Introduction to Agroforestry Systems

USDA NATIONAL AGROFORESTRY CENTER

A partnership of USFS NRCS

USDA National Agroforestry Center (NAC)

USDA National Agroforestry Center
Lincoln, Nebraska 68583

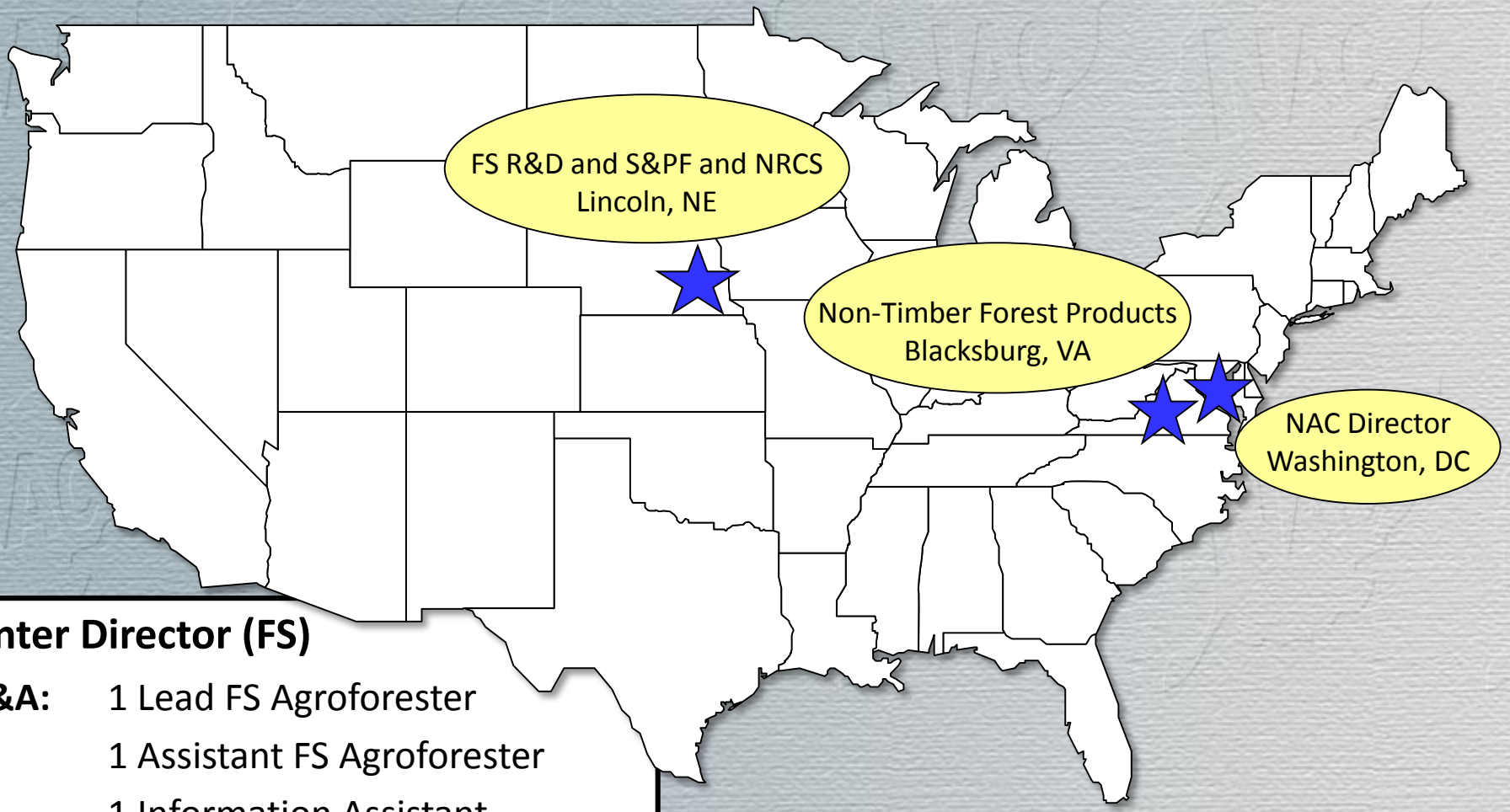
http://nac.unl.edu/

USFS and NRCS partnership

Mission: *accelerate the application of agroforestry through a national network of partners*

