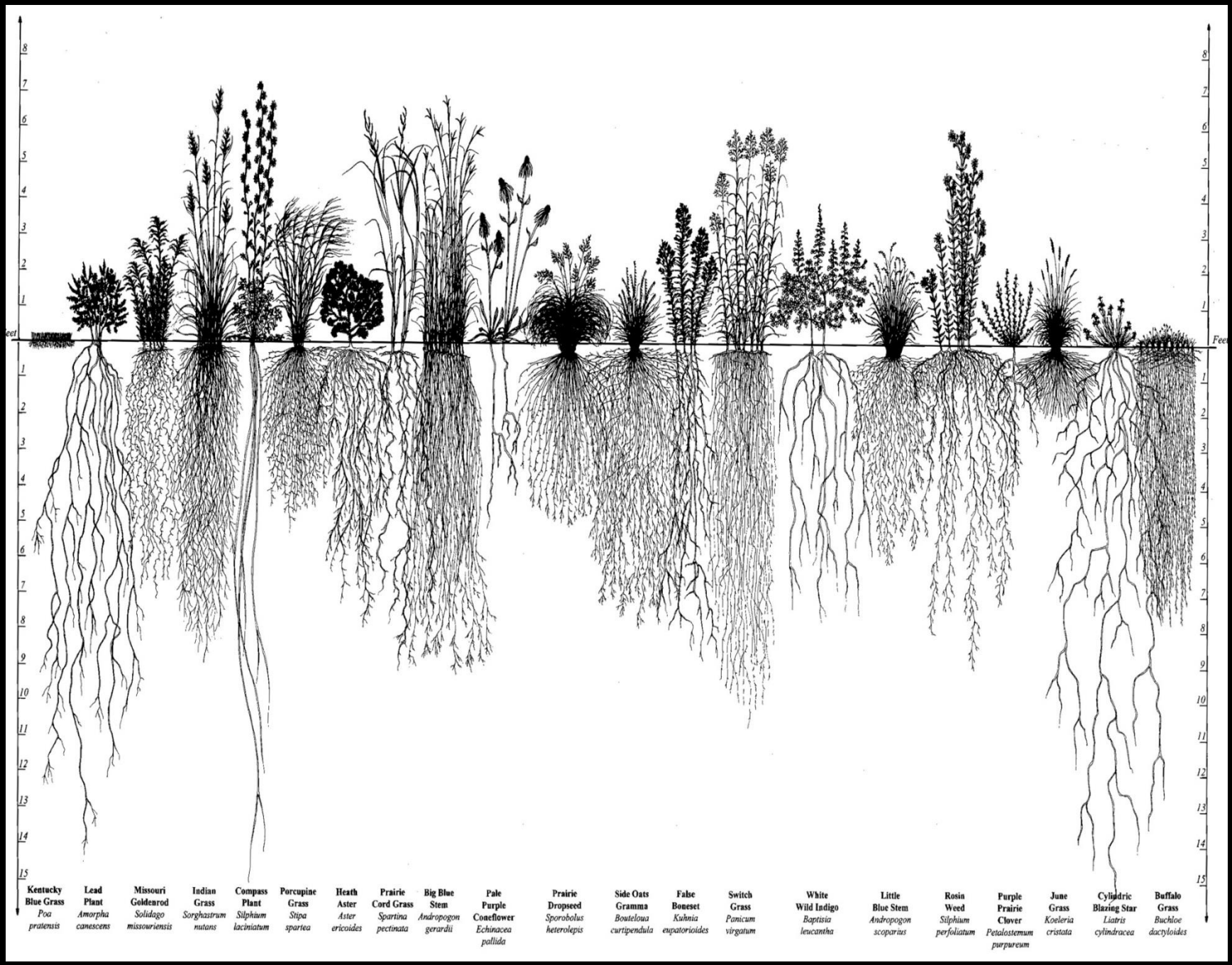
Ground Cover Restoration: Planning and Planting for Success

By: John Seymour

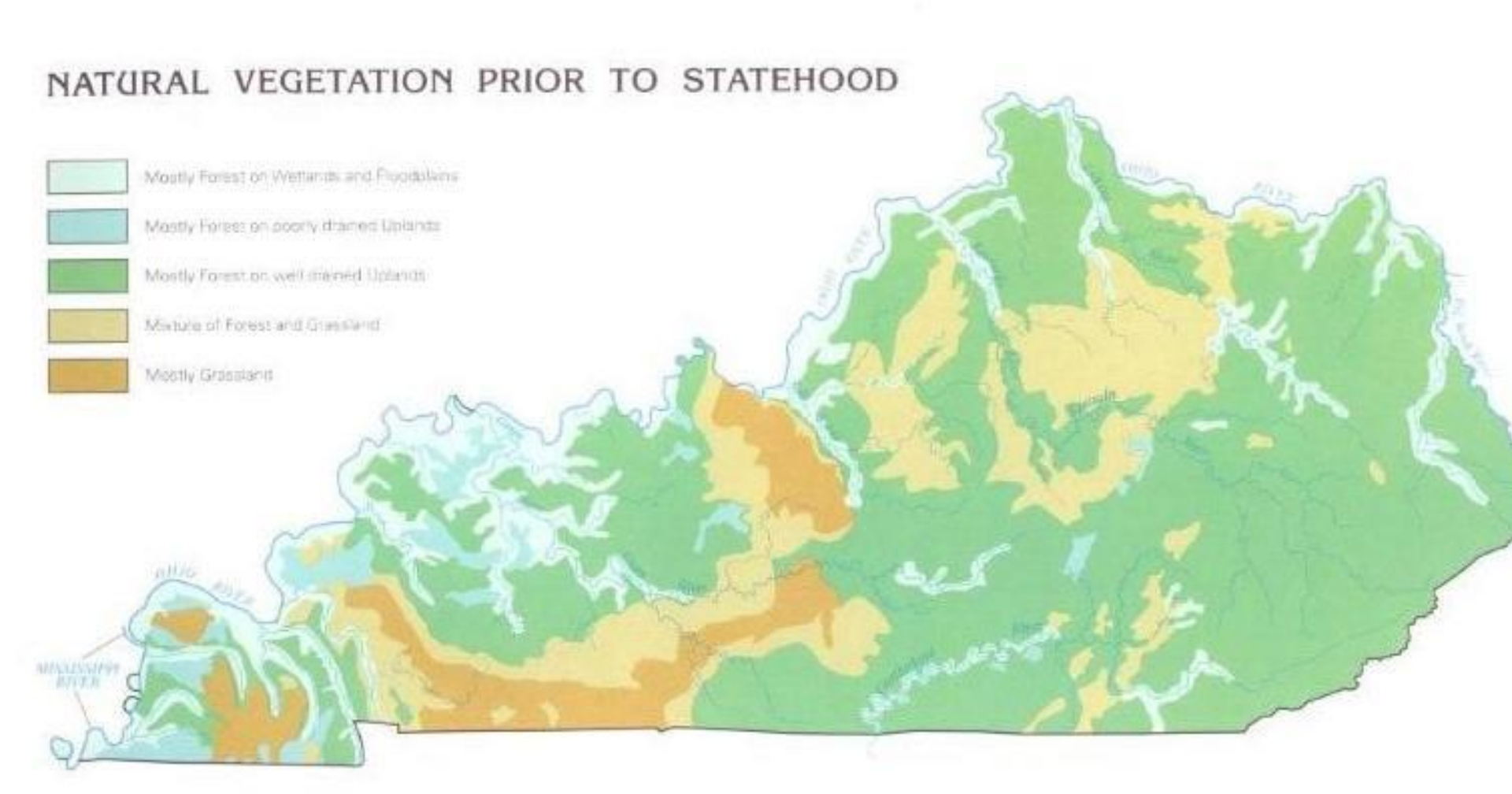

8 7 6 5 4 3 2 1 Feet
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Kentucky Blue Grass Poa pratensis
Lead Plant Amorpha canescens
Missouri Goldenrod Solidago missouriensis
Indian Grass Sorghastrum nutans
Compass Plant Silphium laciniatum
Porcupine Grass Stipa spartea
Heath Aster Aster ericoides
Prairie Cord Grass Spartina pectinata
Big Blue Stem Andropogon gerardii
Pale Purple Coneflower Echinacea pallida
Prairie Dropseed Sporobolus heterolepis
Side Oats Gramma Bouteloua curtipendula
False Boneset Kuhnia eupatorioides
Switch Grass Panicum virgatum
White Wild Indigo Baptisia leucantha
Little Blue Stem Andropogon scoparius
Rosin Weed Silphium perfoliatum
Purple Prairie Clover Petalostemum purpureum
June Grass Koeleria cristata
Cylindric Blazing Star Liatris cylindracea
Buffalo Grass Buchloe dactyloides


