

The University of Manitoba
Faculty of Agricultural and Food Sciences



COURSE TITLE Plant Disease Management

Department Plant Science

Course Number PLNT0780

CRN 11064

Academic Session FALL

Credit Hours 4

Prerequisites and how they apply to this course DAGR0420 (OR 065.042)

Classroom Location Virtual – UMLearn via Webex

Meeting Days and Class Hours M,W,F 11.30 TO 12.20 AND LAB ON TUESDAYS/THURSDAYS 10.00 TO 11.30

Lab/Seminar Location B01 (in person – Room 343) and B02 (in-person Rm 343)

Lab/Seminar/ TUESDAYS (B01) / THURSDAYS (B02) 10.00 TO 11.30

Department Office location ROOM 222

Phone Number 474-8221

Course Web Page (if applicable)

Instructor Information

Name & Title Dr. Dilantha Fernando, Professor and Dean of Studies (St. Paul's College, U of Manitoba)

Office Location 205 Plant Science and 211-70 Dysart Road (St. Paul's College)

Office Phone Number 204-474-8577

Office Hours MON TO FRI 8.30 TO 4.30 BY APPOINTMENT (VIRTUAL OR BY PHONE CALL)

Email Address Dilantha.Fernando@umanitoba.ca

Teaching Assistant(s) (if applicable)

Dr. Abbot Oghenekaro

TA for B01 (Tuesday) and TA for B02 (Thursday): Dr. Abbot Oghenekaro

Abbot.oghenekaro@umanitoba.ca

Room 327. Cell - 204-698-0877

TA Office Hours and Location: (Room 327) by appointment.

Course Philosophy

Students' Learning Responsibilities The students are responsible for attending classes (virtual) and labs (in person) in order to receive firsthand experience in diseases in the Prairies and their management strategies. The students need to buy the required text and read through sections relevant to the course, visit recommended websites including the Manitoba Agriculture and Rural Development website. The students are required to share their on-farm experience with diseases and their management in this interactive class.

Why this course is useful? The students will learn to diagnose, identify and manage most of the important plant diseases that may affect their farms. While the emphasis will be on management, the course will teach several methods of disease management and how they can be wisely used or integrated.

Who should take this course? Any student interested in Plant Pathology and Disease Management and those who plan to work as company representatives in seed companies, for the provincial government as crop specialists, crop scouts or disease management specialists.

How this course fits into the curriculum The course fits well with the agriculture diploma program and its objectives as disease management is part and parcel of sound and economically feasible agriculture practices.

Course Description/Objectives

Undergraduate Calendar Description

General principles of disease management and pesticide use safety as they relate to plant disease control. Discussion of diseases attacking field and horticultural crops in the prairies including disease symptoms, disease cycles, prevention and control.

Instructional Methods Through lectures, labs, handouts, reading material and interactive class presentations and discussions.

Course Objectives to master principles of disease management through the identification of reasons for disease occurrence, increase and their symptoms and interactions with the host. To make the student aware of how cropping practices, and environmental cues could have a profound effect on plant diseases.

Learning outcomes will be able to identify common diseases, and their management.

Description of Examinations

The mid-term exams will be multiple choice and all lab assignments will have to be long answers with paragraph style descriptions.

Description of Assignments

Assignments will be given in each lab.

Assignment Due Dates

Assignments are due after one week to be handed over (email) to the TA on the day of the next lab.

Presentations: Students will be given topics related to agricultural practices, issues, and how they relate to plant/crop diseases. The students will be working in groups to research the topic assigned to them and will make presentations (total 15 mins: 10 mins presentation time with 5 mins for questions) to the whole class.

Examples of topics: 1. Are stubble-borne pathogens on the rise due to minimum-till and no-till farming systems?
2. Would climate change have an impact on fusarium head blight and its mycotoxin production on wheat?
3. The pros and cons of rotational systems in plant disease management.

Grade Evaluation

- a) Mid-term exam 1.....25% (VIRTUAL EXAM: **October 18, 2021 - Monday**)
- b) Mid-term exam 2....25% (VIRTUALEXAM: **November 19, 2021 - Friday**)
- c) Lab assignments/reports.....25%
- c) Final Lab Exam.. 15% (**Monday Dec 6, 2021 11.30 to 12.30 pm**)
- d) Group Presentations.....10% - **Nov 22, 24, 26, Nov 29, Dec 1, Dec 3, 2021 (TA and Instructor evaluate)**

Important Dates (voluntary withdrawal date is Monday Nov 22, 2021) Students will receive evaluative feedback prior to the voluntary withdrawal date. Please refer to academic calendar for voluntary withdrawal dates.

Please also refer to the PDF file for Schedule A in your UMLearn.

Texts, Readings, Materials

Textbook(s) – Authors, Titles, Edition

Additional Materials

Books:

1. Diseases of Field Crops 2003. Bailey, Gossen, Gugal, Morrall – **Required** (approx. \$27.95 bookstore)
2. Diseases and pests of vegetable crops in Canada by Howard, Garland and Seaman (optional)
3. Any documentation from Manitoba Agriculture on crop recommendation for Manitoba

Course Policies

Late Assignments will receive 5% less for each day being late and after one week (being late) a 0% will be assigned to the assignment if there was no valid reason (by e-mailing the instructor and TA concerned) for the delay.

