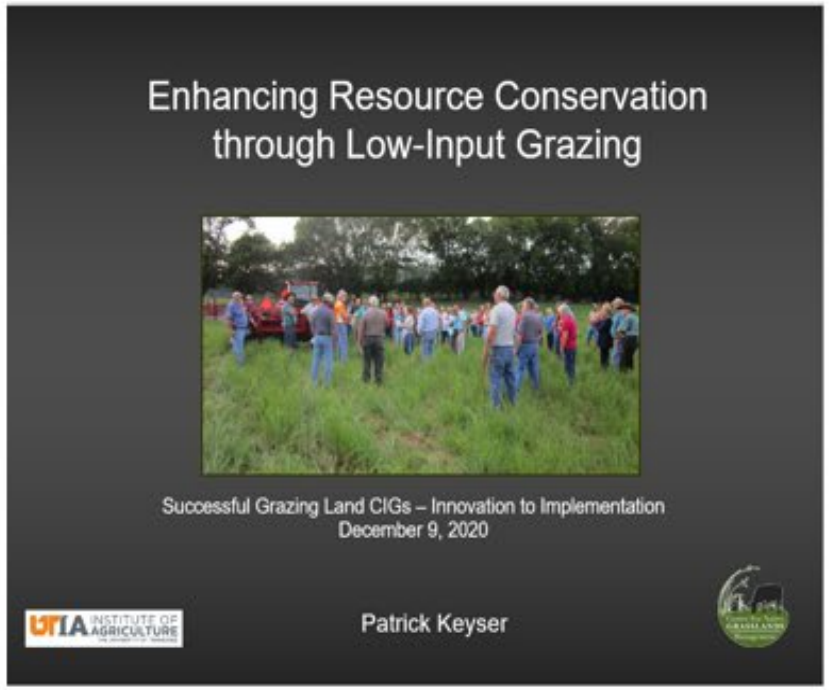
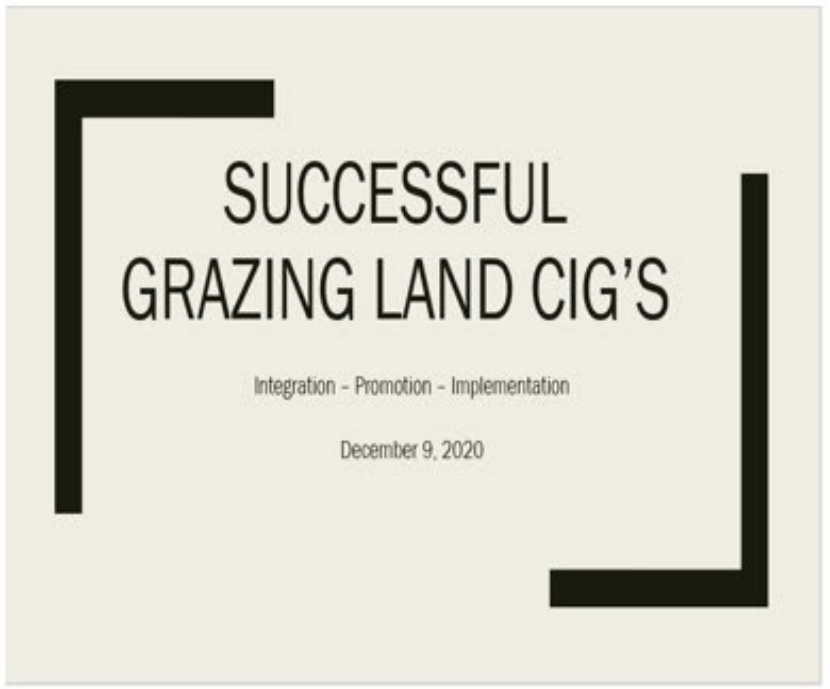
USDA United States Department of Agriculture





Conservation Innovation Grants:

Successful Grazing Lands – Innovation to Implementation

Natural Resources Conservation Service

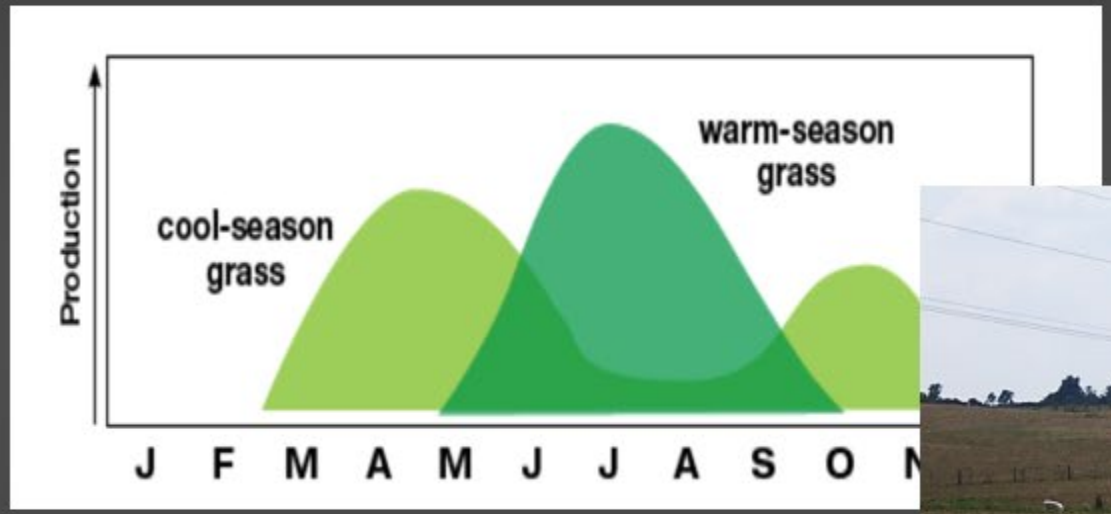
nrcs.usda.gov

Enhancing Resource Conservation through Low-Input Grazing

Successful Grazing Land CIGs – Innovation to Implementation
December 9, 2020

Patrick Keyser

Recognizing a Need…



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Identifying a Solution

1. Develop clear, producer-driven objectives
2. Think big, think applied, be realistic
3. Build a solid team
4. Stay focused (marathon, not a sprint!)
5. Be hard-headed

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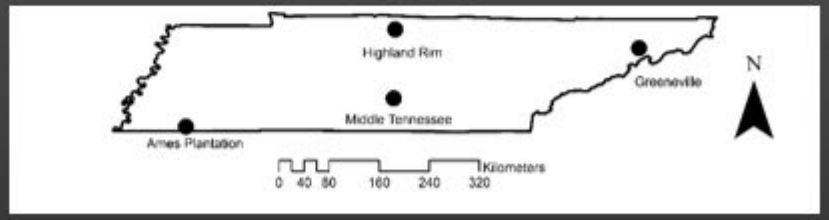
The Project

1. Demonstrated animal performance, grazing days, and pasture productivity for 3 key native grass forages (SG, EG, BB/IG)
2. Grazed 3 summers at four TN Research and Education Centers
3. Conducted in-service trainings/field days at each location
4. Developed technical guidance materials
5. Involved: animal nutritionists, agronomists, economists, wildlife biologists, agents, NRCS field staff, producers



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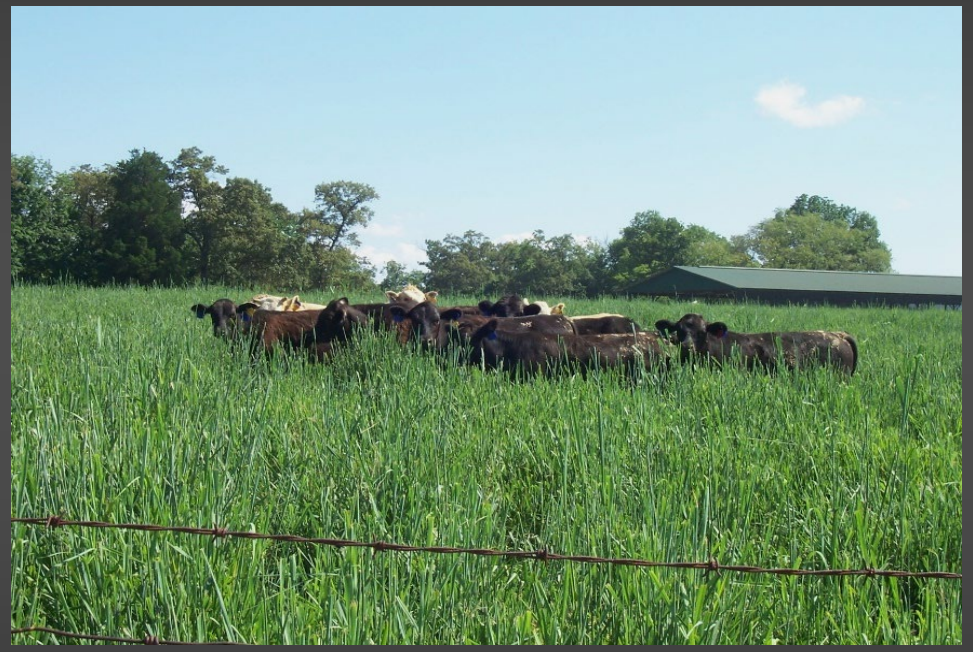
Learning Practical Lessons…



