

Student Name _____

Weed Science, PLS 4601c Section 7644
and Grad. – Prin. Of Weed Science AGR 6932 Section 9212
University of Florida - Davie

<http://grove.ufl.edu/~turf/weedscience/>

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Hour Test 2 (circle the right answers)

Take-home, open-book (includes Internet), no helping or getting help

Send answer to: turf@ufl.edu by 11:59 pm, Monday, August 3

Invasive weeds

1. Which invasive weed is a vine?
 - a) catclaw mimosa
 - b) cogongrass
 - c) hydrilla
 - d) kudzu <<<<<<<<**
 - e) paperbark tree
2. Which invasive weed is a poisonous shrub?
 - a) hydrilla
 - b) kudzu
 - c) Old World climbing fern
 - d) paperbark tree
 - e) tropical soda apple <<<<<<<<**
3. Which invasive weed is not a flowering plant?
 - a) Dioscorea bulbifera
 - b) Imperata cylindrica
 - c) Lygodium microphyllum <<<<<<<<**
 - d) Neyraudia reynaudiana
 - e) Pistia stratiotes

4. Which invasive weed is a monocot?
- a) **air potato** <<<<<<<<
 - b) **hydrilla** <<<<<<<<
 - c) kudzu
 - d) Old World climbing fern
 - e) **Waterlettuce** <<<<<<<<
5. Which invasive weed is a dicot?
- a) Hydrilla verticillata
 - b) Imperata cylindrica
 - c) Neyraudia reynaudiana
 - d) Pistia stratiotes
 - e) **Solanum viarum** <<<<<<<<
6. Of the 10 invasive weeds on Weed Set 2, which do you think is the most dangerous and why?

For whichever weed is chosen, “dangerous” by dictionary definition involves the potential of something to cause harm or injury. In a weed context, this could include loss of property, ecological damage, or injury or death of humans and other important species. For a weed to be “most dangerous” it must therefore be most capable of occurring to an extent and/or in such a way that harm or injury can occur.

To identify and explain the “most dangerous” weed it must have the properties that cause harm or injury which could include **poisonous** properties and/or the ability to **deplete resources** and/or the ability to **replace beneficial species**. A weed can be more dangerous if there is **no way to control it** or if control is **difficult or costly** or if control is delayed because the weed is not noticeable at first. Here are examples:

Harmfulness: hydrilla can **cause floods and/or drown people**; tropical soda apple can **poison livestock**; melaleuca can **replace native plants** and make areas **impassable to wildlife**; lygodium and kudzu **smother other vegetation**; lygodium is a **fire hazard**; any strong growing weed can **consume considerable water**.

Reproduction: melaleuca and other weeds can **spread far and wide** by small seed; lygodium has a **wide range of habitats**

Control may be difficult because a weed ensnarls other plants and **cannot be selectively treated**; or because there are **no selective herbicides** or **no known biocontrol**.

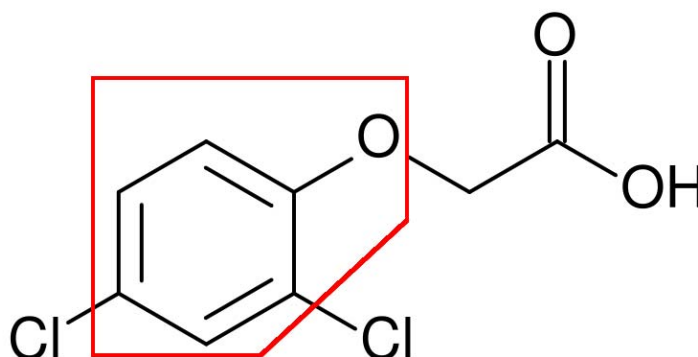
Herbicides

7. Which herbicide is an ALS inhibitor:

- a) atrazine
- b) glyphosate
- c) imazapyr <<<<<<<<<**
- d) oxadiazon
- e) paraquat

