

***AACC SEED & ATEEC Webinar:***

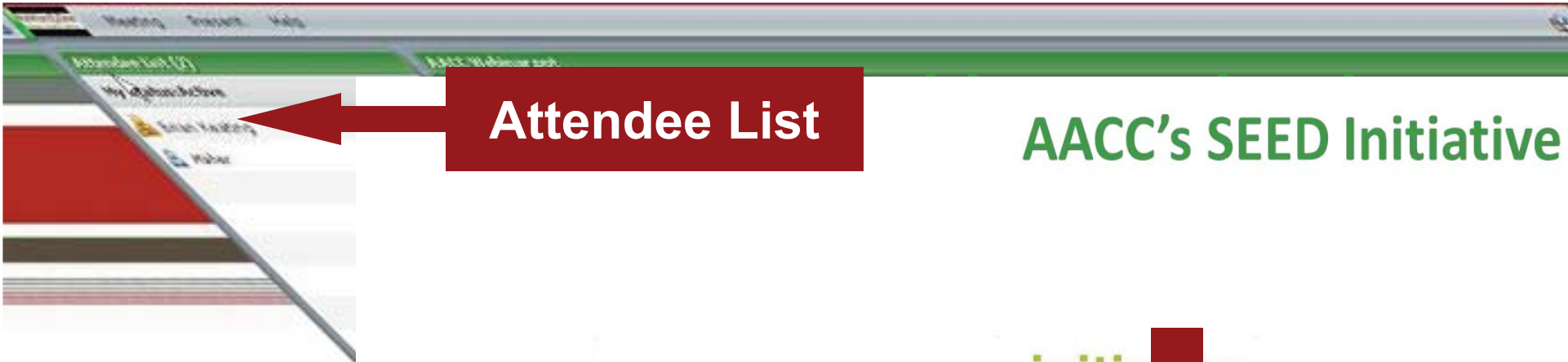
# ***Community Colleges Leading Rural-Based Green Economy Initiatives***

***December 2011***



**EASTERN IOWA COMMUNITY COLLEGES**  
**CLINTON ♦ MUSCATINE ♦ SCOTT**

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**Attendee List**

**AACC's SEED Initiative**



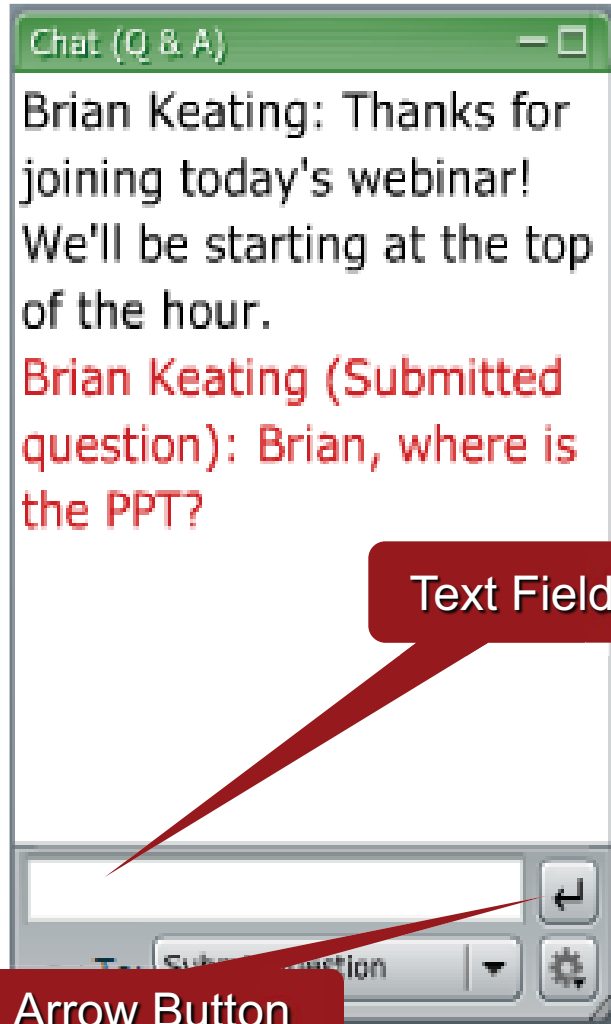
**Presentation  
Slide Area**

*A coordinated national strategy to support community  
during the green economy*

**Chat Room**



## Submitting Questions



- To submit a question or comment, type the question in the **text field** and click the **arrow button**.
- Please enter the name of the person to whom the question is directed.
- Your name, the text "**Submitted Question**," and your question will appear in red on your screen, indicating successful submission.
- Questions are directly transmitted to presenters—no other participants will see your questions.

# Practice: Attendance

In the chat room, please type:

- your name,
- the name of your organization,
- your location, and
- the number of people attending with you today.



- **Alternative energy, resource conservation and sustainable agriculture** as economic drivers for rural areas
- Community colleges as the: **lead/convener/partner/facilitator** in preparing skilled workers AND creating jobs in the green sector
- And what does all of this look like **in the classroom?**



Brought to you by AACCC and ATEEC



*A coordinated national strategy to support community colleges in building the green and sustainable economy*

*An NSF center of excellence, to advance environmental and energy technology education through curriculum, professional, and program development and improvement*

*Supported by the Kresge Foundation*



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# Speakers

**Judith Canales**, Administrator, Rural Business & Cooperative Programs, USDA's Rural Development Agency

**Timothy Crowley**, President, Northern Maine Community College

**Robin Kohanowich**, Sustainable Agriculture Coordinator, Central Carolina Community College



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# USDA Rural Business and Cooperative Service



Judith A. Canales  
Administrator  
Rural Business and Cooperative Service  
U.S. Department of Agriculture  
Rural Development

Judith Canales has more than 20 years of experience working in federal and local government administrations and nonprofit management. She received her second presidential appointment in 2009 when President Barack Obama named her the first Hispanic woman to serve as the Administrator for the Rural Business and Cooperative Service (RBS) agency of the Department of Agriculture Rural Development.

