



Lectures, Demonstrations and Hands-on Experience at a Certified Organic Farm in Monroe, NC
Eleven core classes for Organic & Sustainable Farming & Gardening
Container Gardening to Market Farming

- ☞ Managing Soil Fertility
- ☞ Garden and Field Tillage and Cultivation
- ☞ Propagating Crops from Seed and Greenhouse Management
- ☞ Transplanting and Direct Seeding
- ☞ Irrigation: Principles and Practices
- ☞ Selecting and Using Cover Crops
- ☞ Making and Using Compost
- ☞ Managing Arthropod Pests
- ☞ Managing Plant Pathogens
- ☞ Managing Weeds
- ☞ Reading and Interpreting Soil Test Reports

Complete class descriptions available online at www.WindcrestOrganics.com/LearnAndGrow

2009 Calendar

class size limited to 10 students - Register EARLY!
Ask about special group dates & rates

October

- Saturday, Oct. 17th 3:00 pm Managing Soil Fertility
Saturday, Oct. 24th 3:00 pm Selecting and Using Cover Crops
Thursday, Oct. 29th 6:30 pm Selecting and Using Cover Crops

November

- Saturday Nov. 14th (Part 1) & Saturday Nov. 21th (Part 2) 1:00 pm
Propagating Crops from Seed & Greenhouse Management

2010 Calendar available online at www.WindcrestOrganics.com/LearnAndGrow

Register at
www.WindcrestOrganics.com, or email learn@windcrestorganics.com
or call 704.764.7746

Managing Soil Fertility (4 hours)

\$45.00

CONCEPTS

- Certified organic agriculture as defined by the U.S. federal government's National Organic Program
- Sustainable agriculture
- Soil fertility in organic and sustainable farming systems
- Soil quality
- The relationship amongst soil fertility, plant health, and the resistance and resilience of crop plants to pests and pathogens
- Goals of a sustainable fertility/soil management program
- Components of a soil fertility management program
- The role and impacts of tillage
- The role of cover crops in the organic management of soil fertility
- The use of composts, manures, and other organic amendments
- Management and the concept of nutrient budgets
- Considerations in the design of crop rotations

INSTRUCTION

LECTURE (2 Lectures, 3 Hrs. Total)

Lecture 1 presents the concepts, objectives, and components of sound soil fertility management programs for certified organic production systems.

Lecture 2 describes the sustainable agriculture practices (e.g., tillage, cover crops, composts, soil amendments) that go into organic fertility management.

ASSESSMENT QUESTIONS (1 Hours)

Assessment questions reinforce key unit concepts and skills.

Garden and Field Tillage and Cultivation (6 hours)

\$65.00

CONCEPTS

- The definitions of cultivation and soil tillage
- The objectives of soil tillage
- The factors influencing the timing and type of tillage used
- The primary features and rationale behind the French-intensive raised bed method of tillage
- The primary features and rationale behind modern mechanical/field-scale methods of soil tillage
- The positive and negative effects of tillage on the physical, chemical, and biological properties of the soil
- Definitions and applications of primary and secondary tillage techniques
- Field equipment and common soil preparation sequence used in primary and secondary tillage

SKILLS

- How to evaluate and adjust soil moisture to within a proper range prior to soil cultivation
- How to evaluate soil conditions to determine the need for/type of cultivation
- How to use primary and secondary soil cultivation techniques to develop and maintain French-intensive raised beds

INSTRUCTION

LECTURE (1 Lecture, 1.5 Hours)

The lecture outline covers the definition of cultivation and tillage, the general aims of soil cultivation, the factors influencing cultivation approaches, and the tillage techniques used in the French-intensive method of soil preparation. The lecture also includes an overview of tillage techniques used in field-scale mechanized production systems.

DEMONSTRATION 1: FRENCH-INTENSIVE CULTIVATION(1.5 Hours)

Demonstration 1 outlines the steps for preparing a site and demonstrates the cultivation and maintenance of French-intensive permanent raised beds.

HANDS-ON EXERCISE: GARDEN BED CULTIVATION (1 Hour)

In this exercise, students practice cultivating permanent raised beds using traditional French-intensive cultivation techniques.

DEMONSTRATION 2: MECHANICAL TILLAGE AND CULTIVATION (1.5 Hours)

The Demonstration 2 outline details the steps for demonstrating tractor-mounted tillage and cultivation equipment.

ASSESSMENT QUESTIONS (1 Hour)

Assessment questions reinforce key unit concepts and skills.

