

# Agroforestry: Programs, Policies, and Trends

The view from the National Agroforestry Center and  
from Washington DC

**USDA National Agroforestry Center**

Agroforestry Workshop

Corvallis, Oregon

October 21 -22, 2014



# USDA National Agroforestry Center (NAC)



USDA National Agroforestry Center  
Lincoln, Nebraska 68583

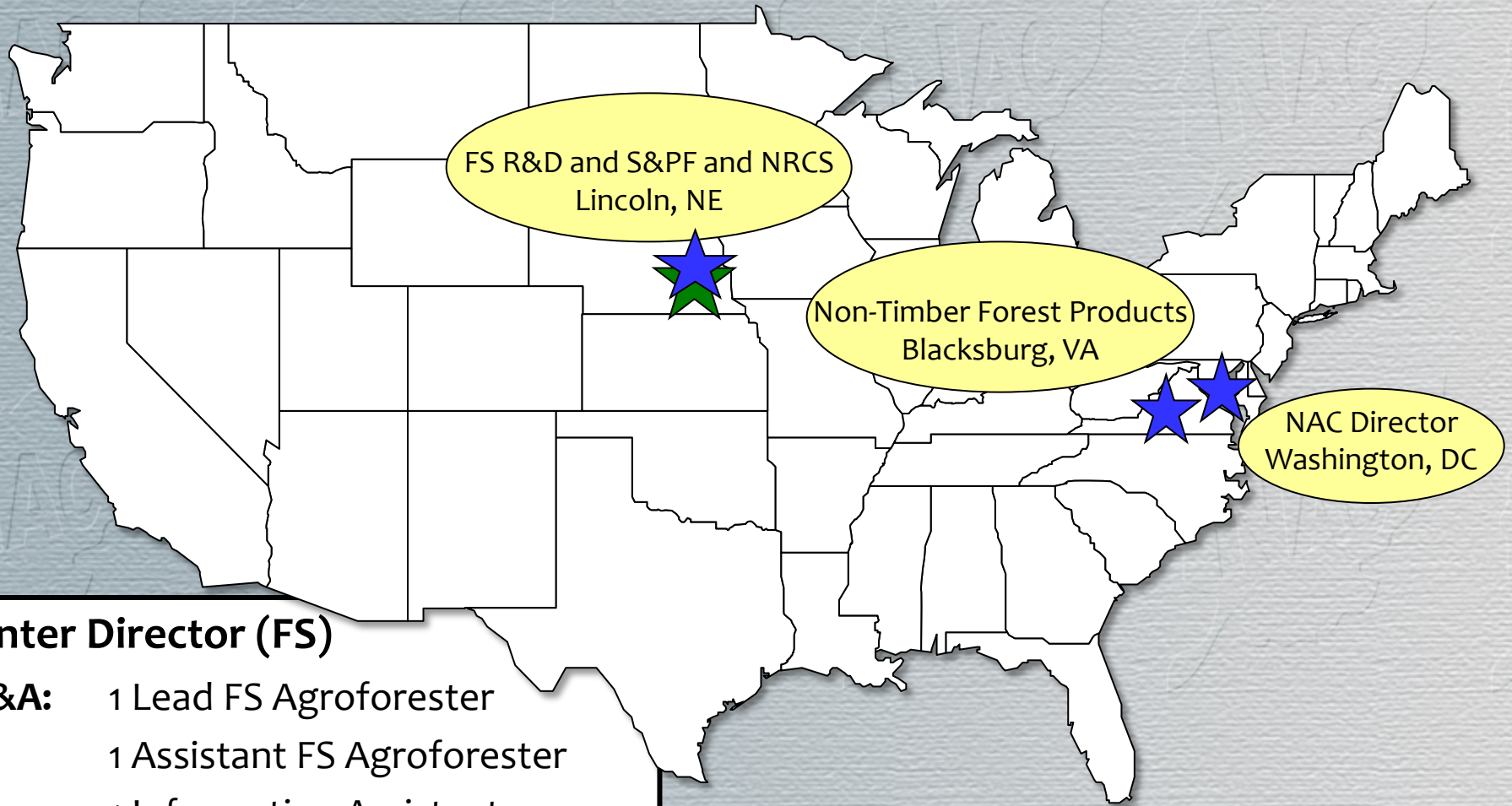
<http://nac.unl.edu/>

USFS and NRCS partnership

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

Origin: 1990 Farm Bill

# NAC Network



FS R&D and S&PF and NRCS  
Lincoln, NE

Non-Timber Forest Products  
Blacksburg, VA

NAC Director  
Washington, DC

## 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

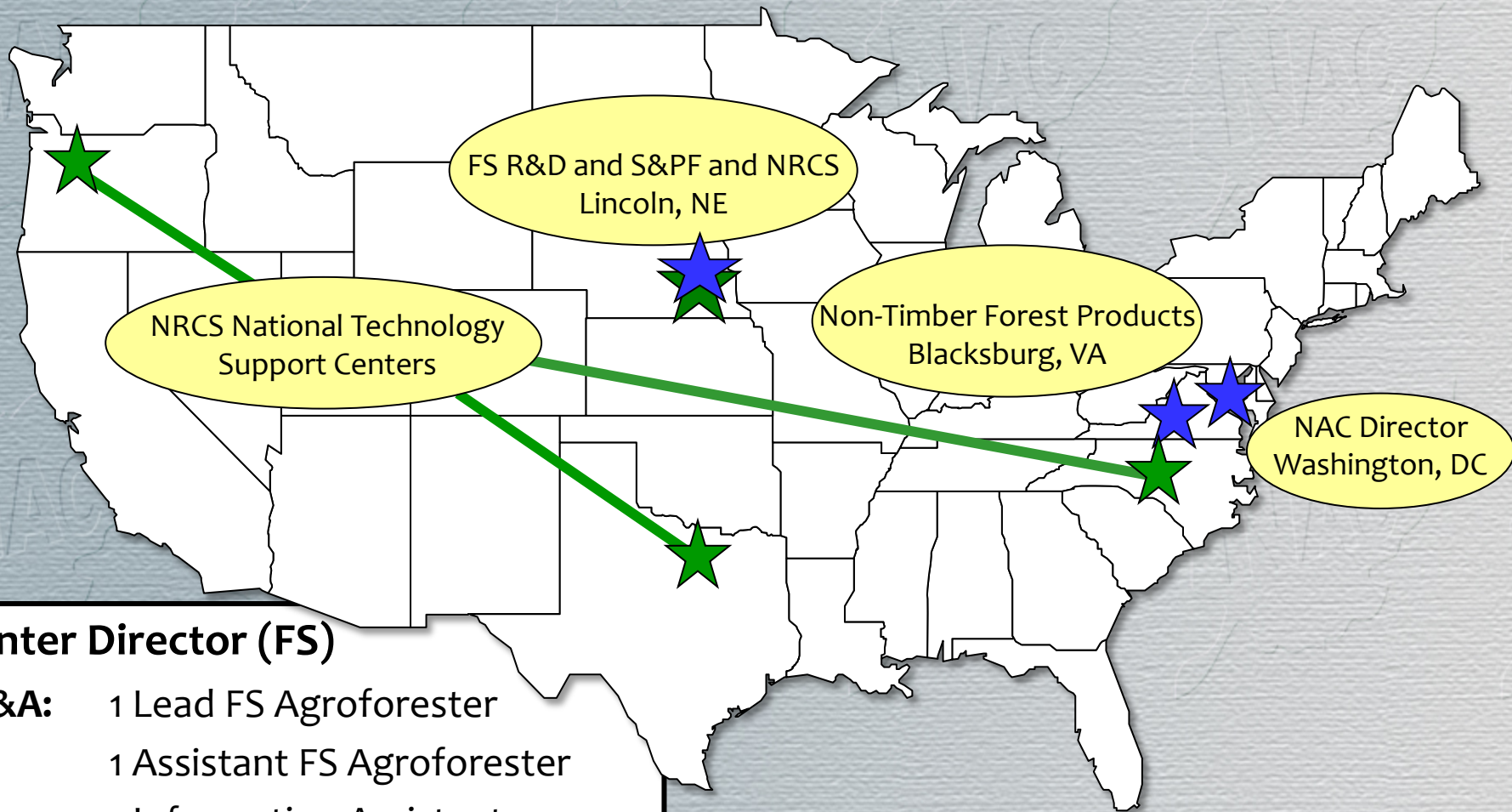
**Admin:** 2 Admin Professionals

A partnership of





# NAC Network



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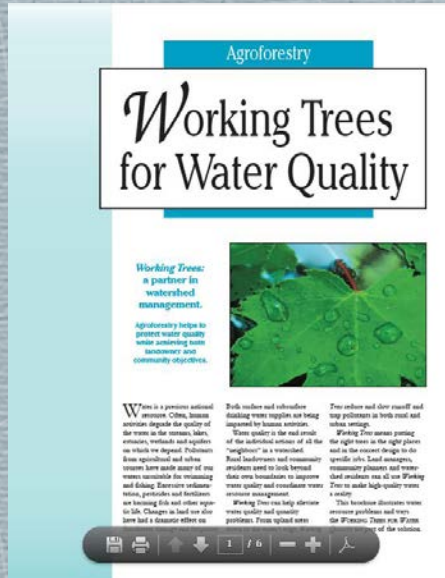
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A partnership of