Ms. Canales is responsible for overseeing the agency's portfolio and is deeply involved in providing financing to small businesses and cooperatives throughout rural America. Ms. Canales also specializes in rural and urban development, community development, economic development, and housing.



Committed to the future of rural communities.



# Sustainable Agriculture

- *Sustainable Agriculture* was addressed in the 1990 Farm Bill and under that law, “the term sustainable agriculture means an integrated system of plant and animal production practices having a site-specific application that will, over the long term:
  - satisfy human food and fiber needs
  - enhance environmental quality and the natural resource base upon which the agricultural economy depends
  - make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls
  - sustain the economic viability of farm operations
  - enhance the quality of life for farmers and society as a whole

# Sustainable Agriculture

While Rural Development programs do not support production related activities, several programs such as the Rural Energy for America Program (REAP), Rural Business Enterprise Grant (RBEAG), Value-Added Producer Grant (VAPG), and Rural Business Opportunity Grant (RBOG) have assisted rural producers create or expand sustainable agriculture businesses.

Examples would include:

- Finance a mobile slaughter unit to assist small producers of naturally raised livestock market their products.
- Funding for a business plan or feasibility study for a producer of organic milk to develop value added dairy products.
- Funding for technical assistance and training to smaller-scale vegetable producers on good agricultural practices to ensure they are able to compete in retail markets.
- **Provide funding for an on-farm anaerobic digester to supply renewable energy.**



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# *What projects are eligible for REAP?*

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Requirements for eligible renewable energy or energy efficiency projects:

- Must be located in a rural area unless agricultural producer
- Must be for commercially available and replicable technology
- Must be technically feasible
- Must have sufficient revenues to provide for operation and maintenance

The applicant must be the owner and control the operation and maintenance of the proposed project.



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# *Guaranteed Loan limitations*

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**Guaranteed Loan request must not exceed 75% of project costs (*including grant funds, if applicable*)**

- **Renewable Energy:**
  - **Minimum request: \$5,000**
  - **Maximum request: \$25,000,000**
  
- **Energy Efficiency**
  - **Minimum request: \$5,000**
  - **Maximum request: \$25,000,000**



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# *Grant limitations*

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## **Grants request must not exceed 25% of project costs**

### **– Renewable Energy**

- **Minimum grant request: \$2,500**
- **Maximum grant request: \$500,000**

### **– Energy Efficiency**

- **Minimum grant request: \$1,500**
- **Maximum grant request: \$250,000**



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## ***Section 9007-***

# ***Rural Energy for America Program (REAP)***

Neighborhood Energy, LL C  
at Maxwell Farms

Newport, Vermont



- ***Anaerobic Digester – Electricity***
- ***\$357,990 Grant + \$326,770 Loan Guarantee***
- ***225 kW capacity, enough to power almost 200 homes***
- ***6.4 year payback window***
- ***“Milk prices were low at the time. I mean really low...I knew that we needed to diversify our revenue and create some stability.”***

# *Rural Energy for America Program (REAP)*

AGreen Energy, LLC  
at Jordan Dairy Farm  
Rutland, Massachusetts



- *Anaerobic Digester – Electricity*
- *Five farm cluster project*
- *300 head dairy plus additional recycled organics from partner farms and food processing*
- *\$951,638 Loan Guarantee*
- *300 kW production capacity*
- *Heat and electricity production for farms, greenhouses, and homes in the community*

# *Rural Energy for America Program (REAP)*

Show Me Energy Cooperative  
Centerview, Missouri



- *Biomass Pellet Production from spent seed and native grasses planted on marginal land*
- *2003- Value Added Producer Grant (VAPG) for Feasibility Study*
- *2003- \$95,000 REAP grant for Pellet Production Facility*
- *2010- Rural Business Entrepreneur Grant (RBEG) to study feasibility of collocating 22MW gasification to electricity production facility*



# *Rural Energy for America Program (REAP)*

Cliff Fitchpatrick  
Wentworth, Missouri



- *\$20,000 REAP grant (25% of project cost) for 800 BTU Biomass Stove to heat four chicken houses*
- *“The biomass stoves also give us the flexibility to shift fuel sources...It helps to stabilize our energy costs... We can’t get caught in the do-nothing trap when oil prices are low. We need to be looking at promoting long-term sustainability.”*

# *FY 2011 Rural Energy for America Program*

## *Renewable Energy/Energy Efficiency investments by technology*

| Technology          | Number of Projects | Grant and Loan Guarantee Investments | Leverage              |
|---------------------|--------------------|--------------------------------------|-----------------------|
| Anaerobic Digesters | 19                 | \$ 20,901,079                        | \$ 89,972,097         |
| Biofuels            | 4                  | \$ 872,633                           | \$ 12,013,838         |
| Biomass             | 29                 | \$ 6,986,914                         | \$ 23,784,615         |
| Energy Efficiency   | 1,142              | \$ 23,188,213                        | \$ 73,649,041         |
| Flex Fuel Pump      | 66                 | \$ 4,256,346                         | \$ 22,109,380         |
| Geothermal          | 59                 | \$ 1,412,560                         | \$ 4,251,333          |
| Hybrid              | 13                 | \$ 700,604                           | \$ 1,595,703          |
| Hydroelectric       | 6                  | \$ 8,222,001                         | \$ 12,473,709         |
| Hydropower          | 3                  | \$ 301,517                           | \$ 912,752            |
| Solar               | 478                | \$ 20,385,450                        | \$ 57,861,071         |
| Wind                | 55                 | \$ 3,872,127                         | \$ 75,388,274         |
| <b>Total</b>        | <b>1,873</b>       | <b>\$ 91,011,834</b>                 | <b>\$ 374,011,813</b> |



