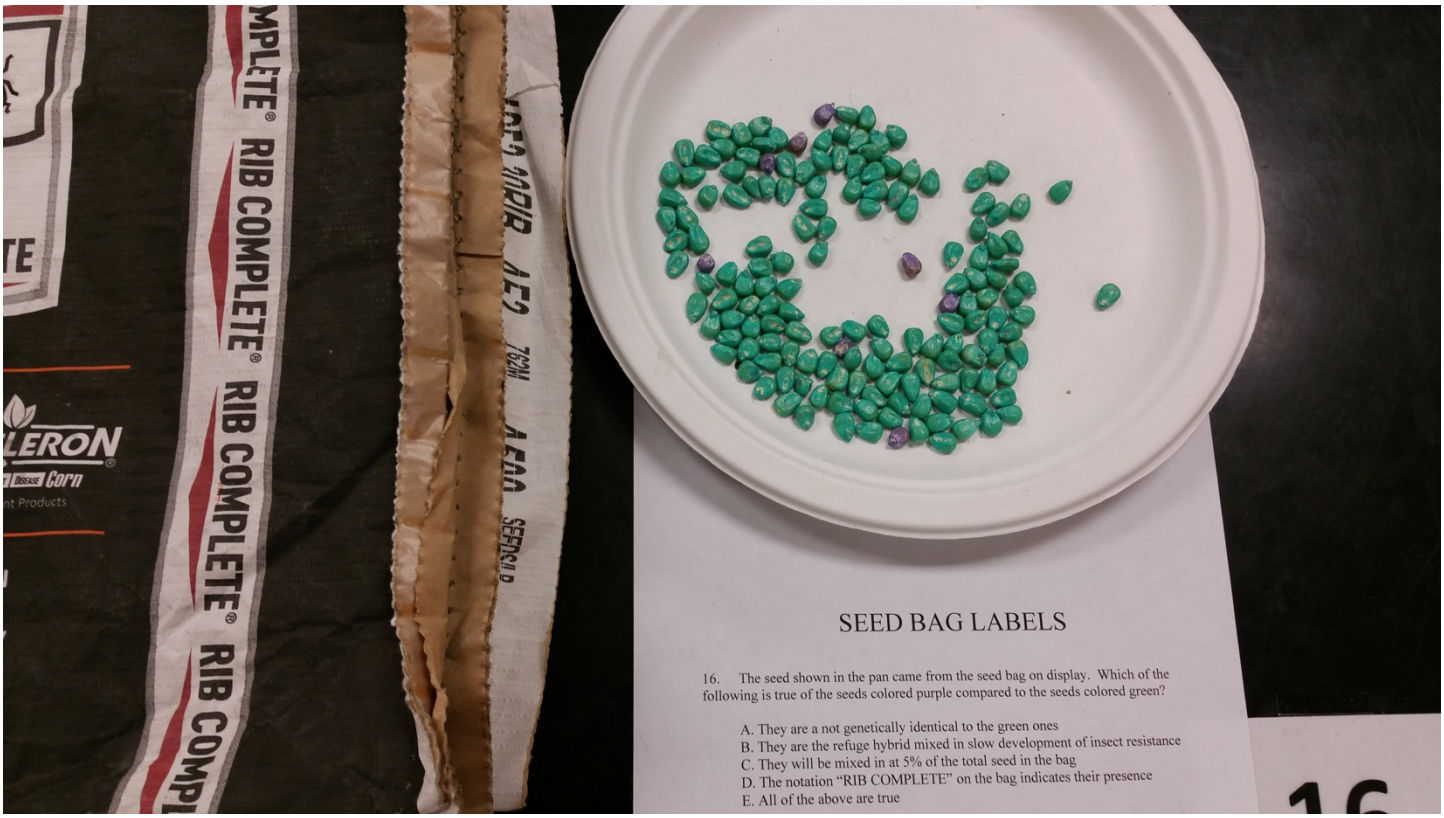
15. Use the legume forage plants shown here to answer the following two part question.
ANSWER: A, B, C, or D

a. Which of the plants has **pinnately compound leaves**?

b. Which of the plants is **pubescent**?

List both answers in correct order.

SEED BAG LABELS



16. The seed shown in the pan came from the seed bag on display. Which of the following is true of the seeds colored purple compared to the seeds colored green?