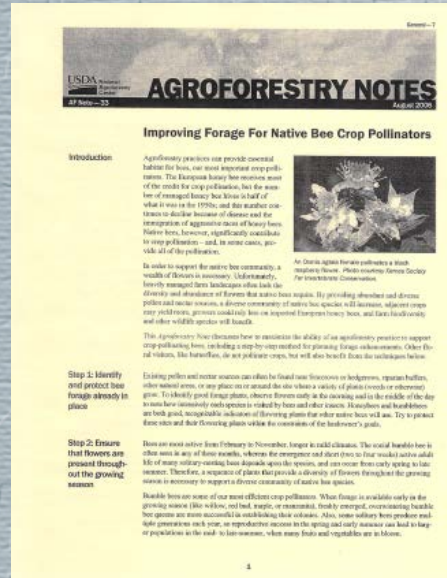


# TT&A Products

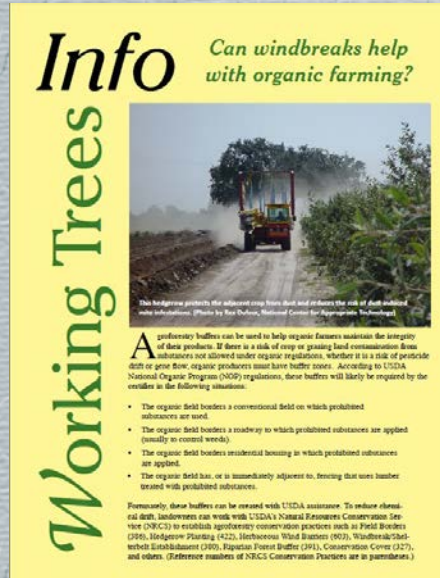
Brochures



Technical Notes



Information Sheets



Newsletters



Presentations



Tools



Displays





# TT&A Activities

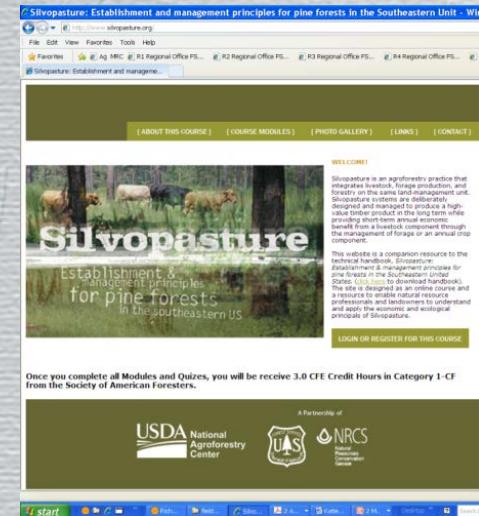
## Demonstration Sites



## Agroforestry Academy



## Online Training



## Case Studies



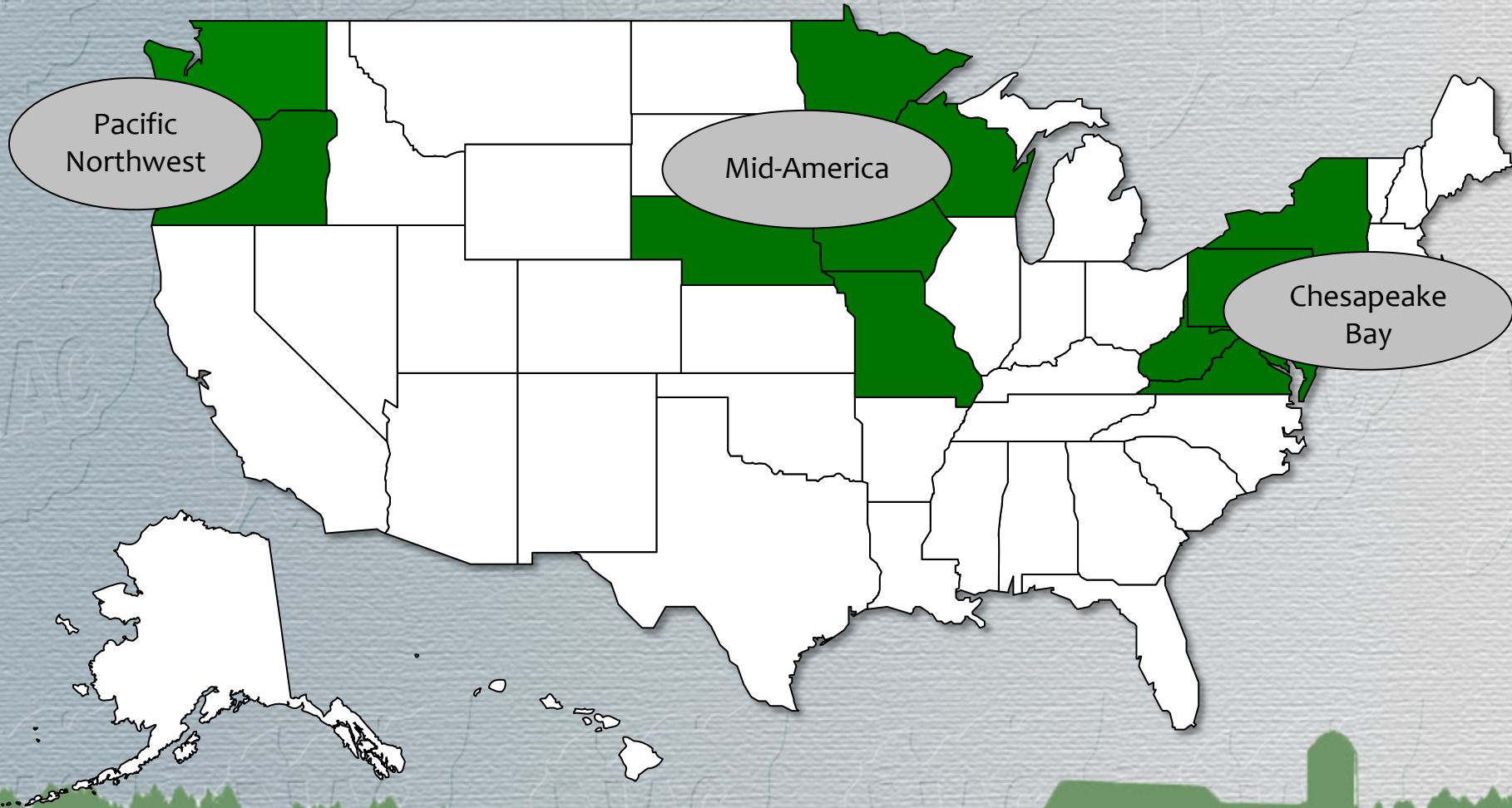
## Workshops





# TRENDS

## Regional Agroforestry Working Groups



# Mid-American Agroforestry Working Group (MAAWG)

[midamericanagroforestry.net](http://midamericanagroforestry.net)

## Members:

- Leopold Center for Sustainable Agriculture
- USDA National Agroforestry Center
- Agricultural Marketing Resource Center
- Center for Agroforestry, University of Missouri
- Center for Integrated Natural Resources & Agricultural Management, University of Minnesota
- Forest Agriculture Enterprises LLC, Wisconsin
- Green Lands, Blue Waters
- Red Fern Farm, Iowa
- Trees Forever
- University of Minnesota Extension
- USDA Agricultural Research Service
- USDA Natural Resources Conservation Service





# Mid-American Agroforestry Working Group (MAAWG)

*midamericanagroforestry.net*

## Goals :

- Identify the core issues (gaps, barriers, conflicts, opportunities) for advancing the adoption of agroforestry as a cornerstone of productive land use in the Midwest;
- Initiate and coordinate actions to address and resolve the core issues; and
- Communicate effectively with key audiences about the working group's purpose, goals, core issues actions and findings.



# MAAWG

## Recent activities:

- Received SARE grant to hold “train-the-trainer” agroforestry workshops in July 2013 and July 2014 with participants from seven states
- Works with Green Lands, Blue Waters to address hypoxia in the Gulf through increased “continuous living cover” on the landscape: agroforestry, cover crops, perennial forages, perennial biomass, and perennial grains
- Helping to organize North American Agroforestry Conference in Ames, Iowa on May 30-June 2, 2015





# Chesapeake Bay Agroforestry Working Group

## Members:

- State agencies: Pennsylvania Department of Conservation and Natural Resources, Pennsylvania Department of Agriculture, Maryland Department of Forestry, West Virginia Division of Forestry
- Federal agencies: Forest Service, NRCS, USDA National Agroforestry Center
- Universities: Penn State, Virginia Tech, Frostburg State





# Chesapeake Bay Agroforestry Working Group

## History:

- Emerged from Chesapeake Bay Agreements and Chesapeake Forestry Workgroup
- 2010 Chesapeake Bay TMDL for nutrients led to State Watershed Implementation Plans and Chesapeake Executive Order Strategy
- This includes forest restoration and agroforestry, particularly riparian forest buffers
- Agroforestry working group had its first meeting in May 2014



# Chesapeake Bay Agroforestry Working Group

## Priorities:

- Regularly scheduled training for natural resource professionals
- Setting a “common language”
- Getting both farmers and agency people excited about agroforestry
- Support incentives for practitioners
- Network-building between disciplines

## Upcoming:

- Survey of participants about involvement
- Applying for Northeast SARE grant for training in 2015



# Regional Group Questions

- What are the natural resource concerns agroforestry can help address in the PNW?
- Who is interested in agroforestry?
- Do people know who to turn to for agroforestry information?
- What types of agroforestry are already going on? What types of agroforestry could be expanded?
- What are the needs of technical service providers in the region related to agroforestry?
- What communication already takes place? What more could take place?