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# *FY 2003-2010 Rural Energy for America Program*

## *Renewable Energy/Energy Efficiency investments by technology*

| Energy Type       | Biomass Type          | Number of Projects | Grant and Loan Guarantee Investments | Amount Leveraged        |
|-------------------|-----------------------|--------------------|--------------------------------------|-------------------------|
|                   | ANEROBIC DIGESTER     | 147                | \$ 74,691,457                        | \$ 205,067,555          |
|                   | BIODIESEL PRODUCTION  | 53                 | \$ 54,462,100                        | \$ 107,349,716          |
|                   | ETHANOL PRODUCTION    | 8                  | \$ 22,095,000                        | \$ 68,987,803           |
|                   | SOLID FUEL PRODUCTION | 31                 | \$ 18,154,808                        | \$ 36,260,157           |
|                   | THERMAL CONVERSION    | 137                | \$ 30,693,593                        | \$ 71,647,897           |
| BIOMASS           |                       | 376                | \$ 200,096,959                       | \$ 489,313,127          |
| ENERGY EFFICIENCY |                       | 4,258              | \$ 154,720,413                       | \$ 282,761,894          |
| GEOTHERMAL        |                       | 139                | \$ 4,697,287                         | \$ 18,222,896           |
| HYBRID            |                       | 27                 | \$ 3,035,912                         | \$ 186,683,216          |
| HYDROPOWER        |                       | 8                  | \$ 1,754,281                         | \$ 13,367,351           |
| SOLAR             |                       | 577                | \$ 36,457,291                        | \$ 77,560,158           |
| WIND              |                       | 507                | \$ 105,723,541                       | \$ 529,569,708          |
| <b>Total</b>      |                       | <b>5,892</b>       | <b>\$ 506,485,683</b>                | <b>\$ 1,597,478,350</b> |



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# Other RBS Programs

- **Business and Industry (B&I) Guaranteed Loan** program provides loan guarantees to commercial lenders. The program also supports lenders by boosting their legal lending limits, expanding their lending portfolio, and allowing increased benefits through the sale of the guaranteed and non-guaranteed portions of the loan in the secondary market.
- **Intermediary Relending Program (IRP)** provides loans to local organizations that they will use to establish revolving loan funds. These loan funds will finance business and economic development activities that help create and save jobs in disadvantaged and remote communities.
- **Rural Business Enterprise Grant (RBEG)** program supports the development of small emerging private business enterprises in rural areas. These grants can be made to public bodies and private nonprofit corporations that serve rural areas.
- **Rural Economic Development Loan and Grant (REDLG)** program provides funding to rural projects through local utility organizations. Under the REDLoan program, the USDA provides zero interest loans to local utility organizations, which they make available to local businesses. Under the REDGrant program, USDA provides grant funds to local utility organizations which is used to establish revolving loan funds.
- **Value-Added Producer Grant (VAPG)** program encourages independent producers of agricultural commodities to process their raw products into marketable goods that they can sell at local and regional markets, thereby increasing the farm's income.



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# *Thank you!*

*For More Information on Rural Development RBS  
Energy Programs, visit our website at  
[http://www.rurdev.usda.gov/BCP Reap.html](http://www.rurdev.usda.gov/BCP_Reap.html)*

*or contact your  
Rural Development  
State Energy  
Coordinator:*

[http://www.rurdev.usda.gov/rbs/  
busp/EnergyCoordinatorList.doc](http://www.rurdev.usda.gov/rbs/busp/EnergyCoordinatorList.doc)