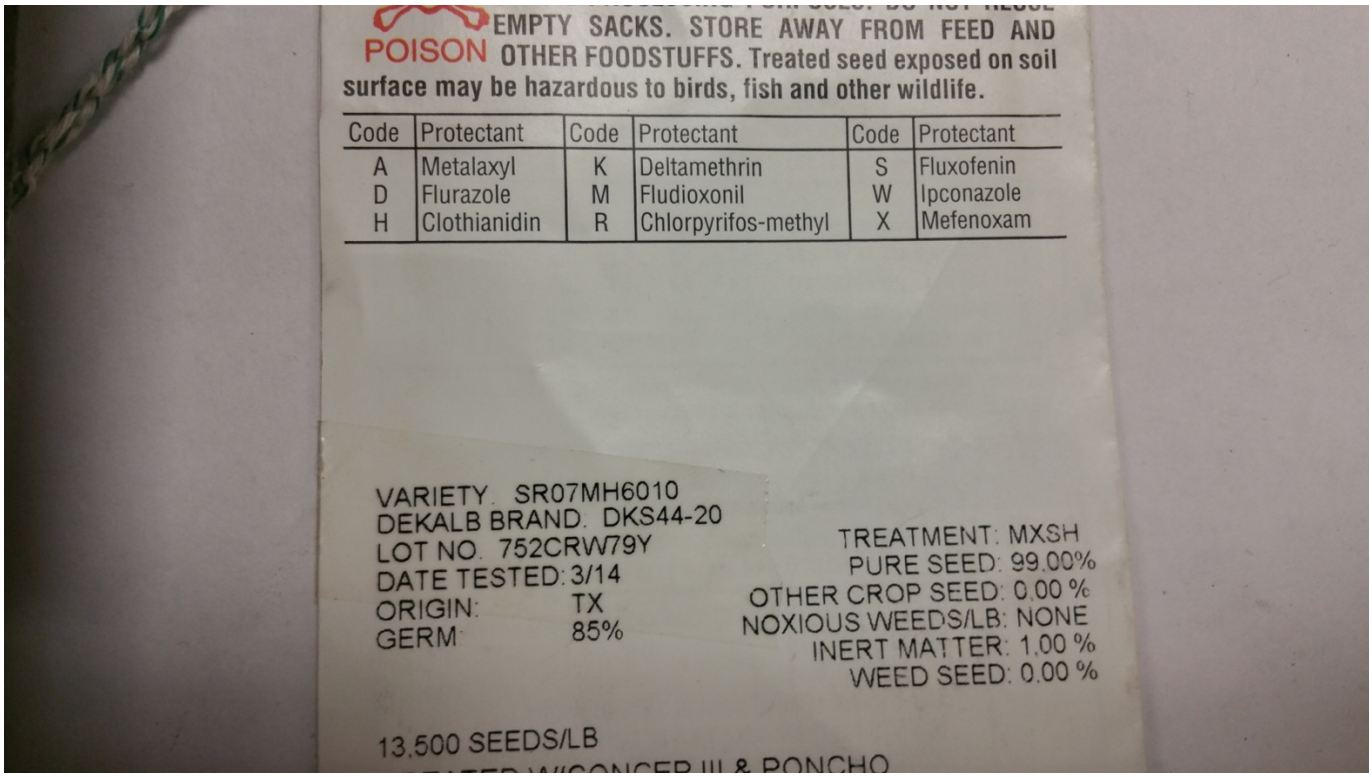
A. They are a not genetically identical to the green ones
B. They are the refuge hybrid mixed in slow development of insect resistance
C. They will be mixed in at 5% of the total seed in the bag
D. The notation "RIB COMPLETE" on the bag indicates their presence
E. All of the above are true