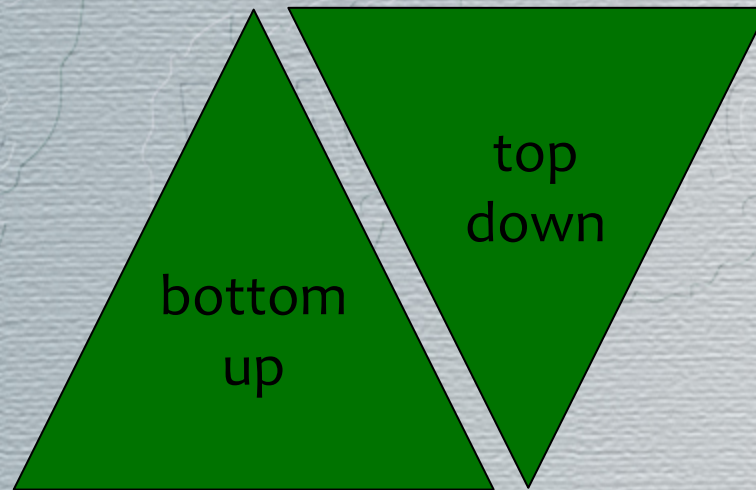


# Regional Group Questions

- What are the opportunities and constraints provided by existing policies? E.g. riparian buffer requirements
- What is the role of restoration in agroforestry?
- How does agroforestry help get at existing work related to working lands?
- Does the amount of gathering of non-timber forest products indicate these could be “forest farmed”?
- The PNW has many operations that are already diverse – could more trees be added to these systems?
- How does agroforestry relate to existing orchards?
- Are there opportunities related to local food efforts, particularly around processing infrastructure?



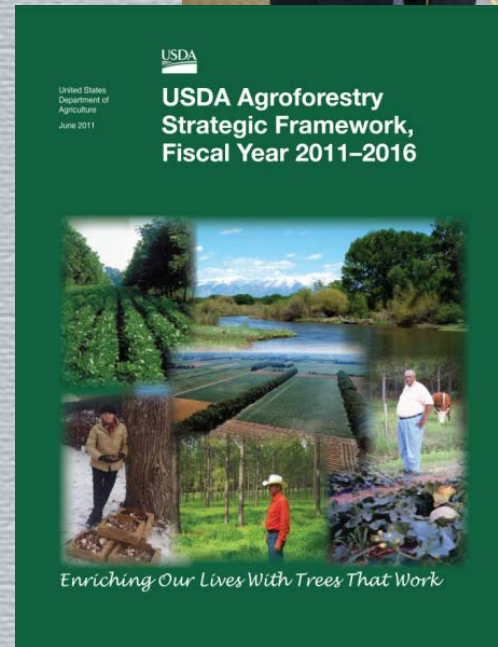
# How do federal programs and policies relate to regional efforts?





# USDA Agroforestry Strategic Framework, 2011-2016

- Released June 2011
- Developed by interagency team (five USDA agencies, National Associations of State Foresters & Conservation Districts)
- Input from 90+ stakeholders





# USDA Strategic Framework for Agroforestry, 2011-2016

## Purpose:

- Increase awareness & support for agroforestry
- Identify future USDA emphasis areas for agroforestry R&D and technology transfer

## Three Goals:

- **ADOPTION** – Increase use of agroforestry by landowners and communities
- **SCIENCE** – Advance the understanding and tools
- **INTEGRATION** – Incorporate agroforestry into

USDA

programs



# USDA Strategic Framework for Agroforestry, 2011-2016

## Key accomplishments:

- **USDA Departmental Regulation on agroforestry**  
([http://www.ocio.usda.gov/sites/default/files/docs/2012/Agroforestry\\_DR\\_2013.pdf](http://www.ocio.usda.gov/sites/default/files/docs/2012/Agroforestry_DR_2013.pdf))
- **USDA Agroforestry Executive Steering Committee**  
(guides Strategic Framework implementation)
- **First-ever USDA report on agroforestry**  
FY 2011-12 financial commitments, accomplishments, case studies, next steps



# USDA Strategic Framework for Agroforestry, 2011-2016

## USDA Agroforestry Executive Steering Committee

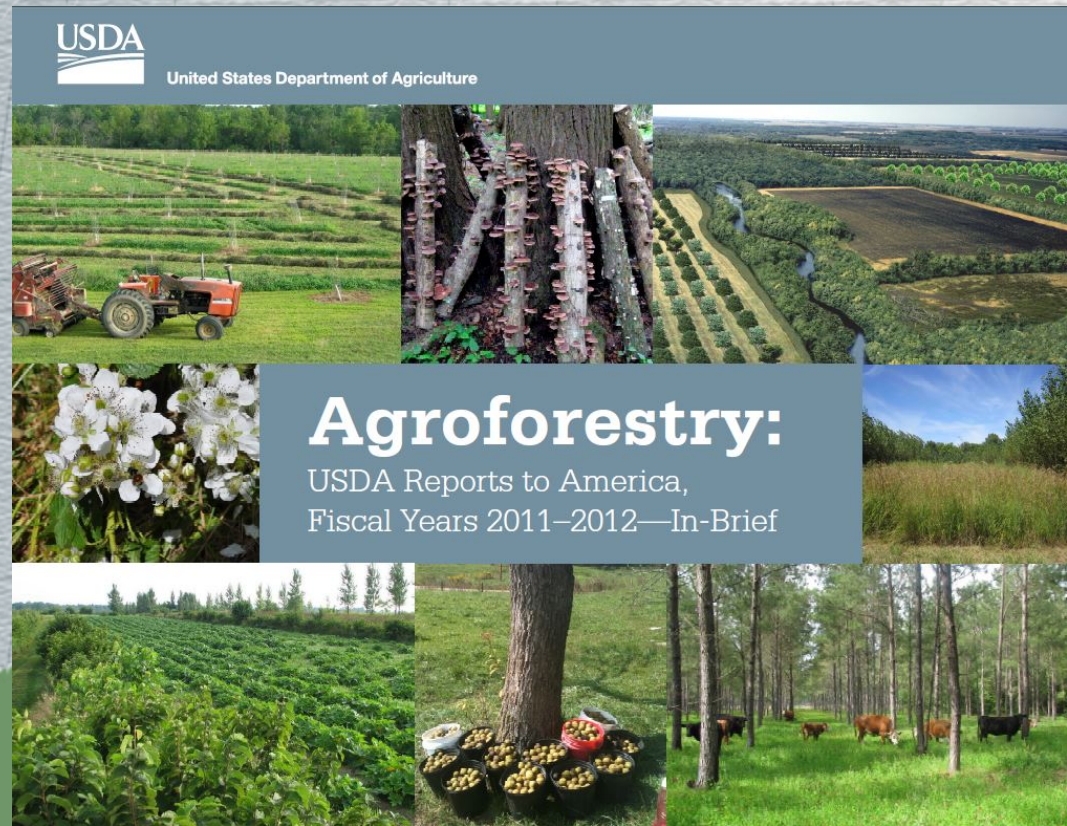
- ✓ Agricultural Marketing Service (AMS)
- ✓ Agricultural Research Service (ARS)
- ✓ Farm Service Agency (FSA)
- ✓ Forest Service (FS)
- ✓ National Agricultural Statistics Service (NASS)
- ✓ National Institute of Food and Agriculture (NIFA)
- ✓ Natural Resources Conservation Service (NRCS)
- ✓ Rural Development (RD)

**Current Chair: Wayne Honeycutt, NRCS Deputy Chief**



# Agroforestry: USDA Reports to America

- Comprehensive (~180 p) & in brief (~30 p) versions
- Federal Fiscal Years 2011-2012
- **\$333 million invested by USDA (FY 2011-12)**
- 15 case studies – feature producers, scientists, partnerships, others





# Agroforestry: USDA Reports to America

## \$333 million invested in agroforestry (FY 2011-12)

- < 1 percent of USDA's total obligations
- 95% (\$328 million) supported technical and financial assistance to help landowners apply practices
  - 99% to riparian buffers and windbreaks
  - 1% to alley cropping, multi-story cropping/forest farming, and silvopasture
- Primary programs:
  - Conservation Reserve (FSA)
  - Environmental Quality Incentives (NRCS)



