



# PLANT STRUCTURE - SEEDLINGS

1. **TWO PARTS** Use the seedlings shown to identify the parts marked by the pins.

a. The structure marked by the WHITE pin on the corn: \_\_\_\_\_.

b. The structure marked by the YELLOW pin on soybean: \_\_\_\_\_.

Word bank for this question:

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

**List both answers in correct order.**



# VEGETATIVE WEED ID

2. This weed is \_\_\_\_\_



# NUTRIENT DEFICIENCY

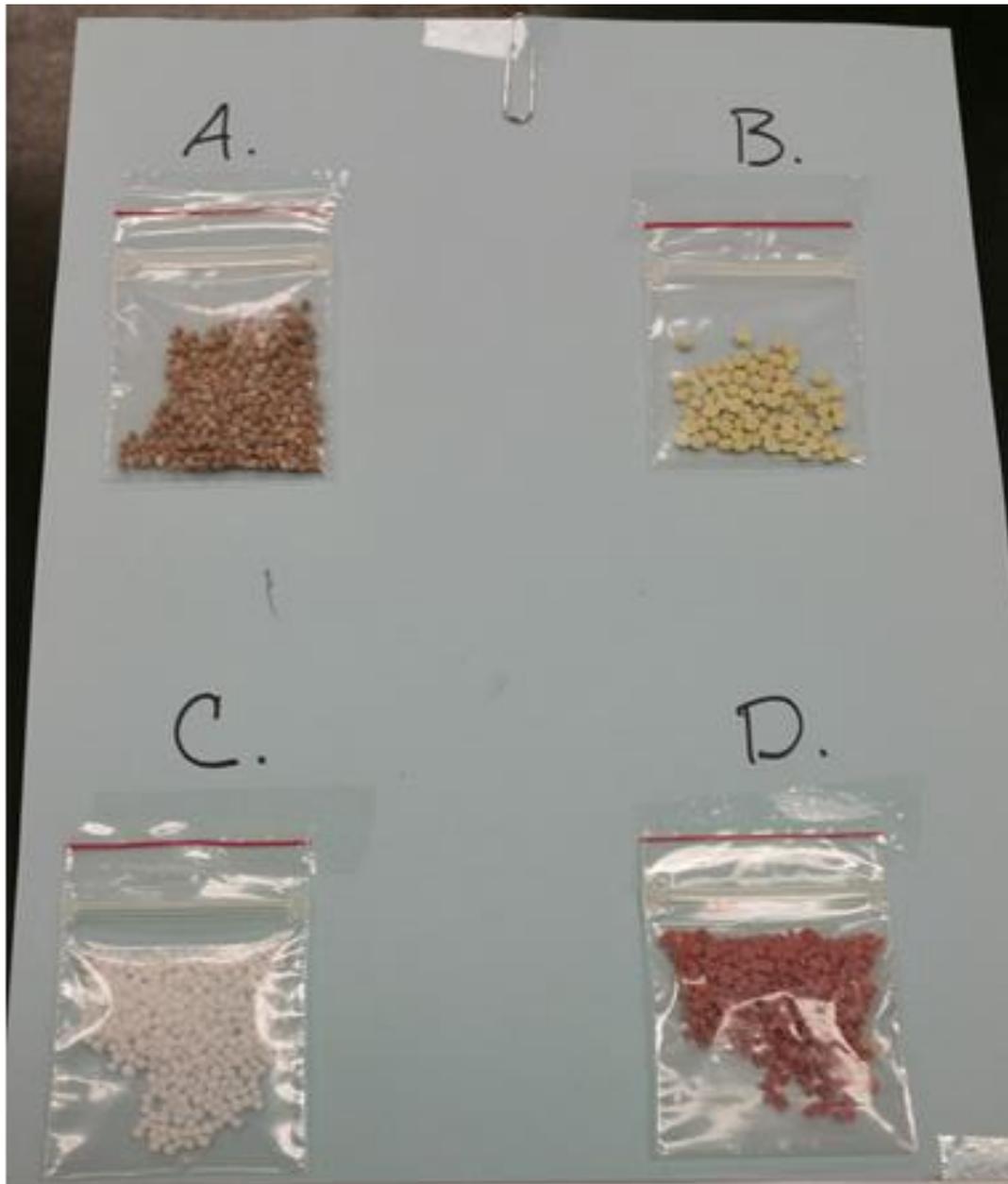
3. The interveinal chlorotic stripes on the upper leaves of this corn plant is typical of the following nutrient deficiency:
- A) Nitrogen
  - B) Potassium
  - C) Phosphorus
  - D) Iron
  - E) Sulfur



