

STUDY GUIDELINES FOR PERMIT EXAM HCW (HORTICULTURAL WEED CONTROL)

SOME INFORMATION YOU SHOULD HAVE KNOWLEDGE OF BEFORE TAKING A LICENSE AND/OR PERMIT EXAMINATION FOR HORTICULTURAL WEED CONTROL.

This outline may be used as a study guide for the license examination (Category HCW), Horticultural Weed Control. The Mississippi Bureau of Plant Industry is providing a list of suggested references and this outline as aids in studying for the license and or permit exams. The use of the World Wide Web can provide a wealth of information and may be helpful in increasing your knowledge of the listed topics. Web sites from universities, extension, weed management societies and sites devoted to specific weed control guidelines may provide detailed information. A copy of the Regulations Governing Commercial Insect, Rodent, Plant Disease and Weed Control Work can be found at The Mississippi Department of Agriculture and Commerce, Bureau of Plant Industry website, <http://www.mdac.ms.gov/wp-content/uploads/11-Regulation-of-Professional-Services.pdf>. **Please note that you should be familiar with the topics and suggested weed identification (photos will be provided on exams) but there is no guarantee that all of the topics or weed ID listed, or only the topics or weed ID listed will be included on any Licensing and/or Permit examinations.**

1. You should be thoroughly familiar with Bureau of Plant Industry Regulations Governing Commercial Insect, Rodent, Plant Disease and Weed Control Work. Topics include, but are not limited to:

- Permit requirements
- Permit requirements
- Licensing/Permit renewal requirements
- Violations
- Bond requirements
- Insurance requirements
- Record keeping/access requirements
- Registered technician standards
- Equipment (marking of vehicle and equipment)

2. Herbicides:

- Know how to interpret the label
- Signal word interpretation
- Common volume conversions

- Drop vs. rotary spreaders
- Advantages/disadvantages of emulsifiable concentrates, granules, wettable powders, and suspension concentrates
- Ester formulations

3. Pesticide mixing; Pesticide application; Pesticide cleanup; Pesticide transport; Pesticide spills; Pesticide disposal; Pesticide safety; Pesticide storage

4. Proficiency in botany and principals of weed science, as is applicable to each category of weed control, is recommended before attempting these exams

5. Definitions: allelopathic; annual; biennial; perennial, thatch

6. Be able to ID the following:

Bahiagrass; bermudagrass (common); bluegrass (annual); buttercup; cogon grass; henbit; honeysuckle (Japanese); Johnsongrass; wild garlic; Zoysiagrass

7. Be thoroughly familiar with the following herbicides below on their ability to control various weeds along with which turfgrasses are tolerant to them. Some herbicides may have use-restrictions.

- 2, 4-D
- Dicamba
- Diquat
- Fenoxaprop
- Garlon (triclopyr)
- Glyphosate
- MSMA
- Oust (sulfometuron)
- Pendimethalin (pendulum)
- Proflam (barricade)
- Sahara (diuron + imazapyr)
- Simazine (princep)
- Trifluralin (treflan)

8. Know how to calculate rate of application of herbicides for liquid and granular applications.

9. Be able to match the weeds listed in the Category III Commercial Certification reference manual, Part 1, Chapter 7: Weed Identification as one of the following:

- Winter Annual Grassy Weed
- Summer Annual Grassy Weed
- Perennial Grassy Weed
- Winter Annual Broadleaf Weed
- Winter Perennial Broadleaf Weed
- Summer Annual Broadleaf Weed
- Summer Perennial Broadleaf Weed

10. Be familiar with pre-emergence; post-emergence; soil sterilants, and abatement control measures.

11. Be familiar with herbicide resistant weeds in Mississippi and the herbicide(s) it is resistant to – <http://weedsociety.org/Details/USState.aspx?StateAbbr=MS>.

12. Be familiar with annuals, biennials, and perennials and control measures of each.

13. Be familiar with monocots vs. dicots.

14. Know method(s) used to determine presence of herbicide(s) in soil.

15. Pros/cons of hand pulling weeds.

STUDY GUIDELINES FOR PERMIT EXAM HCP (HORTICULTURAL PEST CONTROL)

SOME INFORMATION YOU SHOULD HAVE KNOWLEDGE OF BEFORE TAKING LICENSE AND/OR PERMIT EXAMINATION FOR HORTICULTURAL PEST CONTROL.

