

Agricultural Weed Control 1B Exam Study Guide

This study guide is intended to serve as an outline of the knowledge base covered by the *Agricultural Weed Control Category 1B Exam*. If you don't understand a term, concept, or statement, refer to the NM Pesticide Applicator Training Category 1A & 1B Manual for more information. This exam consists of 50 multiple choice, true/false and matching questions taken from the manual. Topics include:

1. General Ag Weed Knowledge
2. Weed Classification
3. Weed Management
4. Herbicide Application
5. Herbicide Use
6. Herbicides and the Environment
7. Adjuvants
8. Identification
9. Calculations

1. General Ag Weed Knowledge

- a. Vegetative reproductive structures are those asexual portions of the plant that allow for new plants to arise without the fertilization of the flower.
- b. Growth regulators are chemicals that influence the growth responses of plants.
- c. Harvest-aid chemicals are used to assist the preparation of crops for mechanical harvest.

2. Weed Classification

- a. A plant that completes its life cycle in one year is an annual.
- b. A plant that completes its life cycle in two years is a biennial.
- c. A grass plant has parallel venation.
- d. The most effective management principle for annual weeds is to not let them seed out.
- e. To manage perennial weeds successfully you must eliminate the below ground plant parts.
- f. Summer annuals reproduce by seeds, germinate in the spring and set seed the same year.
- g. Winter annuals germinate in the fall and set seed in the spring.
- h. Perennials are capable of coming back year after year from the same root system.
- i. Biennial weeds reproduce by seeds and take two years to complete their life cycle.

3. Weed Management

- a. Weeds may be controlled by cultural, biological and mechanical methods.
- b. Biological control uses a disease organism, insect or higher animal to keep the target pest at a low population level.
- c. Cultural control involves sound agronomic practices and crop rotations to minimize weed growth and give the crop the competitive edge.
- d. Physical control includes any technique that uproots, buries, cuts, smothers or burns weed growth.

4. Herbicide Application

- a. Pre-emergent herbicide applications are made before the weed emerges and either before or after the crop emerges.

- b. Post-emergent herbicides are applied when weeds are emerged and actively growing.
- c. Soil incorporation involves the use of tillage, rainfall, or irrigation equipment to move pesticides into the soil.
- d. Weedy plants are successful because they produce large number of seeds, their seeds can remain viable for many years, and they have adapted special means to assist their speed or distribution.
- e. In flowable formulations, the active ingredient is a finely ground particle suspended in a liquid carrier.
- f. The active ingredient in microencapsulated formulations is encased in a coating and requires constant agitation.
- g. Solutions require little or no agitation once they are initially mixed.
- h. Emulsifiable concentrates form a milky-looking emulsion and require little or no agitation once they are initially mixed.
- i. Of all the plants in the world, only about 3% behave as weeds in agriculture.
- j. The level of weed management depends in part on the management objectives for a given agricultural property.
- k. Herbicides can be broken down by microbial action, chemical action, and/or photodegradation.

5. Herbicide Use

- a. A selective herbicide is more toxic to some groups of plants than others.
- b. A non-selective herbicide will kill all weeds and desirable plants.
- c. The age of the plant, amount of cuticle wax on the leaves, and the presence or absence of hairs on the leaves affect whether a herbicide gets to the site of its herbicidal activity within a plant.

6. Herbicides and the Environment

- a. Older, mature plants are generally less susceptible to herbicides than younger plants.
- b. Environmental stress on a plant can influence the efficacy of a herbicide.
- c. A thick cuticle makes it more difficult for a pesticide to penetrate the leaf surface.
- d. K_{oc} refers to the degree to which a herbicide is bound to the soil.

7. Adjuvants

- a. Surfactants decrease the surface tension of spray droplets.
- b. Dessicants kill plant leaves rapidly but they generally remain on the plant.
- c. Defoliant cause the leaves of a plant to fall off.
- d. Stickers increase the amount of spray that sticks to the leaf surface.

8. Identification

Be able to identify (from pictures) the following weeds.

- a. Dandelion
- b. Dodder
- c. Field Bindweed
- d. Johnsongrass
- e. Large Crabgrass
- f. Russian Thistle
- g. Yellow Foxtail

9. Calculations

- a. Be able to determine the total pounds of active ingredient to be applied when given the field size, label requirements, and calibration rates.
- b. Be able to determine the number of gallons required to treat an area when given the field size, label requirements, and calibration rates.
- c. Be able to determine the amount of formulation required for a spray tank when given the field size, label requirements, and calibration rates.