Origin: 1990 Farm Bill

NAC Network



Center Director (FS)

TT&A: 1 Lead FS Agroforester
1 Assistant FS Agroforester
1 Information Assistant

R&D: 3.75 FT Scientists (FS)
1 GIS Specialist
1 Technician

Admin: 2 Admin Professionals

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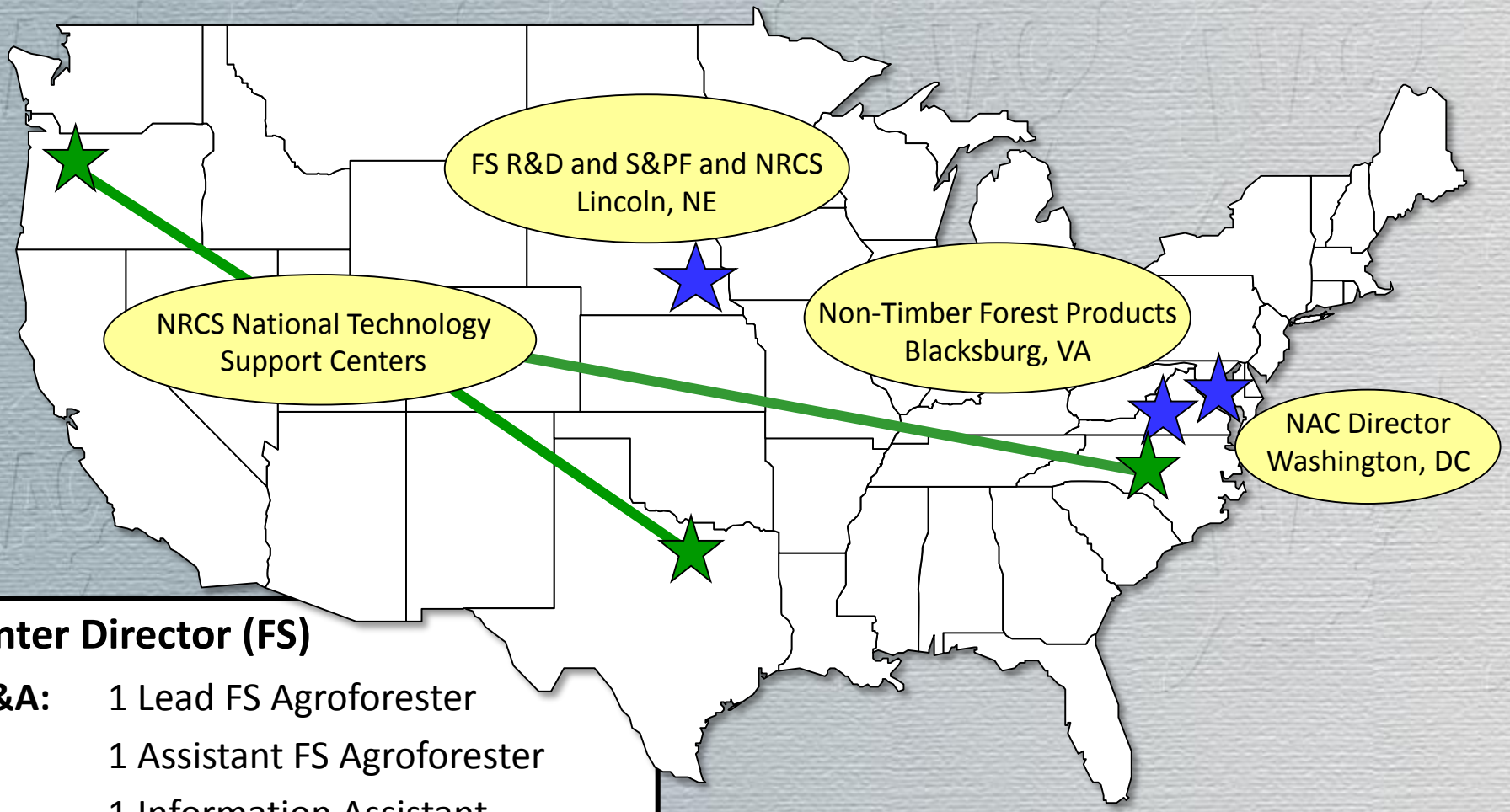

