Building Resilience in Agriculture & Forestry: A Regional Extension Perspective

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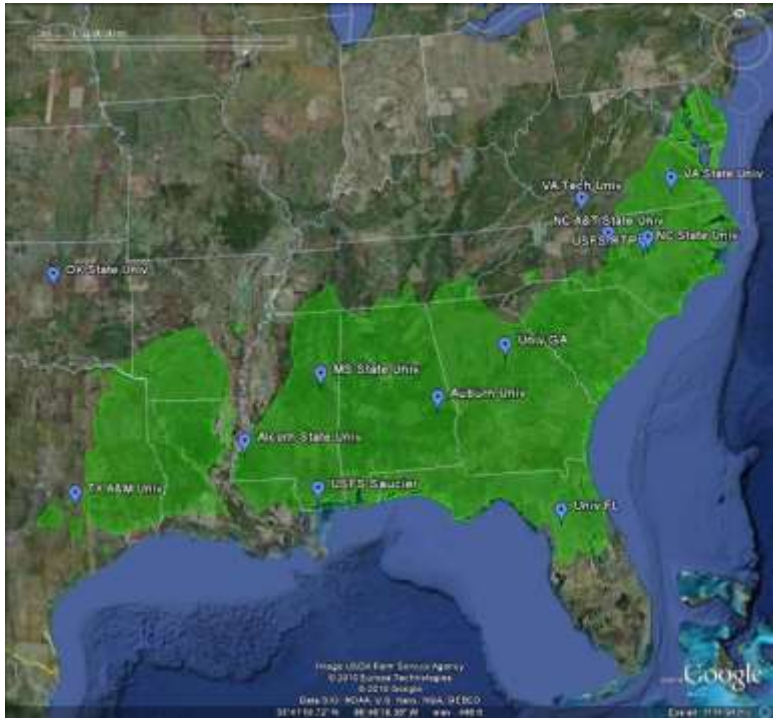
PINEMAP

Background

- USDA-funded Coordinated Agricultural Programs

PINEMAP



Mapping the future of pine management in a changing world

Outline

- Understanding stakeholders
- Influencing change
- What have we done?
- What has worked?
- Lessons Learned

Building Resilience in Agriculture and Forestry

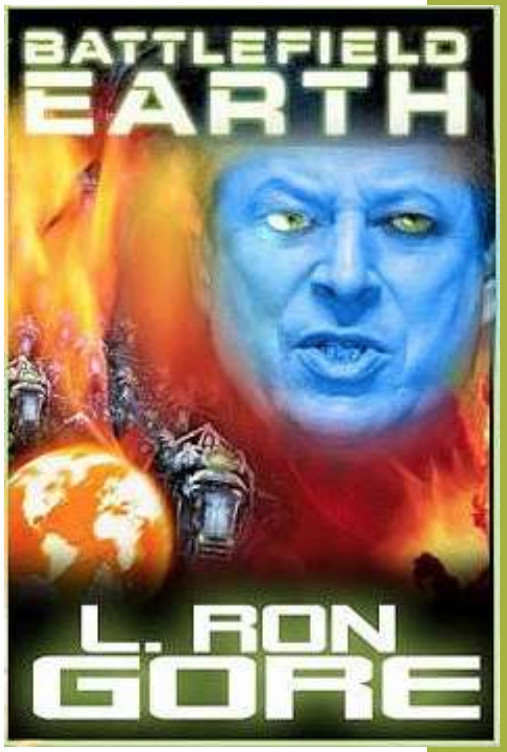
- *Resilience is the capacity of a socio-ecological system to withstand stressors and maintain function*

- Influence agriculture and forestry stakeholders to **adapt** their practices to have more resilient farms and forests

How can we influence people to make changes?

Climate Change has a trust issue

"Is this a bunch of made up political and institutional media bullcrap or what?"



"First, define "climate change." The climate is always changing- always has and always will as long as earth exists. Is "climate change" a new term for manmade global warming?

Climate change is a frequent issue in the media, so people are thinking about it and asking about it from the standpoint of: where is this going to lead us, down the road, in terms of being able to depend on the forest as a resource for future harvests and income, etc. ***Folks are concerned whether they believe climate change Is happening due to fossil fuels, nature, or some combination of human activities and nature."***

Stakeholders

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- Farmers
- Forest landowners
- Foresters
- Forest Industry
- Extension agents
  - Agriculture
  - Natural resources
  - Forestry