# FERTILIZERS

4. Which is of the above fertilizers is the potassium (K) source?

ANSWER: A, B, C, or D



# CROP GROWTH AND DEVELOPMENT

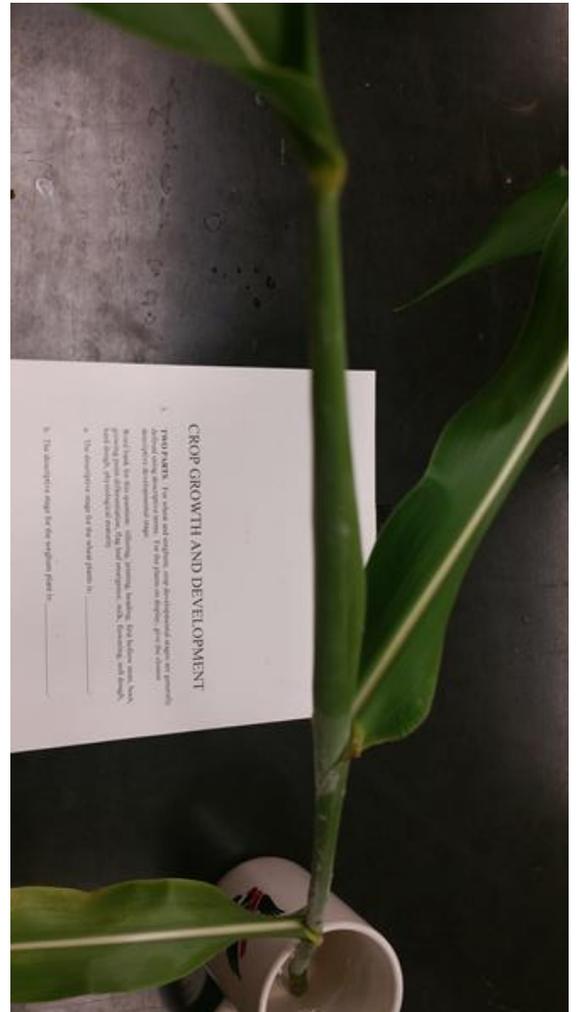
5. **TWO PARTS.** For wheat and sorghum, crop developmental stages are generally defined using descriptive terms. For the plants on display, give the closest descriptive developmental stage.

Word bank for this question: tillering, jointing, heading, first hollow stem, boot, growing point differentiation, flag leaf emergence, milk, flowering, soft dough, hard dough, physiological maturity

a. The descriptive stage for the wheat plants is: \_\_\_\_\_.

b. The descriptive stage for the sorghum plant is: \_\_\_\_\_.

**List both answers in correct order.**



# CROP DISEASE

6. This seed disease is:

- A) blacktip of wheat
- B) blue eye mold
- C) wheat scab
- D) ergot of wheat
- E) loose smut of wheat
- F) wheat streak mosaic virus



# CROP INSECT

Also see larval form and injury symptoms on the plants provided

7. This insect is:

- A) stinkbug
- B) lady beetle
- C) blister beetle
- D) alfalfa weevil
- E) bean leaf beetle
- F) chinch bug



# CROP MANAGEMENT PROBLEM

8. This corn seedling was dug up and placed in the pot with the surrounding soil just as it appeared in the field. What is a production problem that is demonstrated by this display?
- A. planted too shallow and will not likely develop a good crown root system
  - B. planted too deep and will not likely develop a good crown root system
  - C. planted in too wet soil causing side-wall compaction that roots may not penetrate
  - D. planted with a planter that did not have a good closing wheel to cover the seed
  - E. planted with a planter that did not have good down pressure to keep it in the soil



# 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 cotton?

b. Which feed ingredient is make from corn?