8. What is the functional group in the 5-sided box?

- a) aniline
- b) glycine
- c) methyl
- d) phenoxy <<<<<<<<**
- e) triazine



9. Which heavy element occurs in one of the herbicides we studied?

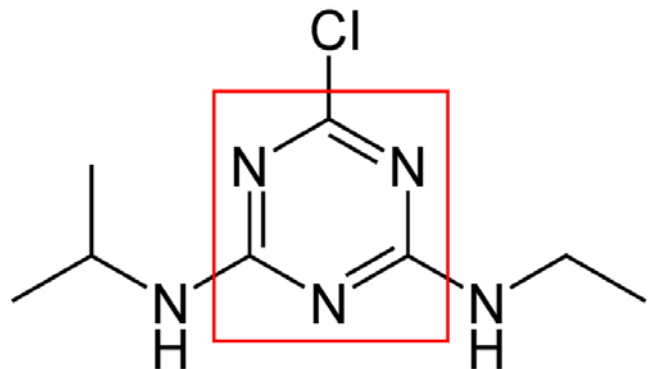
- a) As <<<<<<<<**
- b) Cl
- c) F
- d) H
- e) O

10. Which herbicide most commonly kills people?

- a) atrazine
- b) glyphosate
- c) metsulfuron
- d) paraquat <<<<<<<<**
- e) table salt

11. Herbicides such as 2,4-D that are in the phenoxy family:
- a) Affect mostly grasses
 - b) Affect mostly sedges
 - c) **Affect mostly broadleaf weeds <<<<<<<<**
 - d) All of the above
 - e) None of the above
12. The strong covalent carbon ring which is derived from benzene is represented in which functional herbicide group?
- a) amino
 - b) carbamate
 - c) carboxyl
 - d) methyl
 - e) **phenyl <<<<<<<<**
13. What is the functional group in the square box?

- a) aniline
- b) glycine
- c) methyl
- d) phenoxy
- e) **triazine <<<<<<<<**



Herbicide labels, application, and the law

14. The web site www.safepesticideuse.com is the best place to find information on:
- a) **Florida pesticide certification and licensing <<<<<<<<**
 - b) PPE (Personal Protective Equipment) for each herbicide
 - c) recommendations on Florida crop management including weed control
 - d) sample labels for herbicides
 - e) the risks of using herbicides
15. The web site www.cdms.net is the best place to find information on:
- a) Florida pesticide certification and licensing
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 - c) recommendations on Florida crop management including weed control
 - d) **sample labels for herbicides <<<<<<<<**
 - e) the risks of using herbicides
16. The web site edis.ifas.ufl.edu is the best place to find information on:
- a) Florida pesticide certification and licensing
 - b) PPE (Personal Protective Equipment) for each herbicide
 - c) **recommendations on Florida crop management including weed control <<<<<<<<**
 - d) sample labels for herbicides
 - e) the risks of using herbicides
17. Liquid formulations of Atrazine are RUPs (restricted use pesticides) because of concern over?
- a) cross-contamination
 - b) danger to fish
 - c) endangered species
 - d) **solubility <<<<<<<<**
 - e) toxicity

18. What is a major impediment to safe, effective boom spraying?
- a) **wind <<<<<<<<**
 - b) high humidity
 - c) difficulty of calibrating equipment
 - d) inconsistency of spray nozzles
 - e) variability in pump discharge
19. A method for solving conversion problems was presented in class that involved cancelling out terms between the numerator and denominator. The setup involved multiplying what was given (nozzle discharge, ground speed, and nozzle spacing on the boom) by one or more equivalences, e.g., 12 inches = 1 foot, therefore 1=12 inches /foot. Why is it okay to do this?
- a) **multiplying by 1 changes nothing. <<<<<<<<**
 - b) the EPA requires this method be used
 - c) it's faster than looking up a number in a book
 - d) it's a way of getting around not knowing the nozzle spacing
 - e) it works fine for liquids, not for solids.
 - f)
20. A symbol for a granular herbicide is:
- a) W
 - b) **WDG <<<<<<<<**
 - c) WPG
 - d) WS
 - e) WSP

For the following questions, these equivalents are important. Make sure to set up the problems correctly and show your work.