Influence Change-makers

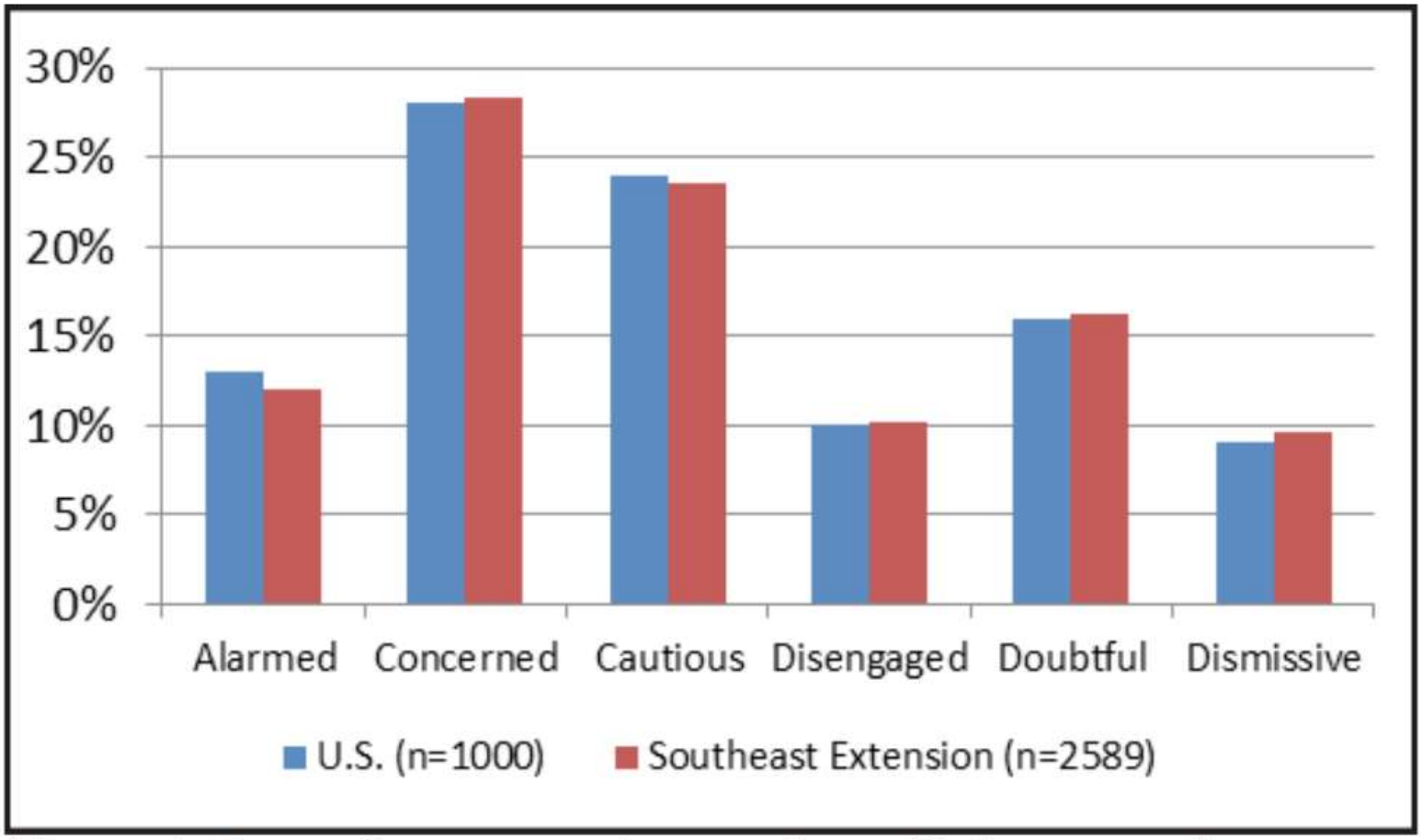
Land Grant University System & the Cooperative Extension System

- Cooperative Extension Service is built on trust
- Get Extension on your side
- Early Adopters
- Behind on this issue (sometimes)