**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 stain of soybean



# PLANT STRUCTURE - SPECIALIZED STEMS

12. The type of specialized underground stem shown here that is used for asexual propagation of this weed is called a:

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



# CROP INSECT

13. Identify the insects on the sorghum plant on display. Use the hand lens and look on the stem and leaf sheaths of the tallest shoot. This insect is:

- A) blister beetle
- B) lacewing
- C) stinkbug

- D) chinch bug
- E) aphid
- F) painted lady



# CROP MANAGEMENT PROBLEM

14. Assume this plant is from a grain sorghum field that has been harvested 1 month ago when it was dry. Because of favorable growing conditions lately, it has started to regrow from the crown and stem. The farmer would like to graze his cows on the stalks and regrowth. Which of the following would be a potential concern?
- A) aflatoxin from the old cut stems
  - B) prussic acid poisoning from the new regrowth leaves
  - C) nitrate poisoning from the new regrowth leaves
  - D) vomitoxin from the seed that may have been dropped on the ground
  - E) none of the above are concerns related to sorghum



# FORAGE CROP MANAGEMENT

15. **TWO PARTS.** Shown are five plants commonly used as forages in Kansas.

ANSWER with the name of the forage crop that fits these descriptions.

- a. Which one is classified as a perennial, warm-season, native forage grass?
- b. Which one is classified as a winter annual, cool-season, introduced, temporary forage crop?

**List both answers in correct order.**





# SEED BAG LABELS

16. Shown are three standard tags that may be found on pedigreed seed regulated by state crop improvement associations. The correct order of generation of production for these three seed classes is:

- A. Certified → Registered → Foundation
- B. Foundation → Certified → Registered
- C. Registered → Certified → Foundation
- D. Certified → Foundation → Registered
- E. Foundation → Registered → Certified
- F. Registered → Foundation → Certified



