



Seeding the Future

Track Master

Contents

Keynotes.....	2
Friday Tours, Dickinson College Farm.....	3
Friday Workshops, Dickinson College Farm	4
Tours and Workshops Schedule, Dickinson College Farm.....	5
Nuts and Bolts: Logistics of College Farm and Garden Operations	6
Teaching and Learning on the Farm and in the Garden.....	9
Sustainable Growth: Starting and Sustaining Farm and Garden Programs on the College Campus.....	12
Breaking Bread, Building Markets: Connecting Community Partnerships	14

Keynotes

Tony Geraci, Chef and Food Service Consultant; Former Director, Food and Nutrition, Baltimore City Public Schools, Baltimore, MD

Planting the Seeds of Change

Tony's keynote address will inspire conference attendees to plant the seeds of change in their own local communities by incorporating the assets that our communities already have.

Julia Barton, Graduate Fellow, School of Environment and Natural Resources, Ohio State University

Putting Students to Work: How a College Farm Raises Citizen Scholars

A liberal arts education is one that fosters new ways of thinking, creative problem solving, social awareness and engagement. Liberal arts institutions boast of academic rigor woven within diverse and well-integrated curricula. College farms can serve to support these advantages of a liberal arts education, while adding a hands' on, living laboratory that puts students to work directly with their environment and their communities. Julia Barton recounts how her involvement with Dickinson's student garden in conjunction with other sustainability and social justice groups and initiatives on campus helped to shape her academic and professional pursuits during and after her time at Dickinson College.

Friday Tours, Dickinson College Farm

- **General Farm Tour:** Take a walk around the Dickinson College Farm's 50 acres of active production land. This tour will feature a general overview of the cash crop, cover crop, and pasture fields, as well as a look at the historic barn, state of the art packing house, intern yurt community, and more.
- **Season Extension Tour:** Green houses, high tunnels, and low tunnels allow produce farms to raise their own seedlings, deliver crops in the colder months, and provide spaces for student crews to work through the winter. This tour will take a detailed look at the construction and operation of season extension structures at the Dickinson College Farm, including a solar heated greenhouse, three high tunnels, and inexpensive systems for protecting crops in the field.
- **Livestock Tour:** Farm animals can benefit any college operation by producing eggs, meat, manure, and keeping the grass cut. Animals also seem to excite many students in a way that plants cannot. Take a walk around and get an insiders' look at pasture based animal management at the Dickinson College Farm. This tour will highlight systems for raising laying hens, broiler chickens, sheep, and beef cattle outside in movable pens.
- **Biodiversity tour:** Sustainable farms are home to more than just cash crops. A stable agroecosystem is home to multiple beneficial species and thus requires fewer outside inputs to maintain productivity. This walk around the farm will focus on habitat enhancements in place to provide homes for pollinators, predators, and parasites. Student farmers will demonstrate efforts to nurture native bees, honey bees, birds, toads, and beneficial insects.

Friday Workshops, Dickinson College Farm

- **Composting 101:** Making high quality, nutrient and microbe rich compost is a fundamental basis of any organic farm or garden, as well as a great way to reduce campus contributions to the landfill. Participants will learn the fundamentals of composting food and yard wastes. Dickinson farm staff will then demonstrate the mechanical operation of the farm's institutional food waste composting system, by which hundreds of pounds of dining hall scraps are converted to compost daily. This workshop will also introduce participants to California red worms ("red wigglers") and their management, and will demonstrate operation of several types of worm bins built by Dickinson students. Use and preparation of worm compost extracts will also be discussed. Following the workshop, there will be an optional hands-on session for those wishing to build a working garden-scale compost pile and learn about making their own potting mixes.
- **Weed Management Tools and Techniques:** In organic produce operations of any scale, effective weed control is essential, but often time consuming and frustrating. This workshop will introduce participants to a variety of methods for weed control, including labor saving hand tools, tractor equipment, and cover cropping strategies. Participants will be invited to get their hands dirty as we get a close up look at some of the fall weeds present on the Dickinson College Farm.
- **Tillage Basics: From Hand Tools to Tractors:** While there are many ways to prepare a plot of land for planting, this workshop will mostly focus on garden scale human powered tillage options. Participants will try their hands at double digging, single forking, and use of a broad-fork for working established beds. The workshop will conclude with an introduction to farm scale tillage machinery, including an articulating spader and other more common tools..
- **Solar Power on the Farm:** This solar focused tour will take an in-depth look at several working photovoltaic (PV) and solar hot water systems existing on the Dickinson College Farm. Participants will learn the basic components and design parameters involved in putting together battery based, grid tied, and solar-direct PV systems as well as solar hot water systems for greenhouse space heating and showers. We will also examine the "Solar Wheeler", a solar powered farm vehicle built by a Physics student.

