

# Illinois Field Crop Applicators Practice Test (Sample)

## Study Guide



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**SAMPLE**

## **Questions**

- 1. What is the abbreviation for a droplet spectrum category that is listed as very coarse with a VMD range of 450-550 microns?**
  - A. VC**
  - B. UC**
  - C. XC**
  - D. EC**
- 2. When are alfalfa weevils mainly controlled through early cutting?**
  - A. Before flowering**
  - B. During the first frost**
  - C. Post-harvest**
  - D. Immediately after seeding**
- 3. True or false: No till or reduced tillage decreases the number of large seeded summer annuals that germinate deeper.**
  - A. True**
  - B. False**
  - C. Only in dry conditions**
  - D. Only in wet conditions**
- 4. What type of method do the following control strategies represent? - Tachinid flies parasitizing army worms.**
  - A. Biological**
  - B. Cultural**
  - C. Mechanical**
  - D. Chemical**
- 5. When a hybrid has defense mechanisms that limit infection, what is this called?**
  - A. Tolerant**
  - B. Resistant**
  - C. Immune**
  - D. Susceptible**

- 6. Why is maintaining records important for pesticide applications?**
- A. To have an inventory of products**
  - B. To track usage and comply with regulations**
  - C. To compare prices**
  - D. To increase pesticide sales**
- 7. What leads to higher herbicide activity in conditions?**
- A. High relative humidity**
  - B. Cool temperatures**
  - C. Poor soil moisture**
  - D. Fast evaporation**
- 8. During what stage do bean leaf beetles cause about 20% leaf defoliation?**
- A. Pod fill**
  - B. Vegetative growth**
  - C. Emergence**
  - D. Seedling**
- 9. What does the term "Pesticide Drift" refer to?**
- A. The accumulation of pesticide on crops**
  - B. The movement of pesticides away from the intended application site**
  - C. The evaporation of pesticide in the air**
  - D. The depletion of pesticide effectiveness over time**
- 10. What is the commonly used unit for expressing density?**
- A. Pounds per gallon**
  - B. Kilograms per liter**
  - C. Grams per cubic meter**
  - D. Ounces per quart**

## **Answers**

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1. C
2. A
3. A
4. A
5. B
6. B
7. A
8. B
9. B
10. A

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## **Explanations**

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**1. What is the abbreviation for a droplet spectrum category that is listed as very coarse with a VMD range of 450-550 microns?**

**A. VC**

**B. UC**

**C. XC**

**D. EC**

The correct abbreviation for a droplet spectrum category that is classified as very coarse, with a Volume Median Diameter (VMD) range of 450-550 microns, is typically represented by "VC." This classification helps applicators understand the size of droplets produced during pesticide application, which can affect drift potential and efficacy. Droplet size categories are important in pesticide application because they influence how the pesticide interacts with the target area and the surrounding environment. Very coarse droplets, defined by the aforementioned range, are less prone to drift due to their weight, making them suitable for certain application scenarios where reducing drift is a priority. While there are other categories denoted by different abbreviations, such as UC for ultra-coarse or XC and EC for specific external classifications, the specific range given in the question directly corresponds to the very coarse category and its abbreviation "VC." Understanding these classifications aids in adhering to best practices for sustainable and effective pesticide application.

**2. When are alfalfa weevils mainly controlled through early cutting?**

**A. Before flowering**

**B. During the first frost**

**C. Post-harvest**

**D. Immediately after seeding**

Alfalfa weevils are primarily managed through early cutting before the plants flower because this timing significantly reduces their ability to reproduce and damage the crop. Cutting the alfalfa at this stage prevents weevils from laying eggs and also maximizes the quality of the forage while minimizing the potential for economic loss due to pest damage. The life cycle of alfalfa weevils indicates that they are most damaging during the early growth stages of the alfalfa plant, particularly during flowering when they can affect yield and nutritional quality. By cutting early, producers can disrupt this cycle and protect their crops effectively. Other timing options, such as cutting during the first frost, post-harvest, or immediately after seeding, do not address the immediate threat posed by the weevils during their active feeding period and would not be as effective in minimizing their population and damage.