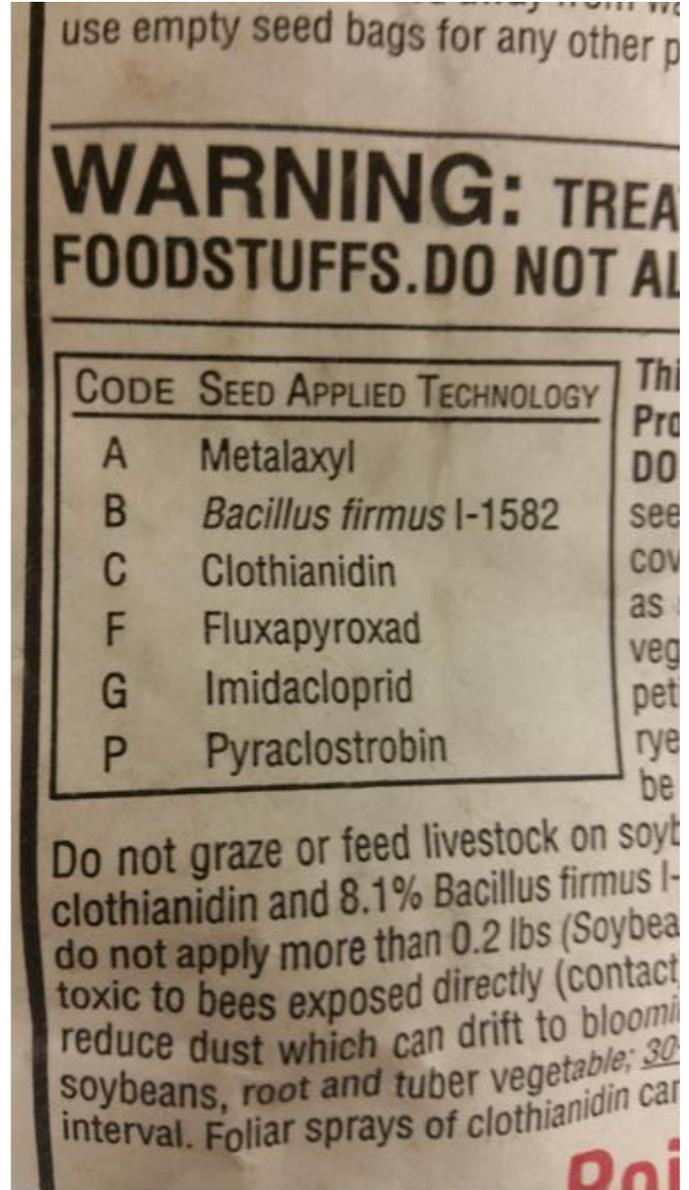
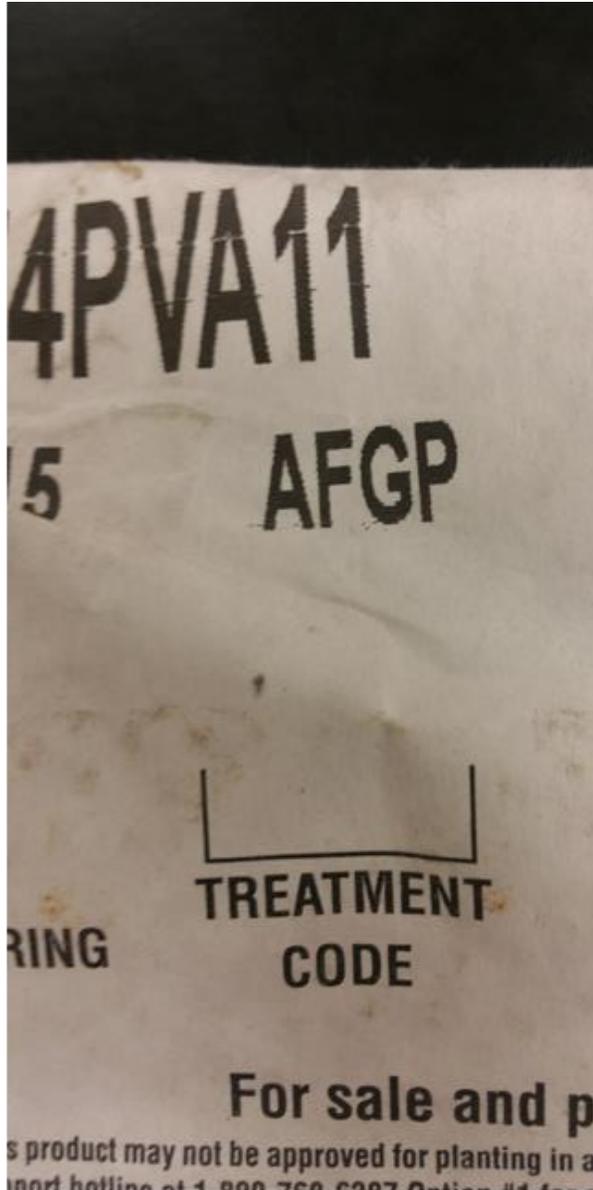
# VEGETATIVE WEED ID