# POLICIES

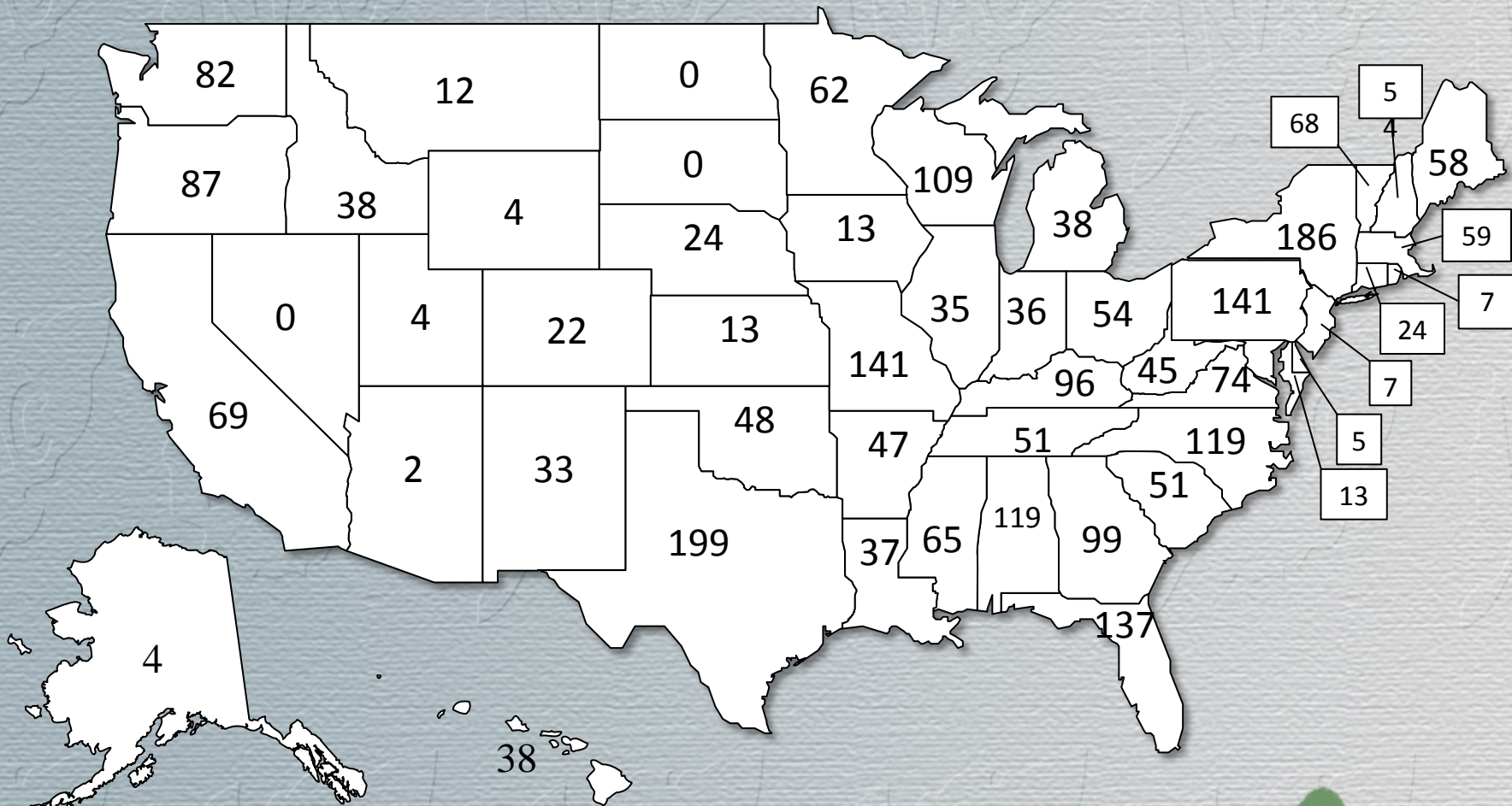
2012 Census of Agriculture included the first-ever agroforestry practice question:

***“At any time during 2012, did this operation practice alley cropping or silvopasture as an integrated Agroforestry system?”***

- **2,725 farms** in all but three states said “yes”
- **Makes possible:** follow-on surveys and analysis of producers who responded “yes” or “no”



# 2,725 farms said they practiced alleycropping or silvopasture





# POLICIES

## **FSA Conservation Practices**

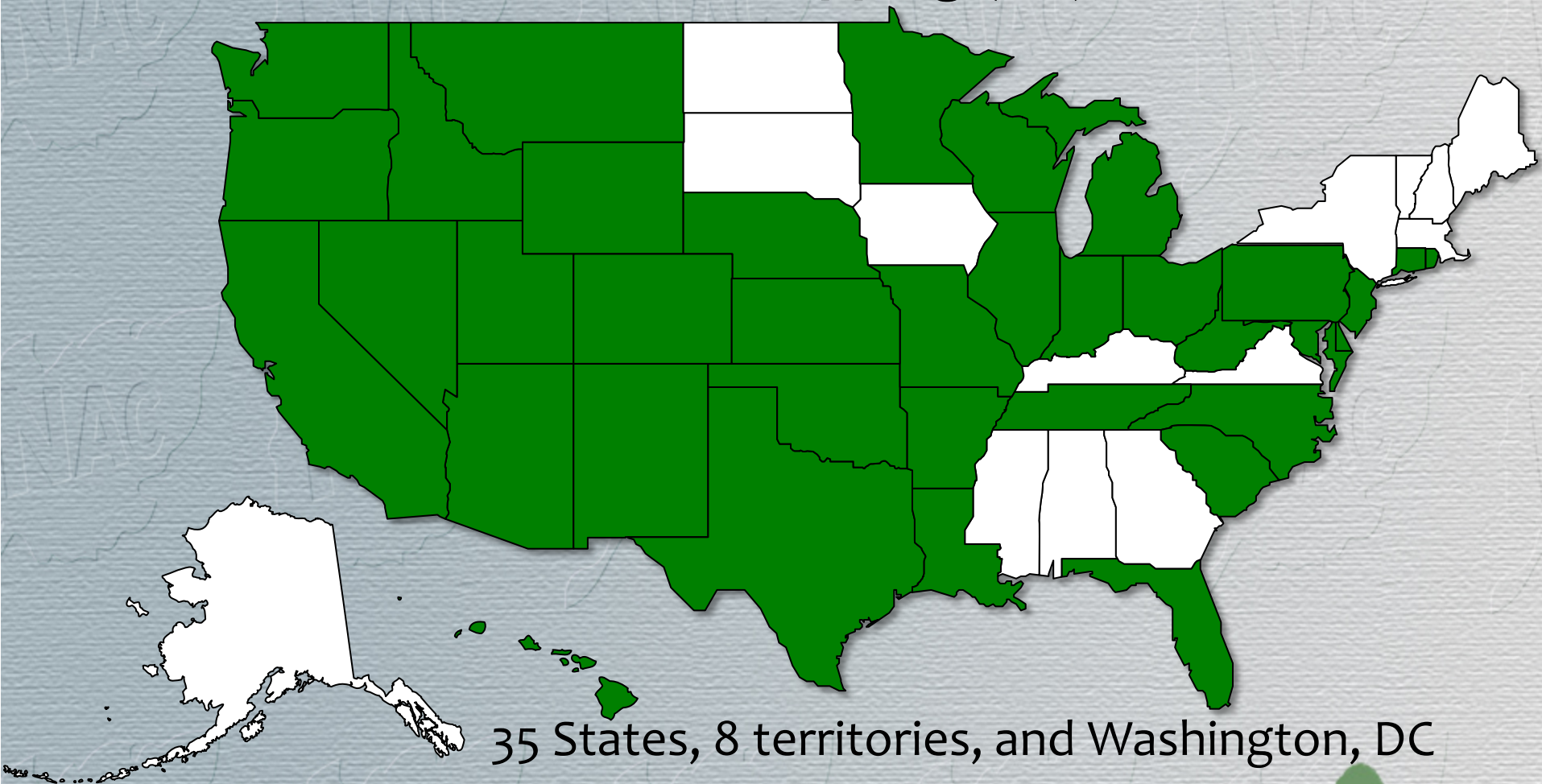
- CP5 Field Windbreak
- CP16 Shelterbelt
- CP17 Living Snow Fences
- CP22 Riparian Buffer
- CP31 Bottomland Timber Establishment on Wetlands

## **NRCS Technical Standards**

- Alley Cropping (311)
- Multi-Story Cropping (379)
- Riparian Forest Buffers (391)
- Silvopasture establishment (381)
- Windbreak/Shelterbelt Establishment (380)
- Windbreak/Shelterbelt Restoration (650)