VEGETATIVE WEED ID

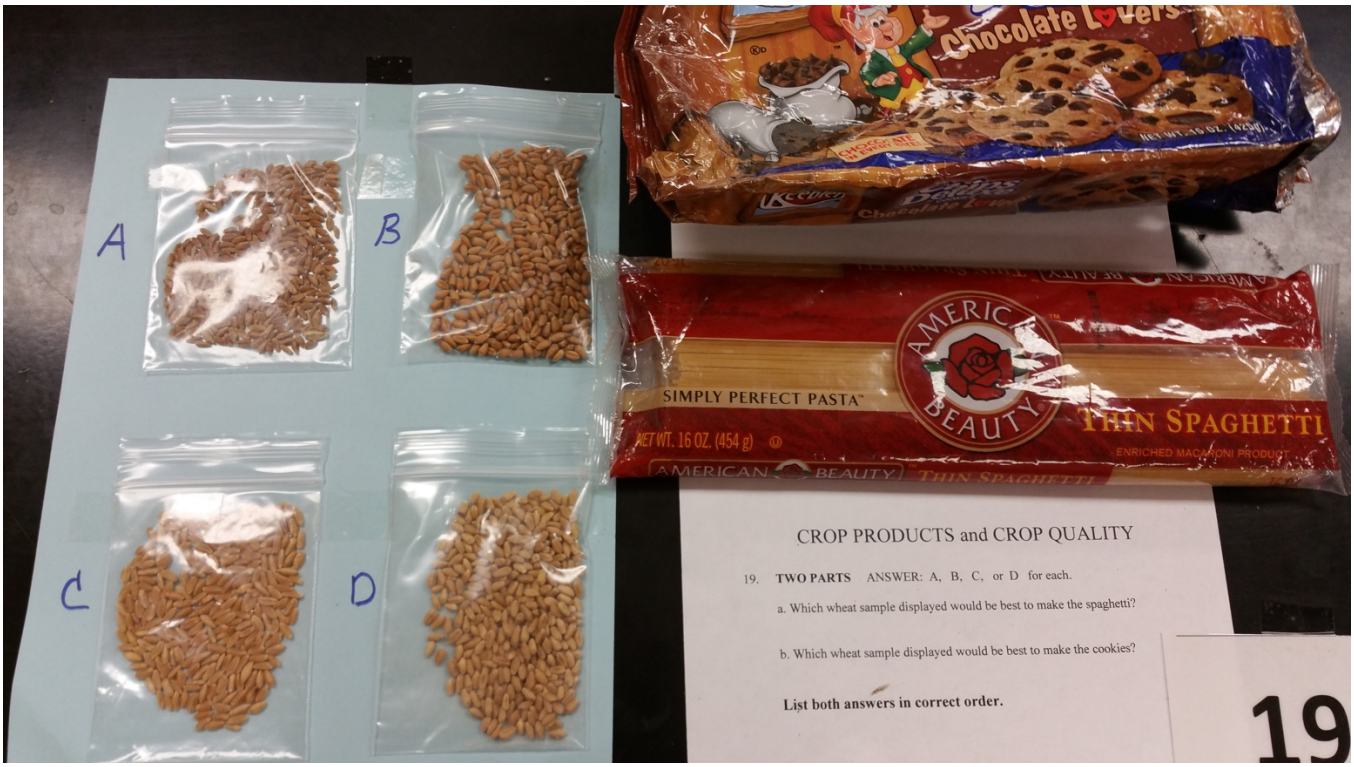
17. This weed is _____

SEED BAG LABELS

18. Use the hybrid sorghum seed bag provided. How many <u>different</u> chemicals are in the seed treatment?



CROP PRODUCTS and CROP QUALITY



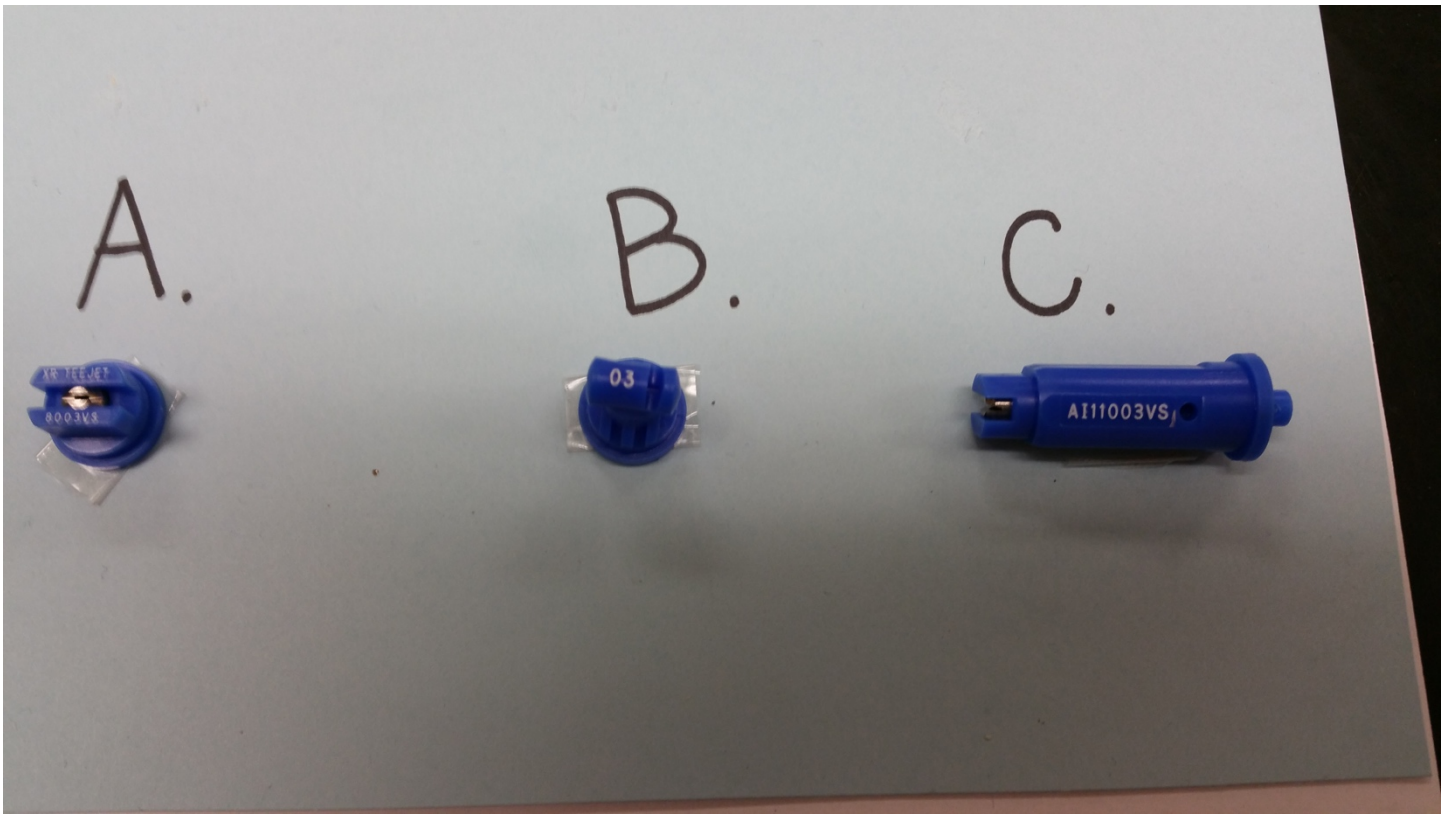
19. **TWO PARTS** ANSWER: A, B, C, or D for each.

a. Which wheat sample displayed would be best to make the spaghetti?

b. Which wheat sample displayed would be best to make the cookies?

List both answers in correct order.