Year One

Year Three

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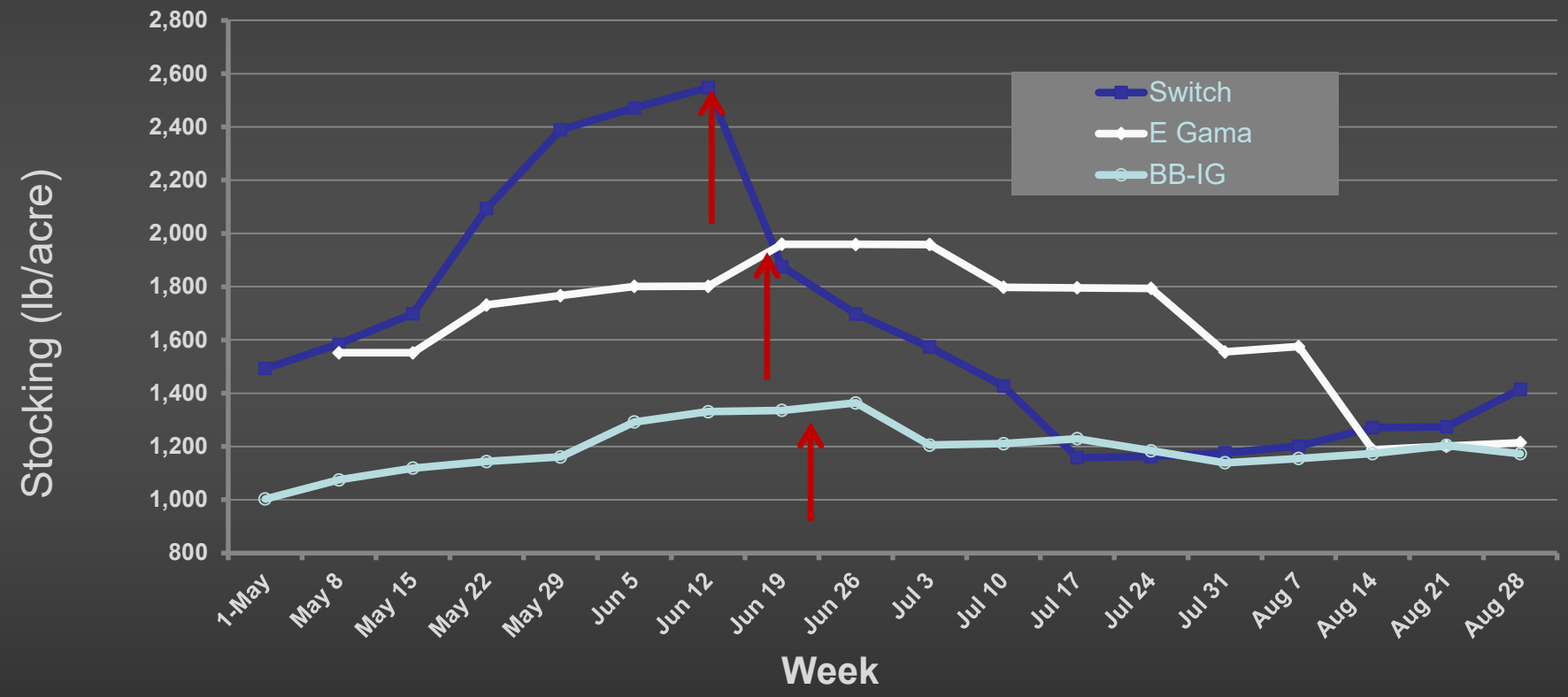
Establish Basic Foundations