Propagating Crops from Seed & Greenhouse Management (2 days)

\$120.00

CONCEPTS

- Definition of sexual propagation
- Propagation media: Components, properties and ratios of materials used
- Containers: Advantages and disadvantages of commonly used formats
- Accurate documentation of propagates for trouble shooting
- Germination requirements of various crops: Seed physiology, seed treatments, temperature ranges, light, air circulation, and moisture conditions
- Physiological process of seed germination and seedling development, and its relationship to environmental conditions
- Optimal conditions for early stages of plant growth up to transplanting stage, including the hardening off process and movement of plants through facilities
- The role, timing, and tools used in supplemental fertilization
- Preventive and active pest and pathogen management

SKILLS

- How to create propagation media
- How to sow seeds into flats and cell trays
- How to manage a greenhouse/cold frame: Maintaining optimal environmental conditions for germination and early stages of seedling growth
- How to transplant/"prick out" seedlings
- How to manage seedlings in preparation for field transplanting
- How to identify appropriate life stage for transplanting to field/garden
- When and how to deliver supplemental fertilization
- How to manage pests and pathogens: Monitoring, identification resources, and active management

INSTRUCTION

LECTURE (2 Lectures, 2 Hours Total)

Lecture 1 covers seed biology, and the cultural requirements for germination. Lecture 2 addresses desirable characteristics of propagation media, common container formats, types of plants that are sexually propagated, the rationale and associated costs and benefits of solar and conventional greenhouse structures, and the prevention/management of common greenhouse pest and pathogens.

DEMONSTRATION 1: GREENHOUSE MANAGEMENT (1.5 Hours)

The greenhouse demonstration illustrates the way that air temperature, soil moisture, and air circulation are managed to create optimal environmental conditions for seed germination and seedling growth. Students will also be introduced to the steps used to prepare seedlings for field transplanting.

DEMONSTRATIONS & HANDS-ON EXERCISES: 2-6: PROPAGATION MEDIA, SEED SOWING, TRANSPLANTING, IRRIGATION, AND SEEDLING DEVELOPMENT (1 Hour Each)

The propagation demonstrations illustrate the techniques used to produce propagation media, sow seeds, transplant seedlings, and manage irrigation and seedling development.

ASSESSMENT QUESTIONS (1.5 Hour)

Assessment questions reinforce key unit concepts and skills

Transplanting and Direct Seeding (2 hours)

\$25.00

CONCEPTS

- The optimal physical environment conditions favorable for successful transplanting
- The optimal soil moisture conditions favorable for successful transplanting
- The optimal seedling development and pre-treatments necessary for successful transplanting

SKILLS

- How to sow small- and large-seeded crops using hand methods and push seeders
- How to transplant from a cell tray and flat format
- How to water-in/irrigate recently transplanted seedlings
- How to irrigate seed beds for optimal germination

INSTRUCTION

GARDEN-SCALE TRANSPLANTING DEMONSTRATION AND HANDS-ON EXERCISE: (1-1.5 Hours)

The garden-scale demonstration outline details the basic skills and concepts for direct seeding annual crops and transplanting both annual and perennial container-grown plants. Step-by-step instructions for students on seedling and soil preparation, direct seeding, and transplanting techniques.

ASSESSMENT QUESTIONS (0.5 Hour)

Assessment questions reinforce key unit concepts and skills.

Irrigation: Principles and Practices (7 Hours)

\$75.00

CONCEPTS

- The role of irrigation water in agricultural systems
- The movement and cycling of water in agricultural systems: E.g., transpiration, capillary action, evaporation, evapotranspiration, evapotranspiration rate, percolation
- Water quantity measurements: E.g., acre/feet, acre/inch, and gallons/minute (GPM)
- Relevant measurements of soil moisture: Soil saturation, gravitational water, field capacity, permanent wilting point
- Environmental factors that influence the type, frequency, and duration of irrigation

SKILLS

- How to determine the timing and volume of irrigation using qualitative approaches: Gauging relative measures of field capacity using the feel method
- How to determine the timing and volume of irrigation using quantitative approaches: Water budgeting calculations using evapotranspiration rates and calibrated water delivery systems
- How to calculate total water volume needs per unit of time to determine the need for irrigation infrastructure
- How to access Web-based irrigation information

INSTRUCTION

LECTURE (1 Lecture, 2 Hours)

The class lecture outline introduces to the basic concepts and terms used in irrigation as well as two of the commonly used approaches to garden- and field-scale irrigation.

DEMONSTRATION 2: GARDEN-SCALE IRRIGATION (1 Hours)

This garden-scale demonstration illustrates how to gauge soil moisture by feel and how to establish, use, and maintain garden-scale irrigation equipment.

