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 – Rm 138 FAFS

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

Course Location: Rm 138

Lab/Seminar Location138

Lab/Seminar/ TUESDAYS 10.00 TO 11.15 am

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

Email Address Dilantha.Fernando@umanitoba.ca

Teaching Assistant(s)

Vinuri Weerasinghe

Room 148. Email – weerasi1@myumanitoba.ca

TA Office Hours and Location: (Room 148) by appointment.

Course Philosophy

Students' Learning Responsibilities The students are responsible for attending classes 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.
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Who should take this course? Any student interested in Plant Pathology and Disease Management and those who plan to go back to the farm, 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.

Holidays and other (Term Break, experiential learning):

National Day for Truth and Reconciliation (observed) ..... Oct 2, 2023
Thanksgiving Day ..... Oct 9, 2023
Remembrance Day (observed) ..... Nov 13, 2023
Experiential Learning (tentative) ……..Oct 10-13, 2023
Fall Term Break: The U of M will be closed Monday, Nov. 13 for Remembrance Day. Nov 13 to 17, 2023

Last Day to Drop without Penalty
Last date to drop and have class excluded from transcripts; VWs will be recorded on transcripts for classes dropped after this date.
Fall Term classes… ..... Sept 21, 2023

Voluntary (VW) Withdrawal deadline
Last date to withdraw and not receive a final grade; students cannot withdraw from classes after this date.
Fall Term classes..... Nov 21, 2023

Grade Evaluation

a) Mid-term exam 1.....25% (: **October 6, 2023 - Friday**)
b) Mid-term exam 2….25% (: **November 24, 2023 - Friday**)
c) Lab assignments/reports.....25%
c) Final Lab Exam.. 15% (**Friday Dec 1, 2023 11.30 to 12.30 pm**)
d) Group Presentations.....10% - **Dec 4 (Groups 1, 2, 3), Dec 6 (Groups 4,5,6) Dec 8 (Gp 7,8,9)**
Group members will be meeting with each other on Mon Nov 27th and Wed Nov 29th to prepare for the presentations.

Important Dates (voluntary withdrawal date is Tuesday Nov 21, 2023) 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.
https:/ / umanitoba.ca/ admin/ governance/ media/ Responsibilities_of_Academic_Staff_re_Students_ROASS_Procedures_-_Schedule_A_-_2016_09_01.pdf

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 recommendations 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.

First Day of Classes: Monday Sept 11, 2023

First Day Labs: Tuesday Sept 12, 2023

Course Content

PLNT078-PLANT DISEASE MANAGEMENT - 2023

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. Flax,
2. Sunflower
3. Potatoes
4. Corn

XI Diseases of vegetables (tomatoes, carrots, and other vegetables grown in Manitoba)

XII Diseases of pulse crops (field peas, chickpeas, lentils, and others)

XIII Diseases of small fruits and fruit trees

XIV Diseases of pasture legumes

Lab Schedule for PLNT0780: Plant Disease Management

First Lab – Start Sept 12th

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

Lab 9: Diseases of vegetables

Lab 10: Diseases of pulse crops

Lab 11: Diseases of fruits, fruit trees and tree diseases

Lab 12: Diseases of pasture legumes and final lab exam preparation.