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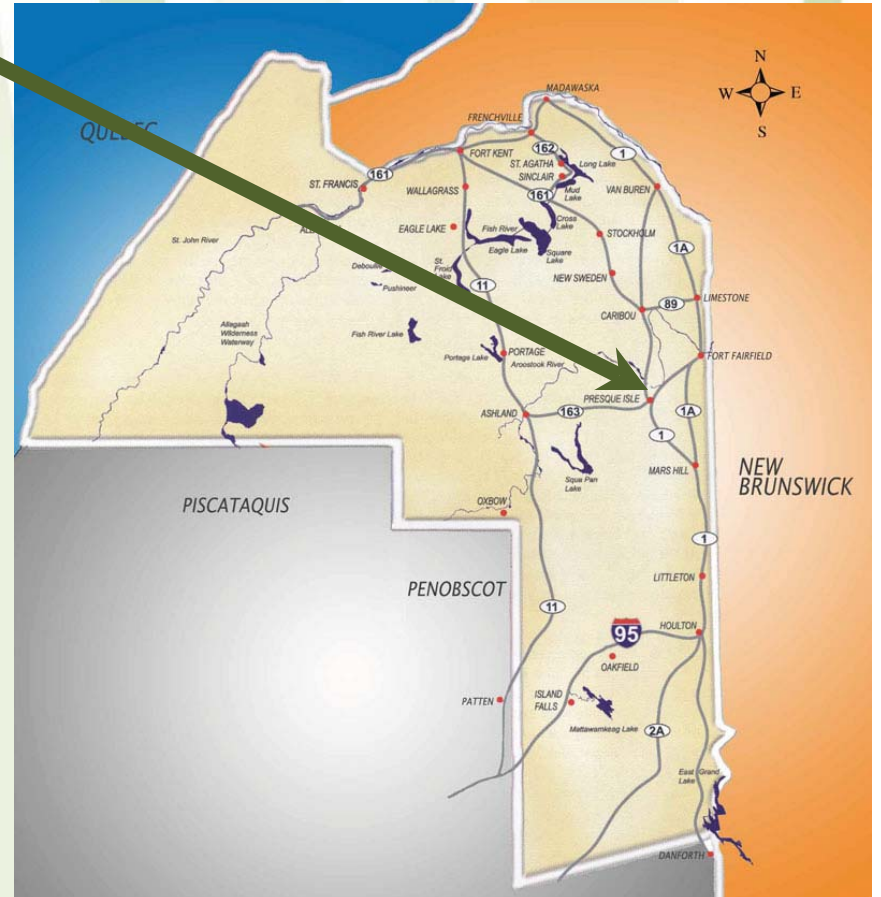
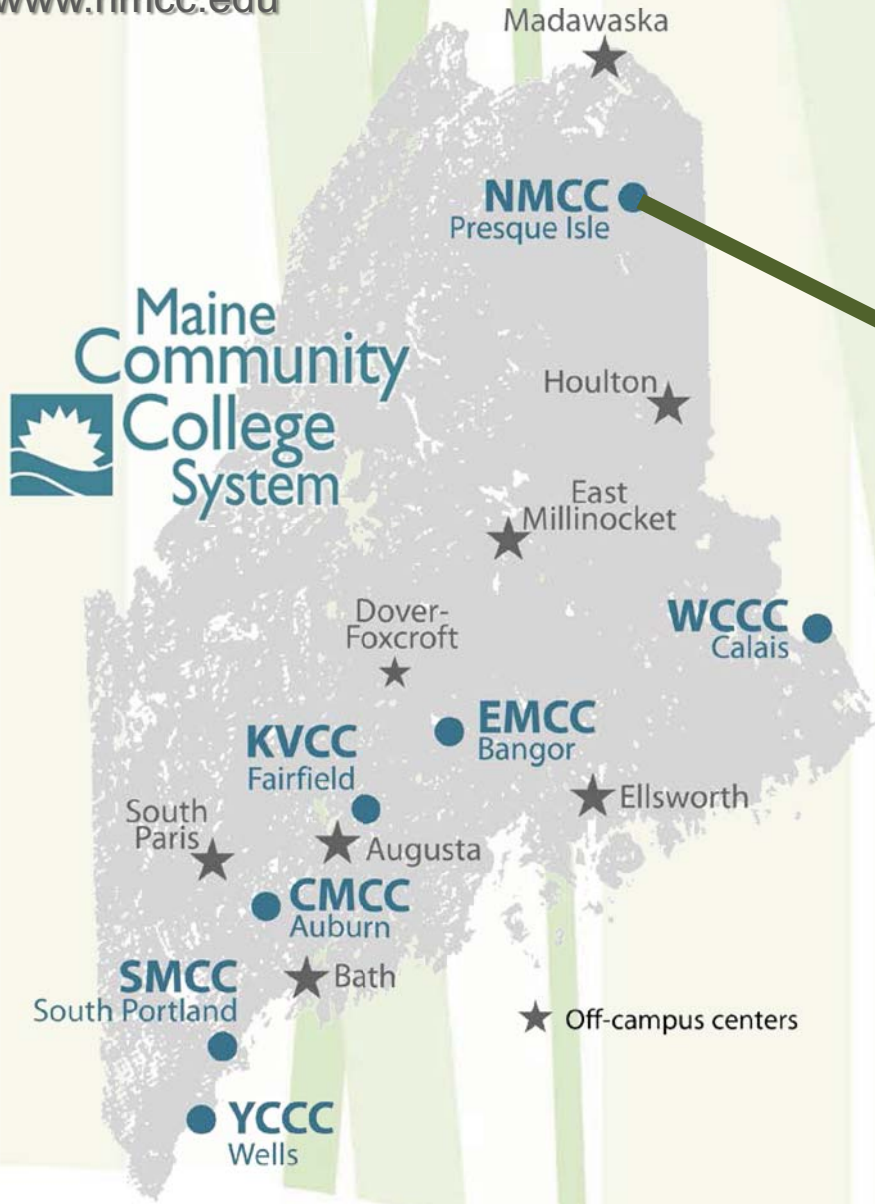
# **Rural Based Green Economy Initiative Northern Maine Community College**

*Timothy Crowley  
President*



www.nmcc.edu

# Maine Community College System





[www.nmcc.edu](http://www.nmcc.edu)

