

**Exam Knowledge Expectations for
Qualified Applicator Certificate & Qualified Applicator License
B - Landscape Maintenance Category**

Use these knowledge expectations (KEs) to help study the suggested material,
Landscape Maintenance Pest Control (2006 Edition)

Knowing the information from all of the KEs should prepare you for taking the exam.

Chapter 1 Pest Identification

- A. Explain why identifying pests correctly is important.
- B. Explain the importance of identifying the plant(s) affected by the pest.
- C. List the main groups of common pests of landscapes, interiorscapes, and turfgrass and their identifying features.
- D. Describe different types of characteristic plant damage caused or nuisance created by insects and other arthropods.
- E. Explain the importance of pest life cycles to effective pest identification and management.
- F. Describe the differences between broadleaf weeds, grasses, and sedges.
- G. Describe different types of plant damage caused by abiotic factors and pathogens.
- H. List common vertebrate pests of landscapes and turfgrass and the damage they cause.
- I. List and describe the types of resources and references available for identifying pests, symptoms of infestation, and damage caused by pests.

Chapter 2 Pest Management and Chapter 8 Using Pesticides Effectively

- A. Define Integrated Pest Management (IPM) in a landscape maintenance context.
- B. Explain the advantages and disadvantages of the pest management methods that make up an IPM program in landscapes, turfgrass, and interiorscapes.
- C. Explain the importance of
 - a. site-specific variables
 - b. pest, host, and natural enemy populations
 - c. pest life stage
 - d. pest management planning
- D. Define natural enemies and explain how they control pests.
- E. Describe nonchemical pest management practices.
- F. Explain the relationships among the components of an effective IPM program.
- G. Define selectivity as it relates to pesticides.
- H. Describe the factors that control a pesticide's selectivity.
- I. Describe the methods used to prevent, suppress, or eradicate pests.
- J. List and describe sources of pest management information.

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Chapter 3 Pesticides

- A. Explain the concepts of pesticide hazard, exposure, and toxicity and how they relate to one another.
- B. List pesticide toxicity categories and signal words, and explain what each category means in terms of a pesticide's effects on humans and animals.
- C. Define a pesticide's mode of action and provide examples of the different modes.
- D. Explain how contact and systemic pesticides control pests differently.
- E. List and define factors that influence efficacy of pesticides.
- F. List the various pesticide formulations available and the advantages and disadvantages of each.
- G. Explain the role of adjuvants in pesticide applications.
- H. List the indications that a tank mix of two or more pesticides is incompatible.

Chapter 5 Hazards Associated with Pesticide Use

- A. List and describe specific hazards associated with using pesticides in landscape, turf, and interiorscape situations.
- B. List the handling tasks most often associated with work related pesticide exposure and explain why these tasks are hazardous.
- C. Describe the potential effects of pesticide exposure on people.
- D. Explain the various fates of pesticides in the environment, and how different pesticides and application methods influence the pesticide's fate.
- E. List the types of offsite movement of pesticides.
- F. Describe ways that pesticides can impact nontarget organisms.
- G. Define phytotoxicity and factors that influence the likelihood of phytotoxicity in landscape, interiorscape, and turfgrass applications.
- H. Describe symptoms of phytotoxicity.
- I. List activities that can result in pesticide damage to treated surfaces.

Chapter 6 Protecting People and the Environment

- A. List the types of hazards that may be present at an application site.
- B. Describe how to identify potentially sensitive areas that could be adversely affected by pesticide application, mixing and loading, storage, disposal, and equipment washing.
- C. Describe ways in which applicators ensure the public's safety before, during, and after pesticide applications.
- D. Explain that handler pesticide safety training must include how to prevent, recognize, and mitigate heat stress when wearing Personal Protective Equipment (PPE) and handling pesticides as part of the job.