Tours and Workshops Schedule, Dickinson College Farm

Time	Tour	Workshop 1	Workshop 2
1:30	General Farm Tour	Tour 1 Season Extn	Tillage 101
	Clair Fox	Jenn Halpin	Students
			Matt to run spader at end
2:30	Tour 2 Livestock	Compost& Worm Compost	Solar power on the farm
	Alex	Anna and Jenn	Matt Steiman
3:30	Tour 3 Biodiversity	Hands-on compost options	Weeding Tools
	Scott & Kaitlin	Anna & Claire	Matt Steiman, Jenn Halpin
	Adjourn	Adjourn	

Nuts and Bolts: Logistics of College Farm and Garden Operations

- 1) Josh Slotnick, Director of the PEAS farm and Lecturer, Environmental Studies Program, University of Montana
- 2) Matthew Ryan, PhD, Agroecologist, Department of Crop and Soil Science, Penn State University
- 3) Matthew Steiman, Assistant Manager, Dickinson Farm
- 4) Mary Barbercheck, PhD, Professor, Department of Entomology, Penn State University
- 5) Chase Hubbard, Farm Manager, Warren Wilson

Josh Slotnick, Director of the PEAS farm and Lecturer, Environmental Studies Program, University of Montana,

Long-term Soil Management for Land-Limited Student Farms

Long term soil management for tith, fertility and production poses specific challenges for land limited farms. This presentation will consider the involvement of annual and multi-year cover crops in farm planning and crop rotations. The presentation will also look at the coordination of various elements of a farm to reach long and short-term fertility goals including animals, vegetable cropland and pasture. I will also look at compost construction, and talk through a broad inventory of bio-resources available to a student farm. The presentation will conclude with a brief discussion of soil management in an educational farm context, where practicality can sometimes vie for attention with curricular goals.

Matthew Ryan, PhD, Agroecologist, Department of Crop and Soil Science, Penn State University, State College, PA

Ecologically-Based Weed Management: Insights and Applications

Weed management can be challenging, but knowing a little about weeds and how they respond to different management practices can make a big difference. Participants attending this workshop will learn about weed ecology and how knowledge of weed-crop competition and weed seed banks can be used to improve management. Participants will hear about the importance of crop rotation for weed management and how different crop sequences can reduce or exacerbate weed problems. The “many little hammers” approach to multi-tactic management will be discussed and the concepts of density dependent efficacy and synergism between management practices will be introduced. Perennial weed biology and different strategies for perennial weed management will also be reviewed.

Matthew Steiman, Assistant Manager, Dickinson Farm, Carlisle, PA

Evolution of Irrigation Systems on an Expanding Vegetable Farm

On most farms and gardens, some supplemental water is necessary to successfully raise fresh produce crops. Delivering adequate water to vegetable fields and gardens can be time consuming, resource intensive, and costly. As of 2011, the Dickinson College Farm has deployed irrigation infrastructure to thirteen acres of vegetable ground, including overhead sprinklers, trickle (drip) systems, and greenhouse microsprinklers. This lively, practical talk will cover lessons learned throughout the development of irrigation at Dickinson College, from building a water storage pond in year one to the recent completion of a permanent buried mainline, pump house and heavy duty electric pump that will soon be solar powered and controlled via remote communication. The talk is intended to be highly useful to new and beginning growers of any scale, but also interesting for those who have a few seasons of wet boots, blowouts, and pump repairs under their belts.

Mary Barbercheck, PhD, Professor, Department of Entomology, Penn State University

Practical Approaches to Ecological Insect Management

Organic farming systems rely on ecologically-based practices such as cultural and biological pest management, and exclude the use of synthetic chemicals in crop production. The fundamental components and natural processes of ecosystems are used directly and indirectly as farm management tools and to prevent pest populations from reaching economically-damaging levels. The goal is to design the production system so that pests do not find plants, are controlled by natural enemies (biological control), or their damage is kept to a minimum. Vigorous, healthy plants are more able to withstand damage caused by arthropods and disease. Therefore, a “plant positive” (as opposed to “pest negative”) approach of managing the system for beneficial processes and cycles and creating healthy soil and plants, is at the foundation of integrated pest management in organic systems. In this session we will discuss some practical approaches to integrated pest management in organic farming systems.