17. This weed is \_\_\_\_\_



# SEED BAG LABELS

18. Use the Asgrow seed bag provided. How many different chemicals are in the seed treatment?



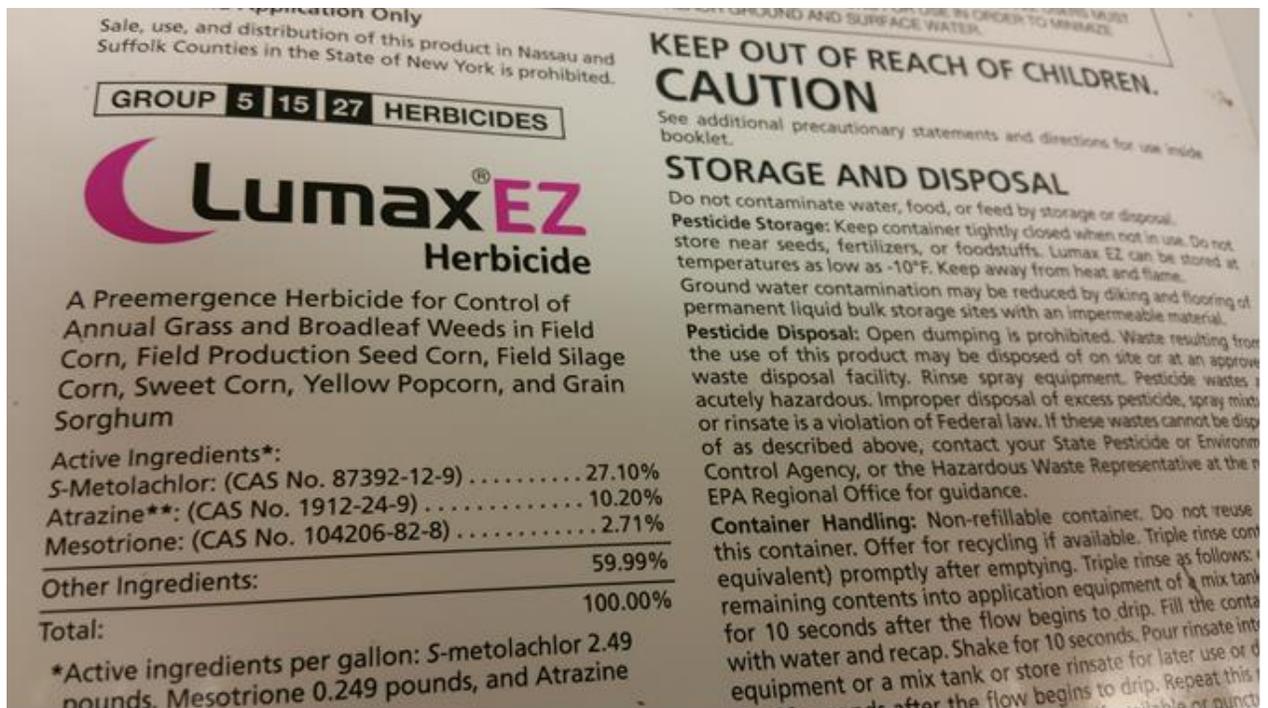
# HERBICIDE LABEL

19. **TWO PARTS** Use the Lumax EZ containers to answer the following questions.

a. What is the signal word for this herbicide?

b. How many different sites of action are represented in the active ingredients.