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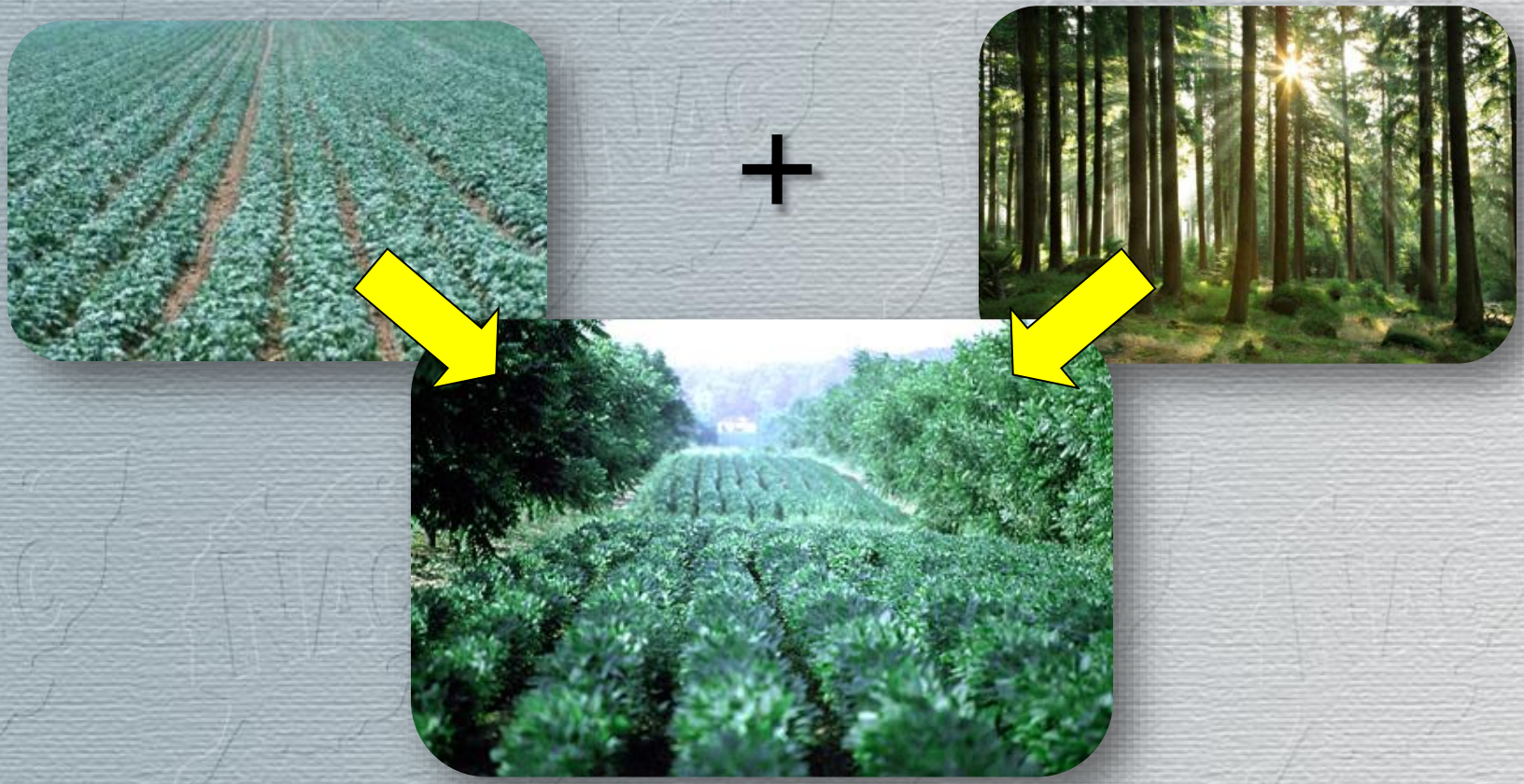