# Northern Maine Community College

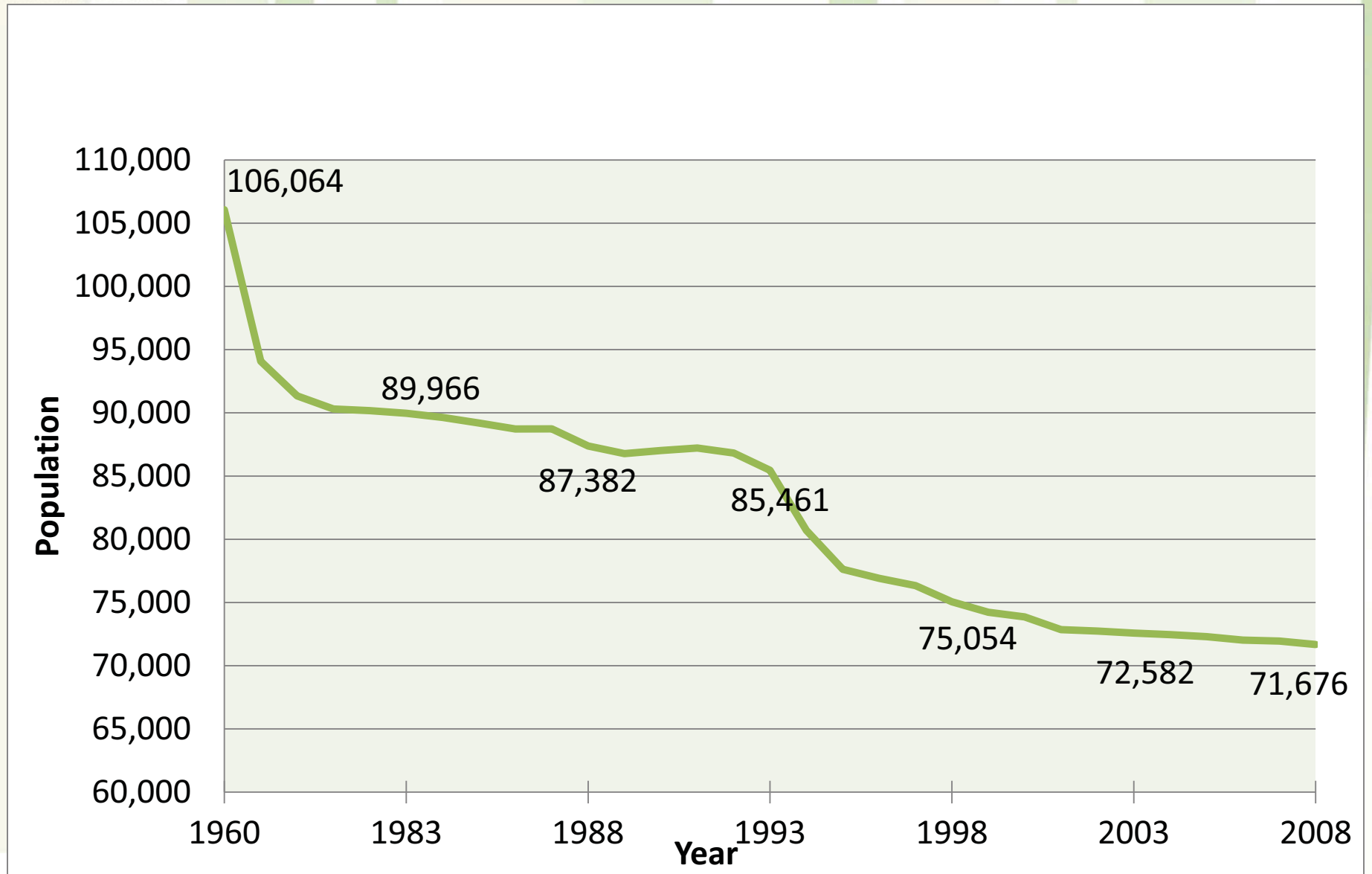






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# Aroostook County Population 1960-2008



# Characteristics of Aroostook County

- Heavy dependence on natural resource based manufacturing, including its associated support structure
- An aging population

# Aroostook County Projected Population

| Age  | 0-4  | 5-9  | 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | 85+  | Total  |
|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|--------|
| 2003 | 3529 | 3941 | 4710  | 5307  | 4006  | 3481  | 3985  | 4858  | 5645  | 5969  | 5695  | 4962  | 3888  | 3431  | 3225  | 2533  | 1779  | 1638 | 72,582 |
| 2008 | 3527 | 3585 | 3994  | 4760  | 4193  | 4027  | 3686  | 4095  | 4926  | 5624  | 5925  | 5587  | 4813  | 3601  | 3006  | 2625  | 1905  | 1797 | 71,676 |
| 2013 | 3522 | 3577 | 3630  | 4036  | 3594  | 4219  | 4213  | 3777  | 4156  | 4911  | 5587  | 2819  | 5431  | 4449  | 3162  | 2442  | 1970  | 1943 | 70,438 |
| 2018 | 3373 | 3572 | 3617  | 3662  | 3049  | 3624  | 4429  | 4293  | 3824  | 4146  | 4885  | 5495  | 5668  | 5025  | 3901  | 2579  | 1835  | 2046 | 69,023 |
| 2023 | 3100 | 3423 | 3611  | 3647  | 2827  | 3076  | 3849  | 4521  | 4328  | 3811  | 4127  | 4809  | 5364  | 5247  | 4406  | 3182  | 1942  | 2018 | 67,288 |
| 2028 | 2827 | 3148 | 3462  | 3644  | 2865  | 2850  | 3276  | 3951  | 4566  | 4306  | 3789  | 4066  | 4704  | 4964  | 4601  | 3592  | 2381  | 2068 | 65,060 |

# Mobilize Northern Maine Renewable Energy Cluster Premise

- Aroostook County residents and businesses are burdened with high cost of electricity and dependence on the import of heating oil. This hampers the regions competitiveness and exports wealth that reduces long-term economic potential.

- Governor's Trade Mission
- College Participation Supported by Economic Development
- Discussion with Manufacturers and Energy Association Reps
- Open the Doors for Future Partnership



**TRADE MISSION TO SPAIN AND GERMANY – FALL 2009**



# Wind Power Technology Program Established

## Program Highlights:



- **Safety Fundamentals**
- **Electrical Systems Fundamentals**
- **Mechanical Systems Fundamentals**
- **PLC/Communication Fundamentals**
- **Delivery System Fundamentals**
- **Maintenance Concepts**
- **Wind Turbine Siting and Park Layout**
- **Wind Farm Management Concepts**

# Aroostook County Renewable Energy Economic Strategy Elements

## FINANCE

The region must develop an integrated finance structure to supply specialty forms of financing for energy efficiency modifications and heating system conversions.