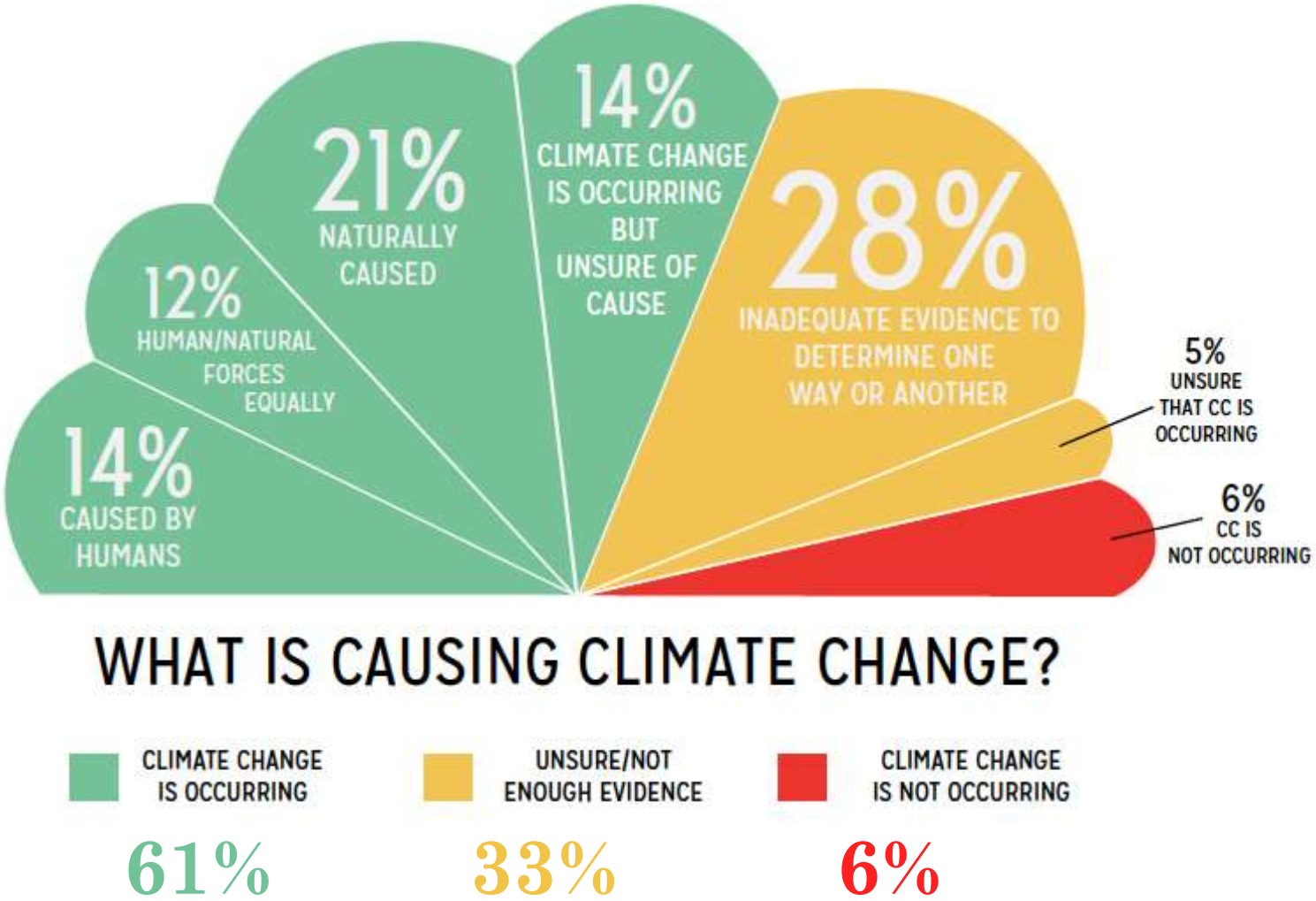
Understanding Stakeholders

- Surveys
- Needs assessments
- Informal dialogue

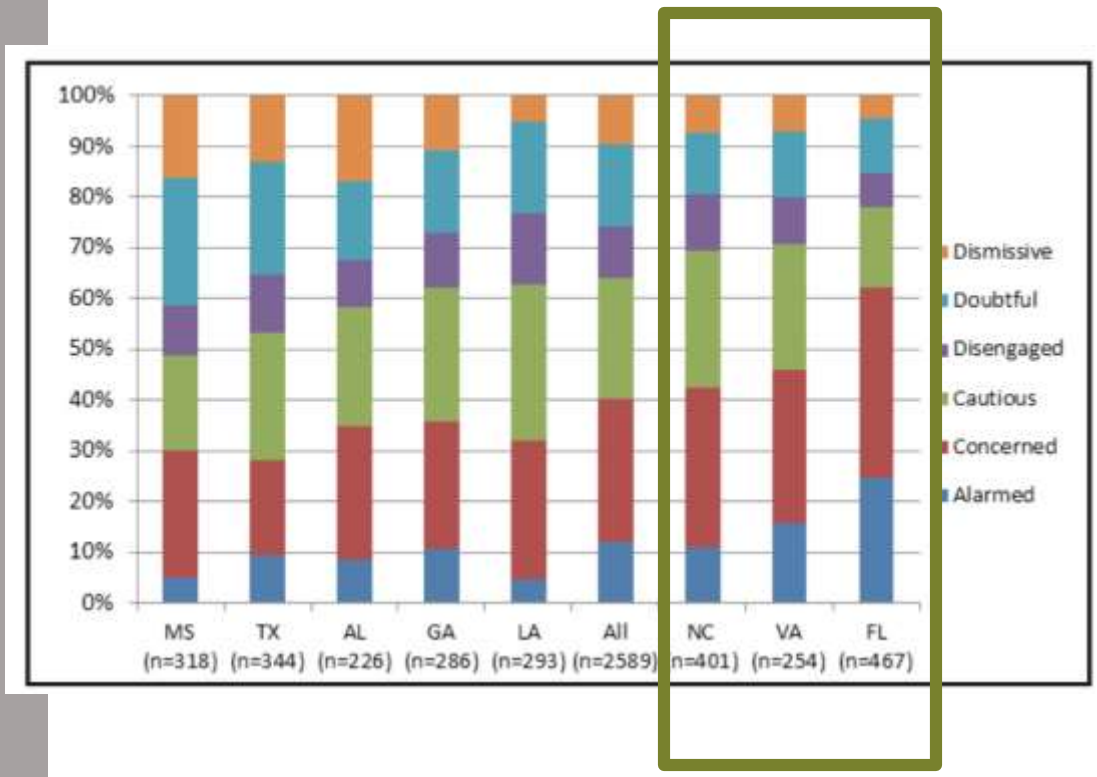
Extension Agents' Perceptions- 2012

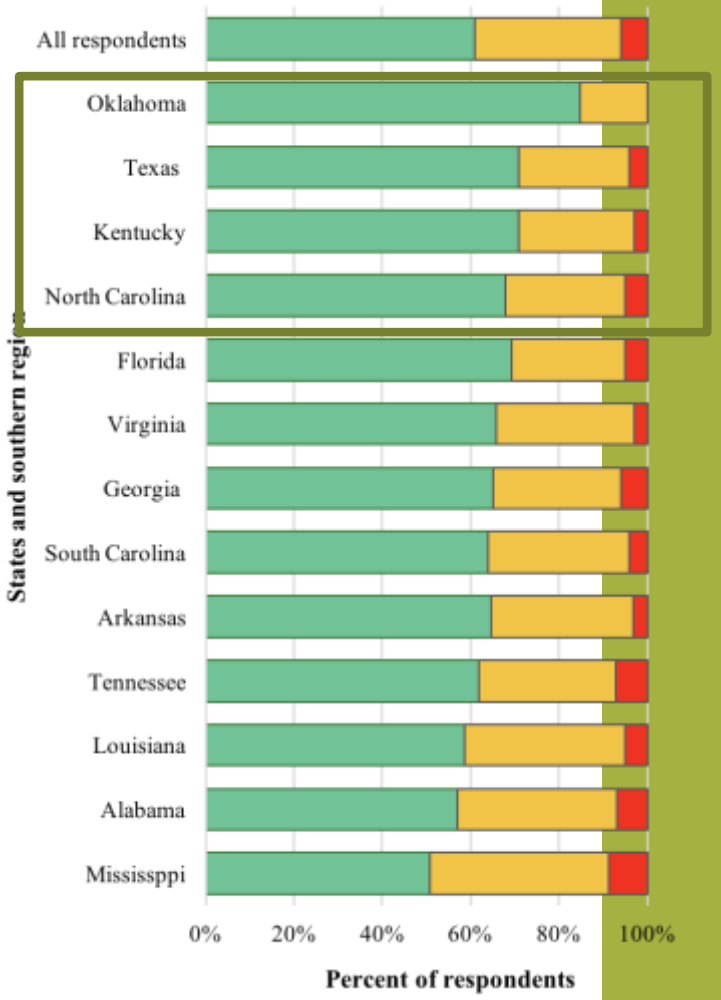


Foresters' Perceptions- 2013



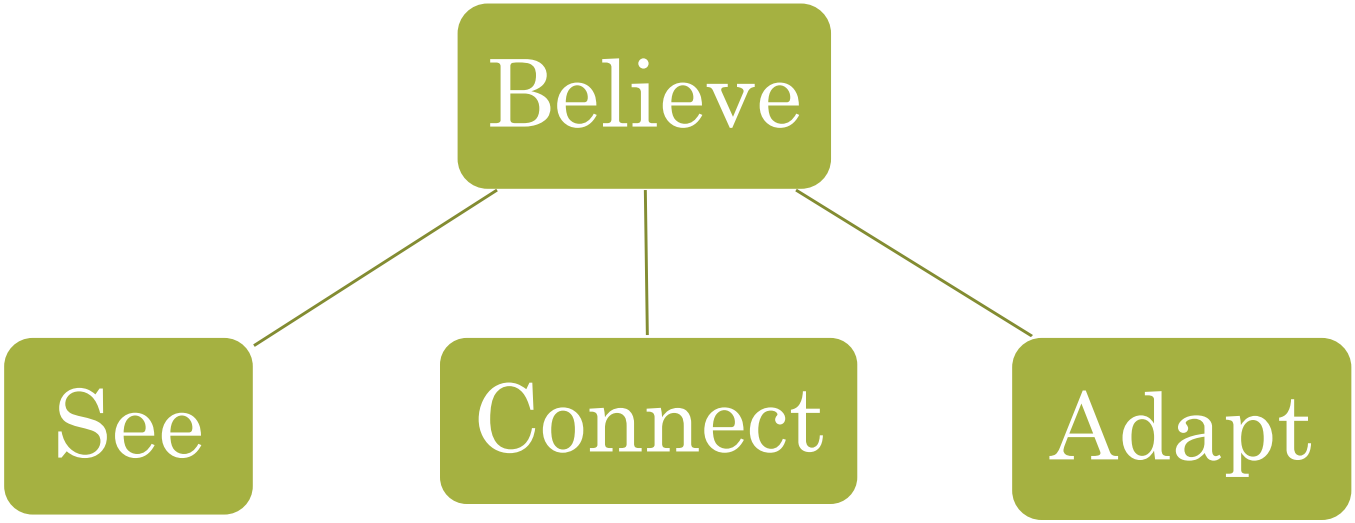
Perceptions vary by state





Perceptions can change over time

Climate change attitude has a significant influence on individuals' personal perceptions and management actions.



1. *Observe* climate-related changes in their environment

2. *Consider* those changes relevant to forestry

3. *Think* those changes will require different management strategies

Morris, H., Megalos, M., Boby, L. and Hubbard, W. 2016

What have we done/are doing?

- Climate Academy
- Webinars, Factsheets, Decision Support Tool
- Workshops
- Guidebook to forest management
- Partnerships

Healthy Forests

Managing for Resilience

What makes a healthy forest?
The southeastern United States has a highly variable climate that includes droughts, floods, tropical systems, thunderstorms, tornadoes, extreme heat, and extreme cold, which affect planted southern pine forests. Though tropical systems bring considerable moisture, they also have the potential to damage limbs and knock down trees. Abnormally wet or dry conditions can cause stress and even mortality. Healthy forests are typically resistant to these kinds of disturbances and can tolerate a range of stressors without significant risk to their conditions.

For example, most pine plantations (like the one shown below in Figure 1) can survive a brief dry spell without serious consequences. Healthy forests are also resilient, meaning they will eventually return to their original state even after a severe disturbance causes a short-term change. If that dry spell persists and becomes a major drought, the trees may experience an intense or early loss of needles but will usually recover as conditions improve.

Figure 2. Brown spot needle disease symptoms in longleaf pine seedling. Image courtesy of Robert L. Anderson, USDA Forest Service, Bugwood.org

Forest Pests and Diseases
Though trees have adjusted to their local climatic conditions, a forest may require management assistance to remain healthy when facing multiple stresses. Stressed trees experience poor growth, health, and reproduction, as well as an increased risk of disease or pest infestation, such as the brown spot needle disease