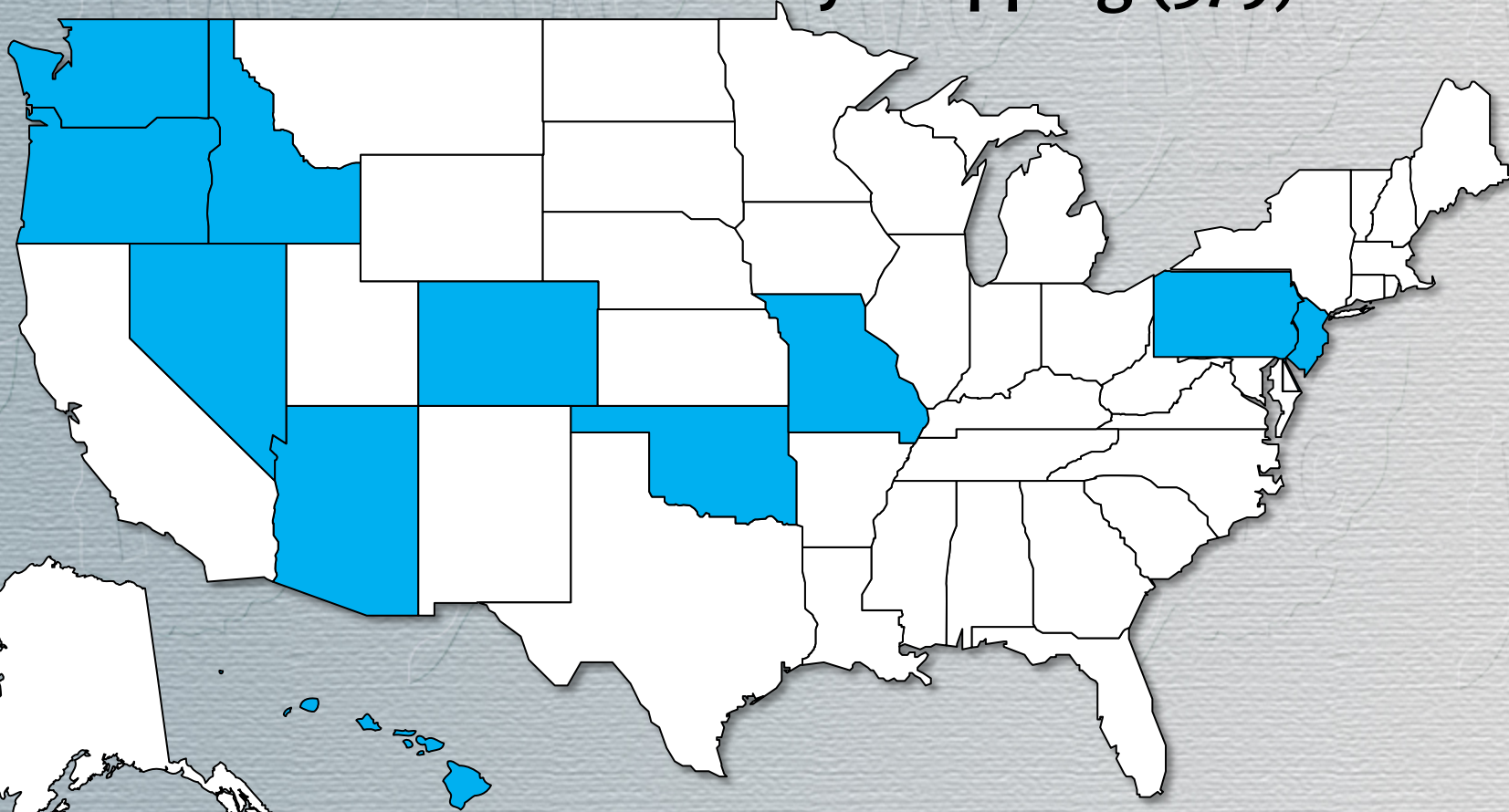


# States and territories that have adopted the NRCS Technical Standard on **Alley Cropping** (311)





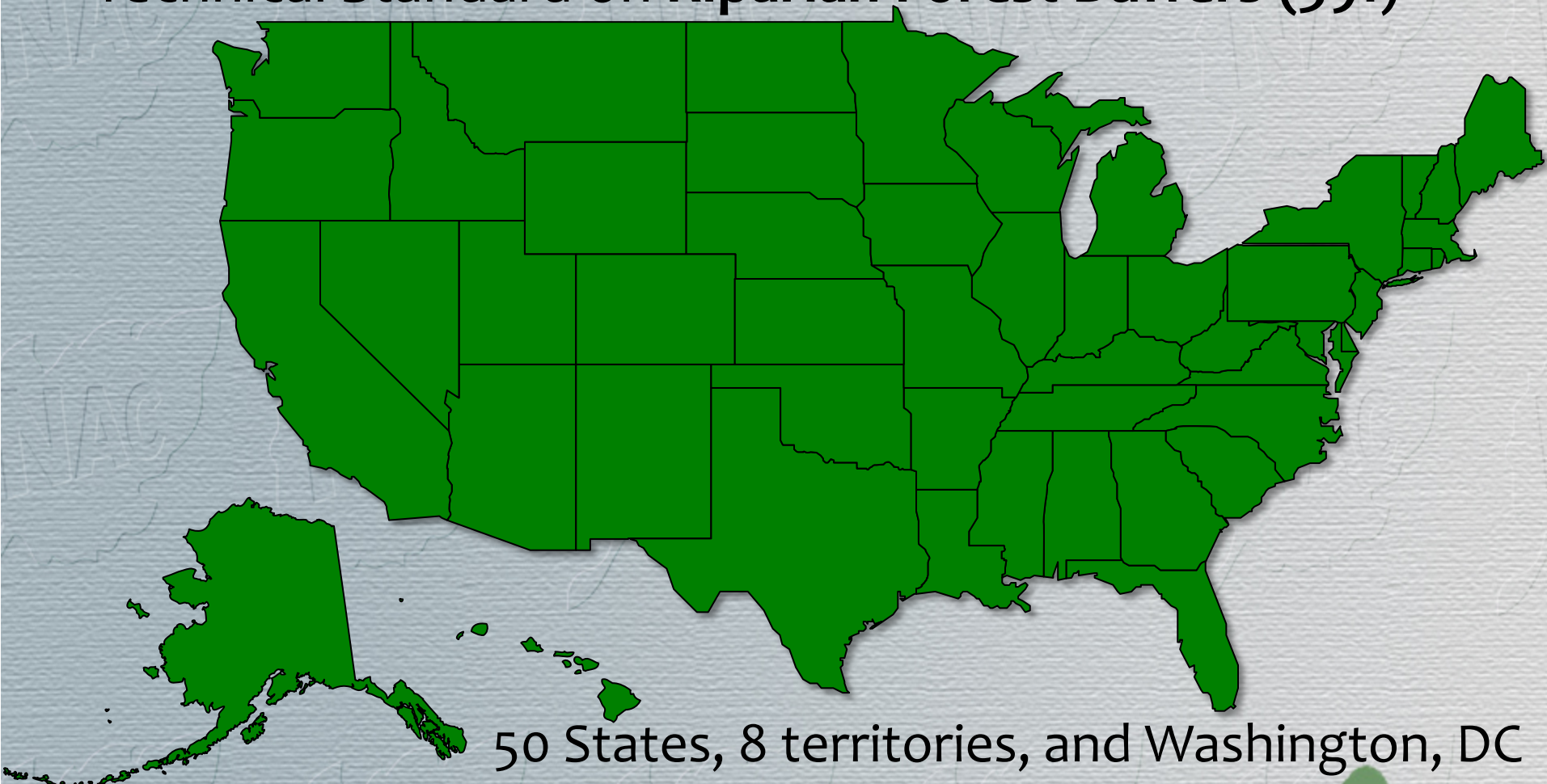
# States and territories that have adopted the NRCS Technical Standard on **Multi-Story Cropping** (379)



11 States and 8 territories



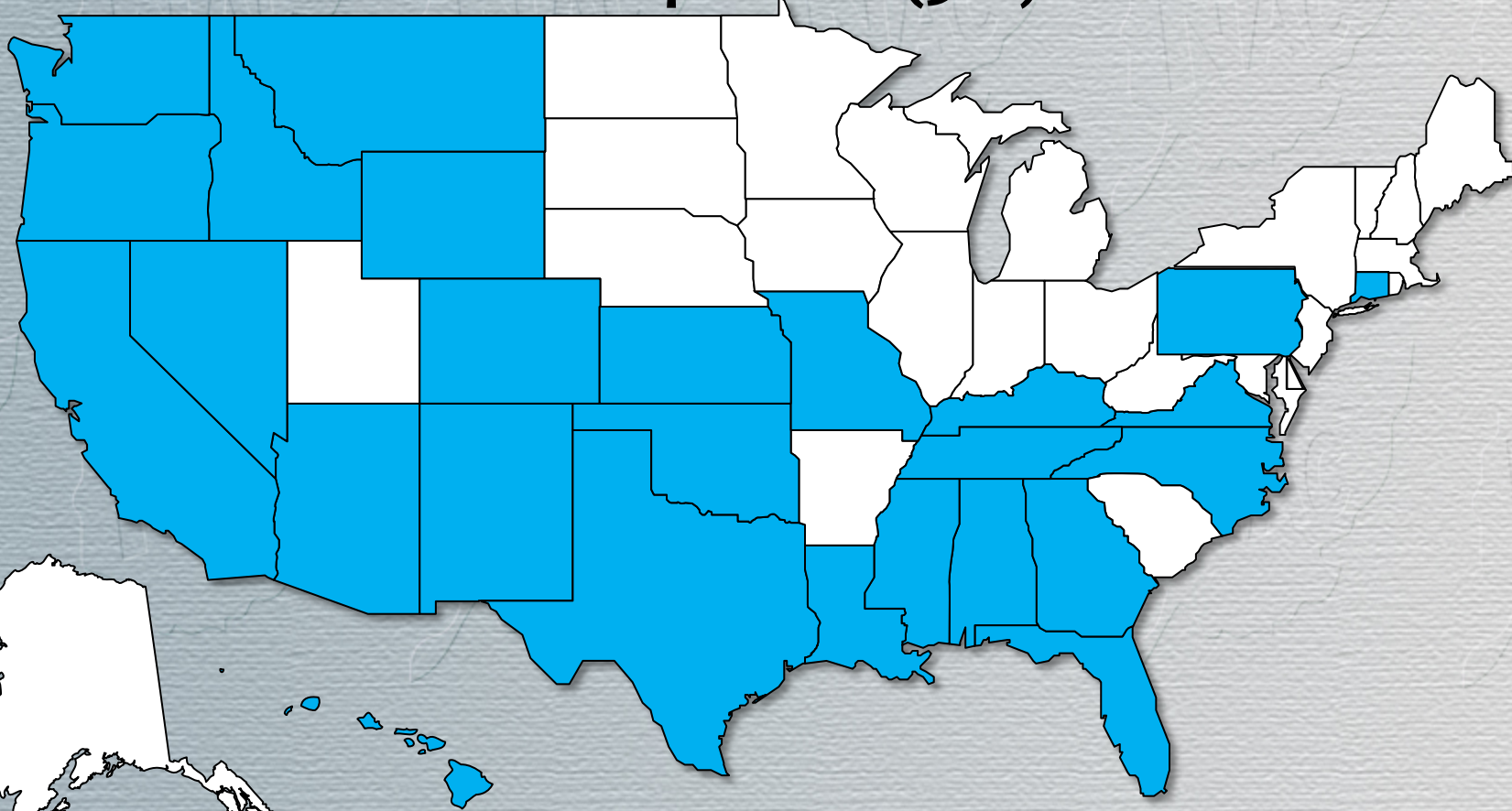
# States and territories that have adopted the NRCS Technical Standard on **Riparian Forest Buffers** (391)