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Generating Reliable Data

Forage	ADG (lb/hd)	AUD (days/ac)	Gain (lb/ac)
Switchgrass	1.74	172	435
Big blue/Indian	2.11	121	368
Eastern gamagrass	1.06	171	247

71-115 days grazing per year; weaned steers (600 lb starting wt)

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Backus et al., 2017. Journal of Animal Science 95:3143-3153

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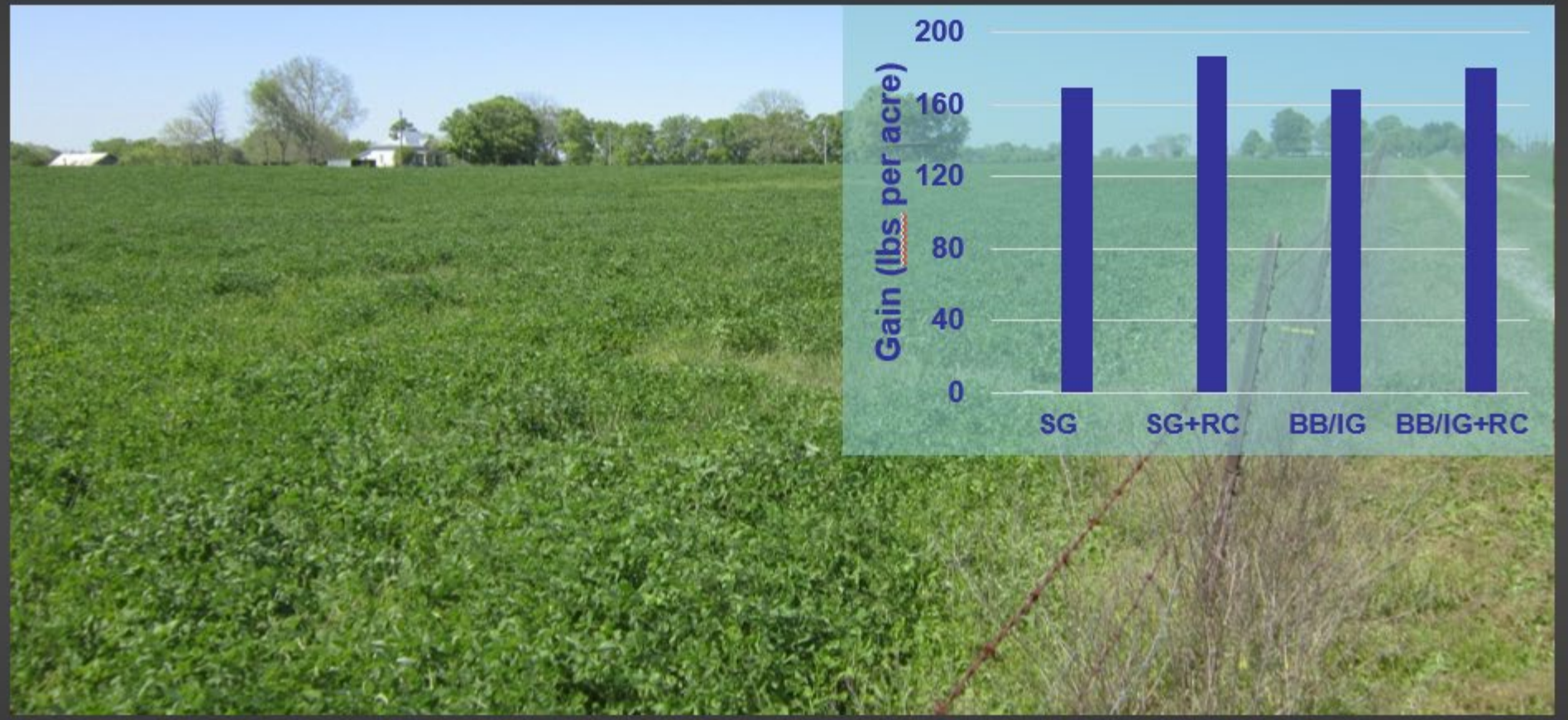
Interseeded Clover



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Keyser et al., 2016. Agronomy Journal 108:373–383

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Keeping an Eye on the Bottom Line…

Net Returns ($/acre)	
West TN	
SG	$104
BB/IG	$136
EG	$99
Middle TN	
SG	$345
BB/IG	$257

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Lowe et al., 2015. Agronomy Journal 107:1733–1740

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Educate, Educate, Educate!