EXERCISES 1–3: FIELD- AND GARDEN-SCALE IRRIGATION SAMPLE CALCULATIONS (0.5 Hour Each)

Given evapotranspiration information and output data for drip and sprinkler irrigation systems, students will review how to calculate the needed frequency and duration of irrigation for a 1-acre field and a 100-square-foot garden bed

EXERCISE 4: CALCULATING A WATER BUDGET FOR BLOCK OF VEGETABLES (0.5 Hour)

Students will use their region's evapotranspiration information to calculate the needed frequency and duration of irrigation for a garden area.

EXERCISES 5–6: HOW MUCH WATER DO I NEED? HOW MANY ACRES CAN I IRRIGATE? SAMPLE CALCULATIONS (0.5 Hour Each)

Students will practice calculating total water volume needs per unit of time to determine the need for irrigation infrastructure.

ASSESSMENT QUESTIONS (1 Hour)

Assessment questions reinforce key unit concepts and skills.

Selecting and Using Cover Crops (2 Hours)

\$25.00

CONCEPTS

- The influence of cover crops on the physical and chemical properties of agricultural soils
- The role cover crops play in pest and disease management
- The factors to consider when selecting a cover crop for farm or garden use

SKILLS

How to access cover crop information

INSTRUCTION

LECTURE (1.5 Hours)

A lecture covers the advantages and disadvantages of using cover crops and the three-step process of choosing a cover crop based on the agricultural system's needs.

ASSESSMENT QUESTIONS (0.5 Hour)

Assessment questions reinforce key unit concepts and skills.

Making and Using Compost (7 Hours)

\$50.00

CONCEPTS

- The benefits of aerobic hot composting and the benefits of compost in soil
- The different stages of the biological composting process and the key composting organisms responsible at different stages
- The key factors for aerobic hot composting including carbon-to-nitrogen ratio, moisture, aeration, and volume

SKILLS

- How to assess compost materials
- How to build a compost pile
- How to troubleshoot, turn, and track a compost pile
- How to assess finished compost for various uses

INSTRUCTION

LECTURE (1 Lecture, 1.5 Hours)

The class lecture outline reviews the benefits of composting and the biology of the composting process, emphasizing the key factors required for quality compost production.

DEMONSTRATION AND HANDS-ON EXERCISE: GARDEN-SCALE COMPOST PRODUCTION (1.5 Hours)

The garden-scale compost demonstration details how to construct, troubleshoot, and assess aerobic hot compost piles, including a step-by-step outline for students to follow.

LECTURE: FIELD-SCALE COMPOST PRODUCTION (1 Hour)

The lecture details how field-scale compost windrows are made and monitored.

ASSESSMENT QUESTIONS (1 Hours)

Assessment questions reinforce key unit concepts and skills.

Managing Arthropod Pests (7 Hours)

\$75.00

CONCEPTS

- The role of pest management in organic farming systems
- Farming and gardening practices that serve to prevent unchecked growth of pest populations
- Essential components of a sound pest management program for certified organic farming systems
- Basic arthropod biology and ecology as they relate to management
- Simple and practical methods for monitoring and identifying arthropods, classifying them by functional group, and classifying their damage
- Commonly available active control treatments suitable for use on certified organic farms and gardens
- An ecosystem approach to enhancing biological control through the use of non-crop vegetation

SKILLS

- How to sample for arthropods
- How to identify insects to order, common name, genus and species using printed and online resources
- How to classify insects by functional grouping
- How to recognize key pest groups and their damage symptoms
- How to recognize the basic groups of beneficial arthropods
- How to use IPM printed and on-line resources to determine control action thresholds
- How to evaluate a range of control measures available and their relative strengths and weaknesses

INSTRUCTION

LECTURE (2 Lectures, 1.5 Hours Each)

Lecture 1 covers the role of pest management in organic farming systems, the farming practices that aim to prevent the unchecked growth of pest populations, the components of a pest management program, and the common procedures used in arthropod monitoring. Lecture 2 introduces the basic biology and ecology of arthropods as they relate to identification and management

DEMONSTRATION 1 AND HANDS-ON EXERCISE: PEST MONITORING, SAMPLING, AND IDENTIFICATION (1.5 Hours)

Demonstration 1 introduces the practices of field monitoring. Students practice systematic monitoring techniques for sampling arthropods and crop damage, then identify the samples, and research and discuss the economic thresholds for control action intervention and control action options.