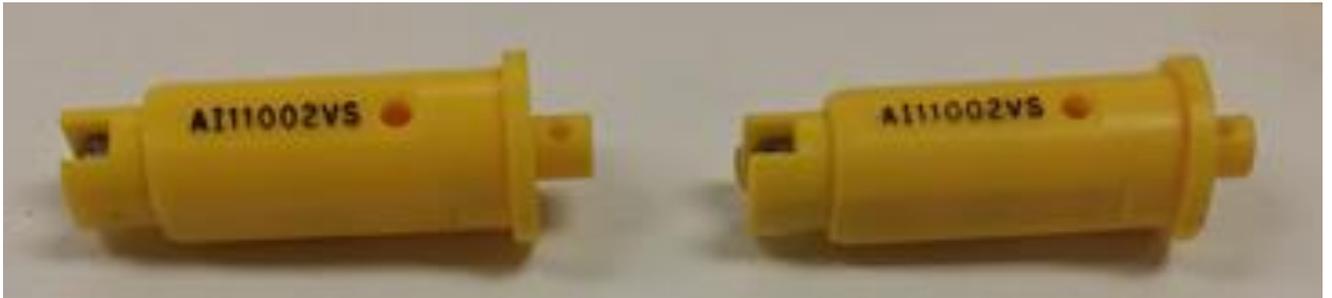
**List both answers in correct order.**



# PESTICIDE APPLICATION

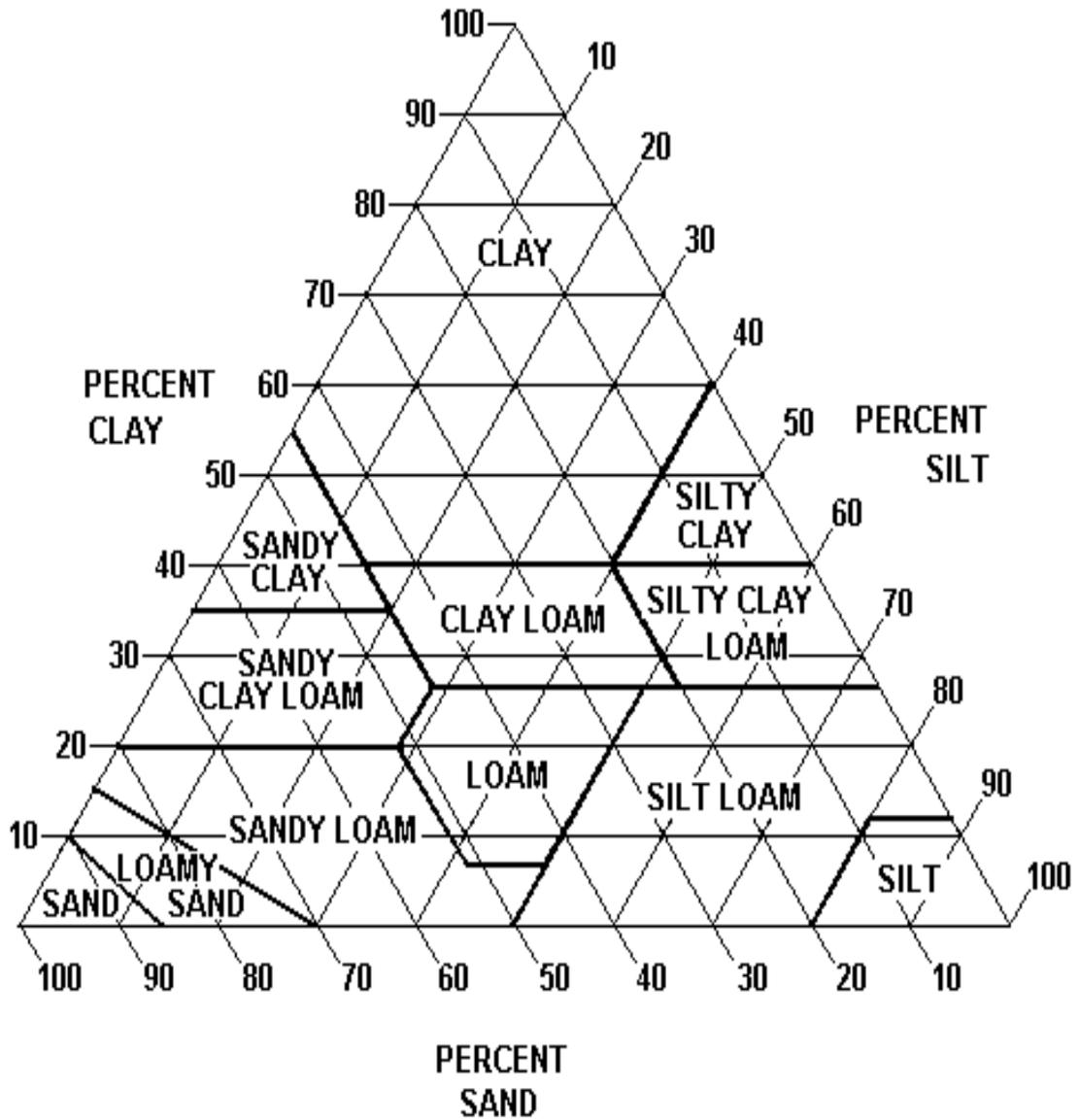
20. **TWO PARTS.** Use the nozzle tips on display to answer the following two statements.
- At standard 40 PSI pressure, the nozzle delivery rate of these nozzle tips should be \_\_\_\_\_ gallons per minute (GPM)
  - The angle of the spray pattern will be \_\_\_\_\_ degrees.

**List both answers in correct order.**



# SOIL TEXTURE

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



# PLANT STRUCTURE – DICOT LEAVES

22. The proper description of the leaf type and leaf arrangement for this plant is:
- A) Simple leaf, alternate arrangement
  - B) Simple leaf, opposite arrangement
  - C) Palmately compound leaf, alternate arrangement
  - D) Palmately compound leaf, opposite arrangement
  - E) Pinnately compound leaf, alternate arrangement
  - F) Pinnately compound leaf, opposite arrangement



# CROP DISEASE

23. 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



# CROP GROWTH AND DEVELOPMENT

24. **TWO PARTS.** Give the correct vegetative developmental stage for the plants shown.

a. The vegetative stage is of the corn plant is \_\_\_\_\_ (letter and number).

b. The vegetative stage is of the soybean plant is \_\_\_\_\_ (letter and number).