## INNOVATION

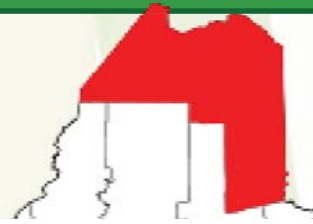
UMPI, UMFK, UMaine & NMCC must lead in the develop of R&D and workforce training programs attracting young thinkers and linking to regional industry .

## CONNECTIVITY

The region must be leading the US in the availability and 24x7 boundary free uses and access to broadband services.

## NATURAL RESOURCES

Forest and Farm biomass resources form the foundation of this industry in Aroostook County.



## Aroostook Renewable Energy Economy



## VALUE ADDED PROCESSING

Pellet and Chip manufacturers converting biomass for forest and farm into heating fuel material. Distribution systems deliver product to consumer.

## ENTREPRENEURSHIP

The region must embed a climate of entrepreneurship from grade school education to community leaders.

## MARKETING & COMMUNICATIONS

A strategic and consistent internal and external communication plan must be implemented to promote the use of Aroostook energy products and resources.

## INDUSTRY NETWORKS

Informal and formal industry networks must be created locally, regionally, nationally and globally.



[www.nmcc.edu](http://www.nmcc.edu)

# The Alternative Energy Center

**Residential Wind  
Expansion of Wind Program  
Thermal/Photovoltaic  
Biomass**

**Green Energy  
Building Methods  
Energy Auditing  
Weatherization**







## Northern Maine Center for Excellence in Alternative Energy Training and Education

*Made possible by:*

- Investment of Campus Resources
- Efficiency Maine Trust Grant
- Private Contributions
- MaineHousing



- Donations from 3 German Companies to WPT Program
- Plarad, PSA Sicherheitstechnik, August Friedberg
- \$28,000 of tools and equipment





www.nmcc.edu

# Efficiency Maine Trust Grant

Revise and strengthen programs in building energy systems

**New courses designed/major revisions to curriculum:**

- Solar Domestic Hot Water
- Building Sciences I and II
- Energy Auditing
- Electrical Construction and Maintenance I & II
- Direct Digital Control



**Significant upgrades to classrooms**



# Weatherization Trainer



## Partnered with MaineHousing to become a Weatherization Training Center (WTC) for Northern Maine

*(\$880,000, 4 sites in Maine)*

- Pressure House
- Blower Door
- Thermal Imager
- Cellulose Insulation Blower
- Assorted Hand Tools and Measuring Devices

To provide training to support weatherization auditing and technicians for low and middle income residents of Northern Maine.





[www.nmcc.edu](http://www.nmcc.edu)

# Wood to Energy Biomass Boiler

- \$500,000 grant from Maine Forest Service
- ~ \$900,000 project to install new 1MW pellet boiler
- Project is being designed to displace 50,000 gallons of #2 fuel oil with wood/grass pellets.
- Estimated annual savings ~ \$70,000





**NORTHERN  
MAINE**  
COMMUNITY COLLEGE

# Sustainable Agriculture at “Green Central”, CCCC



Pittsboro Campus, NC 05.14.2011 23:24

“Green Central” is home to the Sustainable Technologies of green building, renewable energy, Natural Chef culinary and sustainable agriculture.





# Sustainable Agriculture at CCCC

The Sustainable Farming Program at Central Carolina Community College grew out of a desire to address the needs of the farm community in Chatham County and the surrounding Piedmont region of NC.





The success of local Farmer's Markets, organic food businesses and restaurants focusing on local and sustainable has encouraged and welcomed new and beginning farmers



# Growing Small Farms

CHATHAM COUNTY CENTER  
NORTH CAROLINA COOPERATIVE EXTENSION

*Promoting awareness, understanding, and practice of sustainable agriculture*

## Farmers' Markets

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[Marketing](#)

[Pollinator  
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### Chatham County

- [Chatham Mills Farmers' Market](#)
  - Saturday, 8:00 am-noon at Chatham Mills in Pittsboro
- [Fearington Farmers' Market](#)
  - Tuesday, 4:00 pm til early evening in Fearington Village near Pittsboro
- [Goldston Growers' Market](#)
  - Wednesday, 3:30-6:30 pm on Bellevue St. in Goldston
- [Pittsboro Farmers' Market](#)
  - Thursday, 3:30-6:30 pm at County Fairgrounds in Pittsboro
- [Siler City Farmers' Market](#)
  - Saturday, 9:30 am-1:00 pm in downtown Siler City

### [Triangle Area "Growers Only" Markets](#)

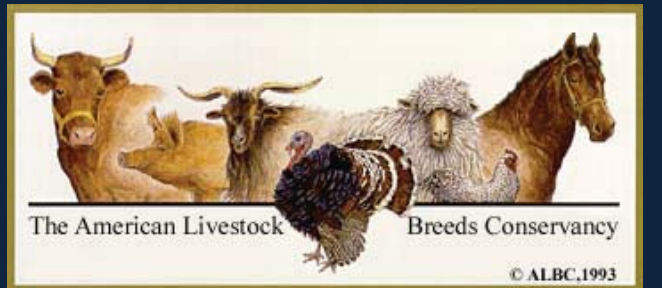
### [Triad Area Farmers' Markets](#)

# Grassroots beginnings



Initiated by local growers in 1996, the program quickly formed into a one-of-a-kind collaboration of farmers, community members, CCCC, NC Cooperative Extension, and several non-profit organizations

# Enduring Partnerships Across the Community



## Growing Small Farms

CHATHAM COUNTY CENTER  
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Promoting awareness, understanding, and practice of sustainable agriculture

# Sustainable Agriculture at CCCC

The on-campus Student Farm was developed in 1996 as a research and demonstration facility for sustainable agriculture practices, as well as an outdoor classroom for hands-on instruction.