Prairie Remnant

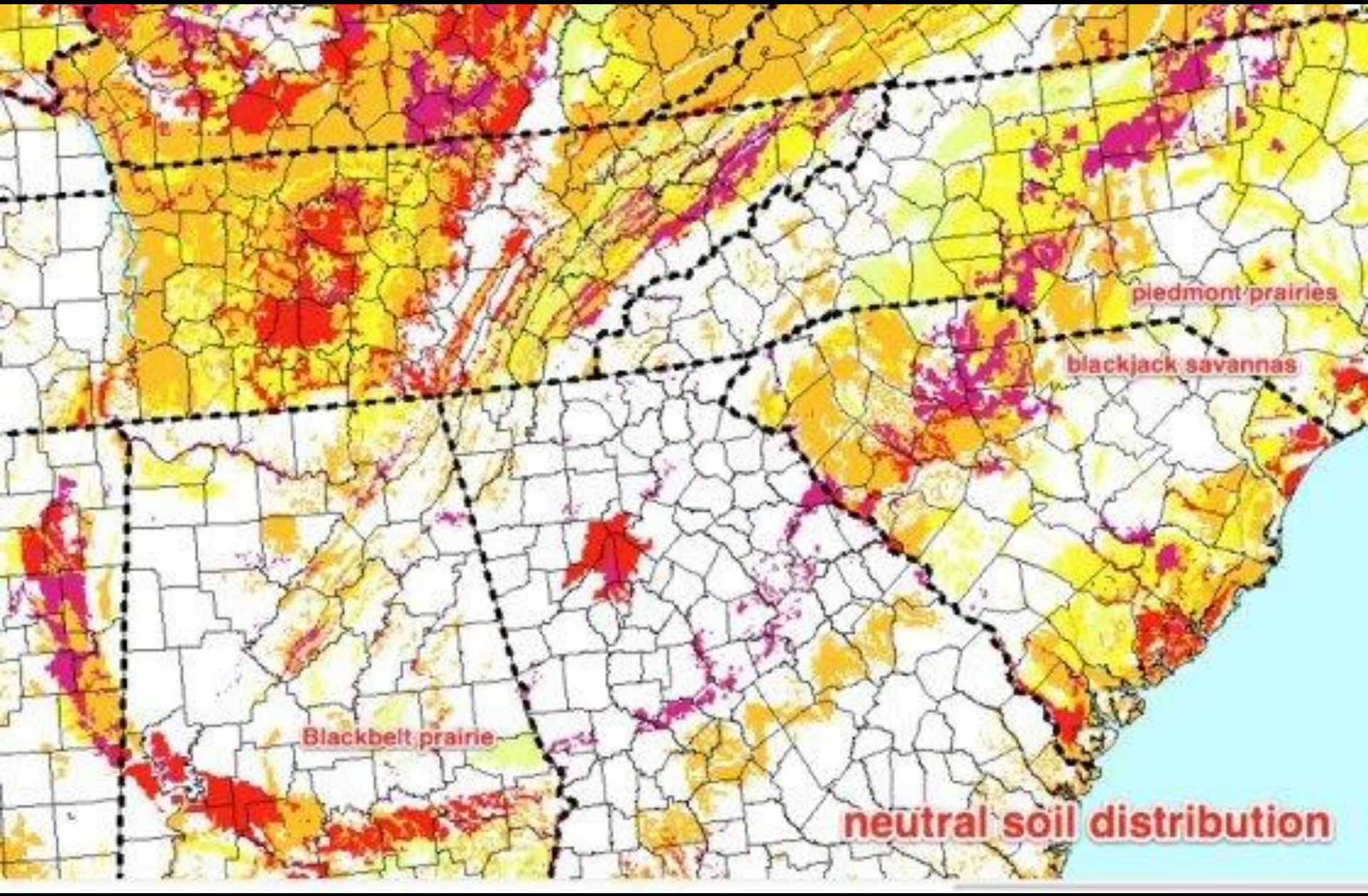

Savannah


Wetlands

Big Barrens Region




ROUNDSTONE
Native Seed
L L C


piedmont prairies
blackjack savannas
Blackbelt prairie
neutral soil distribution

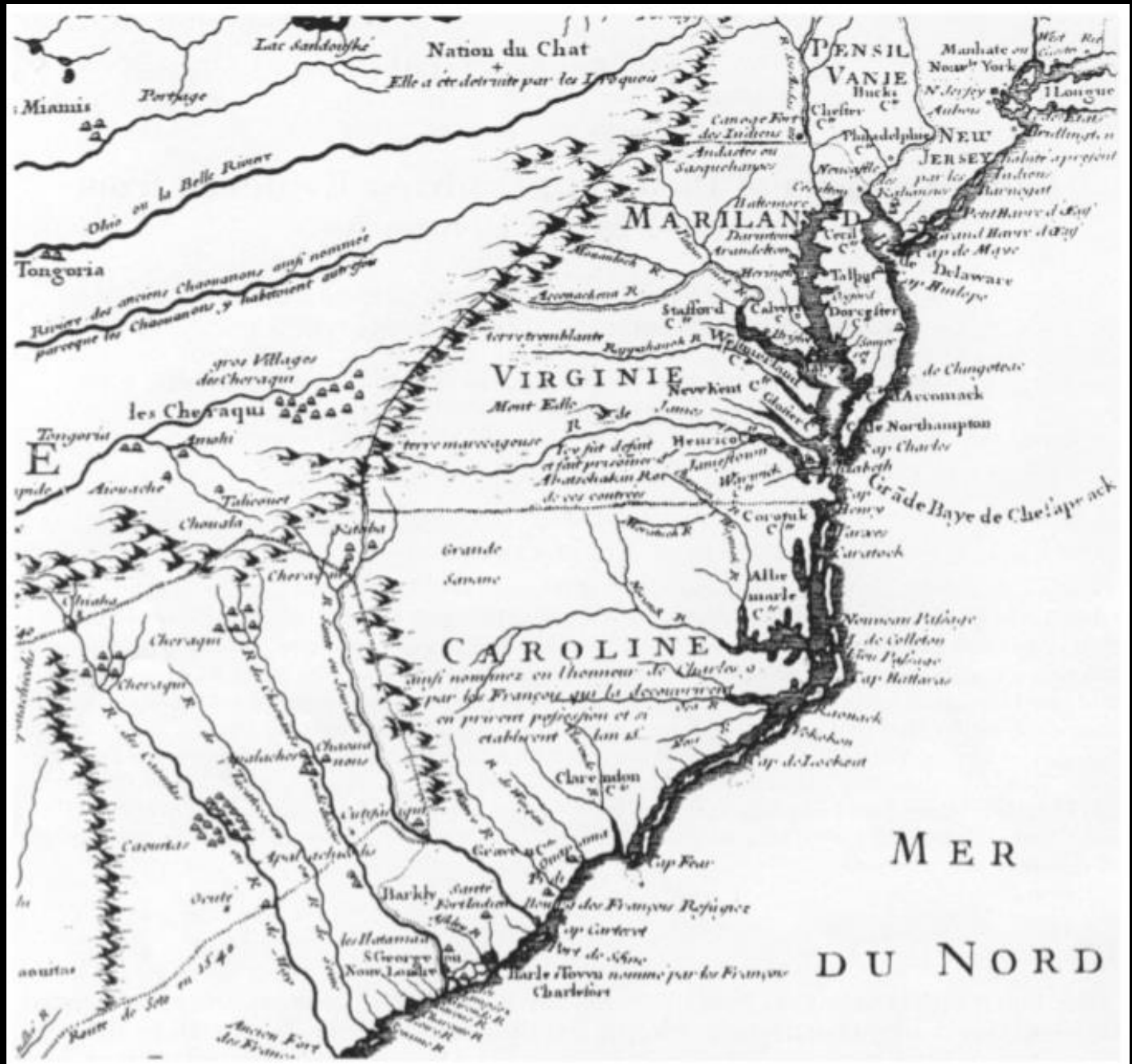
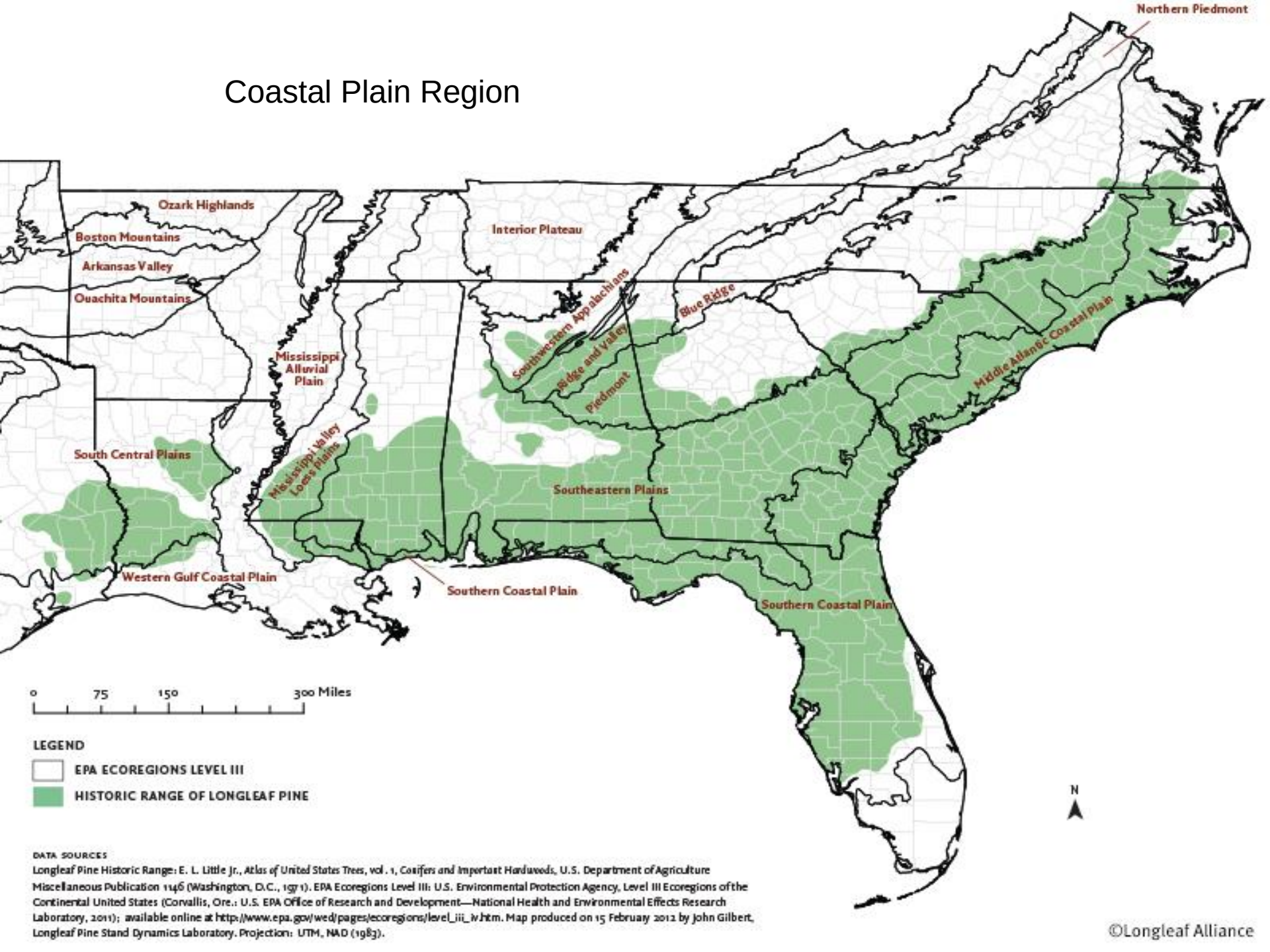


Figure 1. DeLisle's 1718 map with the words "Grande Savane" in the Carolina Piedmont (Cumming 1962).

Coastal Plain Region



DATA SOURCES

Longleaf Pine Historic Range: E. L. Little Jr., *Atlas of United States Trees*, vol. 1, *Conifers and Important Hardwoods*, U.S. Department of Agriculture Miscellaneous Publication 1146 (Washington, D.C., 1971). EPA Ecoregions Level III: U.S. Environmental Protection Agency, Level III Ecoregions of the Continental United States (Corvallis, Ore.: U.S. EPA Office of Research and Development—National Health and Environmental Effects Research Laboratory, 2011); available online at http://www.epa.gov/wed/pages/ecoregions/level_iii_iv.htm. Map produced on 15 February 2012 by John Gilbert, Longleaf Pine Stand Dynamics Laboratory. Projection: UTM, NAD (1983).

Seed Sources

- Private Lands and Private Individuals
- Roadside Remnants
- Right of ways
- DOD and Federal Lands
- Jones Center
- Heritage preserves
- Solon Dixon Center
- NRCS Plant Material Centers
- Partners
- National Forests

Area Sources

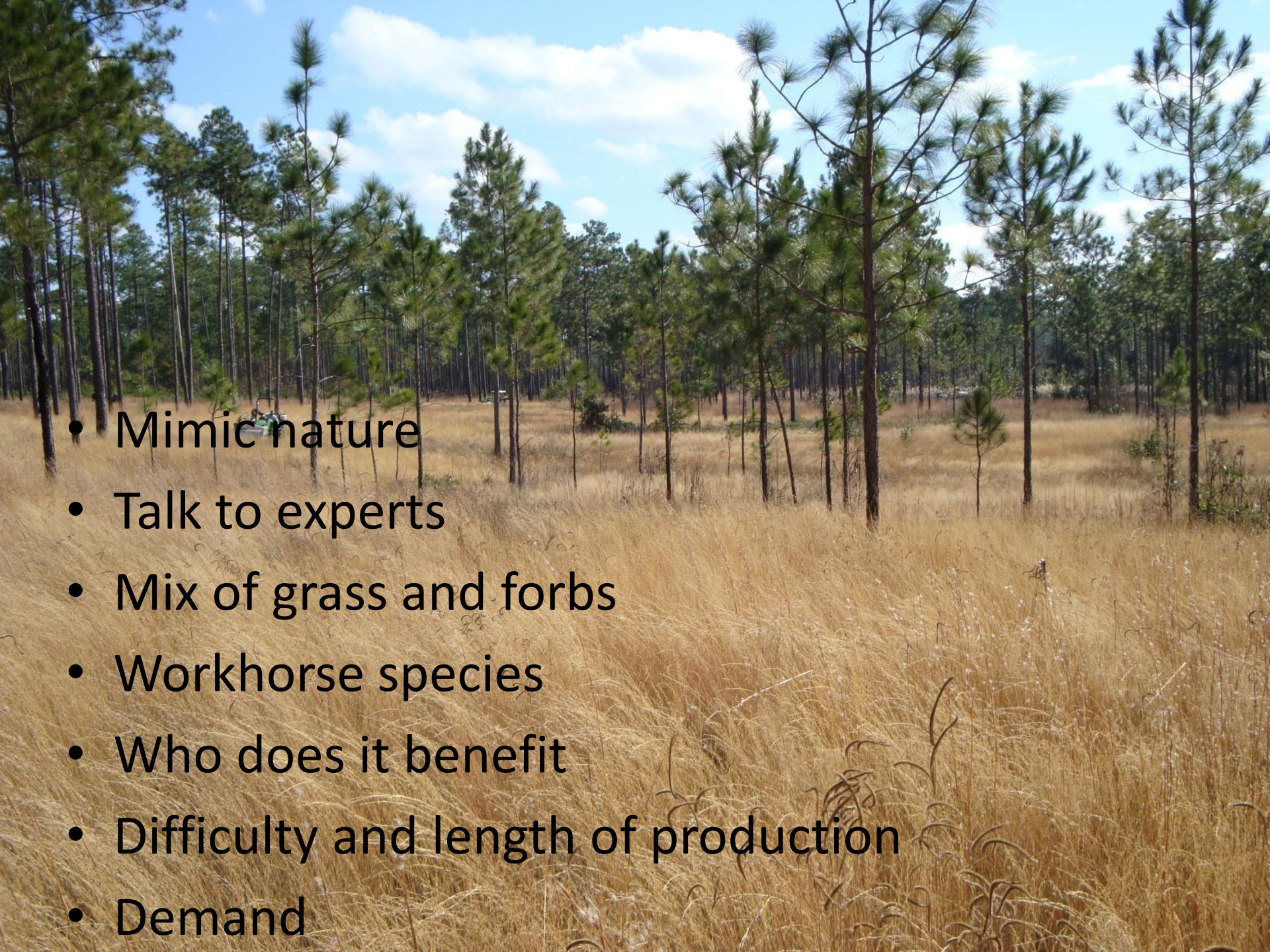
- KY, TN, NC, SC, GA, FL, AL, MS,AR, LA, TX, MO, WV, VA, IL, IN and OH

- Coastal Plain
- Piedmont
- Black Belt
- Big Barrens
- Appalachian
- Grand Prairie
- Delta

Why Harvest Seed?