Chase Hubbard, Farm Manager, Warren Wilson College

Running a Successful Livestock and Agronomic Crop Farm with Student Labor

The Warren Wilson College Farm raises pastured beef, pork, and poultry on 350 acres in rural North Carolina. Nearly thirty students work the farm, gaining hands on experience with farming in a style that is environmentally sound and economically viable, based on the humane and careful husbandry of livestock. After 117 years of production and teaching, the WWC Farm has developed a vibrant market for their animal products, while also earning several awards for their wildlife, soil, and water quality conservation measures. Farm manager Chase

Hubbard will share lessons and strategies for running a successful diversified farm with the ebb and flow of student labor throughout the year.

Teaching and Learning on the Farm and in the Garden

1. Philip Ackerman-Leist, Director of the Farm & Food Project; Director of the Masters in Sustainable Food Systems; Associate Professor of Environmental Studies, Green Mountain College, Poultney, VT
2. Jacqueline Ricotta, PhD, Associate Professor of Horticulture at Delaware Valley College, Doylestown, PA
3. Laura Lengnick, PhD, Director, Sustainable Agriculture Program, Department of Environmental Studies, Warren Wilson College, Asheville, NC
4. Mike Campbell, Associate Dean, Zurn School of Natural Sciences and Mathematics; Professor of Biology, Mercyhurst College, Erie, PA
5. John Henson, PhD, Charles A. Dana Professor of Biology, Dickinson College, Carlisle PA
6. Anthony Cervino, Assistant Professor of Art, Dickinson College, PA

Philip Ackerman-Leist, Director of the Farm & Food Project; Director of the Masters in Sustainable Food Systems; Associate Professor of Environmental Studies, Green Mountain College, Poultney, VT

The Liberal Arts & the Practical Arts: Cross-Pollination on the College Farm

College farms and gardens are, in many ways, the most prominent current example of a historical tension in American higher education between the liberal arts and what we tend to call "practical skills." College farms and gardens offer us an exceptional opportunity to integrate ways of seeing (the liberal arts) with ways of doing (the practical arts)--instead of juxtaposing these two educational philosophies as polarized pedagogical approaches. Central to the early and continued success of any college farm or garden in a liberal arts setting or a land grant university is the development of an associated curriculum that not only blends theory and praxis but also clearly fits the institution's mission, its resources, and its bioregion.

Jacqueline Ricotta, PhD, Associate Professor of Horticulture at Delaware Valley College, Doylestown, PA

Training the Next Generation: Hands-On Learning Using the Campus Farm to Teach Vegetable Production within a Four Year Degree Program

Farm based education programs such as internships are usually geared towards a career in farming. However, at Delaware Valley College, the campus farm and accompanying greenhouses and high tunnels provide the infrastructure to teach hands-on horticulture production skills within a four year degree program that includes a full complement of liberal arts courses. Students participate in labs that include laying plastic and drip irrigation, transplanting plants that they have grown from seed, setting up sprinkler systems, planting other crops, pruning trees, applying fertilizer, etc. Students are also allowed to drive the tractors and adjust the

implements when supervised by the professor and the farm manager. In addition to hands-on courses, there is a 500 hour work requirement (often completed on the campus farm) that provides additional experience. Upon graduation, students in Horticulture at Delaware Valley College have the skills and knowledge to farm or pursue other career options.

Laura Lengnick, PhD, Director, Sustainable Agriculture Program, Department of Environmental Studies, Warren Wilson College, Asheville, NC

Sustainable Agriculture at Warren Wilson College: Cultivating Leadership for Sustainable Food Systems

Warren Wilson College has a long and vibrant history as an educational institution emphasizing liberal arts learning for the common good through the integration of academics, work and service. Sustainable Agriculture at Warren Wilson draws on this wealth of resources to offer students a diversity of opportunities to apply sustainability concepts learned in the classroom to our campus and beyond. Established in 1994 as a concentration within the Environmental Studies major, the Sustainable Agriculture program supports student achievement of specific sustainability education outcomes through an integrated, interdisciplinary curriculum featuring socio-economics, community organizing, systems thinking, agro-ecology, and adaptive management. Sustainable agriculture students at Warren Wilson College learn how to plan, operate and manage a sustainable farm, but along the way, and equally important, they learn the skills, values and attitudes required to be innovative leaders in community change for sustainability. Successful examples of this experiential liberal arts approach to sustainable agriculture education include the recent adoption of a campus Sustainable Dining Policy inspired by a Life-Cycle Analysis of the top ten foods consumed in the campus cafeteria; the use of the Holistic Goal, an adaptive management strategy, by Student Life; the development of a Whole Farm Plan by the campus farm; and many national firsts by our students and graduates: the first state accredited high school program of study in sustainable agriculture, the first land-less community supported agriculture program, the first campus Energy Descent Action Plan, the first Youth Food Policy Council, and the first global sustainable agriculture information website written for and by farmers.

