Oregon Agriculture Herbicide Practice Exam (Sample)

Study Guide

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Questions

1. Which statement is accurate regarding the agitation of wettable powders?

A. They require no agitation

B. They require manual stirring

C. They require mechanical agitation

D. They dissolve without agitation

2. What type of ester is known as a high-volatile ester?

A. Ethyl-ester

B. Butyl-ester

C. Methyl-ester

D. Propyl-ester

3. What is the primary advantage of using plastic reinforced spray tanks?

A. They are the strongest material available

B. They are resistant to rust and corrosion

C. They have a low cost of production

D. They require no maintenance

4. Which of the following is referred to as mayweed chamomile?

A. Russian Thistle

B. Coast Fiddleneck

C. Jointed Goatgrass

D. Bull Thistle

5. What characterizes the spike stage in plant growth?

A. Overt development of flowers

B. Leaves rolled within coleoptile

C. Formation of new roots

D. Seed maturation

6. Which of the following is a sign of herbicide breakdown in the soil?

A. Presence of residual herbicide

B. Increase in herbicide concentration

C. Decrease in microbial populations

D. Decreased herbicide concentration

7. What is essential to monitor for effective herbicide application?

A. Only the pH levels of the soil

B. Soil moisture, ground temperature, and weather conditions

C. The age of the crops being treated

D. Type of machinery used

8. For which of the following weeds might a grower need to use specific timing of herbicide applications to ensure effectiveness?

A. Pig weed

B. Barnyardgrass

C. Wild carrot

D. Wild oat

9. Which weed is primarily classified as a summer annual and can thrive in a variety of soil types?

A. Pig weed

B. Wild carrot

C. Downy brome

D. Hairy nightshade

10. Green foxtail is primarily classified as what type of plant?

A. Annual grass

B. Perennial grass

C. Biennial grass

D. Herbaceous perennial

Answers

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

Explanations

1. Which statement is accurate regarding the agitation of wettable powders?

A. They require no agitation

B. They require manual stirring

C. They require mechanical agitation

D. They dissolve without agitation

The accurate statement regarding the agitation of wettable powders is that they require mechanical agitation. Wettable powders are formulated to be mixed with water to create a sprayable solution. Because they do not dissolve completely like soluble granules, they need to be kept in suspension in the liquid to ensure uniform distribution during application. Mechanical agitation helps to continuously mix the solution, preventing the particles from settling out at the bottom of the tank. This is crucial for effective application since an uneven mixture can lead to inconsistent herbicide coverage, impacting the efficacy of weed control. Manual stirring, while potentially effective for small quantities, is often impractical for larger applications and does not ensure sufficient mixing over extended periods. The assertion that wettable powders require no agitation or that they dissolve without agitation is inaccurate, as both scenarios would lead to poor performance in weed management due to the possibility of clumping or ineffective distribution of the active ingredient.

2. What type of ester is known as a high-volatile ester?

A. Ethyl-ester

B. Butyl-ester

C. Methyl-ester

D. Propyl-ester

The correct choice identifies butyl-ester as a high-volatile ester, which is important in herbicide application contexts. High-volatile esters are characterized by their increased tendency to vaporize at common environmental temperatures, which can affect both their efficacy and the potential for off-target movement. This is particularly relevant in agriculture since high volatility can lead to herbicide drift, impacting neighboring crops and sensitive areas. Butyl-esters are used in various herbicide formulations due to their balance of performance and volatility. Their higher volatility means they can evaporate more quickly, which can enhance penetration through plant surfaces for certain applications but also necessitates careful application timing and methods to minimize drift. Other esters listed, like ethyl, methyl, and propyl, generally exhibit lower volatility compared to butyl-esters. Understanding the volatility of these compounds is essential for safe and effective herbicide use, as selecting the right type of ester can significantly influence both application success and environmental safety.