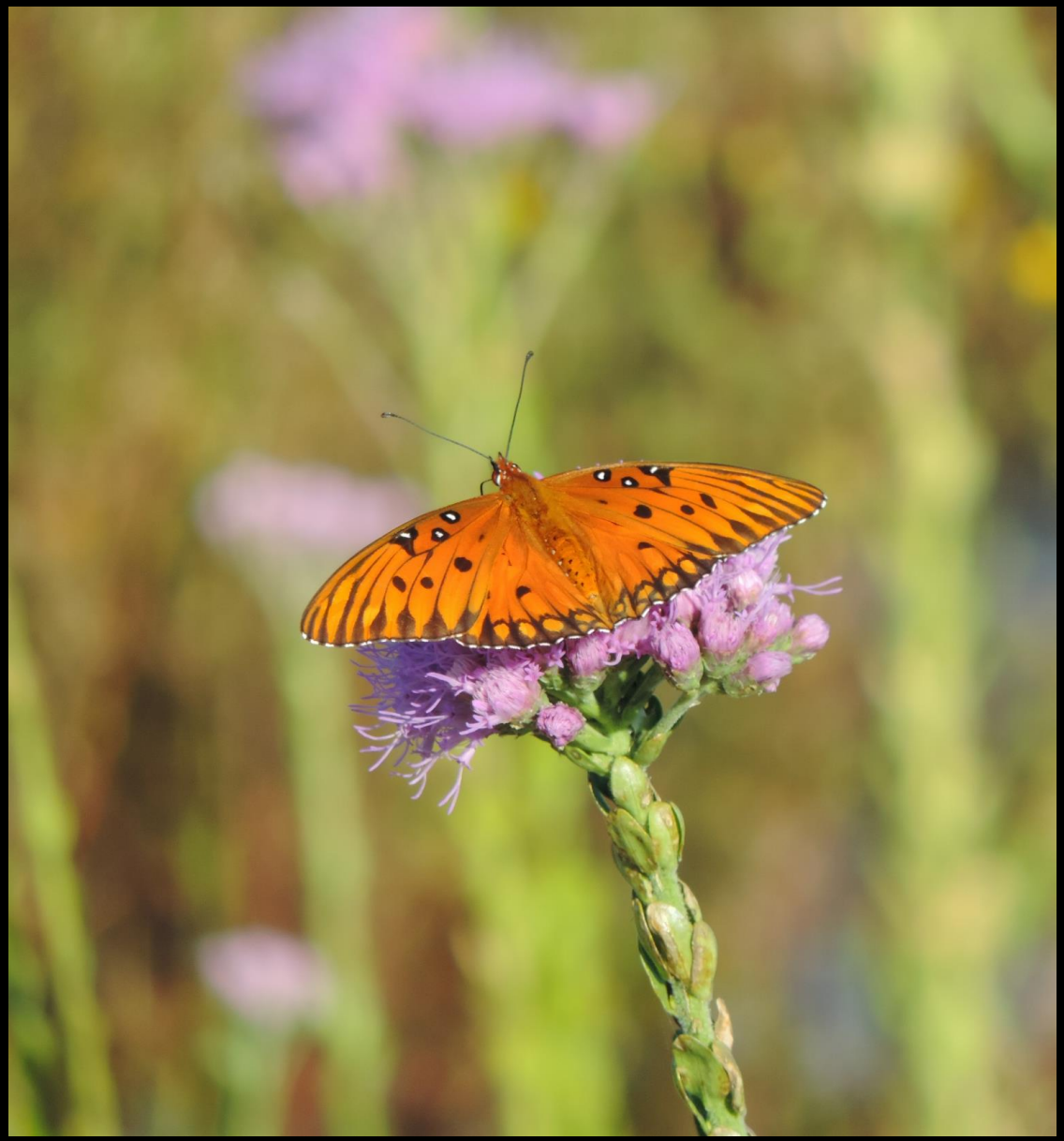
How do we determine target Species?

Goat's Rue

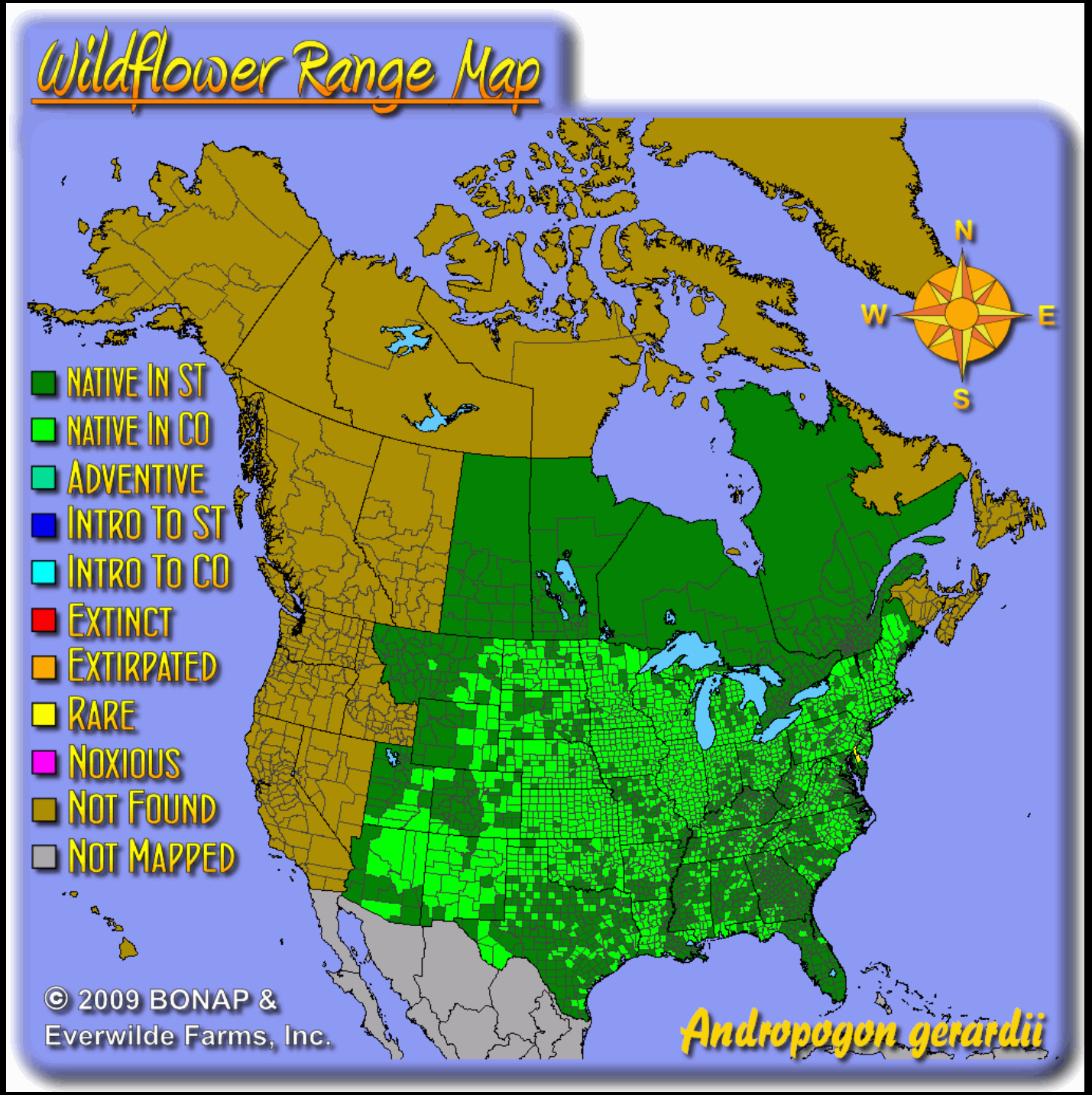


- Mimic nature
- Talk to experts
- Mix of grass and forbs
- Workhorse species
- Who does it benefit
- Difficulty and length of production
- Demand

Who does it benefit?