Protecting Your Forest Asset

MANAGING RISKS IN CHANGING TIMES

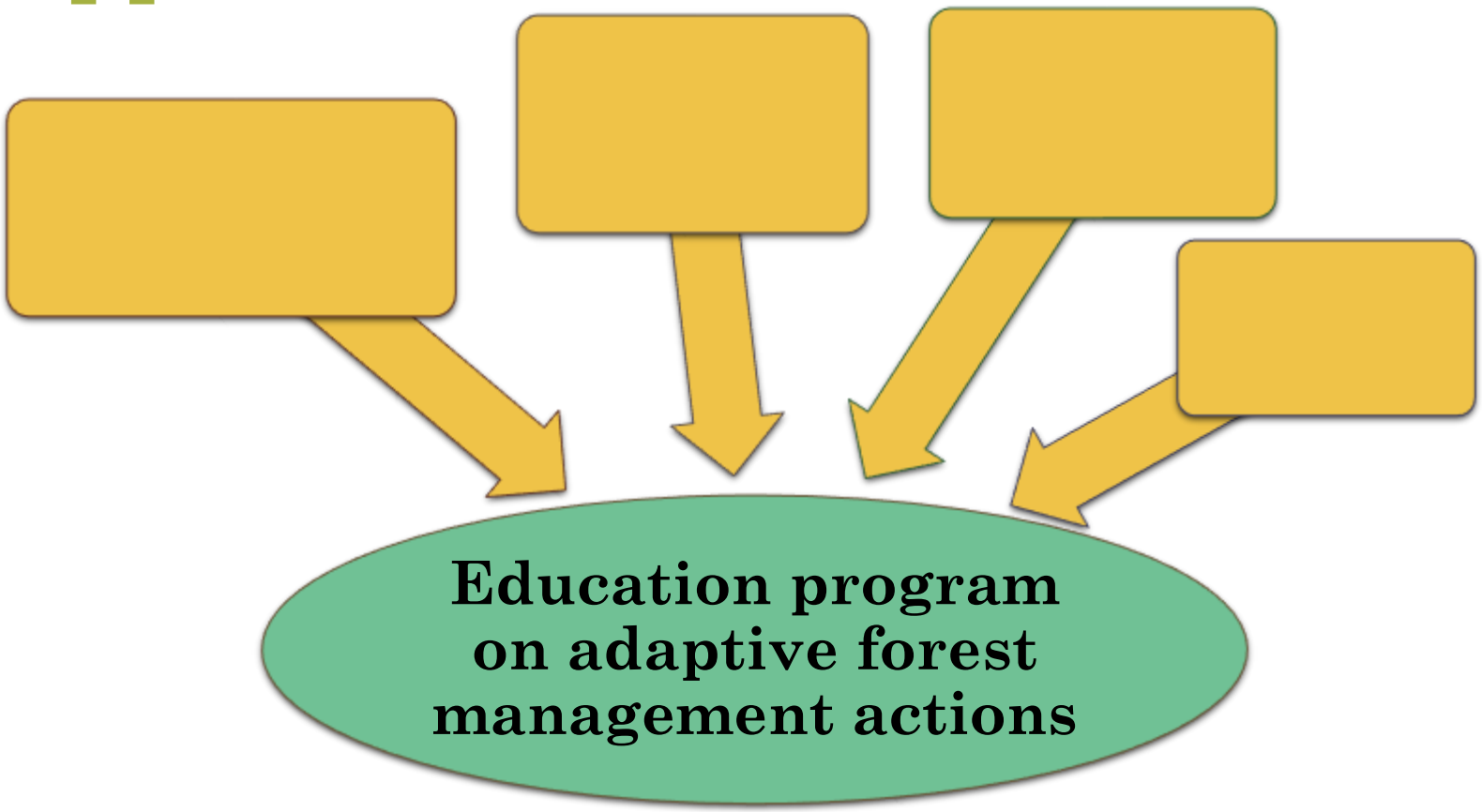
REGIONAL PEER-REVIEWED PUBLICATION

Private forest owners control most of the southern forest resource and are critical to maintaining forest health in the South. Record droughts, rising temperatures, increased frequency and intensity of wildfires, insect and plant invasions, and more intense storm events all pose threats to the health of Southern forests. Scientists project that increases in temperature and changes in rainfall patterns will cause these disturbances to become more common, occurring with greater intensity or duration. This pamphlet reviews healthy forest strategies and approaches to decrease the risks associated with these disturbances on your forestland.

The use of sound management practices can prepare and protect trees and other forest resources from increasing risks. When individually owned private forest

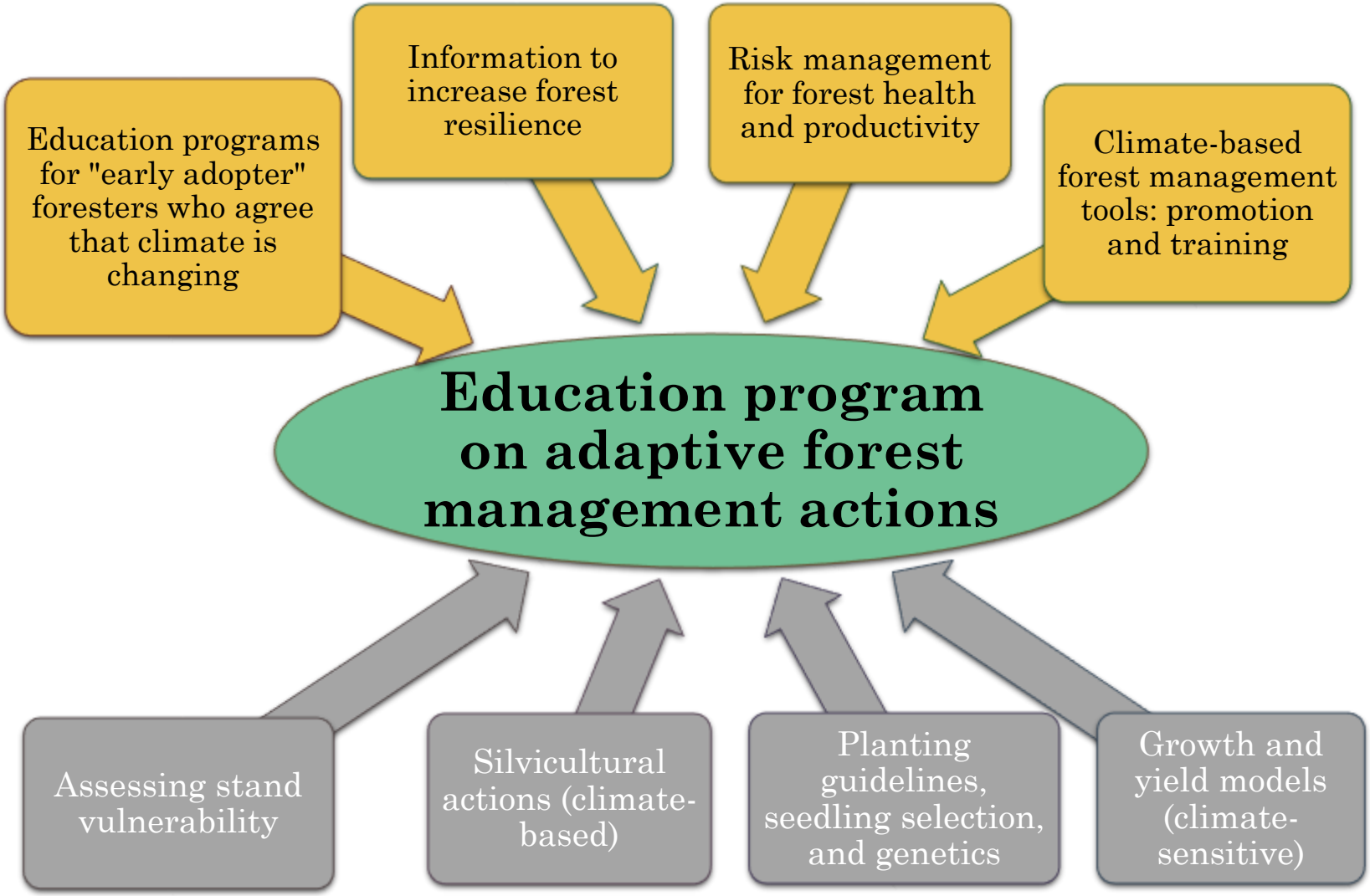
Southern Regional Extension Forestry

Approach



- Multiple approaches
- Focus on what foresters/farmers/Extension are already interested in
- Doing the “right” thing for climate change is good overall for business

Approach



Boby, L., Hubbard, W., Morris, H., and Megalos, M., 2016

Southern Region Extension Climate Academy (SRECA)

MANAGEMENT SOLUTIONS

Sea Grant

CLIMATE RISKS

Forest Crops Livestock Coasts

- To build capacity among Extension professionals to be leaders in their state for appropriate and relevant programming in climate variability and change.