Mike Campbell, Associate Dean, Zurn School of Natural Sciences and Mathematics; Professor of Biology, Mercyhurst College, Erie, PA

The College Garden as a Laboratory for Sustainable Agriculture

In three years, the Mercyhurst College experiment in sustainable agriculture has grown from a half-acre project to a 5-acre operation that regularly delivers fresh produce to the college kitchens, three farmers markets, and a local food bank. Besides companion planting demonstrations and introductions of natives, perennials and fruit trees, we have advanced field research in soil restoration ecology, carbon sequestration, and organic methods of weed control. Student

involvement has been a key ingredient in all phases of the garden project, and our academic program is currently being expanded to include training courses in landscape design and renewable energy technology. An analysis of the successes and failures to-date in the development of our academic program will be presented.

John Henson, Charles A. Dana Professor of Biology, Dickinson College, Carlisle PA

Science on the Farm: An Overview of Student/Faculty Research Projects Utilizing the Dickinson College Organic Farm

Since its inception the Dickinson College Organic Farm has been the site of a number of student/faculty scientific research projects running the gamut from hydrogeology to microbiology. Research projects have been pursued as aspects of the teaching laboratories of specific courses – such as Biology of Behavior, Ecology, Infection vs. Immunity, Plant Physiology, and Health Studies - as well as part time academic year and full time summer research efforts. Specific projects have included the nesting ecology of blue birds, the orientation behavior of honeybees, aspects of integrated pest management and biological control, stream ecology monitoring, alterations in plant biochemical pathways, and the impacts of vermicompost extract on disease suppression and productivity. This latter project will be discussed in detail as an example of a full time summer student/faculty research project that integrated aspects of sustainable agriculture practices with the analysis of microbial communities and plant productivity.

*session shared with Professor Cervino

Anthony Cervino, Assistant Professor of Art, Dickinson College, PA

Farm Art, Creativity and the College Farm

College farms offer a rare opportunity to bring students out of the classroom and into an exciting environment for artmaking. Illustrated by past and current collaborative experiences between the Department of Art & Art History at Dickinson College and the Dickinson College Farm, this presentation will touch on the potential for students to make art that responds to both the physical and conceptual landscape of college farms. Additionally this talk will look at the use of farms as a non-traditional venue for exhibiting artwork.

*session shared with Professor Henson

Sustainable Growth: Starting and Sustaining Farm and Garden Programs on the College Campus

- 1) Panel
 - a. Jenn Halpin, Director, Dickinson College Farm, Carlisle PA
 - b. Elizabeth Goodwin, Student Organic Farm Manager, Dilmun Hill Farm, Ithaca, NY
- 2) Matthew R. Biette, Director, Dining Services, Middlebury College, Middlebury, VT
- 3) Frank Hummel, Executive Chef, Delaware Valley College, Doylestown, PA
- 4) Elizabeth Goodwin, Student Organic Farm Manager, Dilmun Hill Farm, Ithaca, NY
- 5) Jenn Halpin, Director, Dickinson College Organic Farm, Carlisle PA

Panel:

- 1) Jenn Halpin, Director, Dickinson College Farm, Carlisle PA**
- 2) Elizabeth Goodwin, Student Organic Farm Manager, Dilmun Hill Farm, Ithaca, NY**

Start-up Stories

Matthew R. Biette, Director, Dining Services, Middlebury College, Middlebury, VT

Now Serving: Local Foods
A Look at the Use of Local Sources in Your Menu

Support of local agriculture has grown over the last decade and has gained momentum on college and university campuses throughout the country. Catch phrases such as carbon footprint, food miles, organic or conventional, gardens, farms and ingredients have all entered the food conversation. Is this a pie in the sky or pie on the table? What dictates how much of our local agriculture we can use at any time throughout the calendar year? How do outside forces (business, global, climate) impact your decisions? This discussion will take a look at how Middlebury College has tapped local markets over the years and how you may be able to increase the use of local agriculture on your plate...or not.

Frank Hummel, Executive Chef, Delaware Valley College, Doylestown, PA

Integrating Locally-Sourced Ingredients into Delaware Valley's Food Service Departments

This discussion will include a brief background of ENPGH- (Eat N' Park Hospitality Group) Parkhurst division, summary of my background, Delaware Valley College and the key people involved and where we are in the beginning stages; how the college and Parkhurst have come together to promote the continued growth of the farm to table experience for the students, campus community and others. We will

also discuss how the transition has worked thus far and will take a look into the near future. What are our different food service locations doing to incorporate local ingredients? ENPGH is continuing to build upon and strengthen our relationship with DeVal and the surrounding area. How will we improve our local spend and educate through chef demos, local food dinners and pamphlets?