1. In-service trainings (n = 9; 5 states)
2. Producer field days (n = 24)
3. Extension publication series (n = 5 bulletins)
4. Published professional meeting abstracts (n = 20)
5. Continued to build on this since…

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http://nativegrasses.utk.edu

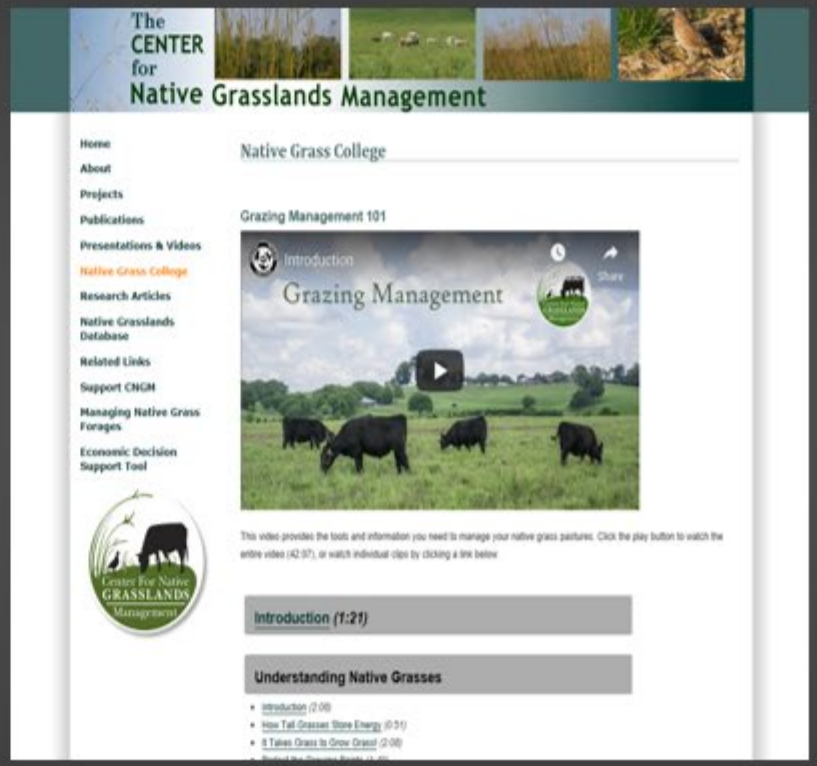
Center For Native GRASSLANDS Management

Native Grass College

- Establishment 101
- Grazing Management 101
- Competition Control 101

Planning stages:

- Economics 101?
- Producer experiences?



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http://nativegrasses.utk.edu/curricula.htm