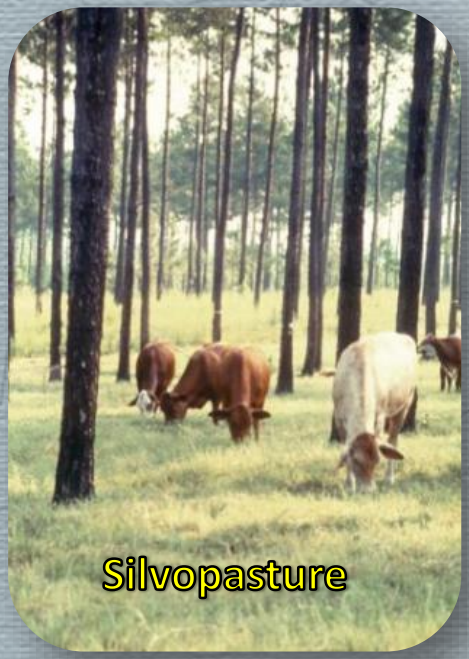
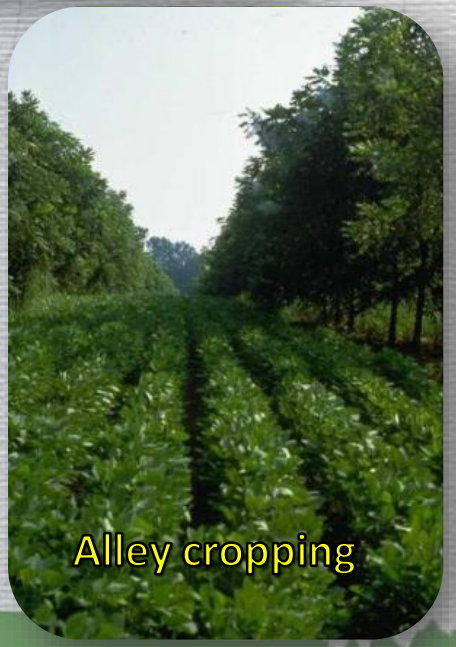


