

CR242
Weed and Herbicide Management
3 Credits

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CR242 Version: 24



Weed and Herbicide Management

Calendar Description

This is a course in weed biology, ecology and identification. The integration of common cultural, biological and chemical weed management practices with the entire cropping system is discussed. Chemical make-up, mode of action and responsible use of herbicides is included.

Rationale

This is a required course for students enrolled in Crop Technology program. Weeds are major pests contributing to yield losses in Western Canadian field crops. They also contribute to losses in forage quality and they cause problems in non-crop areas. To minimize these losses, it is necessary to understand weed biology, available management practices, and environmental impacts these practices have. This course provides the background for responsible and sustainable weed management.

Prerequisites

None

Co-Requisites

None

Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. describe and explain the life cycles and characteristics that allow weeds to be persistent.
2. describe and explain the impact of various weed management practices on the weed community and the environment.
3. devise strategies that rotate weed control mechanisms to minimize resistant weeds.
4. identify and explain the various modes of action of different herbicide groups
5. describe common symptoms of different herbicide groups.
6. identify at minimum 40 common weeds at various developmental stages and their seeds.
7. use government weed management handbooks.
8. demonstrate proper field scouting techniques and protocols.

Resource Materials

Required Text:

Bubar C., McColl, S., and Hall, L. (2009). *Weeds of the prairies*. Edmonton, AB: Publishing Branch, Alberta Agriculture, Food and Rural Development. Agdex 640-4.

Vaillancourt, G., Kaulbers, C. (Ed.). (2016) *Weed seedling guide*. 2nd edition Edmonton AB: Publishing Branch, Alberta Agriculture, Food and Rural Development. Agdex 640-9.

Brook, H. (Ed.). *Crop protection*. Edmonton, AB: Publishing Branch, Alberta Agriculture, Food and Rural Development. (This is an annual publication: The current version will be used). Agdex 606-1

Lakeland College. 2020 CR 242 Lab Course Pack. (2020). Vermilion AB: Lakeland College.

Reference Text:

Dorrance, M. J. (Ed.). *Practical crop protection*. Edmonton, AB: Crop Protection Branch, Alberta Agriculture, Food and Rural Development. Agdex 606-3.

Hall, L., Beckie, H., Wolf, T. M. (2009). *How herbicides work: Biology to application*. Edmonton, AB: Publishing Branch, Alberta Agriculture, Food and Rural Development. Agdex 606-2

Rayer, F. and Dickinson, R. (1999). *Weeds of Canada and the northern United States*. Edmonton, AB: University of Alberta Press.

Conduct of Course

The material in the course units are covered in lectures using overhead transparencies, supplemented by films, slides and government publications, where appropriate. Weed (plant, seed and seedling) identification is covered during lab time.

Evaluation Procedures

| | |
|-----------------------|------------|
| Course Weight | |
| Discussions | 20% |
| Midterm | 15% |
| Assignments | 10% |
| Laboratory exams | 30% |
| Final (Comprehensive) | <u>25%</u> |
| Total | 100% |

Grade Equivalents and Course Pass Requirements

A minimum grade of D (50%) (1.00) is required to pass this course.

| | | | | | | | | | | | | |
|---------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| Letter | F | D | D+ | C- | C | C+ | B- | B | B+ | A- | A | A+ |
| Percent Range | 0-49 | 50-52 | 53-56 | 57-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | 85-89 | 90-94 | 95-100 |
| Points | 0.00 | 1.00 | 1.30 | 1.70 | 2.00 | 2.30 | 2.70 | 3.00 | 3.30 | 3.70 | 4.00 | 4.00 |

Students must maintain a cumulative grade of C (GPA - Grade Point Average of 2.00) in order to qualify to graduate.

Attendance

Classroom and laboratory attendance is considered vital to the learning process and as significant to the students' evaluation as examinations and reports.

- a. Students having a combination of excused and/or unexcused absence of 20 percent or higher for the scheduled course hours will be required to withdraw and will automatically receive a "RW" (required withdrawal) for the course, regardless of any other evaluation results. (RW is a failing grade.)
- b. An excused absence is one that is verified with your Instructor. Verification should be prior to the absence or the next class day following the absence. Verification of the absence may take the form of a note from your doctor/College nurse regarding illness, or a note from another Instructor regarding a field trip or other activity, or authorization by your Instructor. An unexcused absence is anything NOT verified by the instructor prior to the absence or the next class day following the absence.

NOTE: Any exceptions to the above attendance policy (e.g. timetable conflicts, work-related issues) must be approved in writing by the Department Chair prior to the beginning of the course.

It is the students' responsibility to know their own absentee record.

Normal hours are 8:30 a.m. to 6:30 p.m., with potential for evening courses, exams or extended field trips. Students are expected to be available for classes during these times.

Course Units/Topics

Major Topics

1. Weed characteristics:
 - a) competitive
 - b) persistent
 - c) pernicious

2. Weed classification
 - a) Life Cycle
 - b) Structure
 - c) Physiology

3. Integrated Weed Management
 - a) Objectives
 - b) Four-Step Program
 - c) Prevention
 - d) Techniques and the Cropping System

4. Herbicides
 - a) Classification
 - b) Chemical Formulations
 - c) Herbicide Selection
 - d) Factors Affecting Efficacy
 - e) Recognizing Herbicide Efficacy

5. Weed Identification
 - a) Family Characteristics and Nomenclature
 - b) Weed Profiles

Topics listed above are subject to change based on circumstances that are reasonably beyond the instructor's control.



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