

AGRO 4070
Weed Science and the Environment
Fall Semester 2004

4070 Weed Science and the Environment (3) F *Prereq: BIOL 1001, 1002, CHEM 1001, 1002; or equivalent; 2 hrs. lecture; 2 hrs. lab.* Weed biology and economic importance of weeds in the diverse agriculture of Louisiana. Weed management programs, characteristics of important herbicides, mechanisms of herbicidal action, fate of herbicides in the environment, and pesticide application, labeling, and safety.

Instructors: Dr. James L. "Jim" Griffin, Lecture
Wilson Judice, Laboratory Assistant

Times: Lecture- Wednesday 12:40 - 2:30 in 132 M.B. Sturgis
Laboratory- Wednesday 2:40 - 4:30 in 132 M.B. Sturgis

Office: Griffin - 220 H.D. Wilson Building (578-1768); jgriffin@agcenter.lsu.edu
Judice - 210 H.D. Wilson (578-1767); wjudice@agcenter.lsu.edu

Course Description:

Weed Science and the Environment (AGRO 4070) will emphasize the history of herbicide development; weed biology and ecology; weed control methods; herbicide-soil interactions; absorption, translocation, and metabolism of herbicides. The various herbicide families, their mode of action, toxicity, and persistence will be discussed. The laboratories will emphasize grass and broadleaf weed identification, sprayer calibration and equipment, herbicide symptomology, pesticide labels, formulations, and safety, and integrated weed management programs for the major agronomic and horticultural crops in Louisiana. Field trips both on and off campus will supplement classroom activities.

Informational Sources:

Lecture and laboratory notes and general course information are available on the LSU AgCenter weed science web site (www.lsuagcenter.com/weedscience). Look under "Topics and Related Links" and click on "Weed Science and the Environment (AGRO 4070)"

Weed Science Principles and Applications, W. P. Anderson, 3rd Edition, West Publishing Company

Applied Weed Science, Ross and Lembi, 2nd Edition, Prentice Hall, 1999

Weed Science Principles and Practices, G. C. Klingman and F. M. Ashton, 2nd Edition or F. M. Ashton and T. J. Monaco, 3rd Edition, John Wiley & Sons

Weed Identification, Southern Weed Science Society of America

Weeds of Southern Turfgrasses, Cooperative Extension Service, University of Georgia, Athens, GA (<http://www.griffin.peachnet.edu/caes/turf/>)

Identifying Seedling and Mature Weeds, North Carolina Agric. Res. Service and North Carolina Agric. Extension Service, North Carolina State, Raleigh, NC

Mode of Action of Herbicides, F. M. Ashton and A. S. Crafts, 2nd Edition, John Wiley & Sons

Herbicide Handbook of Weed Science Society of America, Eighth Edition, 2002

AGRO 4070 - Weed Science and the Environment Course Information

Lecture Test Dates

September 29, November 3, and December 1 with the Final (comprehensive) on Saturday, December 11 @ 10:00-12:00

Lecture 70% (3 Tests & Final @ 25% each); Lab 30%

Laboratory Requirements

Lab practicals are scheduled for September 22 (Pesticide Formulations, Labels, and Safety; Sprayer Hardware and Distribution; and Sprayer Calibration) and October 27 (Broadleaf Identification; Grass and Sedge Identification; and Weed Seed Identification). A weed collection, calibration problem set, and a herbicide symptomology report are also required. The laboratory grading summary is as follows:

<u>Requirement</u>	<u>Percent of Lab Grade</u>
Practical #1	25
Practical #2	25
Weed Collection	25
Calibration Problem Set	5
Symptomology Report	15
Class participation/attitude	<u>5</u>
TOTAL	100

Note: The Lab grade counts for 30% of your total grade in the course.

Course Grading Scale

90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; less than 60% = F

Note: Graduate students will be required in addition to prepare a paper on an assigned weed science topic.

Office Hours

Students should schedule and set up appointments with instructors (lecture and lab) as needed.