3. What is the primary advantage of using plastic reinforced spray tanks?

A. They are the strongest material available

B. They are resistant to rust and corrosion

C. They have a low cost of production

D. They require no maintenance

Using plastic reinforced spray tanks primarily provides resistance to rust and corrosion. This characteristic is essential for agricultural applications since these tanks often come into contact with various chemicals, including herbicides and pesticides, which could cause corrosion in metal tanks. The materials used in plastic reinforced tanks are designed to withstand chemical exposure, humidity, and other environmental factors that could otherwise compromise the integrity of the tank. This durability extends the life of the tank and ensures that it remains safe and effective for transporting and storing agricultural chemicals. While strength, cost, and maintenance are considered in choosing spray tanks, their resistance to rust and corrosion is crucial for performance and longevity, particularly in the diverse and often harsh conditions faced in agricultural settings. This benefit supports the focus on maintaining the functionality of the equipment over time, minimizing the risk of contamination and malfunction.

4. Which of the following is referred to as mayweed chamomile?

A. Russian Thistle

B. Coast Fiddleneck

C. Jointed Goatgrass

D. Bull Thistle

Mayweed chamomile is a common name for a specific plant that is known scientifically as Anthemis cotula. The name is often used to refer to this plant due to its resemblance to true chamomile. Mayweed chamomile is recognized for its daisy-like flowers and feathery leaves, and it is often found in disturbed areas, where it can become a problematic weed. In this context, identifying mayweed chamomile correctly is important because it can help in understanding its ecological impact, control measures, and its role as a potential agricultural nuisance. The other plants listed do not share the characteristics or taxonomy of mayweed chamomile, which involves different types related to the Asteraceae family or other families entirely. Recognizing these distinctions is vital for effective weed management and agricultural practices.

5. What characterizes the spike stage in plant growth?

A. Overt development of flowers

B. Leaves rolled within coleoptile

C. Formation of new roots

D. Seed maturation

The spike stage in plant growth is characterized by the leaves being rolled within the coleoptile. This stage is crucial as the coleoptile is the protective sheath that encloses the emerging shoot in monocot plants such as grasses. During this stage, the plant is primarily focused on vertical growth, allowing it to reach sunlight while remaining protected. In the spike stage, the energy is concentrated on developing the shoots and ensuring that the leaves can emerge unscathed from the soil. The rolling of the leaves is a strategy to minimize damage during their emergence. As the plant transitions to the next stages, it will begin to develop flowers, roots, and ultimately lead to seed maturation, but these processes are not the defining characteristics of the spike stage itself. Understanding the spike stage is essential for managing crop growth effectively, especially regarding herbicide application timing, to ensure that plants are not stressed during critical development periods.

6. Which of the following is a sign of herbicide breakdown in the soil?

A. Presence of residual herbicide

B. Increase in herbicide concentration

C. Decrease in microbial populations

D. Decreased herbicide concentration

The observation of decreased herbicide concentration in the soil is indicative of herbicide breakdown. This process involves the degradation of the herbicide compounds by various factors, including microbial activity, chemical reactions, and environmental conditions. As these herbicides break down, their concentration diminishes, which is a natural part of their lifecycle and contributes to less potential for harm to subsequent crops as well as reduced environmental persistence. Monitoring decreased concentrations can help farmers and agricultural professionals assess the effectiveness of their herbicide applications and make informed decisions about future treatments, ensuring they maintain effective weed control while minimizing environmental impact. In contrast, the presence of residual herbicide or an increase in herbicide concentration would suggest that the herbicide is persisting in the soil rather than breaking down, while a decrease in microbial populations might relate to other factors but not directly indicate herbicide breakdown.