50 States, 8 territories, and Washington, DC



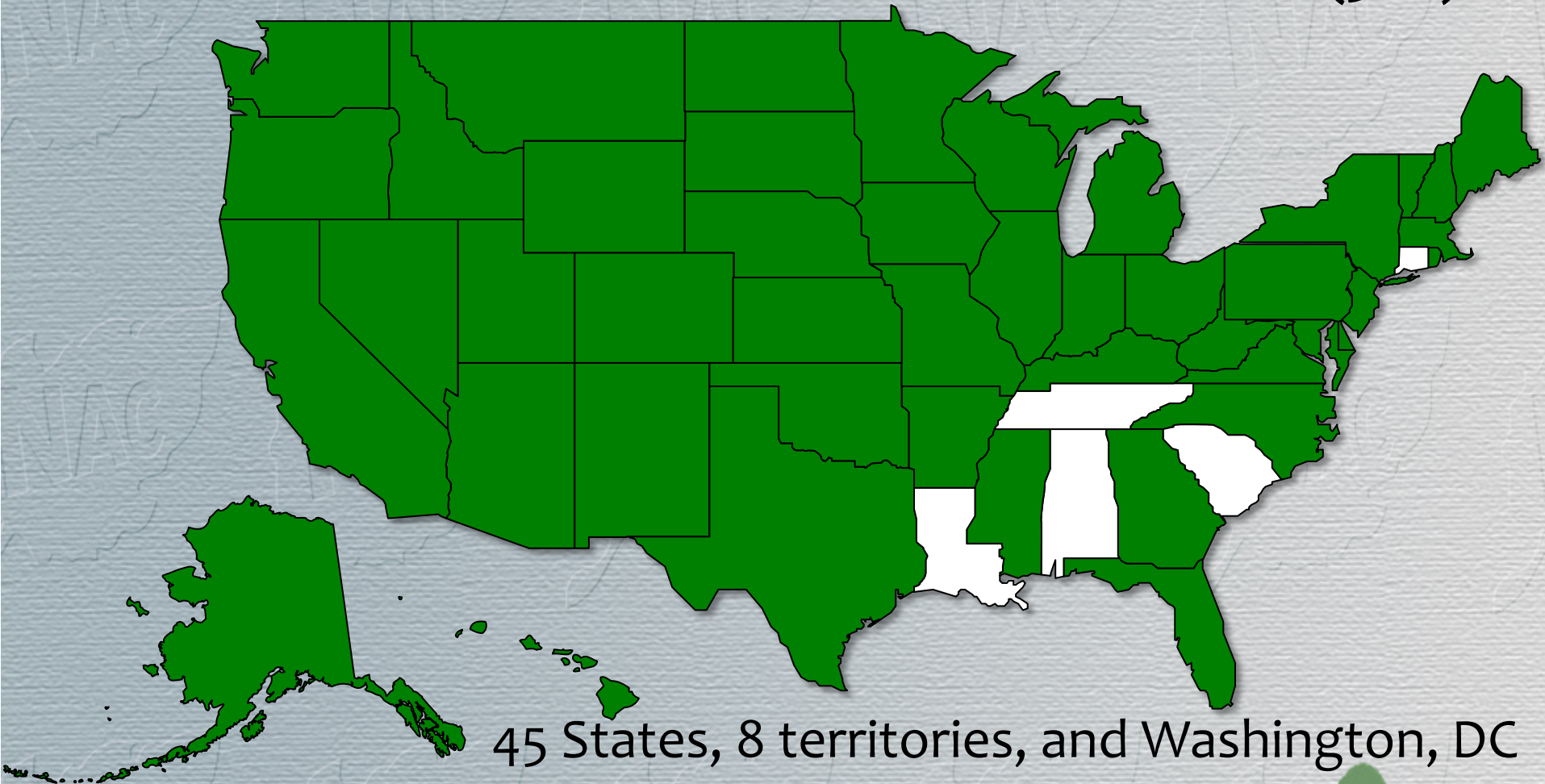
## States and territories that have adopted the NRCS Technical Standard on **Silvopasture** (381)