ASRED Association of Southern Region Extension Directors

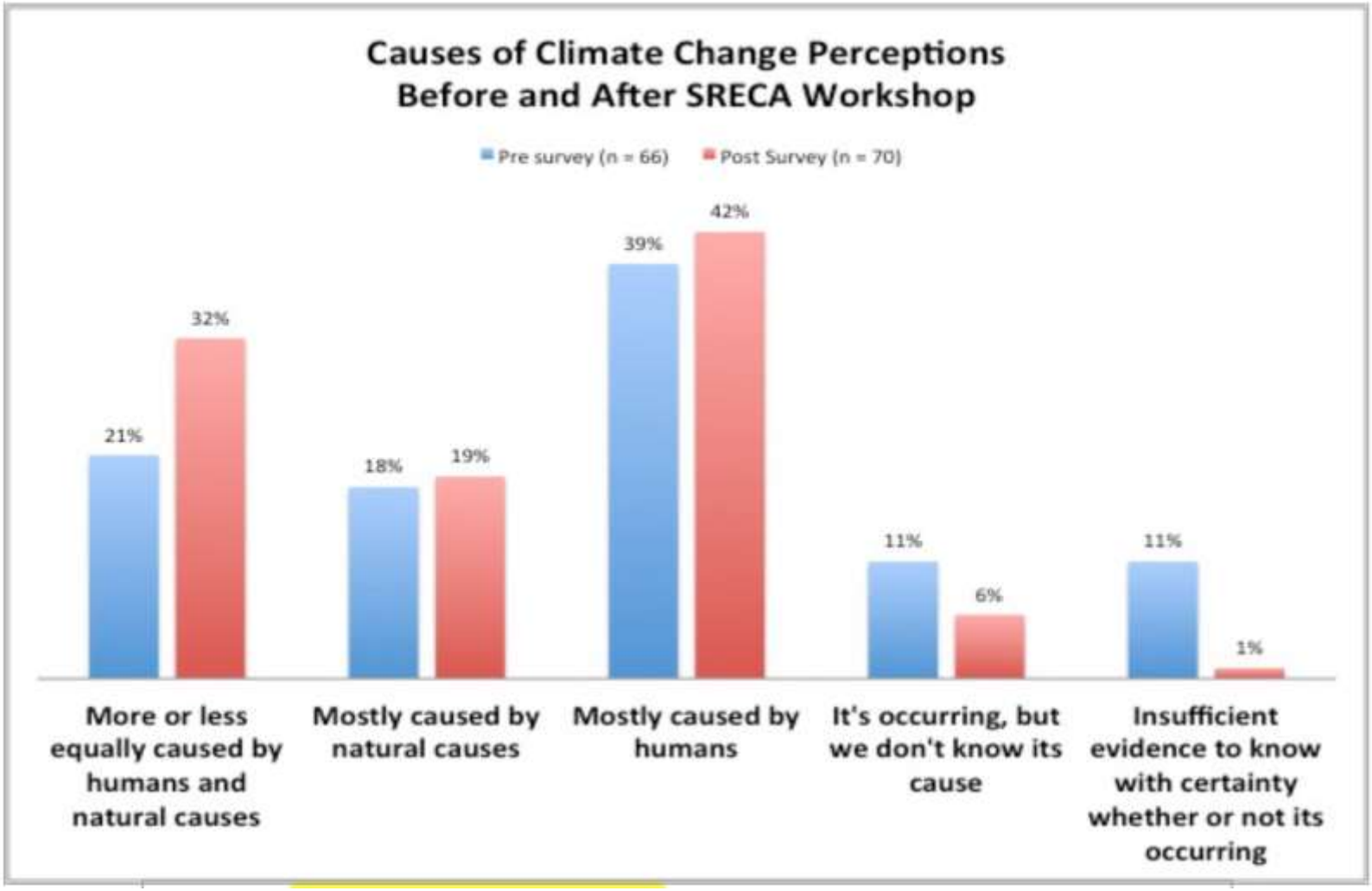
Southern Region Extension Climate Academy

Home About Climate Science Coasts Crops Engagement Forests Livestock SRECA 2014 Presentations

Southern Region Extension Climate Academy (SRECA)

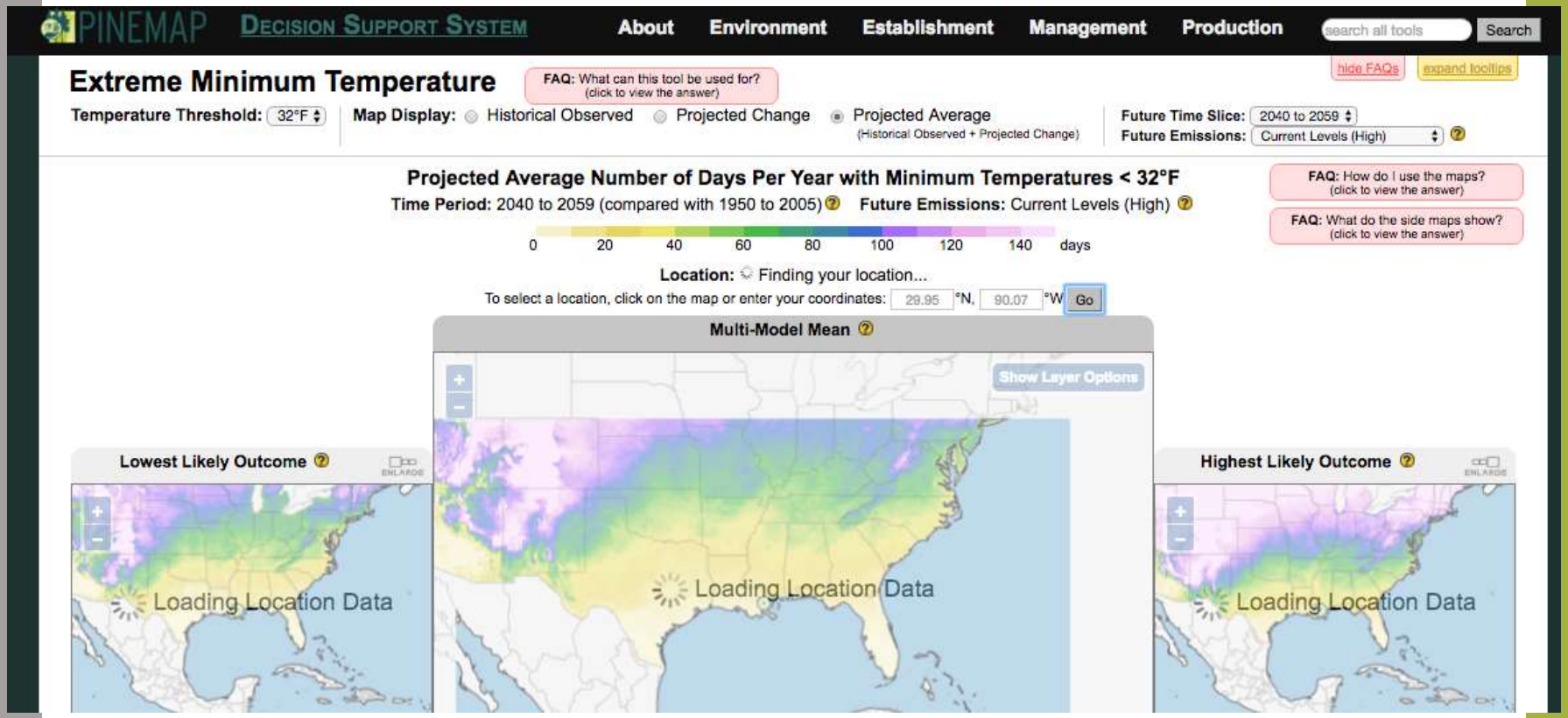
- 122 participants- 15 states
- Selected by Extension leaders
- Multi-sector
  - four target areas: Crops, Livestock, Forestry, and Coasts.