Ecotype vs. Regional ecotype vs. Cultivar?


Wildflower Range Map
N
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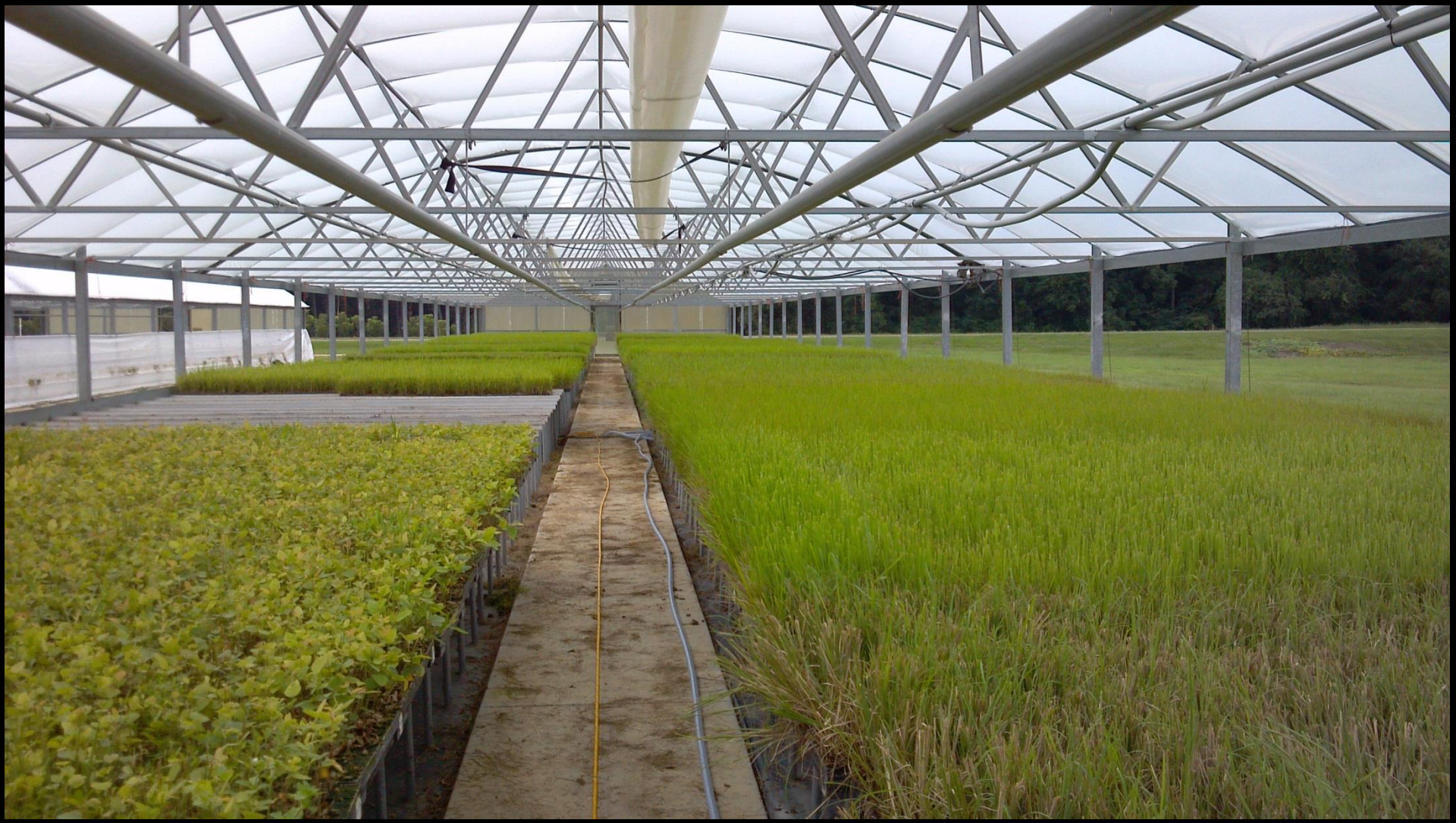
NATIVE IN ST
NATIVE IN CO
ADVENTIVE
INTRO TO ST
INTRO TO CO
EXTINCT
EXTIRPATED
RARE
NOXIOUS
NOT FOUND
NOT MAPPED
© 2009 BONAP &
Everwilde Farms, Inc.
Andropogon gerardii