Class Comments/Rules

This class will start at 12:40 and will end at 4:30. Unless it is an emergency, do not be late for class and do not ask to leave early (we only meet one day each week and will need all the time to cover everything). You are expected to attend all lectures/labs and to turn in assignments on time. Those adhering to this policy will be given the "benefit of doubt" when final grades are assigned.

Scheduled lecture tests and lab practicals will be given the first of the class period. You will be allowed no more than 1 hour and 20 minutes (12:40-2:00) to finish lecture tests and no more than 1 hour (12:40-1:40) to finish the lab practicals. The remaining class time will be used as specified in the course lecture/laboratory syllabus. If for some reason I am unable to cover all of the lecture information in the time allowed, it will be your responsibility to read and study the notes and to seek help if needed.

General Class Comments

Questions/comments are always welcome.

I am genuinely concerned with your performance in this class hence there is no excuse for poor performance.

This course will involve thinking and applying concepts not just regurgitation of facts.

Exams will be very thorough but fair.

It is your responsibility to make up missed class/lab time and to meet assigned deadlines.

Cell phone ringers are to be turned off in class and cell phone use in class is prohibited.

Note: You are encouraged to visit the LSU weed science web site (www.lsuagcenter.com/weedscience).

AGRO 4070 – Weed Science and the Environment
Lecture and Laboratory Syllabus for 2004
www.lsuagcenter.com/weedscience

Date	Lecture Subject Matter / Laboratory Exercise
8/25	Introduce the course, course syllabus, exam dates, and grading criteria; students to complete information sheets <u>Lecture</u> – Introduction - Weed Science and Weeds (provide notes to students) <u>Lab</u> – Discuss expectations and grading criteria and Weed Collection Information; Pesticide Formulations, Labels, and Safety (provide handouts and notes to students)
9/1	<u>Lecture</u> – Weed Biology and Ecology <u>Lab</u> – Sprayer Hardware and Spray Distribution; Sprayer Calibration (handout practice and turn-in calibration problem sets)
9/8	<u>Lecture</u> – General Methods of Weed Control <u>Lab</u> – Sprayer Calibration; Hands on Calibration Exercise #1; lab instructor to plant weed seeds for weed identification lab
9/15	<u>Lecture</u> – Herbicide/Soil Interactions <u>Lab</u> – Finish Sprayer Calibration; Hands on Calibration Exercise #2; provide answers to practice calibration problem set and for calibration exercises; lab instructor to transfer weed seedlings to pots for weed identification lab
9/22	Lab – Practical #1 (all labs to this point); calibration problem set due <u>Lecture</u> – Herbicide/Plant Interactions - Absorption and Translocation of Herbicides Applied to Soil (end of material for lecture test #1); Start Herbicide/Plant Interactions - Absorption and Translocation of Herbicides Applied to Foliage
9/29	Lecture – Test #1 <u>Lab</u> – Broadleaf Weed Identification
10/6	<u>Lecture</u> – Finish Herbicide/Plant Interactions - Absorption and Translocation of Herbicides Applied to Foliage; Factors Affecting Foliar Absorption of Herbicides; Metabolism of Herbicides in Plants <u>Lab</u> – Grass and Sedge Weed Identification; Weed Seed Identification
10/13	<u>Lecture</u> – Review of Organic Chemistry; The Plant Cell and Physiological Processes <u>Lab</u> – Weed identification; Review procedures for Herbicide Symptomology Experiment; plant crops and weeds in greenhouse and apply preemergence herbicides; collect weeds