What is agroforestry?

…..the *intentional* combining of agriculture and working trees to create sustainable farming and ranching systems





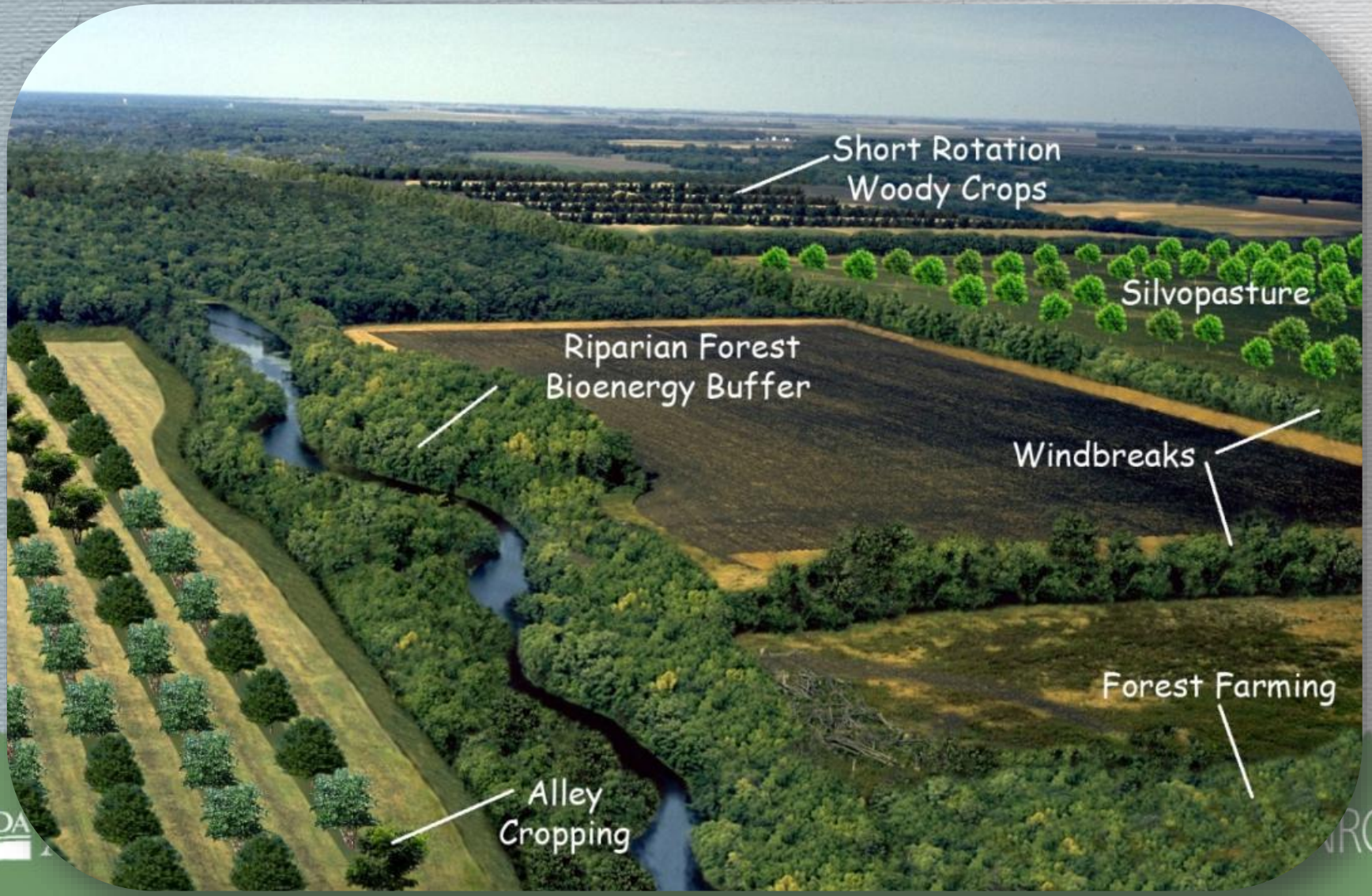
Agroforestry is not:

conversion of agricultural lands to forests, rather it leaves them in production agriculture

Agroforestry is:

- suite of productive conservation practices that can help provide profits and other benefits at the *farm-scale*
- means to address environmental issues at the *landscape/watershed-scale*

Agroforestry as part of a larger agricultural and forested landscape

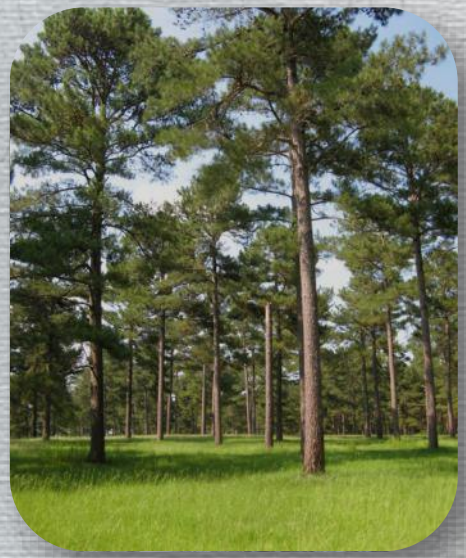


Silvopasture

Combines timber, livestock and forage production on the same acreage. Trees provide longer-term returns, while livestock generate an annual income.