ROUND
Native Seed
Hollow Road


PWDSL

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LEVI'S


1600 Rain-Flo


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Lopsided Indiangrass

Anise Scented Goldenrod

Deer Tongue Grass

Pineywoods Dropseed

Frank's Sedge

Lowland Coneflower

Florida Tick Trefoil

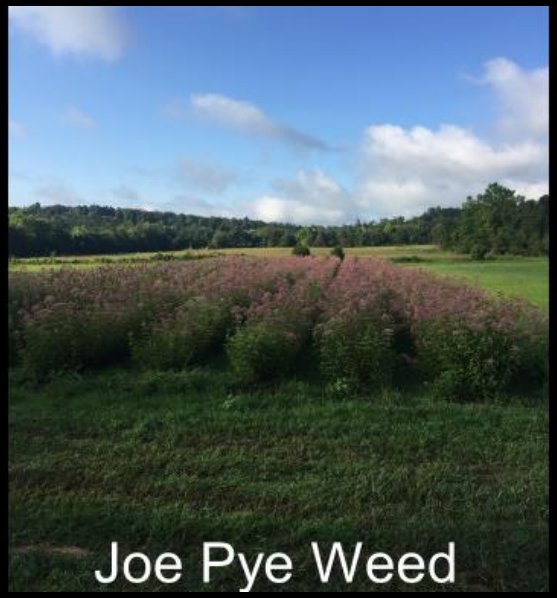
Spurred Butterfly Pea

Little Bluestem

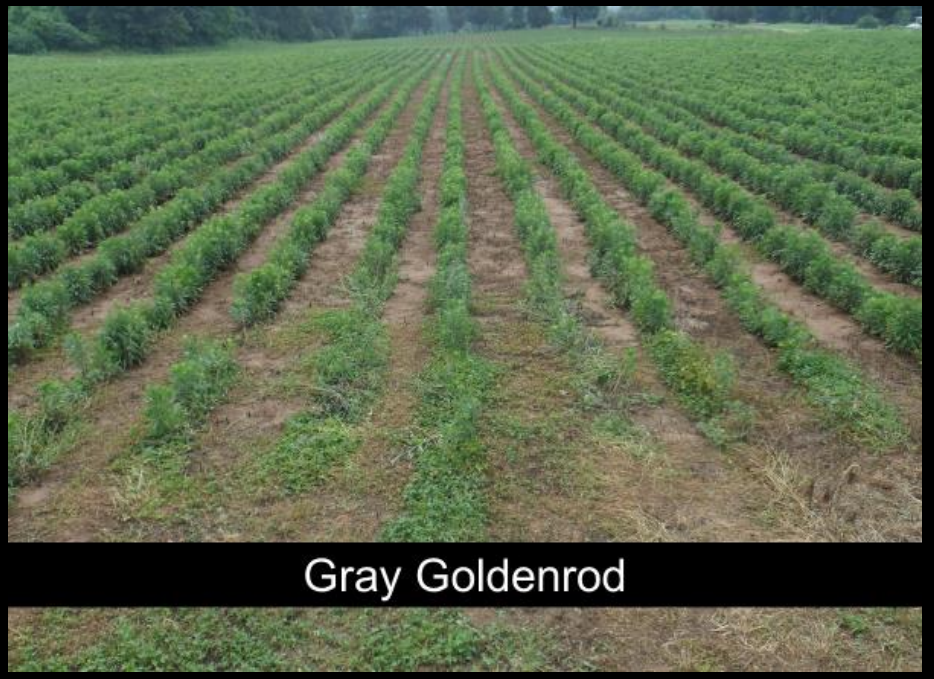
Wild Senna

Slender Mountain Mint

Indian Grass



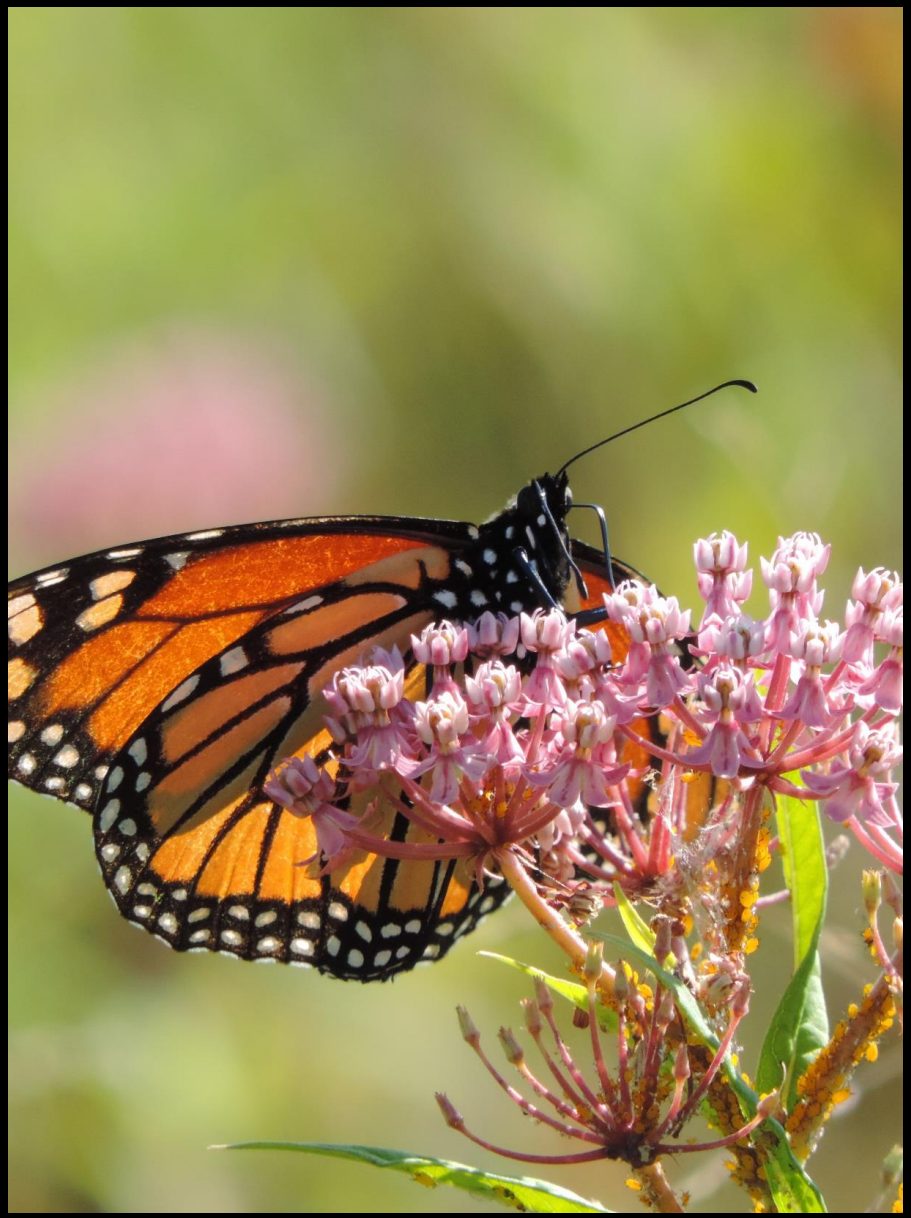
Joe Pye Weed



Gray Goldenrod

Blackeyed Susan

Little Bluestem




Sawtooth Sunflower


JOHN DEERE
522
JOHN DEERE
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KUBOTA
LAYSON'S


JOHN DEERE 4400


CASE IH
2188


Conditioning


Cleaning by Size,
Shape, and Weight

Gravity Cleaning

Separation by Length


SUPER
X 298D


ULINE

First the Seed

Pure Live Seed

- How is Pure Live Seed (PLS) Calculated?
  - A certified test determines the Purity % and Germination % of each lot of Seed
- Purity = the percent of actual seed in the lot
- Germination = the percent of actual seed that will germinate

- PLS = Purity % X Germination

Example:

- Purity = 90% (meaning 90% of the weight of the seed lot is actual seed)
- Germination = 70% (meaning 70% of the actual seed will germinate)
- PLS = 0.90 X 0.70 = 63%

Pure Live Seed = Purity X Germination


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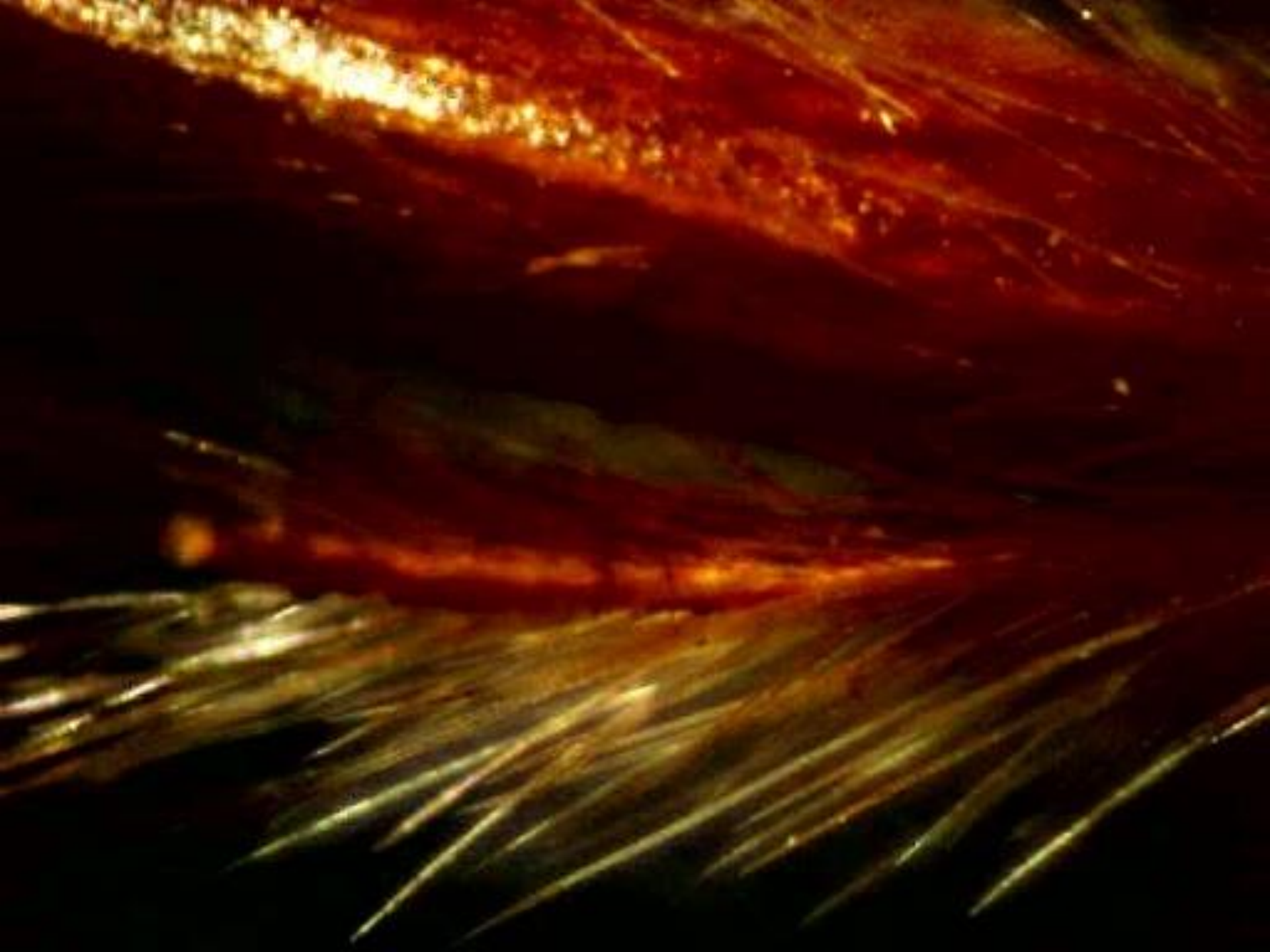
2015


IN GOD WE TRUS
Liberty
2016



How do we ensure a successful establishment?

