CropS/PI P 403/503  Advanced Cropping Systems

Fall 2013, 3 Credits
Time:       Tu, Th 1:25-2:40; Field trips required
Place:      204 Johnson Hall

INSTRUCTOR
Scot Hulbert, Cook Chair for Cropping Systems Pathology,
307 Johnson Hall. Phone 335-3722; Email scot_hulbert@wsu.edu

SECTIONS
The cross listing in two departments is a little confusing; basically you can enroll as a Plant
Pathology class or a Crop Science class, whichever you prefer on your transcripts.
Undergraduates generally enroll as 403 and graduates as 503; the requirements are slightly
different (see GRADING, below). Pullman or Moscow folks are put in section 1; Wenatchee in
section 2, Prosser in section 3 and Mount Vernon is section 4.

MATERIALS
Materials for the class can be accessed via the Angel Website: https://lms.wsu.edu/

OBJECTIVES
• Develop your own opinions about controversial agricultural issues like soil and water
  conservation, chemical use, organic certification, crop plants for energy generation,
  genetically modified organisms and legislation affecting farming methodology.
• Gain an understanding of the diverse dryland and irrigated cropping systems of the
  Pacific Northwest and other regions, and the factors that are changing these cropping
  systems.
• Learn to critically interpret agronomic literature.

GRADING:
403 and 503 Credit:
• Five quizzes (40 points each).
• Participation in class discussions and field trips (50 points). Three trips are required but
  special arrangements are made for students who are not in the Pullman/Moscow area.

503 Credit:
• One research or extension paper that is relevant to cropping systems will be presented
  by you to the class (~20 minutes plus discussion). Paper must be selected, or
  presentation done, before Thanksgiving. (worth 50 points)
• Create a notebook (electronic documents are fine) that details a cropping system you
  would consider professionally (for production or research). Describe the crop rotation
  (including flexible aspects), inputs applied for each crop and their costs, equipment and
  capital needed, profitability. (50 points)

403 Credit:
• Create a notebook that details a cropping system you would consider professionally.
  Draft of system should be done before thanksgiving. (50 points)
Cropping system notebook:

- Describe your cropping operation in general terms of location, rainfall, whether you have irrigation, the crop rotation, annual acreage of each crop, sequence of each crop in rotation and where you will be selling your product.
- Describe the inputs (fertilizers, herbicides, pesticides, etc.) you expect to use on each crop including amounts and where you will get them. You don’t need to find the cost of each input.
- Describe all the operations you would expect to perform throughout the year for each of the crops and a calendar schedule for all of these operations.
- Describe the equipment you will be using to perform these operations.

It is OK to state what normal practices are for a certain cropping system in a given location, but these are not review articles: The notebook should state what YOU are going to do for management practices and why you are going to do it that way.

STUDY HABITS: Complete reading assignments prior to class. Be prepared to both discuss the papers and ask questions about things you don’t understand. Quizzes will cover information from assigned reading as well as highlights of other papers presented by students or instructor in class. Any topics already covered in class are potential material for quizzes.

STUDENTS WITH DISABILITIES: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center.

CLASSROOM EMERGENCY (SAFETY): Please review these websites for emergencies.
http://safetyplan.wsu.edu
http://alert.wsu.edu
http://oem.wsu.edu/emergencies

COURSE TOPICS (in approximate order):

Introductions:
- Factors affecting changes in cropping systems
- Design of crop rotations
- Review of tillage implements and strategies
- Reviews of soil erosion problems

Regional agricultural issues
- Environmental and economic effects of managing water

Conservation tillage and the environment
- Impact of herbicide resistant (HR) crops

Weed management
- Integrated approaches
- Herbicide resistance in crops and weeds

Integrated methods for disease and pest control

Agroecosystem diversity and sustainability

Precision agriculture
Current uses, future potential

Nutrient management issues

Organic agriculture
  The rules, sustainability, productivity, opportunities & challenges

Sustainable Ag: what is it?

Energy Crops
  Pro’s and Con’s
  Global warming and renewable energy: potential contributions from Ag

Perennial Crops
  Advantages and disadvantages
  Development of perennial varieties of annual crops

Animals in Agroecosystems

Perennial Crops
  Advantages and disadvantages
  Development of perennial varieties of annual crops

Working with the seed industry

Additional Topics (topics we may cover based on interest)
  Effects of other transgenics (besides HR) on cropping systems
  Fixation of nitrogen in cropping systems
  Intercropping, including agroforestry and livestock
  Developing crops for specific cropping systems: No-till; organic etc.
  Insecticide resistance management
  Legislation that affects cropping systems

Field Trips: To be decided; we will compare interests on the first day of class.

Cropping system project:
  • Describe your cropping operation in general terms of location, rainfall, whether you have irrigation, the crop rotation, annual acreage of each crop, sequence of each crop in rotation and where you will be selling your product.
  • Describe the inputs (fertilizers, herbicides, pesticides, etc.) you expect to use on each crop including amounts and where you will get them. You don’t need to find the cost of each input.
  • Describe all the operations you would expect to perform throughout the year for each of the crops and a calendar schedule for all of these operations.
  • Describe the equipment you will be using to perform these operations.
READING MATERIAL (revisions in progress):
NAWG Weed Resistance Learning Module  http://www.wheatworld.org/WRMC/
National Organic Program: Regulations: (selected text)
Hill et al. (2006) Environmental, economic, and energetic costs and benefits of biodiesel and ethanol biofuels. PNAS 130:11206-11210
Guide to environmental markets for farmers and ranchers


Cox et al. (2006) Prospects for developing Perennial grain crops; Bioscience 56:649-659
Glover et al. (2007) Future Farming: A return to roots? Scientific American, August 82-89

Transgenic crops approved by federal agencies (nonregulated)