10/20	<p><u>Lecture</u> – Inhibition of Photosynthesis at PS I and PS II; Start on Inhibition of Protoporphyrinogen Oxidase</p> <p><u>Lab</u> – Weed identification; visit greenhouse to observe preemergence (7 DAT); collect weeds</p>
10/27	<p>Lab – Practical #2 (Weed and Weed Seed Identification)</p> <p><u>Lecture</u> – Finish Inhibition of Protoporphyrinogen Oxidase; Auxin-Type Plant Growth Regulators (end of material for lecture test #2)</p> <p><u>Lab</u> - Review procedures for Herbicide Symptomology Experiment; visit greenhouse and apply postemergence herbicides; observe preemergence (14 DAT) treated crops and weeds; collect weeds</p>
11/3	<p>Lecture – Test #2; Disruption of Mitosis; Seedling Root/Shoot Inhibition</p> <p><u>Lab</u> – Herbicide Symptomology and Surfactant Technology; visit greenhouse to observe preemergence (21 DAT) and postemergence (7 DAT) treated crops and weeds</p>
11/10	<p><u>Lecture</u> – Inhibition of Pigment Synthesis (Bleaching Herbicides); Inhibition of Amino Acid Synthesis</p> <p><u>Lab</u> – visit greenhouse to observe postemergence (14 DAT) treated crops and weeds; discuss symptomology report; weed collection due</p>
11/17	<p>Field trip to Idlewild Research Station; Weed control in pastures, roadsides, aquatic situations, rights-of-ways, and forestry; symptomology report due</p>
11/24	<p><u>Lecture</u> – Inhibition of Lipid Synthesis; Inhibition of Cell Wall Synthesis (end of material for lecture test #3)</p> <p><u>Lab</u> – none (Thanksgiving holiday)</p>
12/1	<p>Lecture – Test #3; Other weed science topics; course evaluation</p> <p><u>Lab</u> – review LSU weed control guide; weed control scenarios in turf and ornamentals and in agronomic crops</p>
12/11	<p>Final comprehensive exam (Saturday, 10:00-12:00)</p>
12/17	<p>Commencement day</p>

AGRO 4070
Weed Science and the Environment

Instructor Resume

James L. "Jim" Griffin,
Born and reared in Greenville, MS on small cotton livestock farm; active in 4-H
Married to Carol B. Griffin, one daughter, Jamie

Education:

B.S. Agronomy - Mississippi State University (1975)
M.S. Agronomy/Weed Science - Mississippi State University (1976)
Ph.D. Agronomy/Crop Management and Physiology - The Pennsylvania State University (1979)

Work Experience:

Rice Research Station (1979-1987)
Louisiana Agricultural Experiment Station
Louisiana State University Agricultural Center
Associate Professor (1982-1987)
Assistant Professor (1979-1982)

Dept. of Agronomy (2002-present)
Dept. of Plant Pathology and Crop Physiology (1988-2002)
Louisiana State University
Lee Mason LSU Alumni Association Professor (Research, Teaching, and Extension Responsibility)

Research Responsibility (65%) and Emphasis:

Weed competition, integrated weed management, and weed-pathogen-herbicide and weed-insect interactions (Soybeans- 30%; Sugarcane- 60%; Corn- 10%)

Teaching Responsibility (25%):

AGRO 4070 Weed Science and the Environment
AGRO 7070 Research Methods in Plant Science

Curriculum Coordinator Agricultural Pest Management Concentration in the Plant and Soil Systems
Curriculum

Extension Responsibility (10%):

Sugarcane only

AGRO 4070 Information Sheet

Name _____ Major _____

Advisor _____ Degree Sought _____

Hometown _____ E-mail address _____

____ Urban ____ Rural ____ Farm

Hobbies and Personal Interests:

Which of the following courses have you taken (circle)?

Biology	Inorganic Chemistry	Microbiology
Plant Anatomy	Entomology	Plant Taxonomy
Biochemistry	Plant Pathology	Crop Production
Soils	Plant Physiology	Organic Chemistry
Toxicology	Environmental Chemistry	Basket Weaving

1. Have you worked with pesticides? (Yes or No)? List specific pesticides.
2. Are you a certified pesticide applicator? (Yes or No)? If yes, what categories?
3. What type of information or knowledge would you like to receive from this course?
4. Do you feel that pesticides are the major contributor to environmental pollution in the U.S.?
Yes or No?
5. The U.S. has the safest food supply in the world. Yes or No?
6. Aspirin is more toxic than most pesticides. Yes or No?
7. All pesticides should be banned. Yes or No?
8. Some weeds pose a greater threat to human survival than the AIDS virus. Yes or No?
9. Enough of this stuff, Are you an LSU Sports fan?