Silvopasture Benefits

- ***Improved plant vigor***
- ***Lower animal stress***
- ***Reduced wildfire risk***
- ***Improved wildlife habitat***
- ***Annual income (e.g. grazing, hay, pine straw, hunting)***
- ***Long-term income (timber)***



Silvopasture

Mack Evans, M. A. Evans Enterprise, Georgia

2003 – Started with pine stands in need of thinning and cleanup

- **Cow-calf operation in longleaf and loblolly silvopastures**
- **Uses rotational grazing**
- **Growing longleaf pine for pulp & saw logs**

2008 – Added contract pine straw operation

Questions?

Silvopasture publications available at:
http://nac.unl.edu/practices/silvopasture.htm

Windbreaks





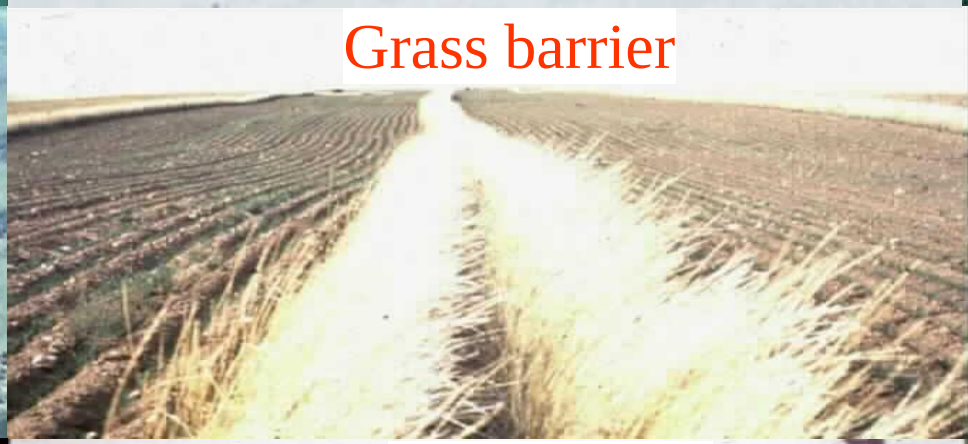

Plantings of single or multiple rows of trees or shrubs that redirect or modify the wind and are established for one or more environmental purposes.

