Dynamic Duo!

Agroforestry: Sustainable Agriculture Through the Blending of Trees and Agriculture

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Presentation Objectives

• What is Agroforestry?
• Agroforestry practices
• Why Agroforestry?
• USDA National Agroforestry Center
• USDA Strategic Framework for Agroforestry
• Questions/Comments?
What is Agroforestry?

...the *intentional* combining of agriculture and forestry to create sustainable land-use systems.
Agroforestry isn’t conversion of agricultural lands to forests, rather it leaves them in production agriculture.
Agroforestry Practices

- Alley Cropping
- Silvopasture
- Forest Farming
- Riparian Forest Buffers
- Windbreaks
- Special Applications
Alley Cropping
Growing an annual or perennial crop between rows of high value trees
Alley Cropping Benefits

- Crop Protection & Production
- Economic Diversification
- Nutrient Utilization
- Soil Erosion Control
Silvopasture
Growing trees and livestock on the same piece of land
Silvopasture Benefits

• $ Annual Grazing Income
• $ Long-Term Timber Income
• Lower Animal Stress
• Reduced Wildfire Risk
• Wildlife Benefits
• Visually Pleasing
• Carbon Sequestration
Silvopasture
George & Pat Owens, Chipley, Florida

1984 – established silvopasture system

- Diverse income from timber, cattle, hay, pine straw, hunting.

George says . . .

“We feel like if it makes money, it's good for the environment, and it enhances the value of the property through aesthetics, that we’re on the right track . . . silvopasture gives us all three.”
Forest Farming
Cultivation of high-value specialty crops under a modified forest canopy
Forest Farming

Products & Benefits

- Mushrooms
- Foods
- Florals
- Medicinals
- Ornamentals
- Ginseng

Diversify and increase income
• 1990 – established shiitake mushroom operation on forest land
• 20,000 shiitake logs currently in production
• Markets: restaurant owners/chefs, organic food stores, internet
Windbreaks
Reduce wind erosion of soil, increase crop yields
Windbreak Benefits

Nebraska:

- 15,300 miles of field windbreaks protect 1 million acres of crops
- $72 million/year in increased crop yields
Riparian Forest Buffers perform many biological and physical functions....
Riparian Forest Buffers

Ecological Services:

- Filter Nutrients & Pesticides
- Sediment Trapping
- Aquatic & Terrestrial Habitat
- Streambank Stability
- Flood Protection
- Carbon Sequestration
Riparian Buffers
Rob Miller, Mt. Jefferson Farms, Salem, Oregon

- **1970s** – Buffers established:
  - Income from wood products
  - Protect farm from erosion and flooding
  - Trap nutrients from fields
- **TODAY** – Using a “systems approach” on farm:
  - Integrating understory plants into buffers, including vegetables
Why Agroforestry?

9.1 Billion People in 2050 WILL:
• Require 70 percent increase in global food production *(U.N. Food & Agric. Org)*
• Be fed have the energy they need.

THE REAL QUESTION IS:

*Can we find a way to make food and energy production sustainable?*

THE ANSWER INCLUDES:

**AGROFORESTRY**
Why Agroforestry?

Bank Channel Erosion  Rural  Soil Erosion

Fertilizer /Pesticide  Livestock Waste
Why Agroforestry?

Bank Channel Erosion

Concentrated Flows

Fertilizer /Pesticide

Urban Contaminants
Why Agroforestry?

EXPECTATIONS from America’s Farms, Ranches, Forests:

- Clean water, air, safe and healthy food
- Vibrant local economies
- Abundant wildlife, beautiful places
- Clean renewable energy
- Moderation of climate change

THE ANSWER INCLUDES: AGROFORESTRY
Landscape-scale agroforestry...

Agroforestry: right plant – right place – right purpose!
So you can also think about agroforestry as a means to link….

- private and public lands,
- rural and urban lands

to support sustainable food, energy and fiber production.
**Authorized:** 1990 Farm Bill, established 1992 in Lincoln, Nebraska

**Mission:** Accelerate the development and application of agroforestry technologies

**Partnership:** USDA’s Forest Service Research, State & Private Forestry, and Natural Resources Conservation Service
USDA National Agroforestry Center

--NAC is a joint R&D and Technology Transfer Unit

--NAC accomplishes its mission through a national network of partners (e.g., universities/extension, state & federal agencies, landowners)
What does NAC do?
• conduct research
• develop technologies and tools;
• coordinate demonstrations and training; and
• provide useful information

Who are NAC’s customers?
• Natural resource professionals that work directly with farmers, ranchers, forest owners, communities
NAC Emphasis Areas

• Bioenergy
• Conservation Buffers
• Climate Change
• Silvopasture systems
• Forest Farming
• Technology Transfer!!
NAC Science & Tools....examples

Riparian Buffers – science to support tools & technologies for water quality improvement in agricultural landscapes

Maximize Contact with Runoff
NAC Science & Tools....examples

Conservation Buffers Guidebook –

- synthesis of 1400+ research publications
- helps landowners and managers design buffers for multiple benefits (e.g., water, food, biofuels)
NAC Science & Tools....examples

*CanVis* Toolkit

- software & guide
- creates visual simulations of agroforestry and other conservation planning

Landowners want to know: *What will it look like?*
CanVis example...
NAC Science & Tools....examples

Working Trees

• series of brochures and corresponding displays illustrate & explain agroforestry practices
• includes *Working Trees for Agriculture, Communities, Water Quality*
USDA Strategic Plan (2010-2015)

- **Goal #1**: “Assist rural communities to create prosperity so they are self-sustaining . . . re-populating . . . economically thriving. . .”
- **Goal #2**: “Ensure our . . . private working lands are conserved, restored, and made more resilient to climate change, while enhancing our water resources.”

**AGROFORESTRY is a means to attain these goals**
USDA Strategic Framework for Agroforestry

**Purpose?**
- Increase awareness & support for agroforestry to accomplish USDA goals
- Identify future USDA emphasis areas for agroforestry R&D, technology transfer

**Who?**
- 6 USDA agencies (FS, NRCS, ARS, NIFA, FSA, OEM)
- 2 Partners: Natl. Association of State Foresters and Natl. Association of Conservation Districts

**When?** By October 2010
Questions & Comments?
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