**List both answers in correct order.**



# CHEMICAL WEED CONTROL

25. A herbicide was applied POST-EMERGENCE to this plant several weeks ago. Based on the symptoms, the most likely site of action and herbicide used was:

- A) EPSP Synthase Inhibitor (glyphosate)
- B) T1R1 Auxin Receptor/Growth Regulator (dicamba)
- C) Photosystem II Inhibitor (atrazine)
- D) HPPD Inhibitor (mesotrione)
- E) PPO Inhibitor (acifluorfen)

You may refer to the herbicide group number classification chart on the glass door.



# 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



# WEED MANAGEMENT

\_\_\_28. What is common about the four weeds on display here?

- A) they are all perennials
- B) they are all dicots
- C) they are all noxious in Kansas
- D) they are all resistant to essentially every common herbicide group
- E) all of the above



# CROP BOTANY

29. **TWO PARTS.** Canola is a relatively new crop in Kansas. Shown here are plants in three stages – rosette, flowering and mature (with fruit). Answer the following questions about the botany of canola:

a. The inflorescence type shown on the flowering or mature plant is called a (an):

- A) spike
- B) raceme
- C) panicle
- D) umbel
- E) composite head

b. The dry fruit type shown on the mature plant or in the pan is called a (an):

- A) capsule
- B) achene
- C) berry
- D) silique
- E) caryopsis



# EQUIPMENT

30. This piece of equipment is a (an) \_\_\_\_\_



# BASIC CROP SCIENCE

\_\_\_31. The venation pattern on the leaves of this tobacco plant is:

- A) palmate
- B) parallel
- C) pinnate
- D) alternate
- E) opposite



# CROP MANAGEMENT

32. Shown here are three crop plants that have been increasing in popularity recently. What do they have in common?
- A) They are all from the legume family
  - B) They all do symbiotic nitrogen fixation with the help of *Rhizobium* bacteria
  - C) They are all popular in cover crop seed mixes that are gaining popularity
  - D) They all have compound leaves
  - E) All of the above features are common to these three plants



## PLANT STRUCTURE – CROP SEEDLINGS

33. Name the part marked by the pins on these corn seedlings. It is the structure that adjusts for different planting depths so that the crown develops at about the same point just below the soil surface no matter how deep the seed is planted.

- A) cotyledon
- B) plumule
- C) coleoptile
- D) radicle
- E) hypocotyl
- F) mesocotyl



# CROP GROWTH AND DEVELOPMENT

34. **TWO PARTS.** For both corn and soybean, reproductive developmental stages are identified by both a numerical stage (R1, R2....etc.) and a descriptive stage. Give the correct **reproductive developmental stage** for the plants shown using EITHER the appropriate numerical or descriptive stage.

b. The reproductive stage for the corn plant is: \_\_\_\_\_.  
(numerical OR descriptive)

b. The reproductive stage for the soybean plant is \_\_\_\_\_.  
(numerical OR descriptive)