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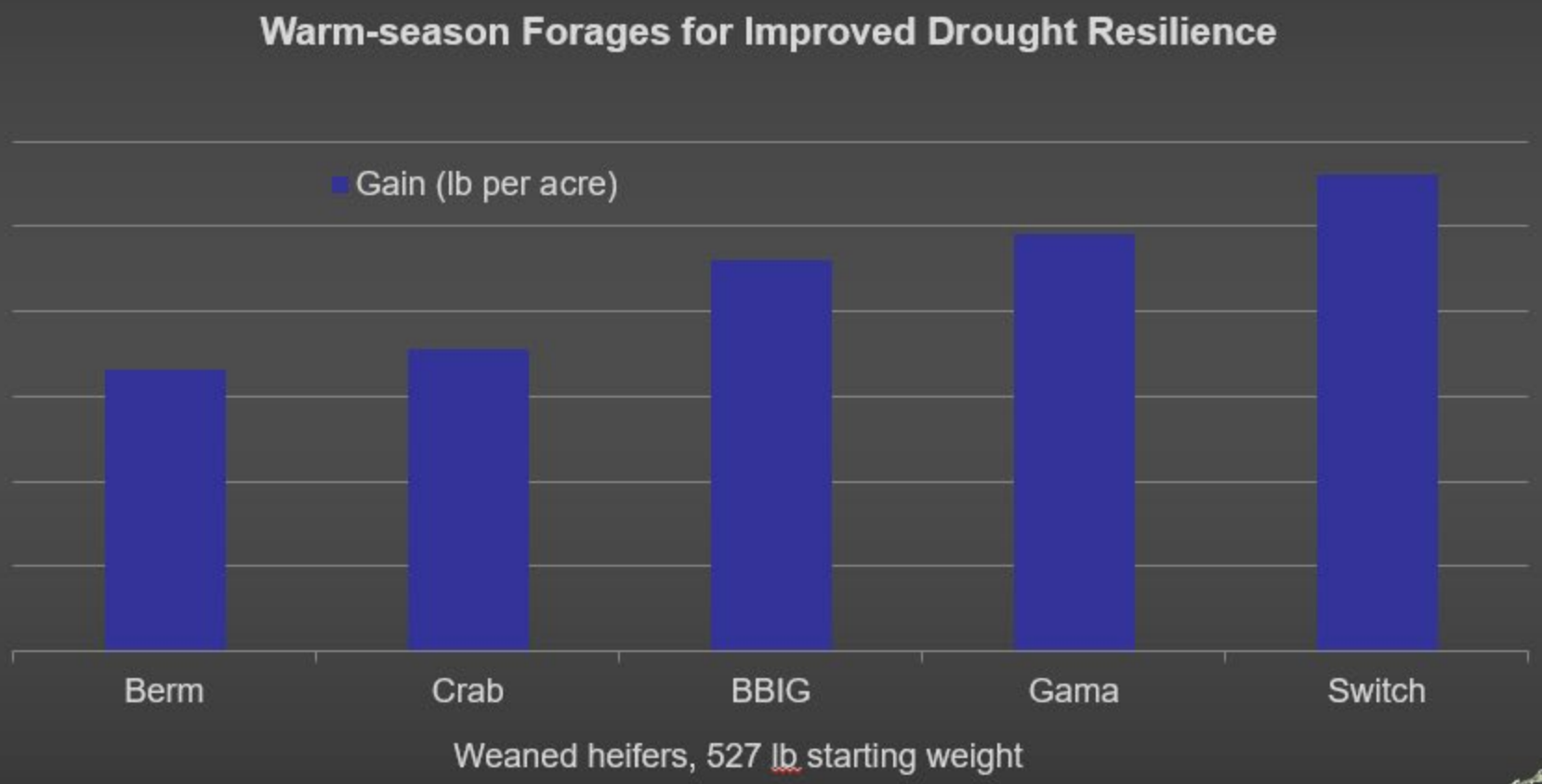
Success Breeds Success…



K. Zechiel, 2017. MS thesis, University of Tennessee

Questions?

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SUCCESSFUL GRAZING LAND CIG'S

Integration – Promotion – Implementation

December 9, 2020

Virginia Was No Different

- For 20 years cattle farmers had been told native grasses are not a viable option
  - *Only good for wildlife and set-aside land*
  - *Took 3 to 5 years to establish*
  - *Easily killed if grazed*
- Wildlife biologists were told
  - *Plant the native grasses on less productive land*
  - *Plant them in buffer areas along the creeks*
  - *Don't plant it on active farmland because any production use of the grasses would be bad for the ground nesting birds; (ie. Quail)*

VA NRCS was Approached by NHQ in 2016

- NHQ asked our State Wildlife Biologist for VA to participate as a pilot state for the WLFW Program: Northern Bobwhite Quail Initiative
- Could we do this?
- Is it feasible?
- Could we repeat this program on eastern pasture as successfully as they had implemented it on rangeland?

WORKING LANDS FOR WILDLIFE

Fortunately, our Biologists were On Board!

- Our State Biologist and a team of our Private land biologists had been to visit Dr. Pat Keyser at UT's Center for Native Grasslands Management
- They toured his research and demonstrations
- He explained how livestock grazing impact was compatible with ground-nesting wildlife
- He even claimed to be able to establish some native grasses in only 1 year!

How Could VA Utilize What Dr. Keyser's CIG and Research had Demonstrated?