PESTICIDE APPLICATION



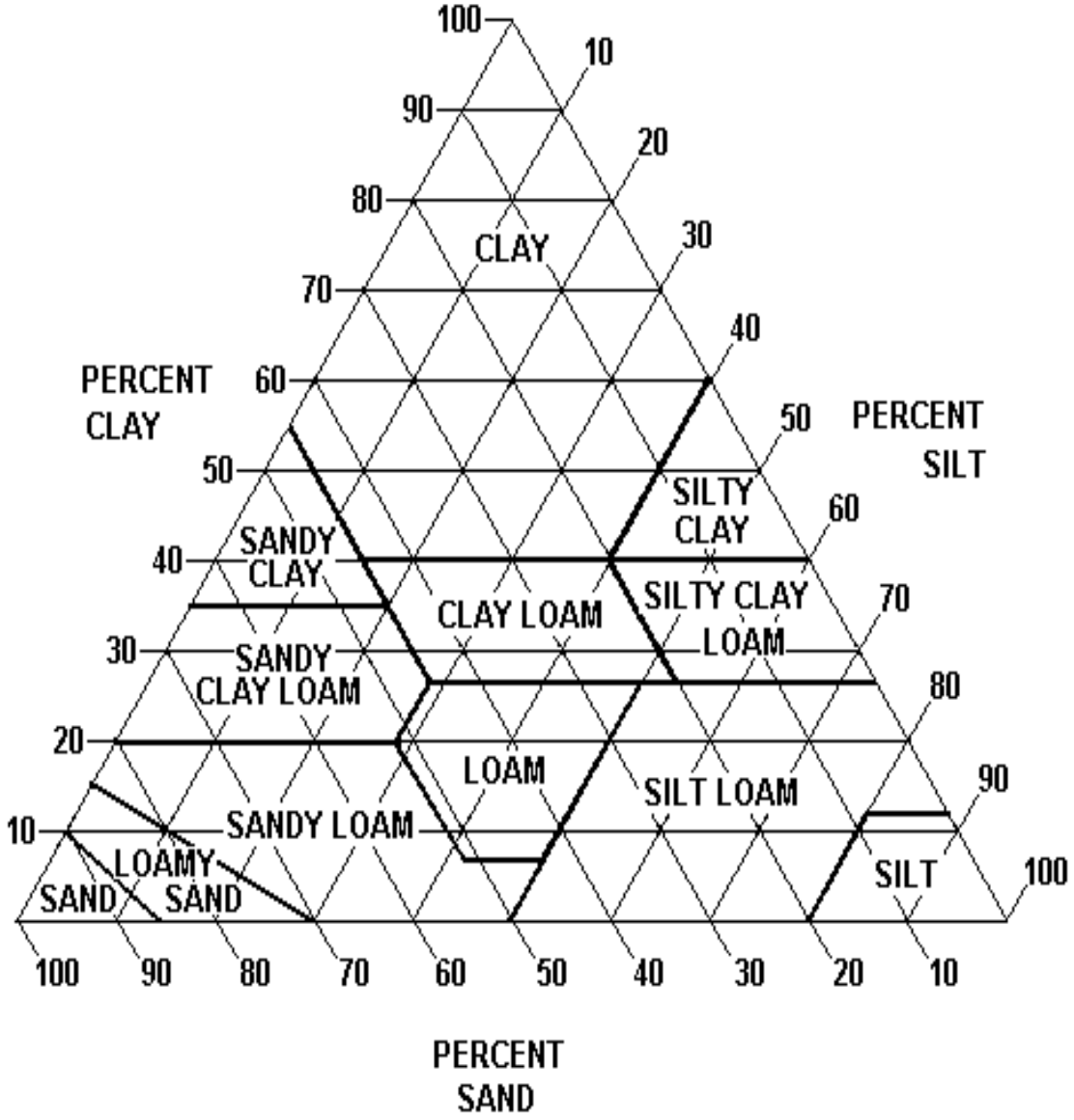
20. Use the nozzle tips on display to answer the following two statements.

a. At standard 40 PSI pressure, the nozzle delivery rate of all three would be _____ gallons per minute (GPM)

b. Nozzle _____ (answer A, B or C) would produce the smallest droplet size and be most likely to cause spray drift.