**List both answers in correct order.**





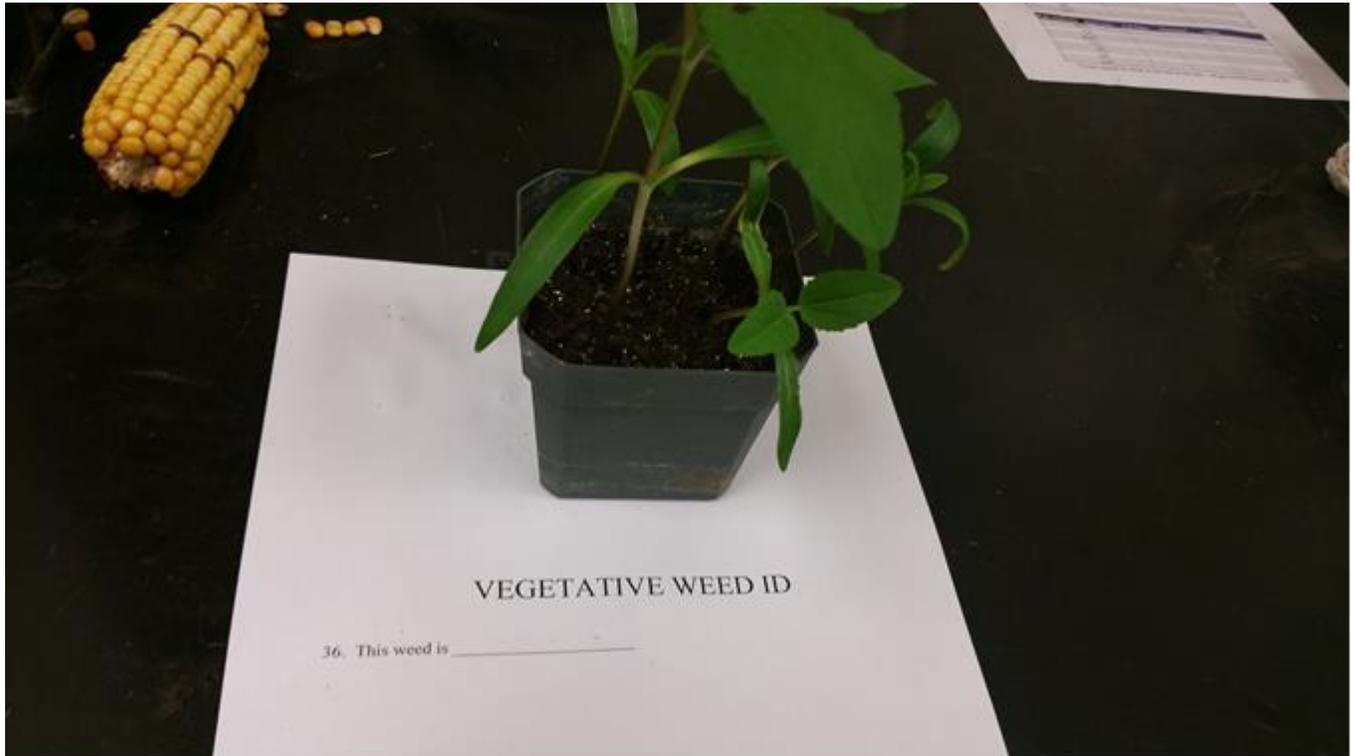
# EQUIPMENT

35. This piece of equipment is a (an) \_\_\_\_\_.



# VEGETATIVE WEED ID

36. This weed is \_\_\_\_\_



# SOIL PROPERTIES

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

Answer: Soil A, Soil B, or Soil C

# NATIVE RANGE - LEGUME FORBS

38. The plant shown here is wild indigo, a native forb found in the tall grass prairie. We can tell it is from the legume family as it has the typical flower structure of legumes with three different shaped petals that we give specific names. What is the name of the petal marked by the pins? (2 points)

- A. banner
- B. wing
- C. sepal
- D. bract
- E. keel



1. a. coleoptile b. hypocotyl
2. yellow nutsedge
3. D. Iron
4. D
5. a. flowering b. boot
6. C. wheat scab
7. D. alfalfa weevil
8. C. sidewall compaction
9. common ragweed
10. a. C b. B
11. B. bacterial blight of soybean
12. A. rhizome
13. E. aphid
14. B. prussic acid poisoning
15. a. little bluestem b. rye
16. E.
17. yellow foxtail
18. 4
19. a. CAUTION b. 3

20. a. 0.2 gpm b. 110°
21. silt loam
22. B. simple, opposite
23. B. barley yellow dwarf virus
24. a. V3 b. V1
25. B. TIRI Amino receptor (dicamba)
26. E. European corn borer
27. C. Gibberella stalk rot
28. C. they are all noxious
29. a. B. raceme b. D. silique
30. cotton picker
31. C. pinnate
32. E. all of the above
33. F. mesocotyl
34. a. R1<sup>+</sup> silking b. R5 or R6 <sup>or beg. seed</sup> full seed
35. rotary hoe
36. cocklebur <sup>or</sup> (common cocklebur)
37. C. (soil C)
38. E. keel (2 pt)