

**SC420**  
**Crop and Soil Management Systems I**  
**Spring 2006**

**Instructors:**

Jack R. Fenwick, C105 Plant Science Building  
Telephone: 491-6907      Email: [j.fenwick@colostate.edu](mailto:j.fenwick@colostate.edu)

Neil C. Hansen, C138 Plant Science Building  
Telephone: 491-6804      Email: [neil.hansen@colostate.edu](mailto:neil.hansen@colostate.edu)

**Course Objectives:**

The objectives of Crop and Management Systems are to:

- 1) Acquaint the student with the environmental factors affecting crop and soil management.
- 2) Examine the impact of environmental factors on crop growth and development.
- 3) Examine the influence of environmental factors on soil management.
- 4) Understand the principles of crop and soil management and their application to crop production systems.

**References:** (Will be placed on reserve in the library)

Cox-Atkins, *Agricultural Ecology*  
Eastin, Haskins, Sullivan, and Ban Bavel, *Physiological Aspects of Crop Yield*  
Fitter and Hay, *Environmental Physiology of Plants*  
Harlan, *Crops and Man*  
Mitchell, *Crop Growth and Culture*  
Salisbury-Ross, *Plant Physiology*  
Stroskopf, *Understanding Crop Production*  
Tesar, *Physiological Basis of Crop Growth and Development*  
Wilsie, *Crop Adaptation and Distribution*

**Grading:**

3 Hour Exams (Including the final)	300 points
10 Quizzes and/or Assignments	<u>100 points</u>
	400 points

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**Course Outline**

**I. Natural Resources for crop and soil management**

- A. Crop ecology
- B. Soil ecology
- C. Climatic impact on crop and soil management
- D. Decision making and natural variability

**II. Fundamental plant growth principles**

- A. Crop growth and development
- B. Components of yield
- C. Crop growth and limiting factors

**III. Principles of soil organic matter management**

- A. Crop species and residue production
- B. Effects of tillage
- C. Effects of crop rotation
- D. Effects of burning and/or residue removal
- E. Effects of animal and human waste additions
- F. Nutrient cycling and budgets

**IV. Effect of temperature on crop and soil management**

- A. Soil heat flux
- B. Heat transfer in plants
- C. Crop response to temperature stress
- D. Temperature management in crop production systems

**V. Light as a limiting factor to crop production**

- A. Light utilization by crop plants
- B. Leaf area management
- C. Plant population and distribution

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<u>Week</u>	<u>Dates</u>	<u>Topic</u>	<u>Professor</u>
1	Jan 18, 20	Crop Ecology	Fenwick
2.	Jan 23, 25, 27	Crop Ecology Ecology Discussion	Fenwick Fen & Han
3	Jan 30, Feb 1, 3	Soil Ecology	Hansen
4	Feb 6, 8, 10	Climate Impacts of Mgt Decision Making & Natural Var.	Fenwick Hansen
5	Feb 13, 15, 17	Fundamentals of Plant Growth	Fenwick
6	Feb 20, 22, 24	Fundamentals of Plant Growth	Fenwick
7	Feb 27, Mar 1, 3	Fundamentals of Plant Growth Hour Exam No. 1	Fenwick
8	Mar 6, 8, 10	Princ. of Soil O.M. Mgt. Exam Discussion Princ. of Soil O.M. Mgt	Hansen Hansen
9	Mar 11-18	SPRING BREAK	
10	Mar 20, 22, 24	Princ. of Soil O.M. Mgt.	Hansen
11	Mar 27, 29, 31	Princ. of Soil O.M. Mgt.	Hansen
12	Apr 3, 5, 7	Temp. Effects on C & S Mgt	Fenwick
13	Apr 10, 12, 14	Temp. Effects on C & S Mgt	Hansen
14	Apr 17, 19, 21	Hour Exam No. 2 Light as a Limiting Factor	Fenwick
15	Apr 24, 26, 28	Exam Discussion Light as a Limiting Factor	Fenwick
16	May 1, 3, 5	Light as a Limiting Factor	Fenwick
17	May 10	Final Exam @ 7:00 – 9:00 a.m.	