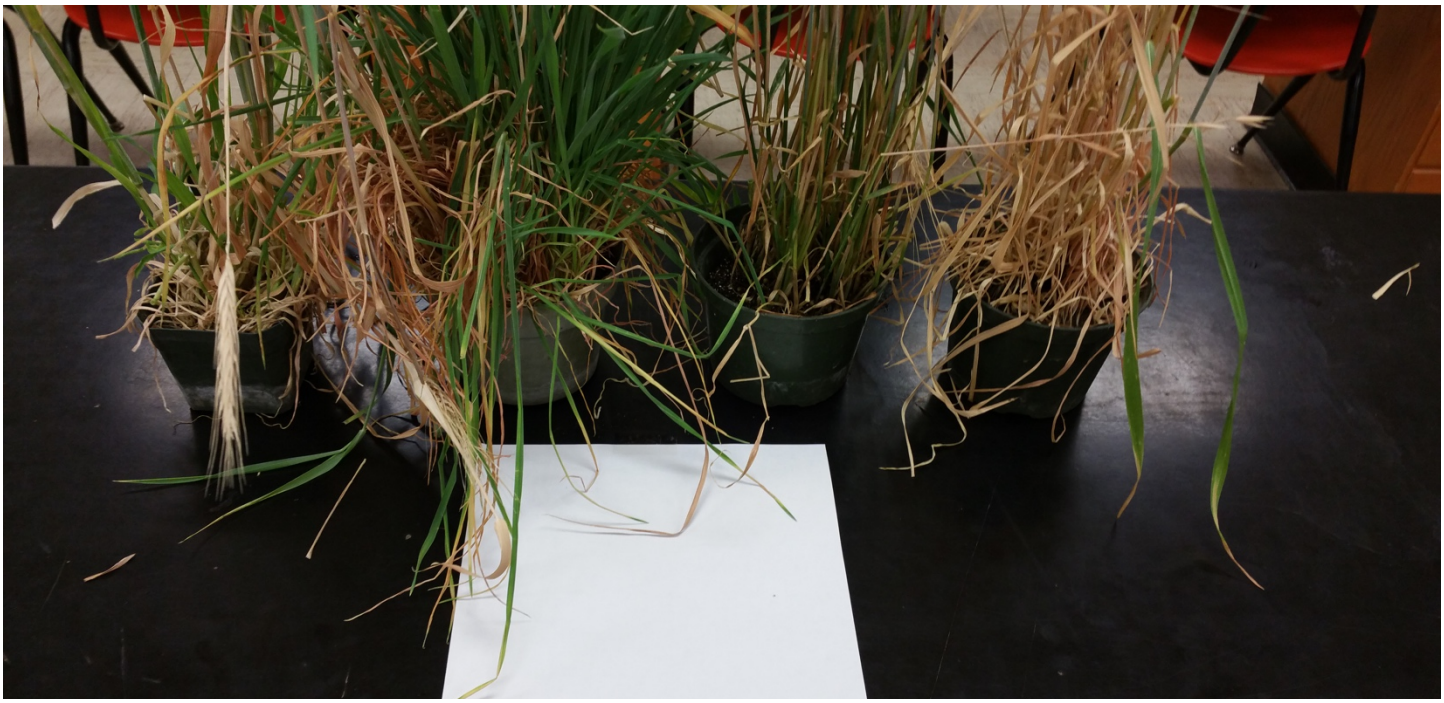
List both answers in correct order.

SOIL TEXTURE



21. The correct soil textural class for a soil with 30 % clay, 60 % silt, and 10 % sand is a _____.

CROP QUALITY AND USE



22. Shown are four cereal crops that can be used for winter cover crops. The one that is the least susceptible to winter kill and is generally the most popular as a cover crop, but also is the most likely to become a "weed problem" if it is not completely terminated in the spring and is allowed to produce some seed is _____. (Answer with the name of the crop).

CROP INSECT

23. This insect is:

A) blister beetle
B) bean leaf beetle
C) corn rootworm adult
D) chinch bug
E) stinkbug
F) lady bug

CROP GROWTH AND DEVELOPMENT

24. TWO PARTS. Give the correct **<u>vegetative growth stage</u>** for the plants shown.

a. The growth stage is of the corn plant is _____ (letter and number).

b. The growth stage is of the soybean plant is _____ (letter and number).

List both answers in correct order.

EQUIPMENT

25. This piece of equipment is a (an)_____.

CROP INSECT

26. This insect is

A) corn earworm
B) green cloverworm
C) corn rootworm
D) fall armyworm
E) European corn borer
F) black cutworm

CROP DISEASE

27. This disease is:

A) charcoal rot
B) pod and stem rot
C) Gibberella stalk rot
D) stem rust
E) corn smut
F) blue eye mold

BASIC CROP SCIENCE

____28. On the roots of this soybean plant just below the soil surface is a structure marked by the yellow pin. This structure is:

A) a cyst where soybean cyst nematodes live and feed decreasing plant yield
B) a gall produced by the bacteria causing the disease bacterial blight of soybean
C) a nodule where symbiotic nitrogen fixing bacteria live providing the plant with N
D) a reproductive structure where spores of the fungal disease Phytopthora root rot will be produced and released into the soil to infect the next crop
E) none of the above

CROP GROWTH AND DEVELOPMENT

29. Observe the corn plant on display to complete the following two statements:

    a. The numerical growth stage is _____ (letter and number).

    b. The descriptive term for this growth stage is _____.

    List both answers in correct order.

BASIC CROP SCIENCE

____30. Which of these seedlings would have be LEAST LIKELY to recover and regrow after hail damage that occurs during the seedling growth stage shown here?

ANSWER: A, B, or C

PLANT STRUCTURE – FRUITS

31. The structure marked by the white pins are fruits of this weed which is a member of the Nightshade family. Members of this plant family typically produce seeds in this type of fruit. This fruit type is botanically called a:

A. capsule
B. pod
C. berry
D. silique
E. caryopsis

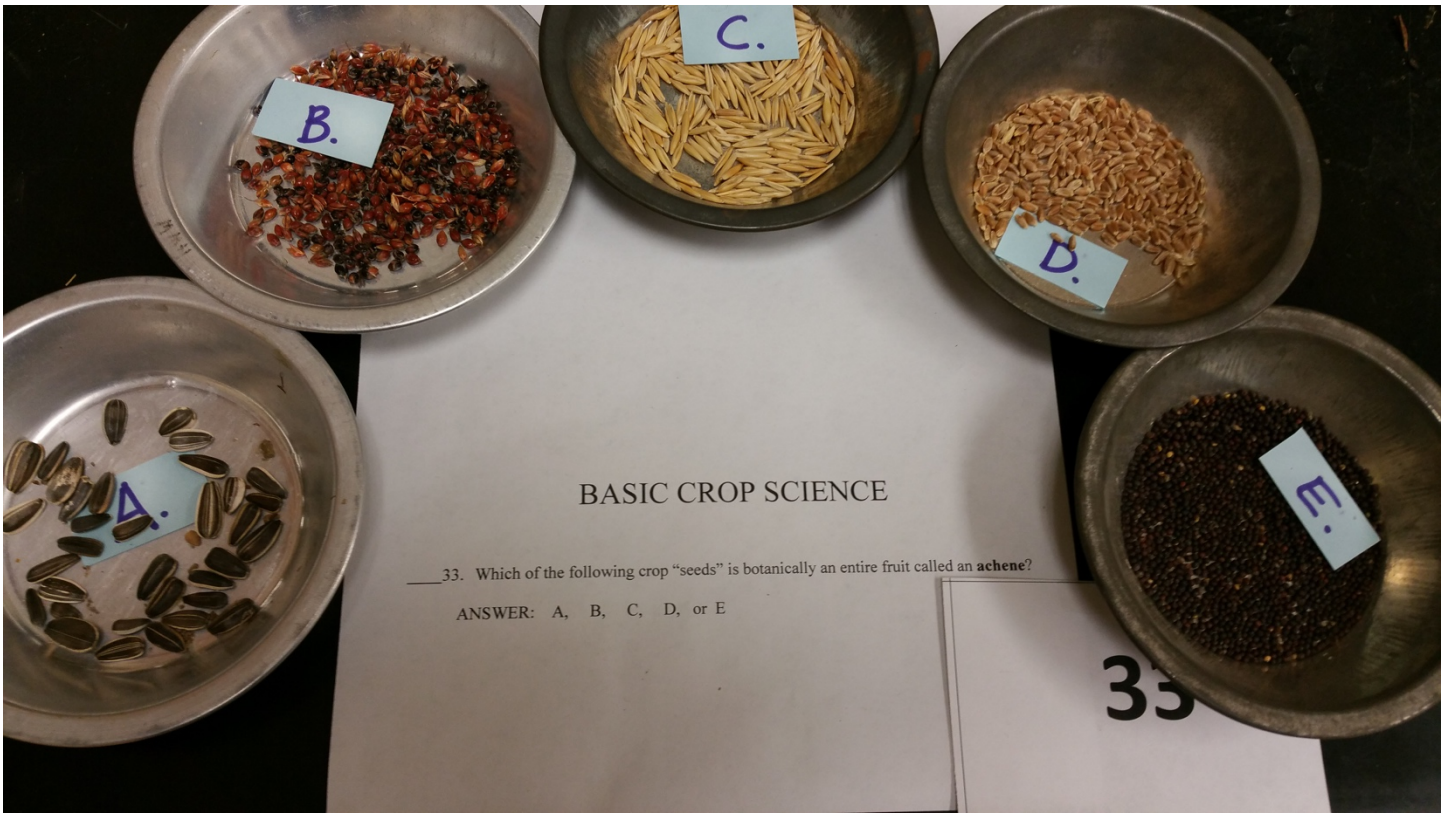
VEGETATIVE WEED ID

32. This weed is _____

BASIC CROP SCIENCE

____33. Which of the following crop "seeds" is botanically an entire fruit called an **achene**?

ANSWER: A, B, C, D, or E



CHEMICAL WEED CONTROL

34. Two different herbicides were applied 14 days ago POST emergence to these flats containing both crops and weeds. Answer this TWO PART question about the activity of the two herbicides:

a. The activity of the herbicide used on flat a was:

A) non-selective and systemic
B) selective and systemic
C) non-selective and non-systemic (contact)
D) selective and non-systemic (contact)

b. The activity of the herbicide used on flat b was:

A) non-selective and systemic
B) selective and systemic
C) non-selective and non-systemic (contact)
D) selective and non-systemic (contact)