Dilmun Hill Farm, Cornell University, Ithaca, NY:

Elizabeth Goodwin, Student Organic Farm Manager
Elizabeth Burrichter, Student Organic Farm Coordinator
Isaac Arginteanu, Student Organic Farm Coordinator
Emma Landeau, Student Organic Farm Coordinator

Recruiting and Maintaining Student Labor at Dilmun Hill Farm

Abstract TBD

Jenn Halpin, Director, Dickinson Organic Farm, Carlisle PA

Growing Food, Growing Awareness: Innovative Approaches Toward Bridging the Gap between Campus Life and Life on the Farm

A main ingredient for a successful college farm or garden program is whipping up opportunities for students to get involved! The Dickinson College Farm successfully combines day to day program management demands with opportunities for students to get their hands dirty and increase campus awareness around growing food. From farm-based social and educational events to awareness building activities on campus, the Dickinson College Farm has developed innovative approaches over the years to grow student interest and involvement. Jenn aims to share proven recipes for curricular, co-curricular and fun social events that attract and sustain student interest in farm and garden-based programs.

Breaking Bread, Building Markets: Connecting Community Partnerships

- 1) Nancy Hanson, Manager, Community Supported Agriculture Program, Hampshire College Farm, Amherst, MA
- 2) Kim Davidson, Associate Director of the Center for Public Service, Gettysburg College, Gettysburg, PA
 - a. Kirsty Bryant-Hassler '12, Campus Kitchen Program Coordinator
 - b. Carter McClintock '12, Campus Kitchen Program Coordinator
 - c. Ciara O'Connor '13, Campus Kitchen Program Coordinator
- 3) Tony Geraci, Chef and Food Service Consultant; Former Director, Food and Nutrition, Baltimore City Public Schools, Baltimore, MD
- 4) Josh Slotnick, Director of the PEAS farm and Lecturer, Environmental Studies Program, University of Montana

Nancy Hanson, Manager, Community Supported Agriculture Program, Hampshire College Farm, Amherst, MA

The First Word is Community: Connecting Your College CSA to the Wider World

Using the Hampshire College CSA as a model, this workshop will explore various ways to connect a college-based CSA to the campus community and beyond. In existence since 1992, the Hampshire CSA has built many fruitful (pun intended) relationships with food pantries, elementary schools and other off-campus organizations as well as our own farm camp. Most importantly, the CSA has become an integral part of Hampshire's academic program and social life.

Josh Slotnick, Director of the PEAS farm and Lecturer, Environmental Studies Program, University of Montana

Agriculturally Supported Community; The Socially Transformative Power of a Civic Student Farm

The public nature of a student farm makes possible a type of community development not typically associated with agriculture. When structured with the surrounding population in mind, a student farm can become a powerful catalyst for community. In 1997 The University of Montana's student farm partnered with the non-profit Garden City Harvest in Missoula, Montana to start a student farm. The farm was to tangibly address food security as well as education in sustainable agriculture for college students. Over time though, we saw that the experience of growing food together was as great a benefit as the food itself. Working from that

understanding, the original partnership has now grown to include a number of other community-based organizations, who's goals, at first blush, have nothing to do with food and farming. This talk will discuss the power of the experience of growing food together and cover some of the possibilities in partnerships and program design to maximize the civic potential of student farms.

Campus Kitchen Program Coordinators, Gettysburg College, Gettysburg, PA:

Kirsty Bryant-Hassler '12

Carter McClintock '12

Ciara O'Connor '13

Teach. Reach. Feed. Lead. The Campus Kitchen at Gettysburg College

At four years old, The Campus Kitchen at Gettysburg College has recovered over 37,000 pounds of food and served over 22,000 meals. More important than the numbers is the project's sustained impact. Through reciprocity, Gettysburg College students are able to establish relationships that break down barriers and stereotypes, resulting in the changing of mindsets, attitudes and actions which develop a stronger, more united community. In this presentation, you will hear stories that demonstrate how The Campus Kitchen at Gettysburg College is building community both on and off campus.

Tony Geraci, Chef and Food Service Consultant; Former Director, Food and Nutrition, Baltimore City Public Schools, Baltimore, MD

Sensible Teaching: Feeding the Mind and the Senses in the Farm Classroom