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- E. Explain how PPE can protect a person from hazards associated with pesticides.
- F. List various types of PPE that pesticide handlers use to protect themselves from pesticide exposure.
- G. Explain how to select the most effective PPE for the job.
- H. Describe how to wear, clean, maintain and store reusable PPE, and how to dispose of worn or single-use PPE.
- I. Describe posting requirements when using pesticides on public property.
- J. Describe how to restrict access to areas where pesticides are in use or have been used.
- K. Describe techniques for mixing and loading pesticides safely, including the equipment, location, and procedures used in the process.
- L. Describe methods for
 - a. mixing a single pesticide
 - b. mixing two or more pesticide formulations
- M. Describe procedures, additives, formulation types, and conditions that help keep pesticides on the treated site.
- N. Explain how to properly process all types of pesticide containers for disposal.
- O. Explain how to properly triple rinse empty rigid plastic and metal pesticide containers.
- P. Explain the potential environmental hazards associated with pesticides.
- Q. Describe the proper weather conditions for the safe application of pesticides.
- R. Describe pesticide chemical and physical characteristics and how these characteristics indicate the potential for pesticides to move offsite.
- S. Describe the procedures to follow for safe, effective cleanup after handling pesticides, including cleaning application equipment, as well as personal decontamination.

Chapter 7 Pesticide Emergencies

- A. Explain the procedures to follow in getting emergency medical treatment for someone who has been exposed to pesticides.
- B. Describe general pesticide poisoning symptoms.
- C. Describe where to find information about first aid for a person involved in a pesticide incident and explain what to do if
 - a. you get pesticides on your clothing
 - b. you get pesticides in your eyes
 - c. you inhale pesticides
 - d. you swallow pesticides

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- D. Describe what to do when faced with a pesticide leak or spill.
- E. Describe how to respond to the misapplication of pesticides.
- F. List common errors that can occur when applying pesticides and describe the problems that can result from these errors, including legal and economic consequences.

Chapter 9 Application Equipment and Calibration

- A. Describe various pesticide application methods.
- B. List the types of application equipment and describe the advantages and limitations of each type.
- C. List components of liquid application equipment, explain how they work together, and identify which components work best with which pesticide formulations.
- D. List the types of application equipment used to apply dusts, and describe the situations in which each should be used.
- E. List the types of application equipment used to apply granules, and describe the situations in which each should be used.
- F. List types of bait application equipment and explain how they work.
- G. Name the parts of application equipment that can be switched out or adjusted to accommodate changing conditions and formulations (such as nozzles or psi).
- H. Explain how to select the right equipment for effective applications to common plant structures.
- I. List the adjustments to make to improve inadequate spray coverage or pesticide placement.
- J. List the important factors to consider when selecting nozzles for a given application.
- K. Describe how to recognize wear in nozzles.
- L. Describe the various nozzles available, including design, size, angles, and output.
- M. Describe how to maintain liquid, dust, and granule pesticide application equipment.
- N. Describe safe and effective practices for cleaning application equipment.
- O. Define calibration and explain why accurate calibration is essential to safe, effective pest control.
- P. Describe methods used to determine how much pesticide to put into the hopper or tank for a specific application rate over the total area of the application site.
- Q. Describe what you need to know before you can dilute a pesticide correctly.
- R. Be able to calculate the active ingredient concentration of pesticides using formulas.
- S. Describe how to determine the correct amount of pesticide needed for a particular application.
- T. Describe how to calibrate application equipment for interiorscape, turfgrass, and ornamental applications.

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Chapter 10 Safe and Effective Applications in Landscape and Turf Settings

- A. List types of landscape and turf application sites and the goals of plant maintenance at these sites.
- B. Explain the various fates of pesticides in outdoor environments, and how different pesticides and application methods influence the pesticide's fate.
- C. List ways that pesticides can damage plants in the treatment area.
- D. List actions that will reduce drift during applications in landscapes and turfgrass.
- E. Explain why and in which situations it is important to communicate with neighbors and others in the area before making a pesticide application.
- F. Describe the safety information that must be provided to people before applications are made in landscape or turfgrass sites.
- G. List the steps necessary to keep people safe during tree injection operations.
- H. Describe site-specific variables that affect the potential for pesticides to move in water away from landscape and turf application sites.
- I. Describe ways to reduce the potential for runoff during and after applications to landscapes and turf.

Chapter 11 Safe and Effective Applications in Intiorscape Settings

- A. List the types of sites that can be classified as interiorscapes.
- B. List the potential problems caused by pesticide use in interiorscapes.
- C. List precautions to take that mitigate pesticide hazards and impacts of interiorscape applications.
- D. Describe nonchemical pest control methods used in interiorscapes.
- E. Describe the ways pesticides can move offsite during and after interiorscape applications.
- F. Explain how to avoid phytotoxicity in interiorscape applications.