## 24 States and 8 territories

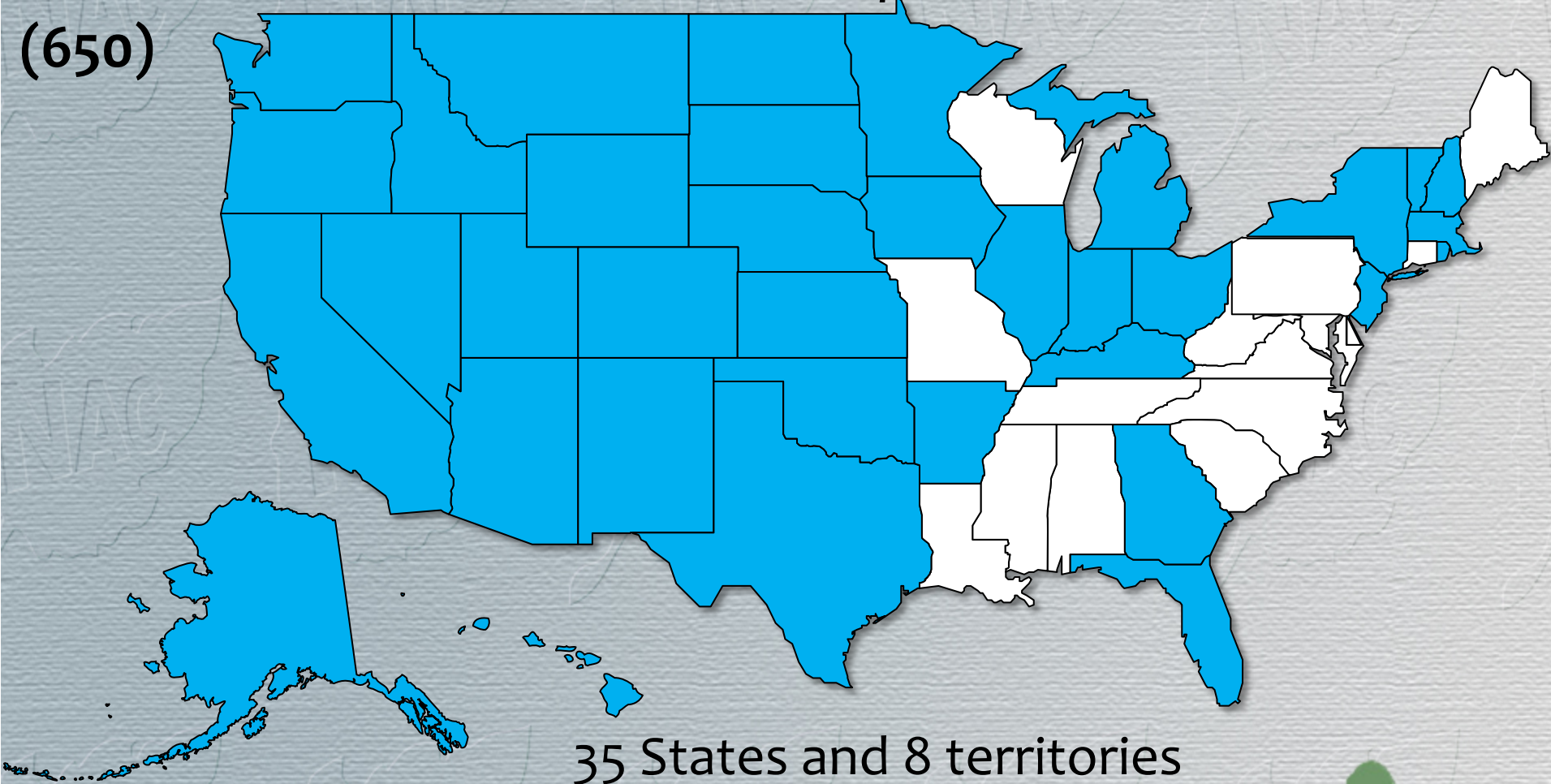


# States and territories that have adopted the NRCS Technical Standard on **Windbreak/Shelterbelt Establishment (380)**





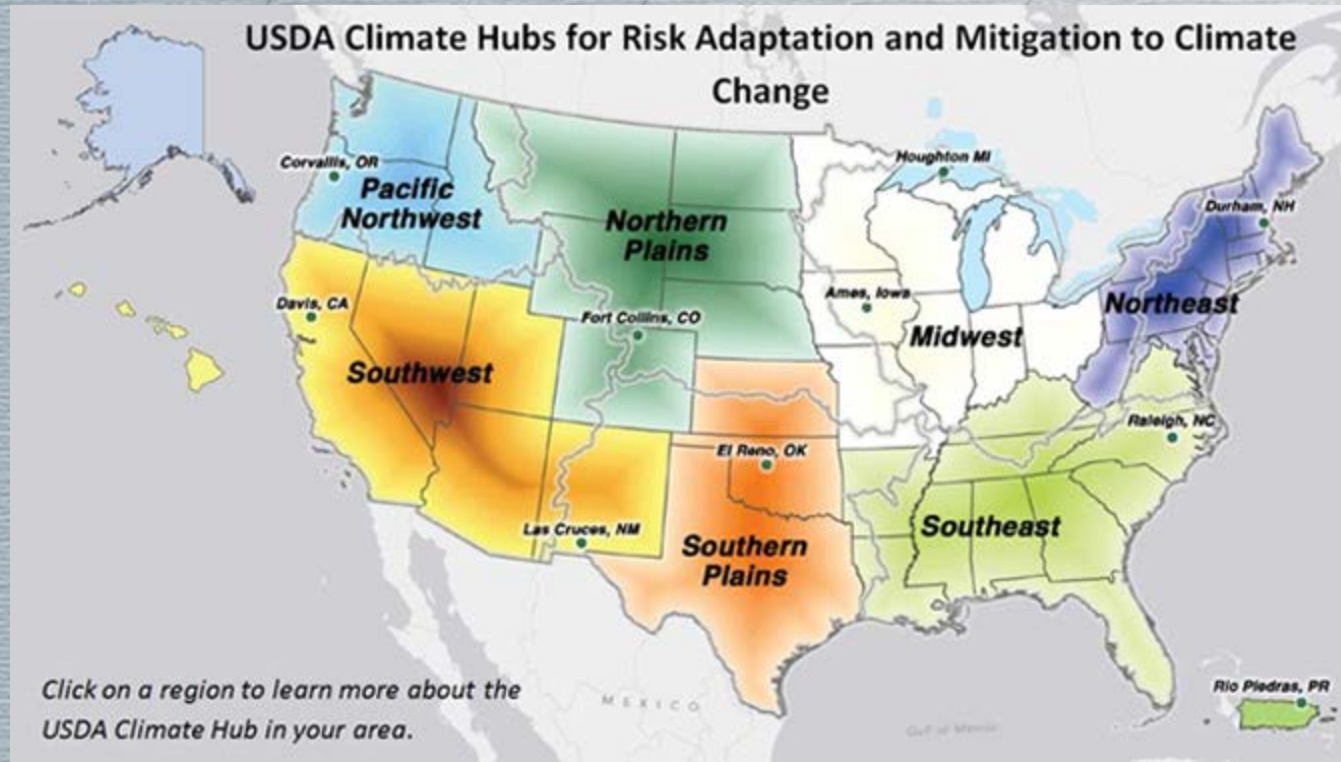
# States and territories that have adopted the NRCS Technical Standard on **Windbreak/Shelterbelt Renovation** (650)





# ISSUES

## 1) Climate Change





# ISSUES

## 1) Climate Change

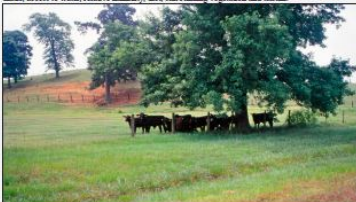
NAC Publications related to mitigating and adapting to climate change

**Info** *Mitigating Heat Stress in Cattle*

**Working Trees**

What causes heat stress?

Heat stress in cattle causes a reduction in feed intake, weight gain, milk production and breeding efficiency. Ideal conditions for beef and dairy cattle include a temperature range between 41° and 77° F. Higher temperatures begin to cause stress in cattle, depending on environmental factors such as shade, access to water, relative humidity, diet, surrounding vegetation and terrain.



Livestock crowd together in the shade of a lone tree. —NAC Photo

There are also internal physiological issues that contribute to heat stress. For example, greater amounts of fat in heavier cattle cause them to suffer from heat stress more so, similarly, heavier cattle have more internal heat to dissipate than non-lactating animals. Some forage plants such as tall fescue and perennial ryegrass can be endophyte infected, producing alkaloids that raise deep body temperature in cattle. All of these factors contribute to heat stress.

Heat stress can even result in greater calf mortality and increased veterinary costs. Moreover, it causes livestock to drink more water, and lose more sodium, magnesium, and potassium in their urine.

**Management strategies for coping with heat**

Shade and water for cattle is paramount! Therefore, management strategies must include provision of shade, providing adequate water, improving ventilation in barns, providing more high quality forage and reducing work necessary to access food, mineral and water. Livestock shading can be employed with trees, buildings, or portable structures, but cattle generally prefer natural shade. Trees on the grazing landscape usually have an advantage over barns and temporary structures because of the cooling effect that evapotranspiration provides, better ventilation and reduced reflection of sunlight rays. When producers are unable to manage grazing through rotational systems, block plantings of trees protected with fencing will provide shade on the north and east sides of the planting. However, producers that employ rotationally grazed systems with agroforestry achieve maximum benefits. Agroforestry provides shade throughout the pasture which benefits the cattle whether milking, feeding or grazing. An ample supply of water is another important tool for coping with heat. A rise in the ambient temperature from 70° to 90° F results in a 38% increase in drinking water requirement for beef cattle. Further utilizing block plantings of trees or agroforestry, it is also important to provide continuously available mineral supplements and salt. In rotationally grazed agroforestry, moving livestock to new pastures more frequently will provide higher quality forage. Better quality forage requires less fermentation, which can result in reduced rumen heat.

**USDA** **Inside Agroforestry**

**WEATHER ALERT**



**BREAKING NEWS**

...(Lincoln, NE) Agroforestry Mitigates Extreme Weather Effects...(Home)

Kate MacFarland  
National Agroforestry Center  
Lincoln, NE

**R**esidents of the US and other countries are increasingly facing extreme weather events such as drought, intense storms, and wildfires. Agroforestry provides many opportunities to help mitigate and adapt to these events through establishing practices that lessen their impact on crops and livestock. This newsletter examines a range of agroforestry practices that can be employed, including riparian forest buffers, agroforestry, windbreaks, alley cropping, and forest farming.

Some of these articles focus on direct interventions that landowners can take to lessen the impacts of extreme weather events on their land. A number of agroforestry practices can be used to reduce fuel loads and make landscapes more resilient to fire. Riparian forest buffers can be used to lessen the impacts of severe storms and flooding.

Windbreaks can be used to distribute snow, increasing water availability in the face of drought. Silvopasture can help reduce stress on livestock at times of extreme heat.

Other articles in this newsletter focus on the role of agroforestry in reducing greenhouse gas emissions. Producing feedstock for biofuels that replace fossil fuels can reduce greenhouse emissions. New tools are being developed to measure how much carbon is sequestered through implementing agroforestry practices on farms and ranches.

Agroforestry practices have multiple benefits, achieving landowners' goals for income creation, food production, habitat improvement, or water quality, while simultaneously providing opportunities to mitigate and adapt to extreme weather events. This newsletter seeks to share information about many of these opportunities. &

**Newsletter Outlook**

SNOW	HEAT	FLOOD
3	5	10



# ISSUES

## 1) Climate Change



### Agroforestry & Climate Change: Reducing Threats and Enhancing Resiliency in Agricultural Landscapes (May 2014, Nebraska City, NE)

- **Purpose:** to produce a USDA technical report on the potential of agroforestry to serve as a mngt option for both GHG mitigation & climate change adaptation tool.  
→ to feed into the 2017 National Climate Assessment
- **Focus:** on many areas in agroforestry where the scientific research is growing and benefits can be seen; as well as on the major gaps that impede our understanding and application, and therefore, **what are those major research priorities.**

Support  
document on  
agroforestry for  
the 2017  
National Climate  
Assessment



# ISSUES

## 2) Local Food and Organic Food





# ISSUES

## 2) Local Food and Organic Food

NAC publications  
related to markets  
for local food  
produced in  
agroforestry systems





# ISSUES

## 3) Pollinators

**Federal Strategy to Promote the Health of Bees and other Pollinators** (announced June 20, 2014): must devise a national pollinator health strategy within 180 days.