A photograph of a student farm. In the background, there is a large, arched greenhouse covered in white plastic. The foreground and middle ground are filled with various green plants, including rows of leafy vegetables and taller, bushier plants. The background is a dense line of trees under a clear sky.

## **Student Farm component:**

- Practical application of coursework
- Used by curriculum and continuing education programs
- Work-study opportunities for students
- Community Supported Agriculture Project serving faculty and students, provides a marketing experience for students

## Organic Crop Production class



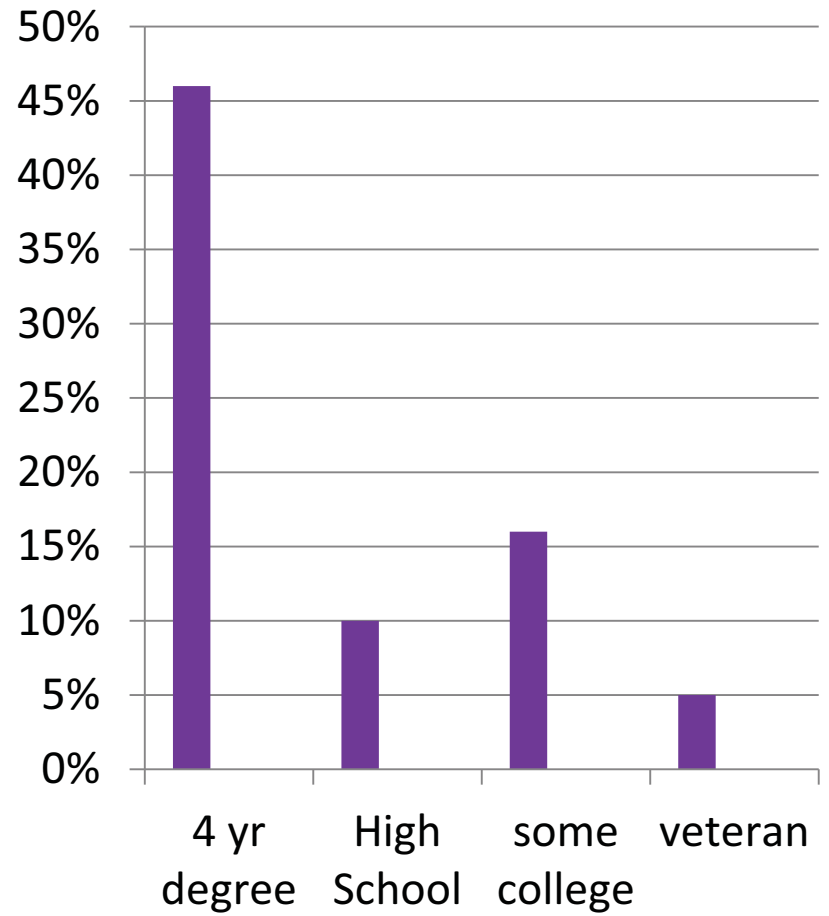
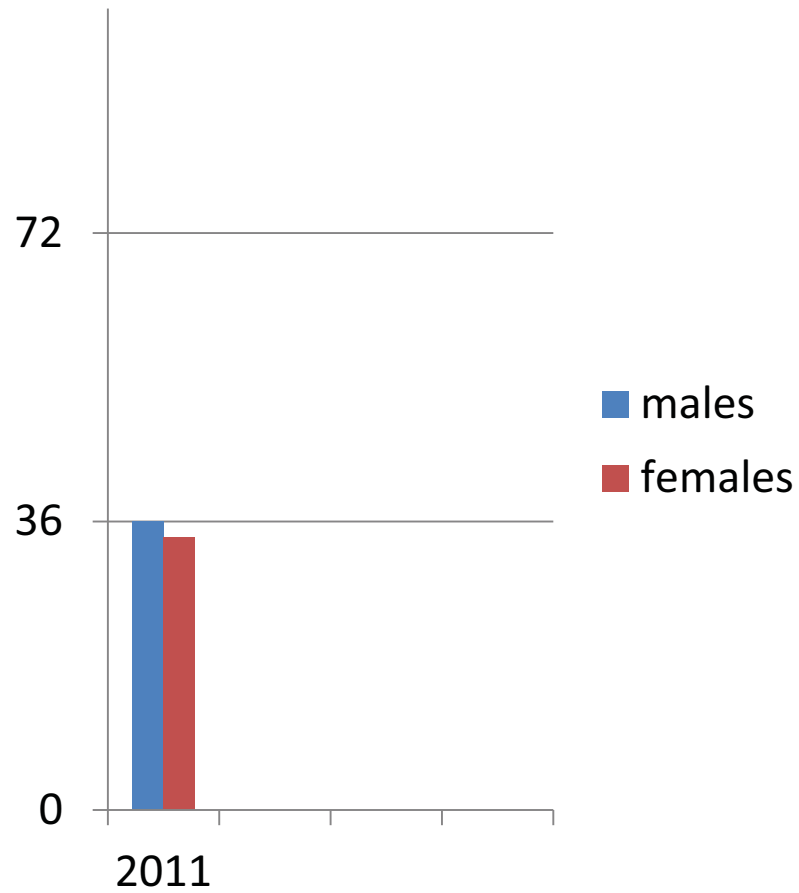


# AAS in Sustainable Agriculture

- In Fall of 2002, CCCC became the first community college to offer a degree in Sustainable Agriculture.
- Students came from all over the US, including this student from Iowa, one from Michigan, 2 from Georgia.
- In 2011: Florida, Illinois, Kentucky, New Jersey, South Carolina, Texas, and W. Virginia are represented (and NC!)