Changes in perceptions- SRECA



www.srecablog.wordpress.com

PINEMAP
Decision Support System
www.pinemapdss.com



Guidebook to Forest Management

PREPARATION

Make contact with people that can provide services and expertise

- Local state forest agency office.
- State forestry association and local landowner association
- NRCS district conservationist
- Find a credentialed, consulting forester (see "How to..." Pub) with knowledge and experience with modern forest management strategies

Explore future climate opportunities/risks at DSS

Develop a realistic forest management plan

- Scale / size / sustainability
- Primary goal to promote health, vigor, resiliency
- Secondary goal is timber production
- Considers future climate opportunities/risks
- Market conditions

Prepare and submit tax and cost assistance documents

- Submitted paperwork to establish farm number in order to apply for EQIP
- Tax appraisal district - Property tax valuation

Outline steps to achieve goal

Locate suitable contractors to complete the task by machine, tractor or hand

ACTIVITIES CHECK-LIST

Always follow Best Management Practices (BMPs) to protect water quality and minimize soil movement and compaction

Conduct pre-harvest / harvest activities minimize cost and foster establishing the next forest stand

- Prescribed Burning before harvest
- No excessive debris during harvest operation – written in contract
- Removing merchantable stems
- "Mowing" pre-merchantable stems
- Timing of harvest

JAN - FEB

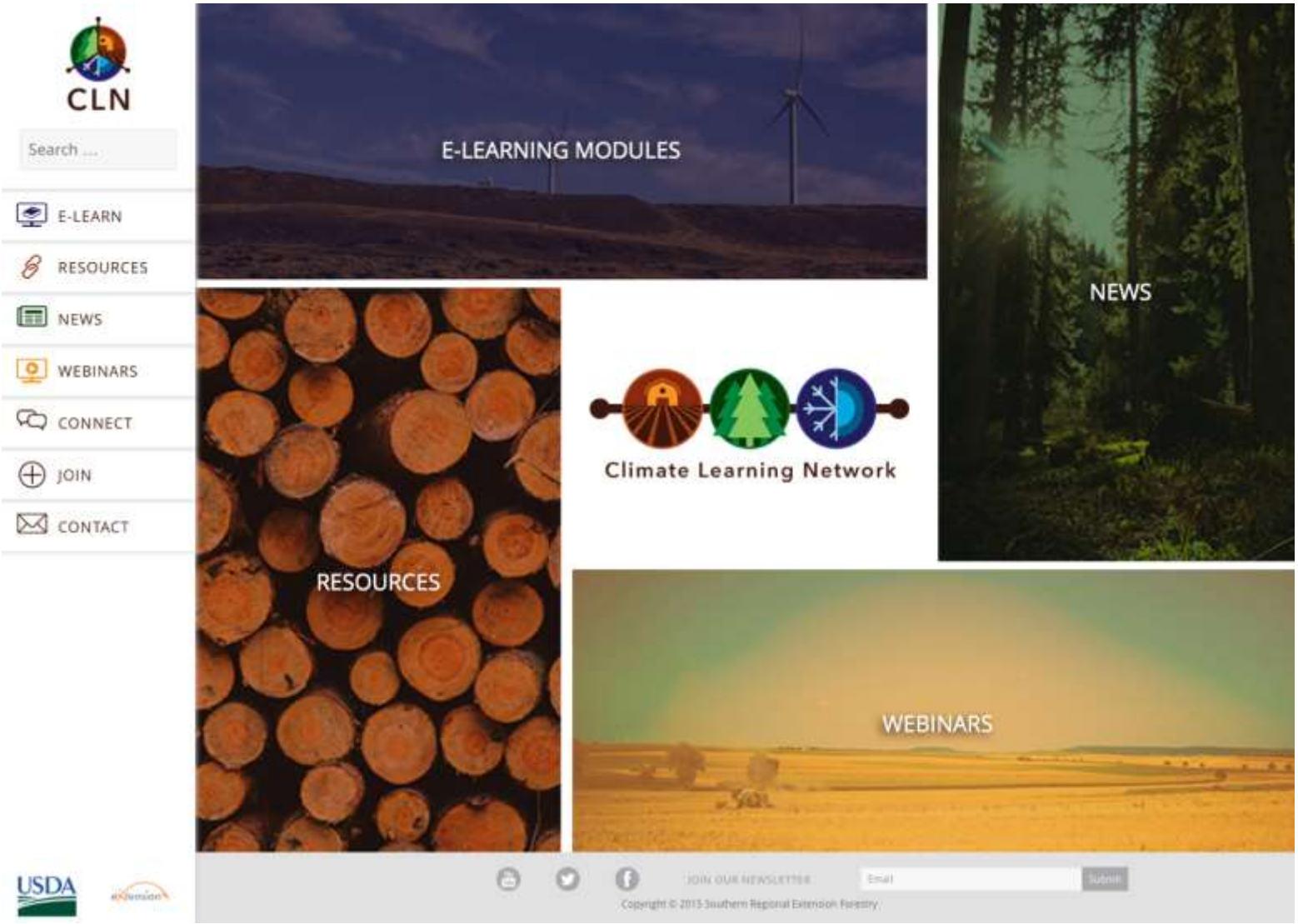
Order pine seedlings early in the year (Jan/Feb)