**3. True or false: No till or reduced tillage decreases the number of large seeded summer annuals that germinate deeper.**

**A. True**

**B. False**

**C. Only in dry conditions**

**D. Only in wet conditions**

The statement is true because no-till or reduced tillage practices minimize soil disturbance, which can have a significant impact on seed germination, particularly for large-seeded summer annuals. In a no-till system, the soil structure remains intact, which can prevent large seeds from being buried deeply. This limited soil disturbance allows these seeds to remain closer to the surface, where conditions are more favorable for germination, such as access to sunlight and appropriate moisture levels. Additionally, reduced tillage practices contribute to a more consistent residue cover on the soil surface, which can suppress the germination of certain weeds, including large-seeded summer annuals, by competing for light and moisture. This means that in no-till systems, not only are the seeds less likely to be placed at deeper levels in the soil, but the conditions created in such environments are less conducive to their successful germination. In contrast, tillage that disrupts the soil can bury seeds deeper, making it more challenging for them to germinate effectively. The relationship between tillage practices and seed germination is essential for effective weed management in crop production systems.

**4. What type of method do the following control strategies represent? - Tachinid flies parasitizing army worms.**

**A. Biological**

**B. Cultural**

**C. Mechanical**

**D. Chemical**

The scenario describes tachinid flies that parasitize army worms, which clearly illustrates a biological control strategy. Biological control involves the use of living organisms to suppress pest populations. In this case, tachinid flies are natural predators of army worms; they contribute to reducing the population of these pests through parasitism. This method is appealing because it utilizes the natural predatory behavior of one species to manage another, which can lead to more sustainable pest management practices. Biological control is often favored in integrated pest management systems because it tends to have fewer negative impacts on the environment compared to chemical control options, reducing the reliance on synthetic pesticides. Other control strategies like cultural, mechanical, and chemical control do not apply here as effectively. Cultural control involves practices such as crop rotation and field sanitation, which do not involve living organisms. Mechanical control includes physical methods like traps and barriers, while chemical control relies on the use of pesticides to eliminate pests directly. In this case, since the control method directly involves a natural organism acting against a pest, it is classified as biological control.

**5. When a hybrid has defense mechanisms that limit infection, what is this called?**

- A. Tolerant**
- B. Resistant**
- C. Immune**
- D. Susceptible**

The correct answer is "Resistant." In the context of hybrid plants, resistance refers to the inherited traits that enable the plant to withstand or limit the effects of pathogens, pests, or adverse environmental conditions. This resistance could be through various mechanisms such as thickened cell walls, production of secondary metabolites, or other biochemical pathways that deter infection or damage from a specific threat. When a plant exhibits resistance, it can maintain its health and productivity even in the presence of pests or diseases, making it a crucial characteristic for breeding programs aimed at developing robust crop varieties. While the other terms are relevant in discussions of plant health, they denote different relationships between the plant and threats. For instance, tolerance pertains to a plant's ability to endure some level of damage without significantly affecting its overall health or yield but does not mean the plant actively prevents infection. Immunity implies a complete inability to become infected, which is rare in agricultural crops. Susceptible indicates a vulnerability to damage or infection, meaning the plant can easily be harmed by pests or diseases.

**6. Why is maintaining records important for pesticide applications?**

- A. To have an inventory of products**
- B. To track usage and comply with regulations**
- C. To compare prices**
- D. To increase pesticide sales**

Maintaining records for pesticide applications is essential primarily because it allows for the tracking of usage and ensures compliance with legal and regulatory requirements. Accurate records provide a documented history of pesticide use, which is necessary for demonstrating adherence to guidelines set forth by governing bodies. This includes information on when and where pesticides were applied, what products were used, and the quantities applied. Such documentation is critical for a few reasons: it helps prevent over-application, ensures that applications are being made in accordance with label instructions, and supports environmental stewardship by reducing the risk of pesticide drift and other unintended consequences. Additionally, during inspections or audits by regulatory agencies, having organized records simplifies the process and verifies that all practices align with safety and legal standards. While having an inventory of products, comparing prices, and increasing sales may have their importance in the agricultural business, they do not capture the legal and safety imperatives that come with pesticide application, underscoring why tracking usage and ensuring compliance is so pivotal.