- Make a plan
- Proper ground preparation
- Correct planting depth
- Eliminate weed competition
- Know what to expect

Mix Considerations

- Number of seeds per pound
- Number of seeds per square foot
- Likelihood of seeds to germinate due to size
- Size of plant at maturity
- Aggressiveness of plants
- Dormancy
- Longevity

Design Considerations for Mixes

What is our purpose?

Mimic Nature?: Recreate natural settings?

Habitat? : deer, turkey, rabbit, quail, songbirds
Bedding, fawning, brooding, cover

Pollinators?: Bees, butterfly's, moths, wasps, etc.

Erosion Control, mitigation, ground coverage?

Site Preparation

Ground Preparation and Planting

Conventional tillage and planting


Work Ground

Work Ground


Firm Seed Bed

Pack or Roll before Seeding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2016


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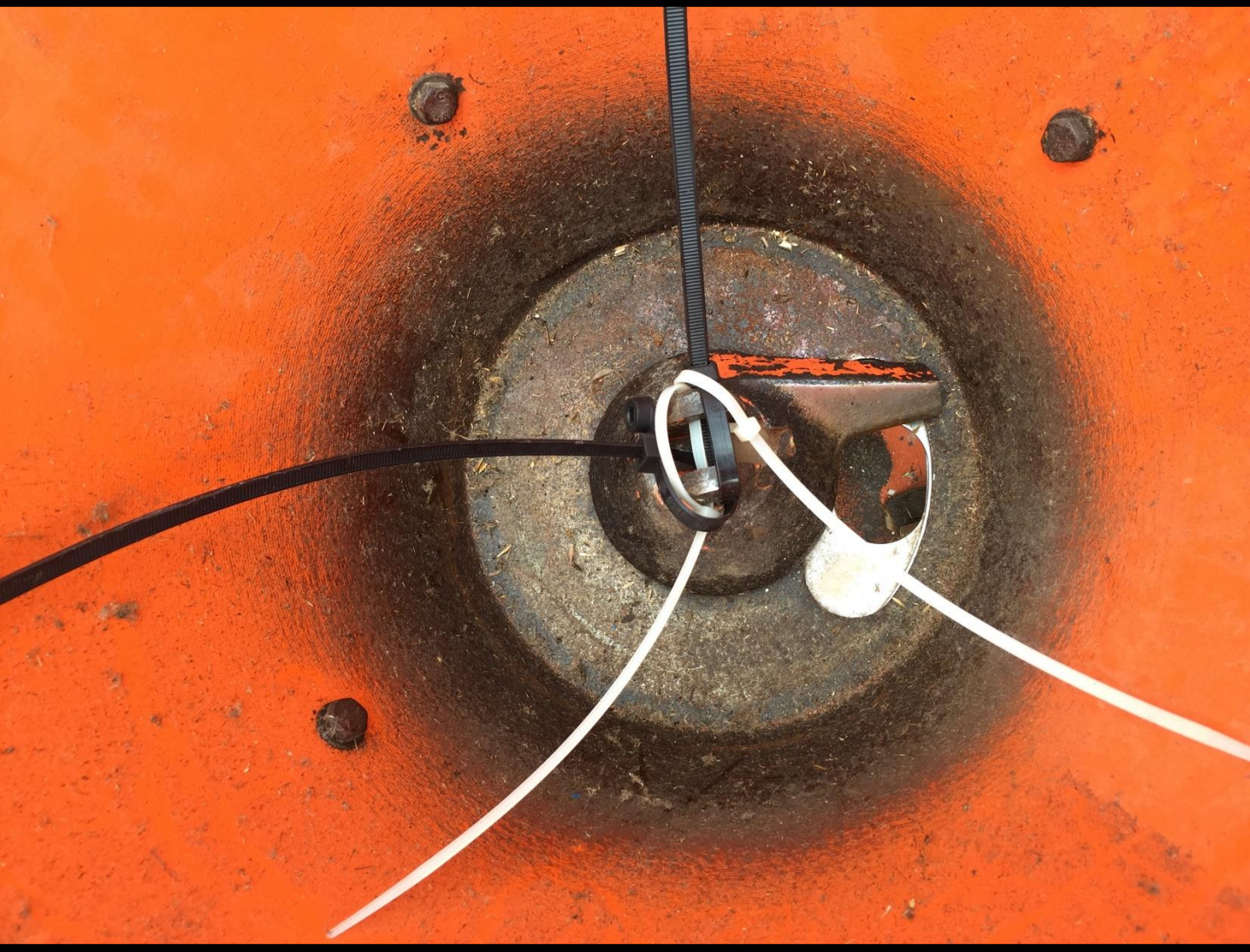
LIBERTY
2016

Broadcast Seeding

Broadcast Seeding


BALTIC



Pack or Roll after Seeding

What makes us unsuccessful?

- Improper ground preparation
- Planting depth
- Weed competition

Herbicide is strongly recommended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What we use, when and why.

Regrowth after a single herbicide application


Regrowth after a second herbicide application


Site Preparation is Critical

Preferred Scenario

- Start a full season in advance
- 1st herbicide application starts in spring the of year prior to planting
- 2nd herbicide is applied late spring to early summer
- 3rd herbicide is applied mid to late summer if needed
- 4th herbicide is applied in the fall if needed
- Sow a cover crop in the fall at a light rate to hold the soil through the winter
- 5th herbicide is applied in the spring to kill the cover crop as well as newly emerging spring weeds
- Last step is to no till drill seed after no less than 7 days after the last herbicide application.

Alternative Scenario 1
Start in summer

- 1st Herbicide in the Summer prior to planting
- 2nd Herbicide in Fall
- Cover Crop if needed over winter
- 3rd herbicide in the early spring
- 4th herbicide in late spring early Summer

Alternative Scenario 2
Start in Fall

- 1st Herbicide in the fall prior to planting
- Cover Crop if needed over winter
- 2nd Herbicide in early spring
- 3rd herbicide in the late spring

Alternative Scenario 3

Start in Winter

- Conventional till the area late fall early winter
- Plant cover crop if needed
- 1st herbicide in early spring
- 2nd herbicide in late spring early summer
- No-Till drill no sooner than 2 weeks after the 2nd spray

Alternative Scenario 4
Start in Spring of planting year

- 1st herbicide in early spring
- 2nd herbicide in late spring early summer
- No-Till drill no sooner than 2 weeks after the 2nd spray

Bermuda

- Must prepare for an entire year before attempting to plant.
- Apply arsenal at 64 -72 oz per acre
- Multi follow up application of roundup at 2 quarts per acre will be needed.
- After planting
  - Spot spraying with roundup or grass selective
  - Arsenal may be needed again in spots