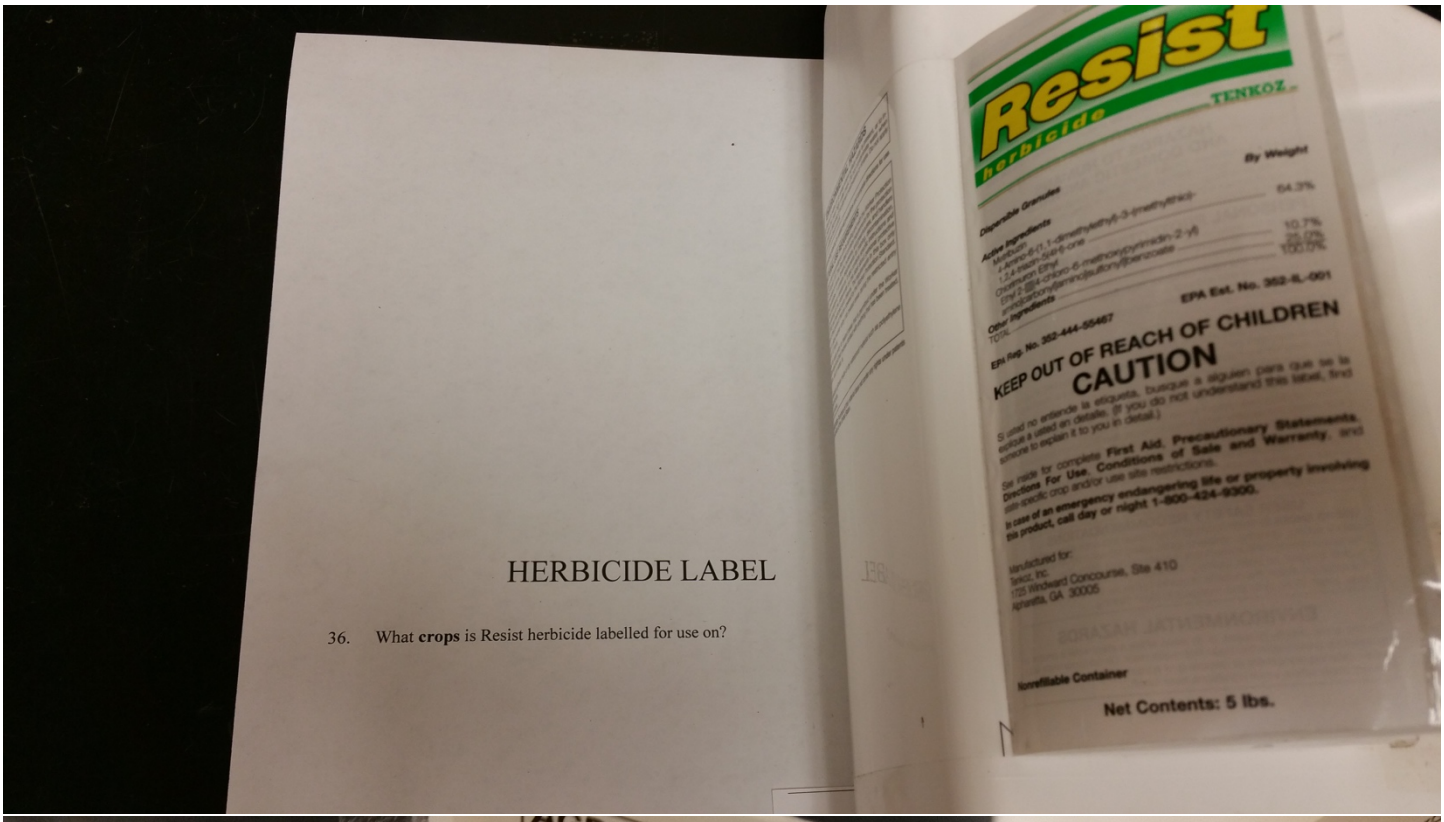
CHEMICAL WEED CONTROL

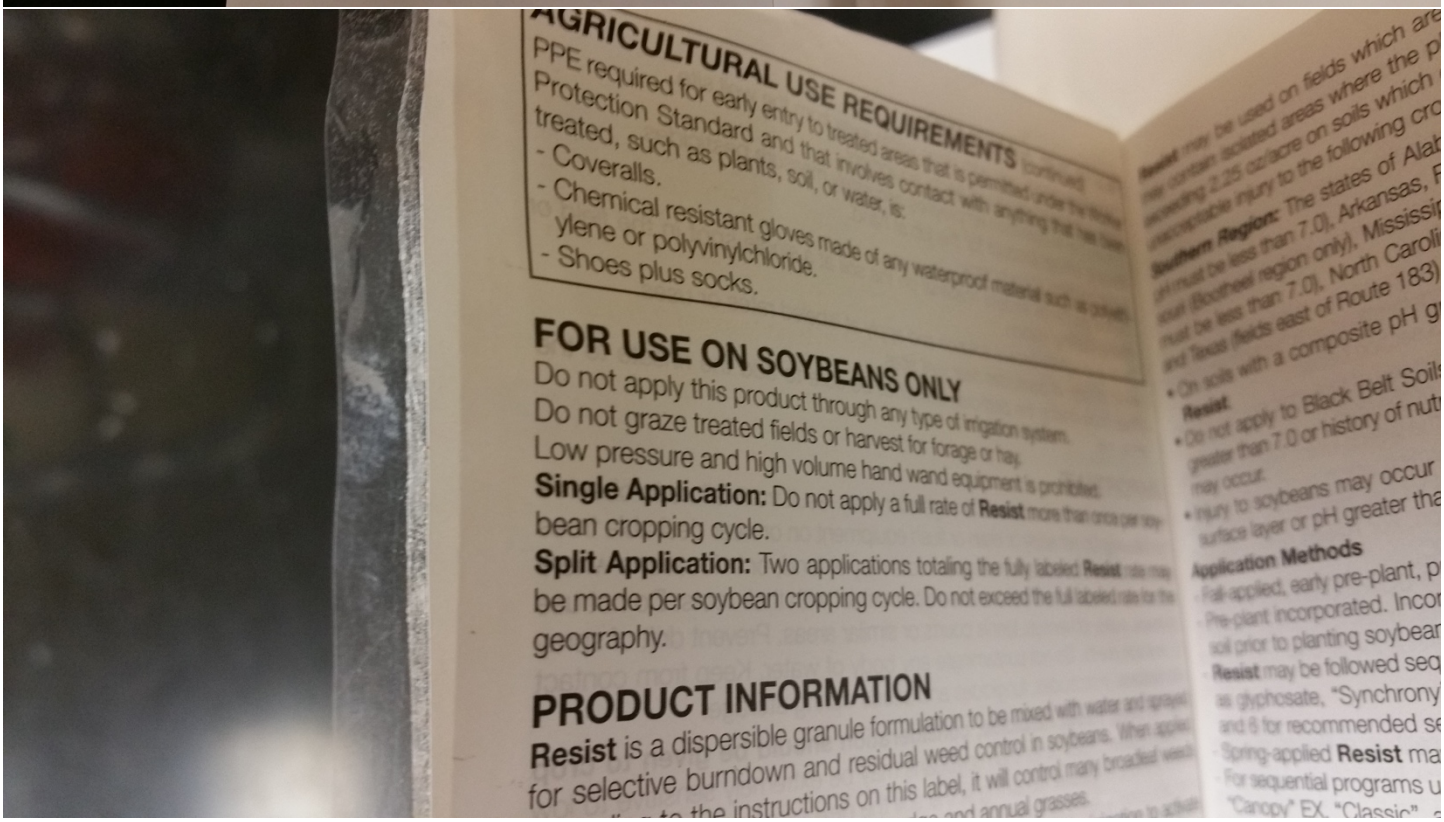
35. A herbicide was applied PRE-EMERGENCE to this flat 14 days ago. It labelled for pre-emergence application in corn. However, as demonstrated here, some crop injury may occur. Which of the following conditions might cause this type of response?