Tree row

Fabric & Gates

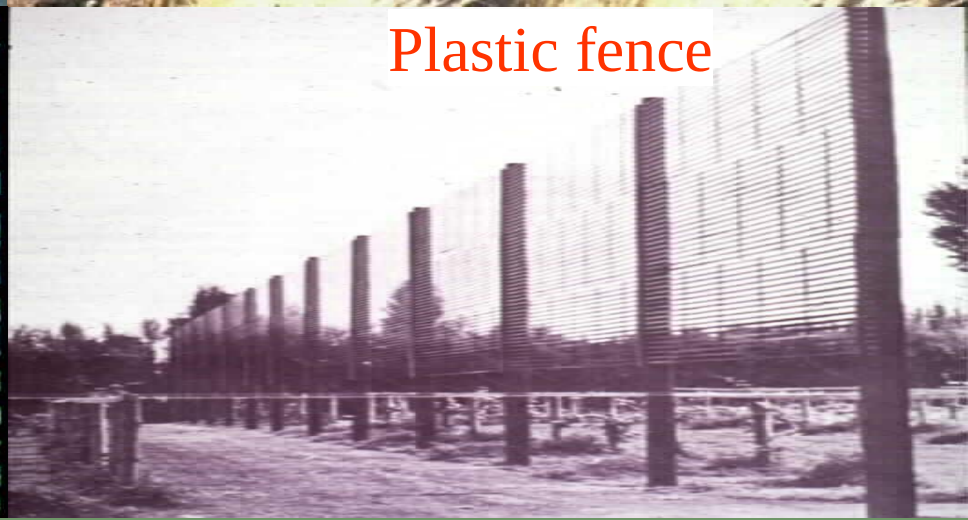
Shrub barrier

Grass barrier



Slat fence

Plastic fence



Windbreak Benefits

- ***Reduce energy costs***
- ***Screen unsightly areas***
- ***Reduce erosion and pesticide drift***
- ***Protect plants***
- ***Manage snow***
- ***Improve irrigation use***
- ***Increase crop yields***
- ***Shelter livestock***
- ***Mitigate odors and dust***
- ***Provide wildlife habitat***
- ***Enhance aesthetics***
- ***Sequester carbon***

Types of Windbreaks

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Questions?

Windbreak publications available at:
http://nac.unl.edu/practices/windbreaks.htm

Alley Cropping

Growing an annual or perennial crop simultaneously in the alley ways between rows of a long term tree crop. The agricultural crop generates annual income while the longer-term tree crop matures.

Alley Cropping Benefits

- ***Diversify farm enterprise***
- ***Reduce erosion***
- ***Improve water quality***
- ***Protect crops***
- ***Improve utilization of nutrients***
- ***Enhance wildlife habitat***
- ***Improve aesthetics***
- ***Store carbon***

Alley Cropping

Dan Shepherd, Clifton Hill, MO

- Planted first pecans in 1969
- 270 acres of pecans
- Originally corn and soybeans in the alleyways
- Hay Crop

Questions?

Alley Cropping publications available at:
http://nac.unl.edu/practices/alleycropping.htm

Forest Farming

*The **intentional** manipulation, **integration**, and **intensive** management of woodlands under a managed forest canopy to produce non-timber products.*

Forest Farming Benefits

- ***Improve economic value of existing forests***
- ***Diversify income***
- ***Increase cash flow***

Forest Farming

Nicola Macpherson
Ozark Forest Mushrooms, Missouri

1990 – established shiitake mushroom operation on woodland

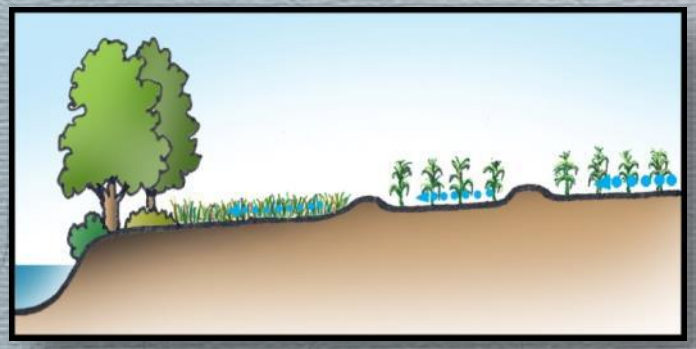
- **20,000 shiitake logs currently in production**

Markets - restaurant owners/chefs, organic food stores, internet

Questions?

Forest Farming publications available at:
http://nac.unl.edu/practices/forestfarming.htm

Riparian Forest Buffers



Riparian forest buffers are natural or planted woodlands adjacent to water bodies. They are designed with trees, shrubs, and grasses to protect water resources from non-point source pollution.

Riparian Forest Buffer Benefits

- ***Clean water***
- ***Protect aquatic habitat***
- ***Enhance wildlife habitat***
- ***Protect stream banks***
- ***Income source (timber and specialty products)***
- ***Flood protection***

Riparian Buffers

Rob Miller, Mt. Jefferson Farms Inc. , Salem, Oregon

1970s – First riparian buffers

- Planted cottonwood trees
- "Working" buffers provides:
- ✓Income from wood products
- ✓Protect farmland from erosion and flooding
- ✓ Trap nutrients from fields

TODAY – "Systems approach"

- Integrates understory plants into buffers
- Vegetables for local food markets (~200 varieties)

Questions?