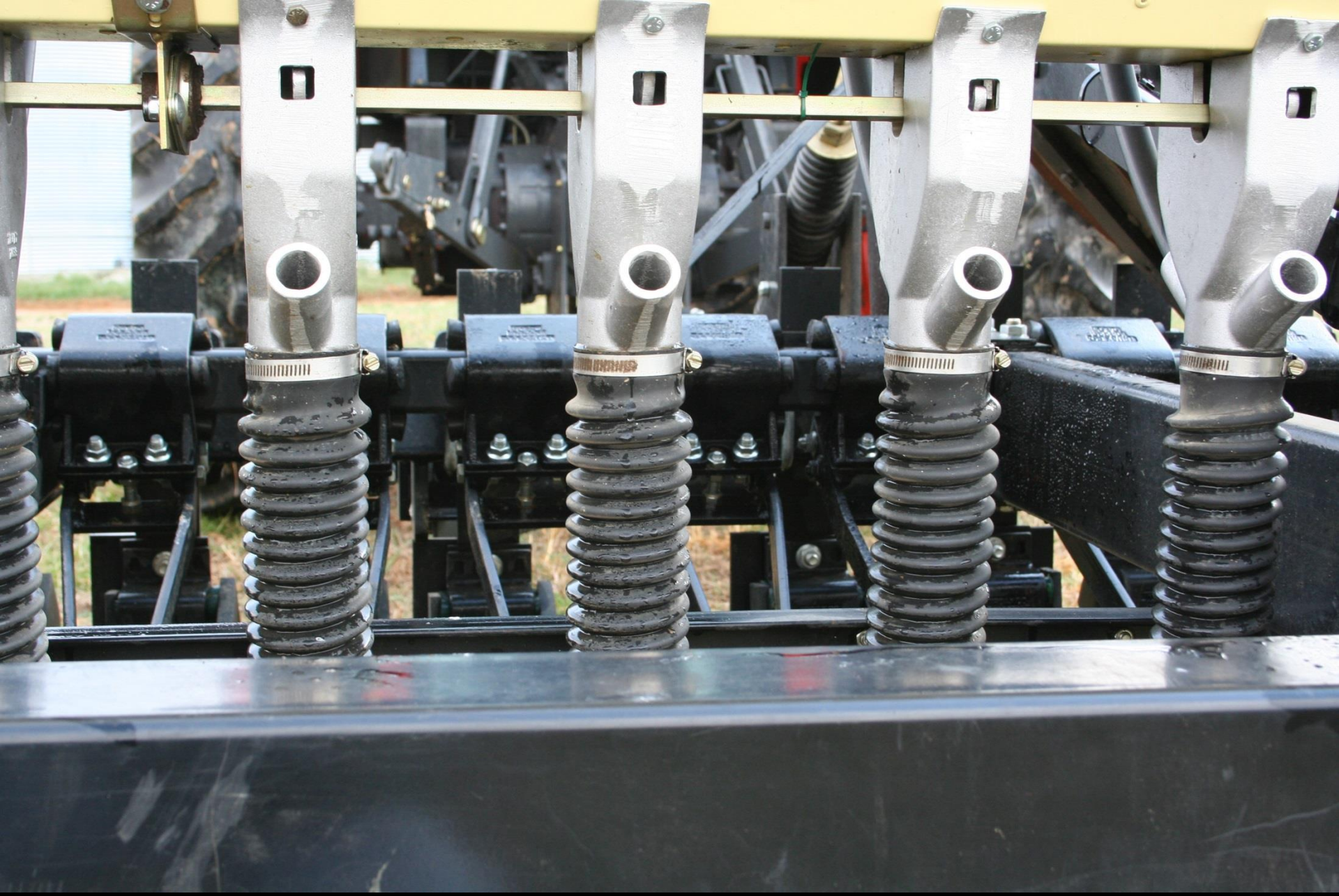
No Till Planting


FLEX-II

Actual No Till Planting

Specialty planting equipment

Fluffy Seed Box



Over-sized Hoses

Trash Plows

Double Disk Opener & Packing Wheel

Proper Calibration is Essential

Do not overfill boxes

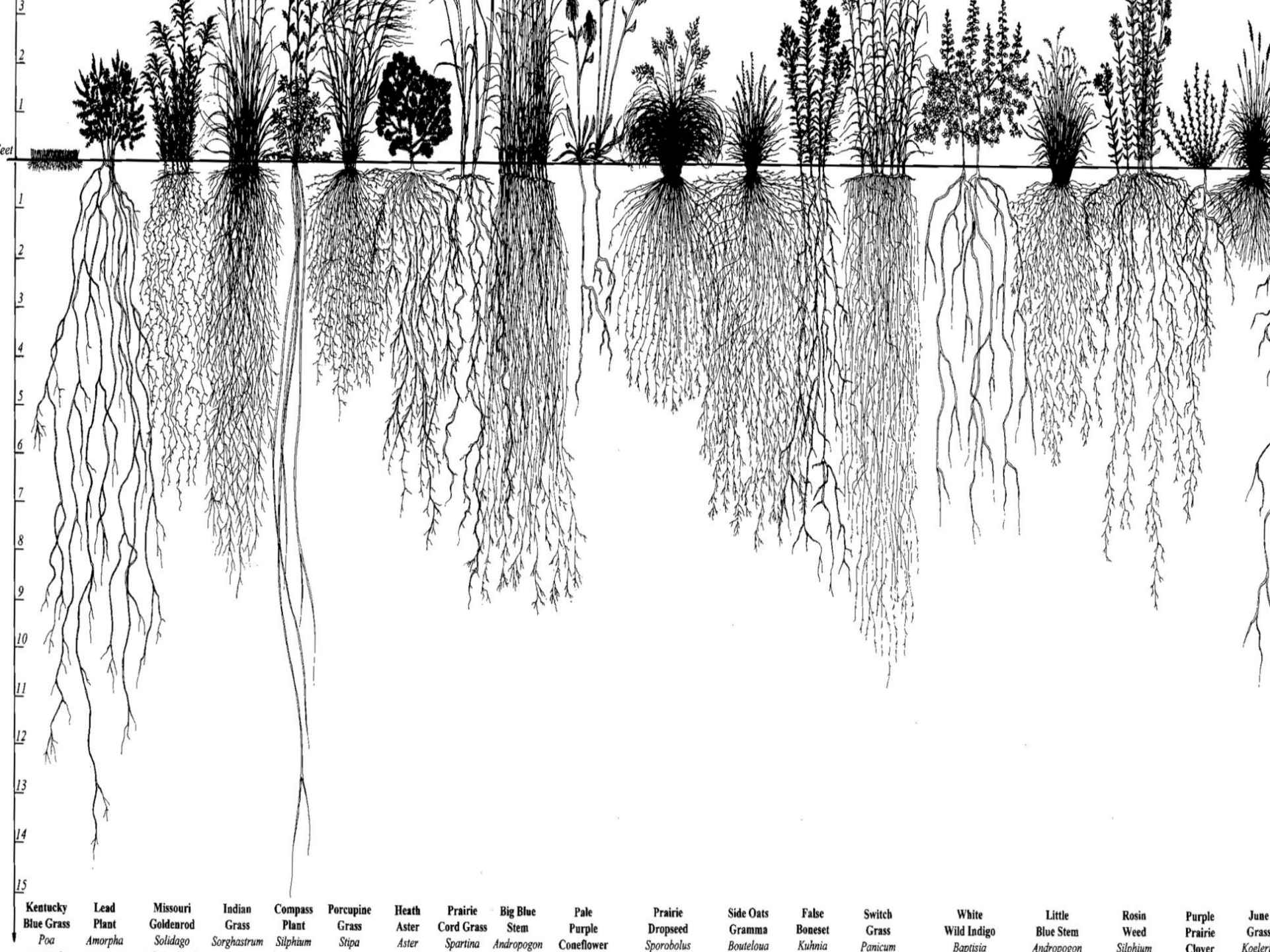

Ground Speed


Depth is critical

Plant no deeper than ¼ of an inch


GRASSLAND


MILE
29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Kentucky Blue Grass Poa
Lead Plant Amorpha
Missouri Goldenrod Solidago
Indian Grass Sorghastrum
Compass Plant Silphium
Porcupine Grass Stipa
Heath Aster Aster
Prairie Cord Grass Spartina
Big Blue Stem Andropogon
Pale Purple Coneflower
Prairie Dropseed Sporobolus
Side Oats Gramma Bouteloua
False Boneset Kuhnia
Switch Grass Panicum
White Wild Indigo Baptisia
Little Blue Stem Andropogon
Rosin Weed Silphium
Purple Prairie Clover
June Grass Koeler

First Year Growth


Beginning of Second Year Growth


End of Second Year Growth

First Year Growth


Second Year Growth

Third Year Growth

Switchgrass at 80 days

Top Clip or Bushhog


WOOD
Don’t wait too late!

What to expect…

Nurse Crops

- Spring: Oats, Annual Rye
- Late Spring: Oats, Annual Rye, Millet
- Summer: Browntop Millet, Annual Rye
- Early Fall: Oats, Millet, Annual Rye
- Fall: Oats, Rye

Be Careful of Rates!

Do not seed too heavy


OH SWCD

Post Planting Herbicide Maintenance

- For pollinator plantings we can spray grass specific herbicides to take out unwanted grass weeds without hurting our pollinator plants.
- Use Imazapic herbicide for control of some grass and broadleaf weeds in Imazapic tolerant pollinator mixes.
- Glyphosate can be used for some dormant sprays.
- Wicking is also a valuble mehtod


ATHENS