

Agronomy 378
Soil Fertility & Plant Nutrition
Fall 2009

Instructor: Dr. Joel Gruver

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Office: Knoblauch Hall 302

Office hours: M, W 9-10, Th 10-12 and by appointment

Class meeting time and location: M, W, F 11-11:50 am in Knoblauch Hall 305

Course objectives:

This course will familiarize students with current soil fertility concepts and their historical roots. The following concepts will be emphasized:

- 1) The impact of soil chemical, physical and biological properties on nutrient uptake by plant roots.
- 2) The impact of micro and macro nutrients on crop quality and productivity.
- 3) The impact of agricultural practices on nutrient cycles and flows in agricultural and natural ecosystems.
- 4) The impact of the cost of nutrient management on the profitability of agricultural systems.
- 5) Methods of assessing the nutrient status of plant and soil systems and strategies for using this information to guide management decisions

Text: No text is required but readings will be assigned each week from a variety of mostly on-line sources. Many readings will come from the following two sources:

Illinois Agronomy Handbook

<http://iah.aces.uiuc.edu/>

Iowa State Soil Fertility website

<http://www.agronext.iastate.edu/soilfertility/>

Grades:

<u>Activity</u>	<u>Percentage of Grade</u>
Questions/problem sets	30 %
Nutrient balance project	10%
Quizzes	40 %
Final Exam	20 %

Grading Scale

A \geq 90 % B 80 – 89 % C 70-79 % D 60-69 % F < 60%

Schedule:

<u>Week</u>	<u>Class meetings</u>	<u>Topic</u>
1	8/24, 8/26, 8/28	The history of soil fertility
2	8/31, 9/2, 9/4	Roots: the hidden half of agriculture
3	---, 9/9, 9/11	Nutrient cycles and flows in agroecosystems
4	9/14, 9/16, 9/18	Environmental impact of agricultural nutrients
5	9/21, 9/23, 9/25	Nitrogen in plant and soil systems
6	9/28, 9/30, 10/2	Phosphorus in plant and soil systems
7	10/5, 10/7, 10/9	Potassium in plant and soil systems
8	10/12, 10/14, 10/16	Sulfur, Calcium and Magnesium in plant and soil systems
9	10/19, 10/21, 10/2	Micronutrients in plant and soil systems
10	10/26, 10/28, 10/30	Soil acidity, alkalinity and salinity
11	????????????????	Soil and plant testing, Part I
12	11/9, 11/11, 11/13	Soil and plant testing, Part II
13	11/16, 11/18, 11/20	
14	-----	Thanksgiving !!
15	11/31, 12/2, 12/4	Variable rate nutrient management
16	12/7, 12/9, 12/11	Biological soil fertility
17	12/16	Take home final is due !

Attendance:

You are expected to attend every class. If you are unable to attend class, you must contact the instructor prior to class in person or via phone or e-mail.

Late policy:

Assignments will normally be collected at the beginning of class on the day that they are due. A penalty of 10% will be assessed for each day that an assignment is late.

Academic honesty:

The University policy for Academic Honesty will be strictly followed in this class.

Please review the policy if you have any questions:

<http://www.wiu.edu/VPAS/handbook/policies/acdishst.shtml>