Riparian Forest Buffer publications available at:
http://nac.unl.edu/practices/riparianforestbuffers.htm

Working Trees – Putting it all Together!

Tom Wahl & Kathy Dice, Red Fern Farm, Wapello, IA

1986 – established on cropland, degraded woodlands, now has 86 acres:

- **Windbreaks –** fruit & nut-bearing trees (e.g. chestnuts, persimmons)
- **Silvopasture –** nut trees provide shade for Cornish rock hens; hens provide enhanced fertility and biocontrol of insect tree pests
- **Forest Farming –** ginseng and goldenseal in the woods
- **Alley Cropping –** herbs with trees

Agroforestry: the 'Leatherman' within the 'Climate Change -Integrated' Toolbox for Agriculture

MITIGATION

1. Sequester (& conserve) carbon
2. Reduce greenhouse gas emissions

ADAPTATION

3. Reduce threats & enhance **resilience**
4. Allow species migration to more favorable environments

....All while doing their other jobs

Why is Agroforestry Important?

Large Farms: help meet demands:

- Increased production of food, feed, fiber, bioenergy
- Protecting water, air, soil, and….
  - ✓ Odor abatement
  - ✓ Loss of biodiversity
  - ✓ Reduce/sequester greenhouse gases
  - ✓ Adapt to a changing climate

Why is Agroforestry Important?

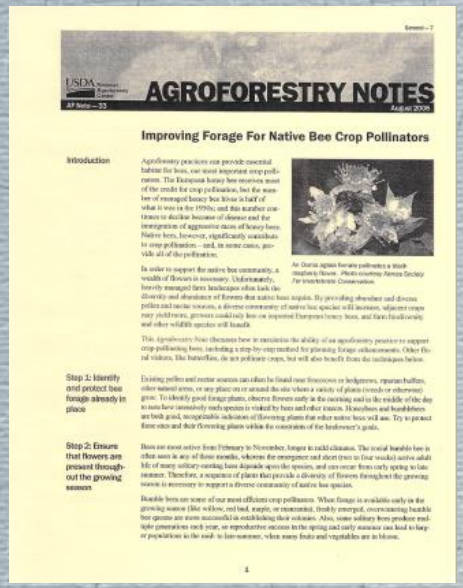
Small Farms: increases profitability

- Cannot compete in large commodity markets
- Need specialty crops to make a profit
- Agroforestry systems can produce high value foods, medicinal, decorative products
- Markets may need to be developed

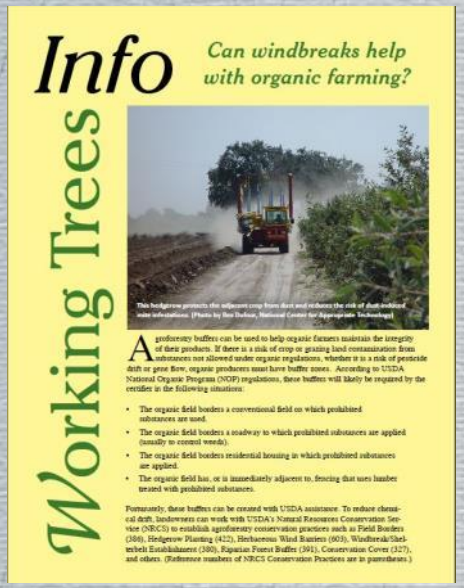
TT&A Products

Brochures

Technical Notes



Information Sheets



Newsletters

Presentations

Tools

Displays

Existing Groups in the Northeast

Chesapeake Bay Agroforestry Working Group

Forest Farming to the Forefront – Northeast Working Groups

Silvopasture.ning.com

Questions?

Publications available at:
http://nac.unl.edu/

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