## 7. What leads to higher herbicide activity in conditions?

**A. High relative humidity**

**B. Cool temperatures**

**C. Poor soil moisture**

**D. Fast evaporation**

High relative humidity contributes to improved herbicide activity because it enhances the retention of the herbicide on plant surfaces and reduces evaporation rates. When humidity levels are elevated, the moisture in the air slows down the rate at which droplets of the herbicide dry on the leaves, allowing for a longer contact time with the target plants. This extended interaction increases the likelihood of effective absorption by the plant, leading to a more significant herbicidal effect. In contrast, cool temperatures can slow down the metabolic processes within plants, potentially reducing their uptake of the herbicide. Poor soil moisture often leads to stress in plants, which can also interfere with the effectiveness of herbicides as uptake mechanisms may be hindered under drought conditions. Fast evaporation, particularly under low humidity or high temperature conditions, can result in decreased herbicide concentration on the target area, significantly reducing its effectiveness. Therefore, high relative humidity plays a crucial role in maximizing herbicide activity.

## 8. During what stage do bean leaf beetles cause about 20% leaf defoliation?

**A. Pod fill**

**B. Vegetative growth**

**C. Emergence**

**D. Seedling**

Bean leaf beetles tend to cause approximately 20% leaf defoliation during the vegetative growth stage. This is a critical time for soybeans as the plants are actively growing and developing their leaves, which are essential for photosynthesis. High levels of defoliation at this stage can significantly impact the plant's ability to produce energy and, consequently, yield. At other stages, such as during emergence or seedling, the plants are less affected because they have fewer leaves, and their overall ability to withstand defoliation is higher. During the pod fill stage, the plants are focused on fruit development rather than leaf production, and while defoliation is still harmful, it typically has less impact on yield compared to the vegetative stage where leaf area is crucial for growth. Therefore, the vegetative growth stage presents the most opportunity for the beetles to inflict noticeable damage to the leaf canopy, hence the significant impact of defoliation during this time.

**9. What does the term "Pesticide Drift" refer to?**

- A. The accumulation of pesticide on crops**
- B. The movement of pesticides away from the intended application site**
- C. The evaporation of pesticide in the air**
- D. The depletion of pesticide effectiveness over time**

The term "Pesticide Drift" refers to the movement of pesticides away from the intended application site. This phenomenon can occur during or after the application of pesticides, often due to wind, air currents, or thermal inversions, which can carry the pesticide particles or vapors to unintended areas. This is a significant concern in agricultural practices because it can lead to the unintended exposure of non-target crops, wildlife, or even human populations to pesticides, potentially causing harm or damage. Recognizing and controlling pesticide drift is crucial for effective pest management and environmental protection. Understanding this concept helps applicators minimize risks and make informed decisions about application methods, timing, and environmental conditions. It underscores the importance of adhering to label recommendations and implementing best management practices to mitigate drift and its potential consequences.

**10. What is the commonly used unit for expressing density?**

- A. Pounds per gallon**
- B. Kilograms per liter**
- C. Grams per cubic meter**
- D. Ounces per quart**

The commonly used unit for expressing density is pounds per gallon. This unit is particularly relevant in the United States, where the imperial system is often employed for measurements. Density measures how much mass is contained in a given volume, and in practical applications like agriculture and chemical application, knowing the density in terms familiar to the local context, such as pounds per gallon, allows applicators to make informed decisions regarding the application rates of liquids, including herbicides and fertilizers. While other units such as kilograms per liter and grams per cubic meter may also be used in scientific contexts, they are generally more common in countries that use the metric system. Ounces per quart is a less common unit for density expression, often related more closely to fluid measurement in cooking rather than a precise density calculation. Hence, pounds per gallon stands out as the preferred and commonly referenced unit for density in many settings, particularly in the U.S. agricultural sector.