- We just had to figure out the best way to take Dr. Keyser's results and
  - *Incorporate them into our technical recommendations*
  - *Integrate them in our program offerings*
  - *Promote his findings to our farmers and landowners*

- If a CIG project
  - *Stays buried in computer files*
  - *Has no transferable outcome*
  - *Does not produce an innovative technique*
  - *Then sadly……*
- A CIG Project should take us to another level!
  - *Result in the transfer of practical implementation techniques*
  - *Stimulate the adoption of a proven technique in an area where it was not previously utilized*
  - *Be formulated into a media for easy adoption and utilization*

We Met and Developed a 1-Year Plan (Jan 2017)

Agency Cooperation

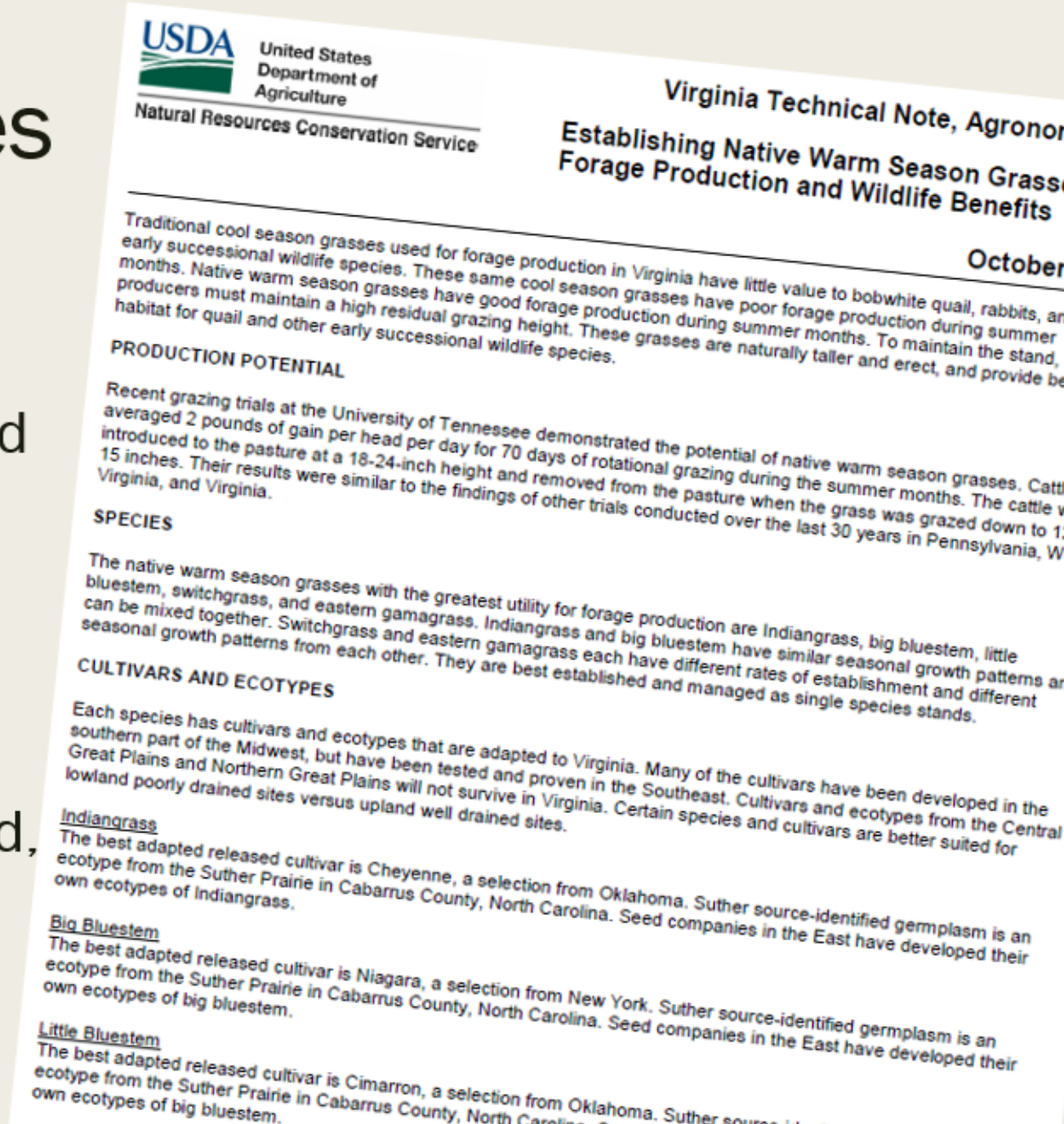
- We needed to garner multi-agency support
  - *VA Dept. of Game*
  - *VA Tech & Cooperative Extension*
  - *NRCS: local, area, state and national level*
- We needed a message of unity that it was good for cattle farmers and good for ground nesting wildlife