Missed Assignments

A grade of 0 (zero) will be assigned to any student who misses a lab or does not hand over the lab assignment on time without discussing with the instructor or TA as stipulated in the section **Medical Notes**.

Missed Exams

A grade of 0 (zero) will be assigned to any student who misses an exam without a valid reason or without the consent of the instructor. No rescheduling of an examination will be allowed, regardless of the circumstances. Those who miss the examination (with a valid reason .ie medical certificate) will have to retake the exam (a whole new exam).

Medical Notes

Students who are unable to meet a course requirement due to medical circumstances are currently not required to submit medical notes. However, students are required to contact their instructor or academic advisor by email to inform of the missed work and to make arrangements for extensions, deferrals, or make-up assignments. Please follow these guidelines if you are unable to meet an academic requirement for your course.

- Contact your instructor for term work such as a class, quiz, midterm/test, assignment, lab;
- Contact an advisor in your faculty/college/school of registration for a missed final exam (scheduled in the final examination period);
- Inform your instructor/advisor as soon as possible do not delay. Note for final exams, students must contact within 48 hours of the date of the final exam; and
- Email your instructor/advisor from a U of M email address, and include your full name, student number, course number, and academic work that was missed.

Academic Integrity

Plagiarism and cheating: Refer to the University of Manitoba General Calendar regarding the definition and penalties associated with impersonations, cheating and plagiarism.

Use of Third Party Detection and Submission Tools

Electronic detection tools may be used to screen assignments in cases of suspected plagiarism.

Course Content

PLNT078-PLANT DISEASE MANAGEMENT - 2021

Instructor - Dr. Dilantha Fernando – Professor and Dean of Studies

Course Outline

- I How did we do with plant diseases this summer? “A State of the Union (Diseases)”**
- II Cropping Systems Pathology – an introduction to an exciting course
Plant Pathology from a cropping systems point of view**
- III What are Plant Diseases and Common Knowledge on Plant Disease**
 - 1. Discussion of the course and what is expected of the student
 - 2. Symptoms and how to differentiate between biotic and abiotic diseases
- IV General Concepts in Plant Pathology**
 - 1. Terminology and Definitions
 - 2. Causes of Plant Diseases
 - 3. Plant-Pathogen-Environment interactions and Disease cycle
- V Principles of Plant Disease Control**
 - 1. Avoidance, exclusion and eradication
 - 2. Protection, resistance and therapy (chemical and biological control)
- VI Cropping practices and their effects on diseases**
 - 1. Methods influencing diseases
 - 2. What do we do in the new millennium?
- VII Diseases of Canola – Dilantha Fernando**
 - 1. Blackleg
 - 2. Verticillium-wilt
 - 3. Sclerotinia
 - 4. Clubroot
 - 5. Alternaria
 - 6. Aster yellows

7. White Rust

VIII Soybean Diseases

IX Diseases of Cereals –

1. Fusarium head blight on wheat
2. Stem Rusts
3. Leaf Rusts
4. Stripe Rusts
5. Oat Crown Rust
6. Smuts and Bunts
7. Septoria
8. Tan spot
9. Ergot

X Diseases of Special Crops

1. Field peas
2. Flax, and Sunflower
3. Potatoes
4. Corn
5. Lentils

Lab Schedule for PLNT0780: Plant Disease Management

First Lab B01 – Sept 14th and Lab B02 Sept 16th

Lab 1: Importance of Plant Diseases in a cropping system

1. Types of Plant Diseases
2. Effects of plant diseases on crop production and yield loss

How to identify a disease by the help of characteristic disease symptoms on the specific plant part: foliar and stem, root, head or inflorescence? Slide presentation on diseases of field crops and live samples.

Lab 2: Introduction to fungi: Fungi live with us!!

Fungicide application: safety, restrictions and precautions.

Lab 3: Diseases of canola; Blackleg, Verticillium and clubroot diseases: symptoms, and their management

Lab 4: Diseases caused by Sclerotinia on canola, sunflower, soybean, field peas and other

Lab 5: Soybean diseases

Lab 6: Cereal diseases caused by Ascomycetes: symptoms, cultures of causal organisms, video on diseases of cereals.

- **Fusarium head blight on wheat, barley, corn and oats: symptoms, culture of causal organism.**

Lab 7: Diseases of Cereals - by ascomycetes and their management

- **Cereal leaf diseases – Tan spot, Septoria, and Ergot diseases, rusts, smuts, bunts**

Lab 8: Potato Diseases and Disease forecasting for fusarium head blight and potato late blight diseases. sunflower and flax: symptoms of diseases and their management; culture of causal organism, sexual/asexual reproductive structures

Final Lab Exam. Date: **Monday 6 Dec, 2021 (Group-1 and Group-2 together virtual) – Both TA and instructor present and invigilating.**