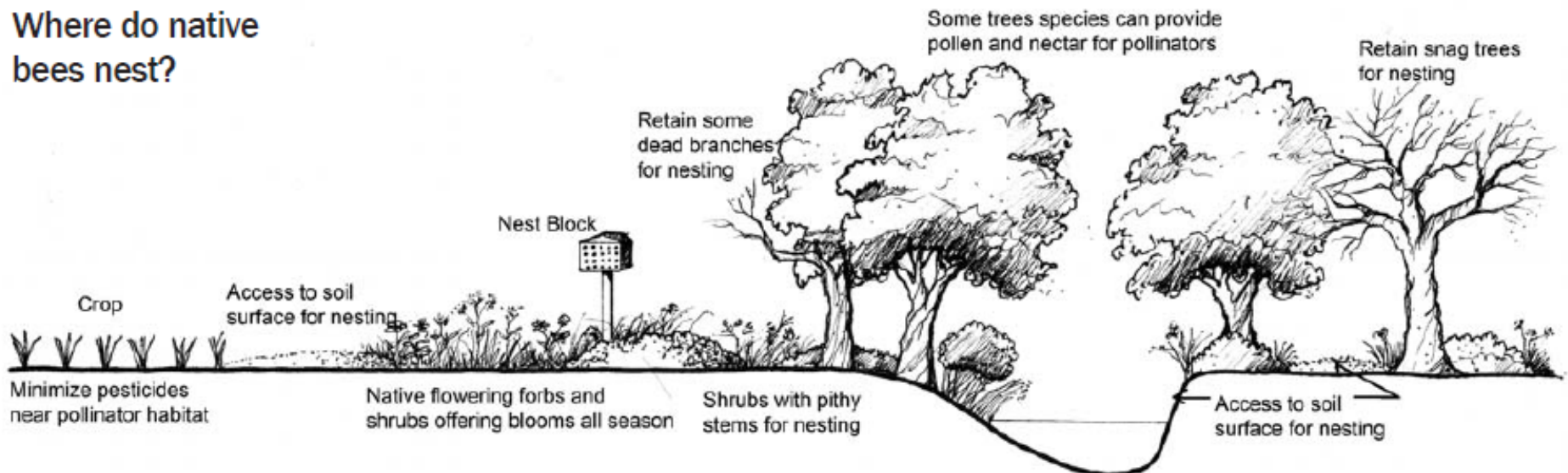
# ISSUES

## 3) Pollinators

Technical notes on:

- Agroforestry: Sustaining Native Bee Habitat For Crop Pollination
- Improving Forage For Native Bee Crop Pollinators
- Enhancing Nest Sites For Native Bee Crop Pollinators
- Pesticide Considerations For Native Bees In Agroforestry

Where do native bees nest?





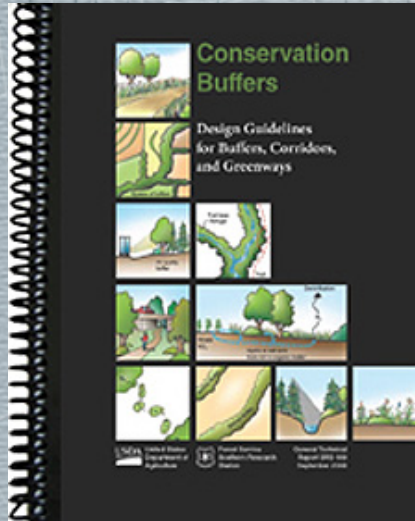
# TRENDS

## 1) Partnerships and Networks

### Windbreaks



Southern Plains  
Windbreak  
Renovation  
Workshop



### Riparian Forest Buffers

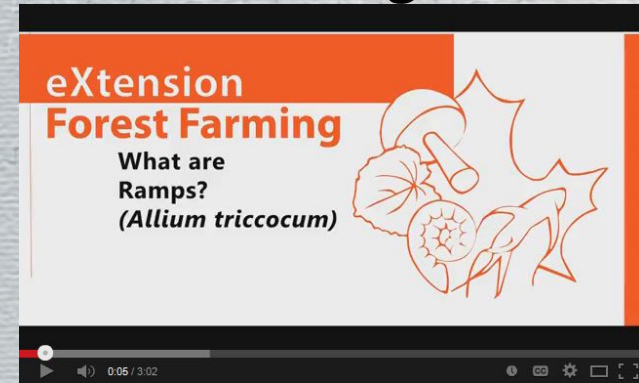
Conservation  
Buffers  
Design  
Guidelines

### Alley Cropping

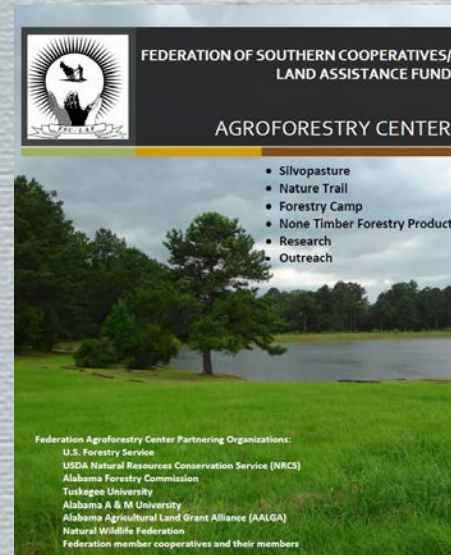


Carbon studies at the Center for  
Environmental Farming Systems

### Forest Farming



YouTube videos



### Silvopasture

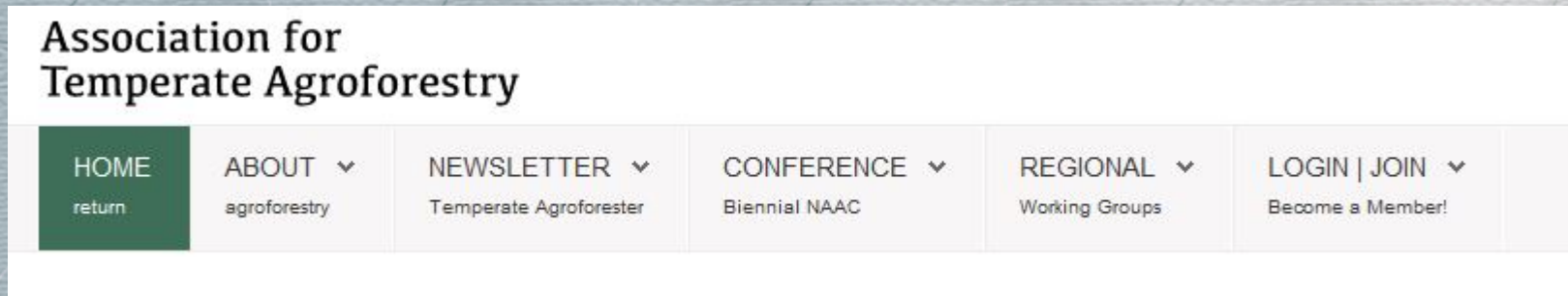
Federation of  
Southern  
Cooperatives  
Agroforestry  
Demonstration



# TRENDS

## 1) Partnerships and Networks

Association for Temperate Agroforestry: [aftaweb.org](http://aftaweb.org)



Canada's Agroforestry Development Centre





# TRENDS

## 2) Agroforestry Education

University of Missouri Center for Agroforestry



National “Certified Agroforester” program  
(Journal of Forestry commentary, Dec 2012)

### COMMENTARY

*J. For.* 110(8):466–467  
<http://dx.doi.org/10.5849/jof.12-069>

### Advancing Agroforestry through Certification of Agroforesters: Should the Society of American Foresters Have a Role?

Andy Mason, Catalino Blanche, Tom Crowe,  
Mike Gold, Mike Jacobson, Shibu Jose, Scott Josiah,  
Eric Norland, Kome Onokpise, and Bruce Wight

2011 commentary, “Seven Billion Reasons to Manage Forests” notes: “... all seven billion of us rely to some degree on forests for wood for heat and fuel; as a source of food; for lumber, paper, and other forest products; and for less tangible but no less important values such as recreation.” All true! How will we sustainably produce the food, fiber, and bioenergy demanded by a global population that the United Nations estimates will exceed 9 billion by 2050 and over 10 billion by the end of the century? While enhancing environmental services and at the same time supporting agricultural production, agroforestry can be an important part of the answer.

Are America’s natural resource professionals equipped to help our farmers, ranchers, Tribes, woodland owners, and communities



# TRENDS

## 2) Agroforestry Education



Alabama Agricultural and Mechanical  
Alcorn State University  
University Arkansas in Pine Buff  
Florida Agricultural and Mechanical  
University  
Fort Valley State University (Georgia)  
South Carolina State University  
Tennessee State University  
Virginia State University  
West Virginia State University

Lincoln University (Missouri)  
Langston University (Oklahoma)  
Delaware State University  
North Carolina Agriculture and Technical  
Univ.  
Tuskegee University  
Prairie View A&M University (Texas)  
Southern University (Louisiana)  
Kentucky State University  
University of Maryland Eastern Shore



# Questions?

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

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