A) too wet
B) high soil pH
C) sensitive corn hybrid
D) weather to cool
E) all of the above are possible reasons that could be factors for such a response

HERBICIDE LABEL

36. What **crops** is Resist herbicide labelled for use on?

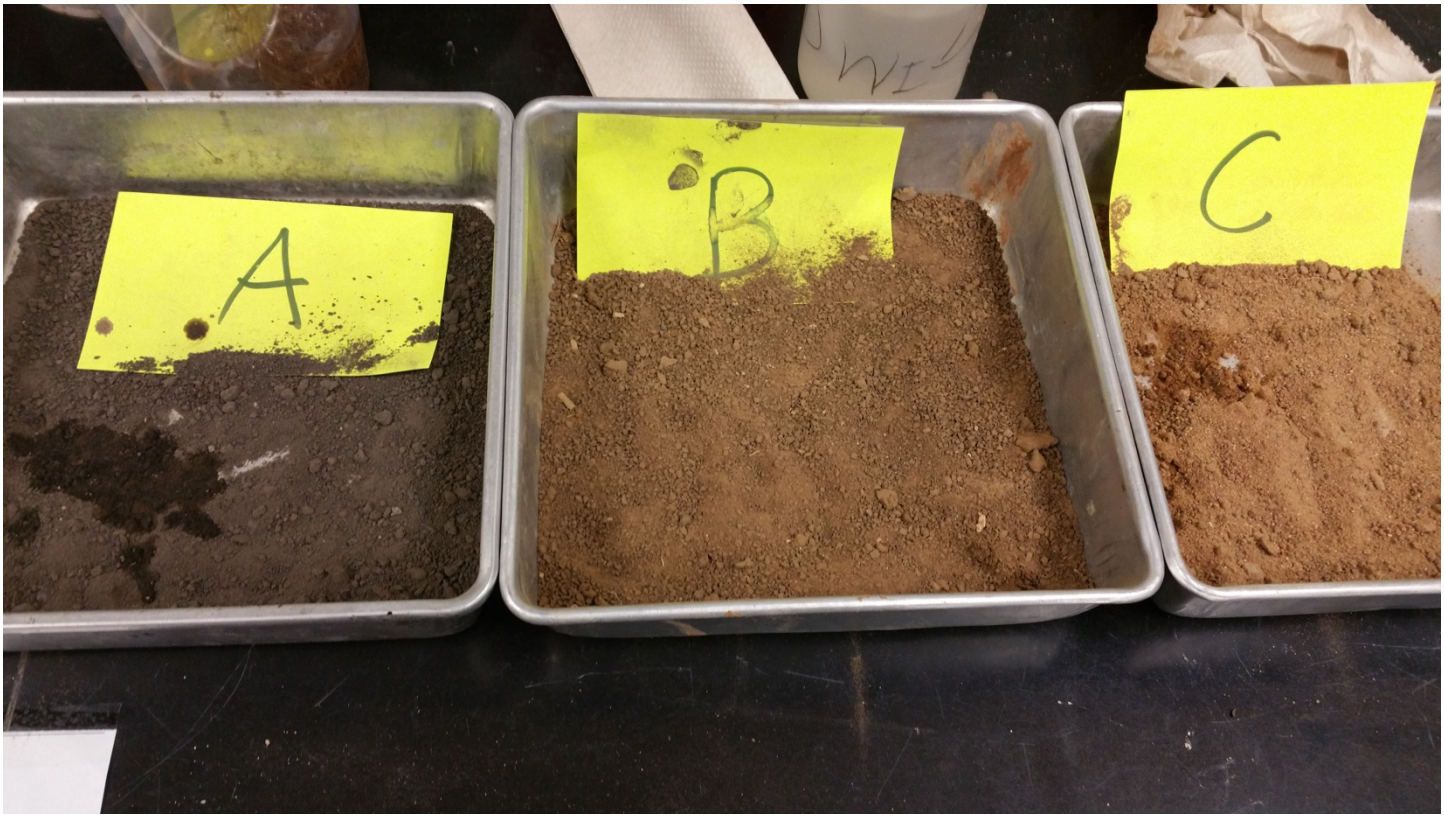




SOIL PROPERTIES

37. Which of the soils on display has the highest sand content? (you may do texture by feel – water and towels provided)

Answer: Soil A, Soil B, or Soil C



PLANT STRUCTURE – COTTON

38. The structure marked by the white pins are flower buds on cotton plants. What is the more common name of this structures used by farmers and agronomists in describing cotton development. **(2 points)**

A. bolls
B. fibers
C. squares
D. spikelets
E. stipules