

**Exam Knowledge Expectations for
Qualified Applicator Certificate
Q – Maintenance Gardener Pest Control Sub-Category**

Use these knowledge expectations (KEs) to help study the suggested material, *Lawn and Residential Landscape Pest Control – A Guide for Maintenance Gardeners* (2009 Edition)

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

Chapter 1 Pesticide Laws and Regulations

- A. Know the roles of the Department of Pesticide Regulation and the county agricultural commissioner, and how to work with their offices.
- B. Know the kind of pest control you may perform and where you are allowed to apply pesticides if you have a
 - a. Qualified Applicator Certificate Category Q – Maintenance Gardener Pest Control or
 - b. Qualified Applicator License Category B – Landscape Maintenance Pest Control, and
 - c. Maintenance Gardener Pest Control Business License
- C. Know the renewal requirements for the
 - a. Qualified Applicator Certificate Category Q – Maintenance Gardener Pest Control or
 - b. Qualified Applicator License Category B – Landscape Maintenance Pest Control, and
 - c. Maintenance Gardener Pest Control Business License
- D. Know the requirements for pesticide use record keeping and use reporting.
- E. Know the pesticide application notification requirements.
- F. Know the requirement to use only registered pesticide products that include the intended use site on the label.
- G. Know the different sections of the label, be able to locate them, and be able to find specific information.
- H. Know how to properly store pesticides and application equipment.
- I. Know how to properly transport pesticides.
- J. Know how to legally and properly dispose of excess pesticides and empty pesticide containers.
- K. Know worker safety requirements, including providing pesticide safety training for handler employees and emergency medical care for all employees.
- L. Be aware of personal protective equipment requirements and know the ones that apply to your pest control activities.

Chapter 2 Pests and Problem Diagnosis

- A. Know that plants may be injured or stressed by inadequate or improper cultural practices, environmental conditions such as drought and nutritional deficiency, and chemical injury such as air pollutants and spray drift.
- B. List and describe groups of organisms that are common pests (insects, mites, weeds, vertebrate pests, fungi, bacteria, and viruses) and the damage they cause to landscape plants.

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- C. Be able to recognize and distinguish the following invertebrate pest groups: aphids, whiteflies, mites, scales, caterpillars, snails and slugs, lawn grubs, ants, and mealy bugs.
- D. Know the difference between broadleaf, grass, and sedge weeds.
- E. Describe the life cycle of annual and perennial weeds.
- F. Describe how vegetative reproductive structures of perennial weeds, such as rhizomes, bulbs, and stolons, make them difficult to control.
- G. Know that many diseases caused by plant pathogens must be diagnosed by an expert.
- H. Be able to recognize powdery mildew and the conditions that favor it.
- I. Know where to go to seek information about pest identification.

Chapter 3 Integrated Pest Management

- A. Know how to routinely check a landscape to keep on top of pest problems.
- B. Describe the main pest management tools used in an IPM program, including cultural, biological, mechanical and physical, and chemical.
- C. Understand how plants that are less susceptible to pest damage, such as resistant varieties, can be used in an IPM program.
- D. Explain how cultural practices such as proper fertilization, irrigation, pruning, and mowing height are important in preventing lawn weed, insect, and pathogen problems.
- E. Explain how the following tools can be used to manage weeds in some situations: mulches, landscape fabrics, hand weeding, and weed trimmers.
- F. Define natural enemies, explain how they control pests, and know how to protect them.
- G. Be able to recognize adults and immatures of the following natural enemies: lady beetles, lacewings, and Syrphid flies.
- H. Know that aphid mummies indicate parasitic wasp activity.
- I. Understand that pesticides kill natural enemies and cause problems.
- J. Know where to find reliable pest management information.

Chapter 4 Pesticides and Their Hazards

- A. Know that all pesticides are toxic to some organisms and can cause problems.
- B. Recognize what factors affect pesticide effectiveness and potential to harm.
- C. Know how pesticides are classified according to target pest.
- D. Define pesticide selectivity and explain why it is important.
- E. Be familiar with different pesticide formulations.
- F. Describe the best timing for applying pre-emergent and post-emergent herbicides.
- G. Explain the difference between contact and systemic herbicides.
- H. Explain the difference between systemic insecticides and other insecticides.
- I. Explain how pesticides move in the environment in air, water, and sediment and injure non-target organisms.

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- J. Recognize the causes and effects of phytotoxicity (injury to plants) from landscape and turf grass pesticide applications.
- K. Explain how people get exposed to pesticides in landscape and turf settings.
- L. Know how pesticides enter the body.
- M. Know the health effects of pesticide exposure.

Chapter 5 Protecting People and the Environment and Handling Emergencies

- A. Describe where to find information about pesticide hazards and safety, for example, pesticide labels, Material Safety Data Sheets (MSDS), and the Pesticide Safety Information Series (PSIS) leaflets.
- B. Know how to select pesticides that are less hazardous to people, water quality, and wildlife by comparing label information.
- C. Be aware of the hazards of vertebrate control materials and snail baits for pets and nontarget organisms.
- D. Know how to select, fit, care for, and use personal protective equipment when handling pesticides.
- E. Know that you can be contaminated by touching pesticide application equipment, which exposes you to harmful pesticide residues.
- F. List precautions that can be taken to protect people and pets that might enter a treated area.
- G. Know how to prevent pesticide drift and other off-site movement.
- H. Know how to keep pesticides out of the environment through proper application and disposal practices.
- I. Know proper personal hygiene after handling pesticides, including laundering.
- J. Know how to recognize pesticide exposure symptoms and respond to emergencies.
- K. Know how to respond to spills, leaks, or other releases of pesticides.
- L. Know that you will be liable if you apply a pesticide that injures plants, people, animals, or property.

Chapter 6 Selection and Use of Pesticide Application Equipment

- A. Know the benefits of designating separate application equipment for herbicide use only; designate other application equipment for other pesticides.
- B. List and describe the uses for the following types of landscape and turfgrass pesticide application equipment: aerosol can, hose-end sprayer, trigger pump sprayer, compressed air sprayer, backpack sprayer, mechanical duster, hand-operated broadcast spreader, and drop spreader.

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- C. Identify and know the function of the following components of liquid application equipment: tank, hose, pump, wand, control valve, and nozzle (including cone, flat fan, and adjustable nozzles).
- D. Know how to clean, service, and maintain pesticide application equipment.
- E. Know how to use bait and bait stations for pests.
- F. Know proper procedures for mixing pesticide sprays, including how to measure pesticides safely and accurately.
- G. Be aware of the hazards involved with using improper measuring and mixing tools.
- H. Explain the important of calibrating pesticide application equipment.
- I. Know how to calculate the amount of pesticide to apply to a known area.
- J. Know why the following are necessary for a successful pesticide application: appropriate equipment, correct application rate and dilution, proper application site, appropriate coverage (broadcast versus spot treatment), vulnerable life stage of the target pest, and personal protective equipment.