- Save time and misery- allow the vendor to order
- 5% more than needed (435 trees to the acre * 1.05 = 456 seedlings per acre
- Match genetics with silviculture, soil expectations, objectives, tract size – 4 star rating system

***Preparation**

Seedling order. Rating system. Estimated costs. Bareroot- $50-$90 per acre. Container- $100-$175 per acre. Variation on genetics/performance. Stock type. Order dates. Density. Planting spacing examples – more space between rows. 430 – 525 seedlings per acre – how to figure out spacing. Nursery list. 4 – star rating system – best seedlings for your need. Planting contractors. How to find planters. What to look for. Focus should be on the planter crew foreman.

Climatelearning.net



Master Climate Program

Lessons Learned- what did not work!

- Completely skipping the “climate talk”
- Trying to convince everyone about climate change

Lessons Learned

- Climate change is about environmental Stress
- Risk Management is Key
- Link to Local Issues
- Focus on what can/should be done
- Provide Sound research, recommendations and tools

Building Resilience Requires Changes & Adapting

Reach people at multiple levels

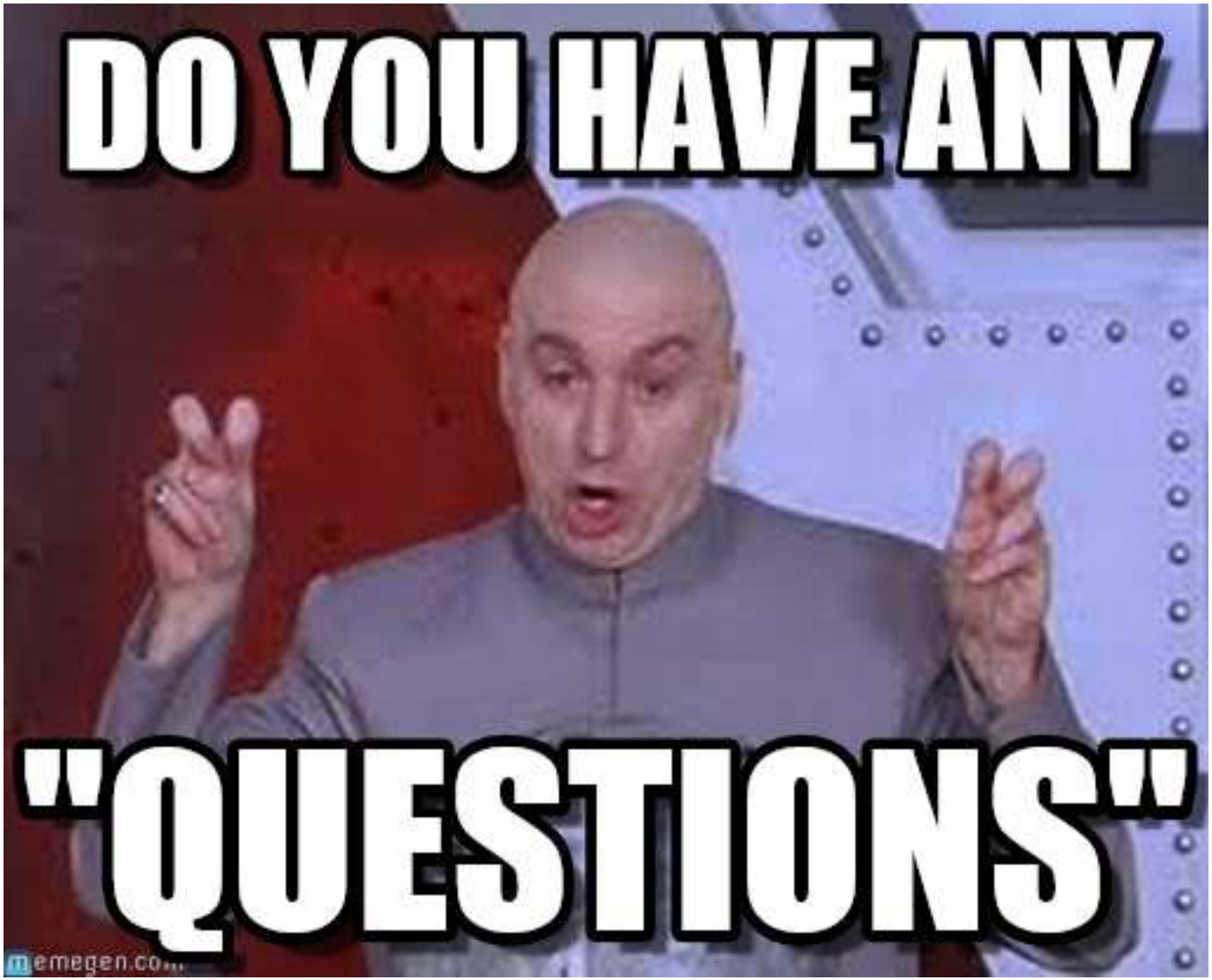
- early adopters
- late adopters

”Believing" in climate change is helpful, but not necessary

- plan programs around other risks
- many ways to influence change

Extension is important

- science-based organization
- some support from Extension directors


DO YOU HAVE ANY
"QUESTIONS"
memegen.co...