7. What is essential to monitor for effective herbicide application?

A. Only the pH levels of the soil

B. Soil moisture, ground temperature, and weather conditions

C. The age of the crops being treated

D. Type of machinery used

Monitoring soil moisture, ground temperature, and weather conditions is crucial for effective herbicide application due to their significant impact on herbicide performance. Soil moisture levels influence how well herbicides penetrate and distribute in the soil. When the soil is too dry, herbicides may not activate properly, reducing their efficacy. Conversely, if the soil is overly saturated, runoff may occur, leading to reduced effectiveness and unintended impacts on non-target areas. Ground temperature also plays a pivotal role; it affects the metabolic processes of both the plants and the herbicide itself. Cold conditions can slow down the herbicide's action, while excessively high temperatures may increase volatility and the risk of off-target damage. Weather conditions, such as wind and precipitation, are critical to consider. Wind can lead to drift, where herbicides unintentionally affect surrounding areas, while rain following application may wash away the herbicide, diminishing its effectiveness. By monitoring these factors, practitioners can optimize the timing and method of herbicide application, enhancing its effectiveness while minimizing environmental impact.

8. For which of the following weeds might a grower need to use specific timing of herbicide applications to ensure effectiveness?

A. Pig weed

B. Barnyardgrass

C. Wild carrot

D. Wild oat

Timing of herbicide applications is crucial for the effective control of wild oat. Wild oat, being a grass species, has specific growth stages that significantly influence the efficacy of herbicides targeting it. Applying herbicides at the correct growth stage—typically when the wild oat is still in the early vegetative or seedling stage—maximizes the likelihood of control. If herbicides are applied too late, when wild oat has matured, they may not be as effective, as the plant may have developed greater resistance. While the other weeds listed also require consideration of timing for effective control, wild oat is particularly notable for its sensitivity to the timing of herbicide application due to its life cycle and growth habits. Understanding the growth stages and the specific herbicide modes of action related to wild oat can help growers apply treatments more effectively, leading to better weed management outcomes.

9. Which weed is primarily classified as a summer annual and can thrive in a variety of soil types?

A. Pig weed

B. Wild carrot

C. Downy brome

D. Hairy nightshade

The classification of pigweed as a summer annual is accurate because it completes its life cycle within a single growing season, typically germinating in the spring, growing throughout the summer, and dying off in the fall. This characteristic enables pigweed to rapidly establish itself in various environments and adapt to different soil conditions. Pigweed, belonging to the Amaranthus genus, is notorious for its resilience and ability to thrive even in less than ideal growing conditions, making it a common and problematic weed in agricultural settings. Its adaptability means that it can be found in diverse soil types, further contributing to its classification as a summer annual. This adaptability helps it compete effectively against crops, often necessitating specific weed management practices. In contrast, other options such as wild carrot and downy brome have different life cycles and preferences for soil types, influencing their distribution and management in agricultural contexts. Wild carrot is typically a biennial, while downy brome is considered a winter annual, germinating in the fall and maturing in the spring. Hairy nightshade, on the other hand, is also more suited to specific conditions rather than being broadly adaptable like pigweed. Understanding these classifications is vital for effective weed management strategies in agriculture.

10. Green foxtail is primarily classified as what type of plant?

A. Annual grass

B. Perennial grass

C. Biennial grass

D. Herbaceous perennial

Green foxtail is primarily classified as an annual grass. This classification indicates that it completes its life cycle within a single growing season. Annual grasses emerge from seed, grow, reproduce, and then die within one year, making them particularly important in discussions of weed management and agricultural practices. Understanding this classification is essential for farmers and land managers when planning weed control strategies, as annual grasses can thrive in disturbed soils and can quickly establish themselves, often outcompeting desired crops. The classification of green foxtail as an annual grass also informs management decisions regarding the timing and selection of herbicides, as these plants are typically most vulnerable during specific stages of their life cycle. It is not classified as a perennial or biennial grass, which would imply a longer life cycle or different growth habits, and this distinction is crucial when considering the most effective control methods. Additionally, it is not classified as a herbaceous perennial; this term refers to plants that live for several years and regrow from the same root system—characteristics not applicable to green foxtail.