This outline may be used as a study guide for the license and/or permit examination (Category HCP), Horticultural Pest Control. The Mississippi Bureau of Plant Industry is providing a list of suggested references and this outline as aids in studying for the License and/or Permit examinations. The Handbook of Turfgrass Insect Pests, Pirone's, Diseases and Pests of Ornamental Plants and the Mississippi Cooperative Extension Service Category III Certification Study Manual are excellent references. Other entomological and plant pathological references, specifically dealing with the ornamental plants, shade trees and lawns, may also prove helpful. The use of the World Wide Web can provide a wealth of information and may be helpful in increasing your knowledge of the listed topics. Web sites from universities, extension, pest management societies and sites devoted to specific insects, pests and diseases may provide detailed information. A copy of the Regulations Governing Commercial Insect, Rodent, Plant Disease and Weed Control Work can be found at The Mississippi Department of Agriculture and Commerce, Bureau of Plant Industry website, <http://www.mdac.ms.gov/wp-content/uploads/11-Regulation-of-Professional-Services.pdf>. **Please note that you should be familiar with the topics and ID in this outline, but there is no guarantee that all of the topics and ID listed, or only the topics and ID listed will be included on any Licensing and/or Permit examinations.**

1. You should be thoroughly familiar with Bureau of Plant Industry Regulations Governing Commercial Insect, Rodent, Plant Disease and Weed Control Work. Topics include, but are not limited to:

- Permit requirements
- Permit renewal requirements
- Identification
- Registered technician standards
- Violations
- Record keeping requirements
- Pesticide Storage and Transport
- Bond requirements
- Insurance requirements
- Equipment

2. Be able to ID insects and related pests and the damage they cause and be familiar with their life cycle. Be able to ID diseases and the symptoms they cause. Be able to ID symptoms caused by nutritional deficiencies, weather related and mechanical damage and pesticide and/or fertilizer misapplication.

Diptera

Leaf gall

Hymenoptera

Cicada killer; imported fire ant

Orthoptera

House crickets; Field crickets; Mole crickets

Hemiptera

Chinch bugs; Boxelder bugs; Crape myrtle bark scale

Coleoptera

White grub; Japanese beetle

Homoptera

Leafhoppers; mealy bug; whitefly; aphid; ground pearls

Mecoptera

Hanging scorpion fly (not a pest, but similar in appearance to crane fly)

Thysanoptera

Thrips

Lepidoptera

Sod webworm; cutworm; Armyworm

Misc.

Spider mite; plant parasitic nematode

Diseases, nutrient deficiencies and the damage they cause; weather related; mechanical damage

Anthracnose; black spot, crown gall, fire blight; leaf spot; phloem necrosis of elms; powdery mildew; rose mosaic virus; verticillium wilt

What does host-specific mean regarding plant disease organisms?

3. Insects. Structure, function and development

External morphology. head, thorax and abdomen.
Internal morphology including respiratory, circulatory
Thrips, aphids and other insect pests have what form of metamorphosis?

4. Insecticides. Know some common products for each class that is used in pest control
Botanicals; Insect growth regulators; Nicotinoids;
Carbamates; Inorganics; Pyrethroids;
Organophosphates
Atropine sulfate is an antidote for what class of pesticides?
5. Pesticides (Insecticides, Fungicides, etc.)

Know how to interpret the label
What size spray droplets are produced if nozzle pressure is increased?
LD₅₀ interpretation
Signal word interpretation
Formulations effectiveness on specific pests
Common volume conversions
Liquid pint to fluid ounces
Liquid gallon to fluid ounces
Liquid quart to fluid ounces
Acaricides control what?
Wettable powder formulations are used to control what?
Pros and cons of using wettable powders vs. emulsifiable Concentrates.
Which type of pump (centrifugal, roller, or piston) is affected by wettable powders the most?
Toxicant

6. Photo ID

Sod webworm adult
Fire blight
Thrips
Rose mosaic virus
Leafhopper
Powdery mildew
Black spot
Anthracnose
Leaf gall
Aphid
Whitefly