DEMONSTRATION 2: FIELD OBSERVATIONS (2 Hours)

In this demonstration, students review the pest management program used at the certified organic farming operation.

ASSESSMENT (0.5 Hour)

Assessment questions reinforce key unit concepts and skills.

Managing Plant Pathogens (5 Hours)		\$55.00
<p>CONCEPTS</p> <ul style="list-style-type: none"> • The economic importance of plant pathogen management • Basic biology (especially life cycles) of bacteria, fungi, viruses, nematodes, mycoplasma-like organisms, parasitic higher plants • Abiotic diseases: Nutrient deficiencies and air pollution • The disease triangle: Interactions among environment, pathogen, and plant • Disease management from an ecological perspective <p>SKILLS</p> <ul style="list-style-type: none"> • How to diagnose diseases and use diagnostic resources 	<p>INSTRUCTION</p> <p>LECTURE (1 Lecture, 3.0 Hours) The class lecture covers the basics of plant pathology: History and causes of disease, biology of causal organisms, disease diagnosis, ecological management, climatic factors.</p> <p>DEMONSTRATION AND HANDS-ON EXERCISE: DISEASE IDENTIFICATION (1.5 Hours) During the disease identification demonstration, students will collect and diagnose diseases and disease-like samples they gather. Management techniques for each disease will be discussed.</p> <p>ASSESSMENT QUESTIONS: (0.5–1 Hour) Assessment questions reinforce key unit concepts and skills.</p>	

Managing Weeds (7 Hours)		\$75.00
<p>CONCEPTS</p> <ul style="list-style-type: none"> • The need for managing weeds in cropping systems • The biology of weeds <p>SKILLS</p> <ul style="list-style-type: none"> • How to identify weeds • How to design a cropping rotation specifically for weed management • How to manage a cropping system for maximum weed suppression • How to assess a cropping system for potential weed problems 	<p>INSTRUCTION</p> <p>LECTURE (2 Lectures, 1.5 Hours Total) Lecture 1 presents basic weed biology, including the problems and benefits of weeds, as well as weed classifications and factors affecting germination and dispersal. Lecture 2 presents information on cultural practices commonly used in sustainable systems for weed management.</p> <p>DEMONSTRATION 1: MECHANICAL WEED MANAGEMENT (1 Hour) The instructor details how various tractor-mounted tools are used for field-scale cultivation of fallow and planted beds.</p> <p>DEMONSTRATION 2: HAND WEEDING IN THE GARDEN AND SMALL FARM (1 Hour) The instructor’s outline details how to demonstrate the use and maintenance of various hand tools for managing weeds in the garden and small farm.</p> <p>DEMONSTRATION 3: WEED IDENTIFICATION LAB EXERCISE (1 Hour) With the instructor’s guidance and the use of texts and web-based resources, students will learn to collect and identify common weeds at various growth stages.</p> <p>ASSESSMENT QUESTIONS (1 Hour) Assessment questions reinforce key unit concepts and skills.</p>	

INSTRUCTION

LECTURE (3 Lectures, 2 Hours)

Lectures will cover the role of soil analysis in sustainable agriculture, the soil properties measured in a comprehensive soil analysis, and basic considerations in applications of soil amendments and fertilizers.

DEMONSTRATION 1: TAKING A REPRESENTATIVE SOIL SAMPLE (1.5 Hours)

Demonstration 1 illustrates the basic procedures involved in taking a representative soil sample for laboratory analysis.

DEMONSTRATION 2: READING SOIL TEST REPORTS (1.5 Hours)

In Demonstration 2, students will learn how to read and interpret soil analysis reports and select mineral and organic matter amendments and fertilizers.

DEMONSTRATION 3: NITROGEN BUDGETING (1 Hour)

Demonstration 3 offers an example of how a simple nitrogen budget can be calculated for an organic farm or garden.

DEMONSTRATION 4: FIELD OBSERVATIONS (1.5 Hours)

Demonstration 4 provides an outline to use in visiting a farm or garden operation for which a soil report has been prepared. This outline will direct students in how to observe the relationship between soil fertility management practices and plant nutrient levels (identified in the soil test) to plant growth and pest responses found in the field.

HANDS-ON EXERCISE: READING A SOIL TEST AND SELECTING AMENDMENTS (2 Hours)

Students will be assigned a sample soil analysis report to practice interpretation, conversion to user-friendly form, and formulation of basic fertility programs for short- and long-term goals. The hands-on exercise also includes the development of a simple nitrogen budget.

ASSESSMENT QUESTIONS (0.5 Hour)

Assessment questions reinforce key unit concepts and skills.