# Students in 2011



# AAS in Sustainable Agriculture



[www.cccc.edu/agriculture](http://www.cccc.edu/agriculture)

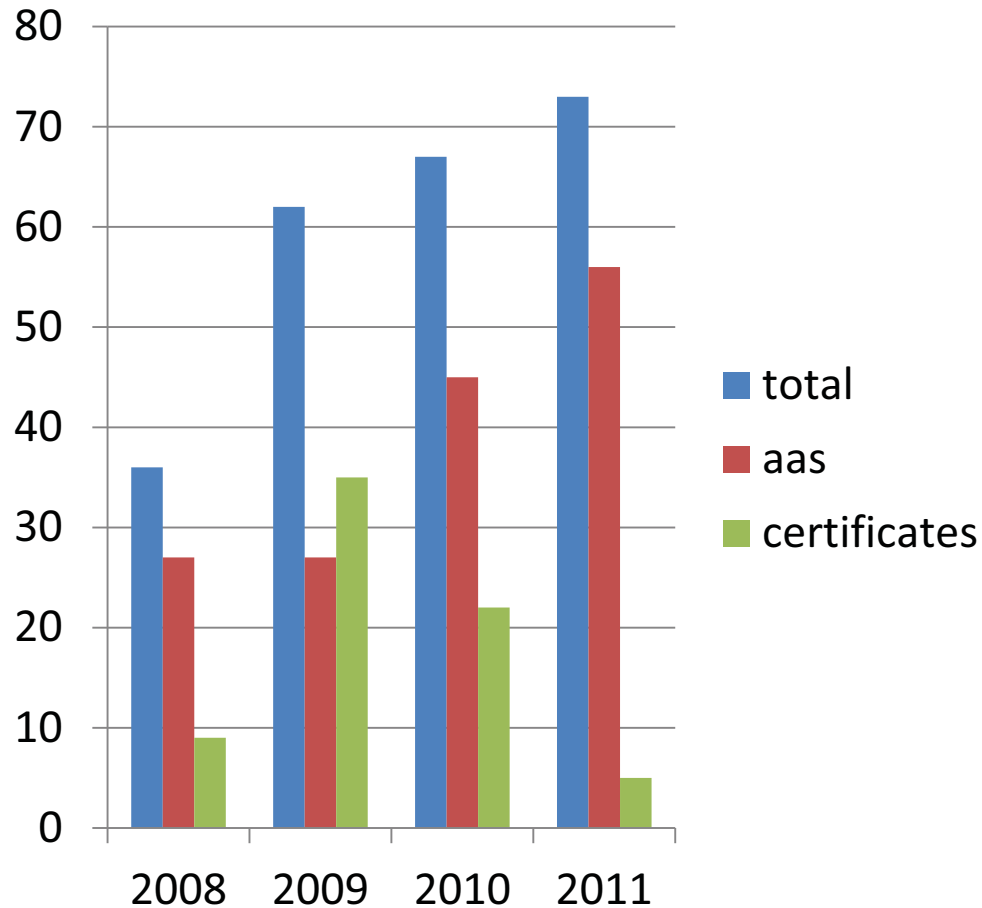
In addition to a 2-year AAS degree, there are three, 18 credit hour certificate offerings:

Vegetable Production

Livestock Production

Sustainability

# Sustainable Agriculture Student numbers, Fall semester data



Steady growth and a shift towards more students seeking an AAS degree.

# AAS in Sustainable Agriculture

## Courses in:

- Organic Crop Production
- Farm Business Management
- Animal, Plant and Soil Sciences
- Agricultural Marketing
- Agricultural Mechanics
- Biological Pest Management
- Farm Structures and Maintenance



# Best Practices

|             | Monday           | Tuesday           | Tuesday          | Wednesday        |
|-------------|------------------|-------------------|------------------|------------------|
|             | AGR268 P01       | AGR265 P01        | AGR221 P01       | AGR170 P01       |
| <b>8:30</b> | Class 8:30-10:20 | Class 8:30-10:20  | Class 8:30-10:20 | Class 8:30-10:20 |
|             | Lab 10:30-12:20  | Lab 10:30-12:20   | Lab 10:30-12:20  | Lab 10:30-12:20  |
|             |                  |                   |                  |                  |
|             | ANS111 P01       | AGR121 P01        | AGR268           |                  |
| <b>1:30</b> | Class 1:30 -3:20 | Class 1:30 - 4:20 | Lab 1:00-4:50 SF |                  |
|             | Lab 3:30-5:20    |                   |                  |                  |
|             |                  |                   |                  |                  |
|             | AGR293 POA       |                   |                  |                  |
|             | Class 6-8:50     |                   |                  |                  |
|             |                  |                   |                  |                  |

## Block Scheduling

- Allows for hands-on time
- Benefits working students, commuters
- Students may take 2 -3 agriculture courses in one day and work the rest of the week.

# Practical Application at the Student Farm



# What are our students doing now?



They are farming!



# Current Farm Manager CCCC Graduate Hillary Heckler



2006-2008 Farm Manager – CCCC Graduate  
Cheryl McNeil; now teaches AGR265/266



# CSA manager, grass fed-beef producer, goat herd and cut flower grower



*The End*





# Questions?



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## Professional Dev Opportunities

- **Workforce Development Institute** (*Jan 25, 2012 in Miami, FL*) including full day SEED peer-to-peer workshop. SEED Members: email TODAY to get FREE Ticket ([enekrasova@aacc.nche.edu](mailto:enekrasova@aacc.nche.edu))
- **2012 SEED Technology Workshop** (June 10 – June 22, 2012)  
Opportunity for high school and community college ENERGY TECHNOLOGY INSTRUCTORS

**College not a SEED member? Sign up at**  
<http://theseedcenter.org/Membership/Join>



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