1 acre = 43,560 square feet

1 gallon = 128 oz

1 pound = 16 oz

1 mile = 5280 feet

21. A farmer is boom spraying at 5 miles per hour, the nozzles discharge 64 ounces per minute per nozzle, and they are 18 inches apart on the boom. How many gallons per acre are applied? Show your work. Continue on the reverse if necessary (10 pts).

$$\frac{\text{nozzle}}{18 \text{ in.}} \times \frac{64 \text{ oz}}{\text{min. nozzle}} \times \frac{\text{hr}}{5 \text{ mile}} \times \frac{60 \text{ min.}}{\text{hr}} \times \frac{1 \text{ gal}}{128 \text{ oz.}} \times \frac{12 \text{ in.}}{1 \text{ ft.}} \times \frac{\text{mile}}{5280 \text{ ft}} \times \frac{43560 \text{ ft}}{\text{acre}}$$

and after canceling terms:

$$= 64 \times 60 \times 12 \times 43560 \text{ gal.} / 18 / 5 / 128 / 5280 \text{ Acre} = 33 \text{ gal} / \text{acre}$$

22. Spraying at 40 gallons per acre, how many acres can be treated with a 300 gallon spray tank. Show your work. Continue on the reverse if necessary. (10 pts)

$$\frac{300 \text{ gal}}{\text{tank}} \times \frac{\text{Acre}}{40 \text{ gal.}}$$

$$= 7.5 \text{ acre} / \text{tank}$$

23. If someone in Florida wants to become a Pest Control Operator to perform contract pest control on Florida lawns and ornamentals, e.g., residential homes and businesses, they must be licensed under Chapter 482, not under Chapter 487 which only qualifies for applications to your own or your employer's property. This document distinguishes the two types of licenses:

<http://edis.ifas.ufl.edu/PI006>

More details on the 487 license are here:

<http://safepesticideuse.com/complimonitoring/databasesearch/applcert&licensing.html>

For the 482 Pest Control Operator license:

What are the additional restrictions and requirements compared with the 487 license?

The Pest Control Operator license (one of three 482 licenses) requires the following which are not part of the 487 license:

- a.) one year of employment as a service employee of a licensed pest control business in Florida
- b.) prior education or additional years employment in a licensed pest control business
- c.) examination fee of \$225 plus initial business fee of \$250
- d.) annual renewal and certification for individual and renewal for business
- e.) insurance as a part of the business

In contrast, the 482 license does not require prior employment, education, or experience, and only involves a quadrennial not annual renewal and recertification, and does not require insurance, and is not tied to a business.

Compare the fees for the two different kinds of licenses

For the PCO 482, in addition to the examination fee of \$225 plus \$250 for business (neither fee exists for the 487), the annual renewal for PCO 482 is \$150 plus \$150 for the business vs. quadrennial for the 487 license at \$160 (or \$60 for public).

So for one PCO 482 in one business, in four years the fees total \$1675 vs. \$160 (or \$60) for the 487 license.

Explain why you think there are two different licensing systems and whether this is justified:

- a) **PCO apply chemicals in areas closest to the consumer public including inside people's homes so there is a potentially greater danger of immediate harm to human health than with other kinds of pesticide applications. It can be argued that the health risk from poorly trained or poorly regulated PCO businesses is great enough to require frequent intense scrutiny and considerable experience and educational requirements, with apprenticeship in Florida conveying specific experience with Florida laws and pests.**
- b) **PCOs have strong lobbying organizations that have participated in legislation to reduce the competitive pressure from recent immigrants in other states.**

If point (a) is correct, this is a strong justification for regulation. If point (b) is correct, this may seem like a cynical basis for regulation, however it could still probably be argued that the internship requirement for the PCO 482 license, while somewhat self-serving, ensures a degree of self-regulation in the industry, and may involve an acceptable amount of collusion between the industry and the regulators to maintain high quality of service. In comparison, in some states the determination of quotas for entry to medical schools is determined by advisory boards composed of medical doctors. For both PCOs and MDs, the absence of regulation or internal peer controls may create oversupply and reduction of quality of service. There are numerous other instances where lobbying industries achieve competitive advantage through enabling self benefiting legislation, with beneficial public effects. The existence of guild systems during thousands of years has benefited the quality of technical skills and the qualification of work performed in many industries for which the consumer may not be able to judge the quality and safety of the work done. There may be other data that should be known about the specific impacts of PCO activity in Florida, and one cannot ignore the irony that many (but not all) of the pesticides available to PCOs are available to homeowners who are untrained, unsupervised, and unregulated.