Items to Develop

- Technical Resources
- Focused training for our staff
- We needed to find producers to champion the use of NWSG's for grazing
- Program structure
- Publicity and Outreach
  - *Funding pool allocation*
  - *Ranking tool priority practices*

Technical Resources

- We developed a new technical note
- NWSG species, cultivars and mixes
- Seeding rates and planting windows
- Drilling, broadcasting, smooth seed and fluffy seed, carriers and no carriers



USDA United States Department of Agriculture

Natural Resources Conservation Service

Virginia Technical Note, Agronor

Establishing Native Warm Season Grass
Forage Production and Wildlife Benefits

October

Traditional cool season grasses used for forage production in Virginia have little value to bobwhite quail, rabbits, an
early successional wildlife species. These same cool season grasses have poor forage production during summer
months. Native warm season grasses have good forage production during summer months. To maintain the stand,
producers must maintain a high residual grazing height. These grasses are naturally taller and erect, and provide be
habitat for quail and other early successional wildlife species.

PRODUCTION POTENTIAL

Recent grazing trials at the University of Tennessee demonstrated the potential of native warm season grasses. Catt
averaged 2 pounds of gain per head per day for 70 days of rotational grazing during the summer months. The cattle w
introduced to the pasture at a 18-24-inch height and removed from the pasture when the grass was grazed down to 1
15 inches. Their results were similar to the findings of other trials conducted over the last 30 years in Pennsylvania, W
Virginia, and Virginia.

SPECIES

The native warm season grasses with the greatest utility for forage production are Indiangrass, big bluestem, little
bluestem, switchgrass, and eastern gamagrass. Indiangrass and big bluestem have similar seasonal growth patterns an
can be mixed together. Switchgrass and eastern gamagrass each have different rates of establishment and different
seasonal growth patterns from each other. They are best established and managed as single species stands.

CULTIVARS AND ECOTYPES

Each species has cultivars and ecotypes that are adapted to Virginia. Many of the cultivars have been developed in the
southern part of the Midwest, but have been tested and proven in the Southeast. Cultivars and ecotypes from the Central
Great Plains and Northern Great Plains will not survive in Virginia. Certain species and cultivars are better suited for
lowland poorly drained sites versus upland well drained sites.

Indiangrass
The best adapted released cultivar is Cheyenne, a selection from Oklahoma. Suther source-identified germplasm is an
ecotype from the Suther Prairie in Cabarrus County, North Carolina. Seed companies in the East have developed their
own ecotypes of Indiangrass.

Big Bluestem
The best adapted released cultivar is Niagara, a selection from New York. Suther source-identified germplasm is an
ecotype from the Suther Prairie in Cabarrus County, North Carolina. Seed companies in the East have developed their
own ecotypes of big bluestem.

Little Bluestem
The best adapted released cultivar is Cimarron, a selection from Oklahoma. Suther source-
ecotype from the Suther Prairie in Cabarrus County, North Carolina.
own ecotypes of big bluestem.

Focused Training for our Conservationists and Partners

- We brought in the expert to train our staff and partners
- July Trainings for Conservations and partners
- Classroom trainings presenting Dr. Keyser's research and showing how he demonstrated it on farms across TN
- Field visits to farmers who graze NWSG's
- Convincing our field staff that
  - *We can successfully establish in one year 80% of the time*
  - *It is palatable forage if grazed before it goes to seed*
  - *Livestock will not kill it if you manage the grazing*
- In-service training for VCE Agents

Follow-Up Support to Conservationists and Producers

- State and area technical assistance specialists
  - *Grassland Agronomist*
  - *State Wildlife Biologist*
  - *Private Lands Biologist*
- Direct technical assistance before, during and after planting
- Documentation of success and troubleshooting failures

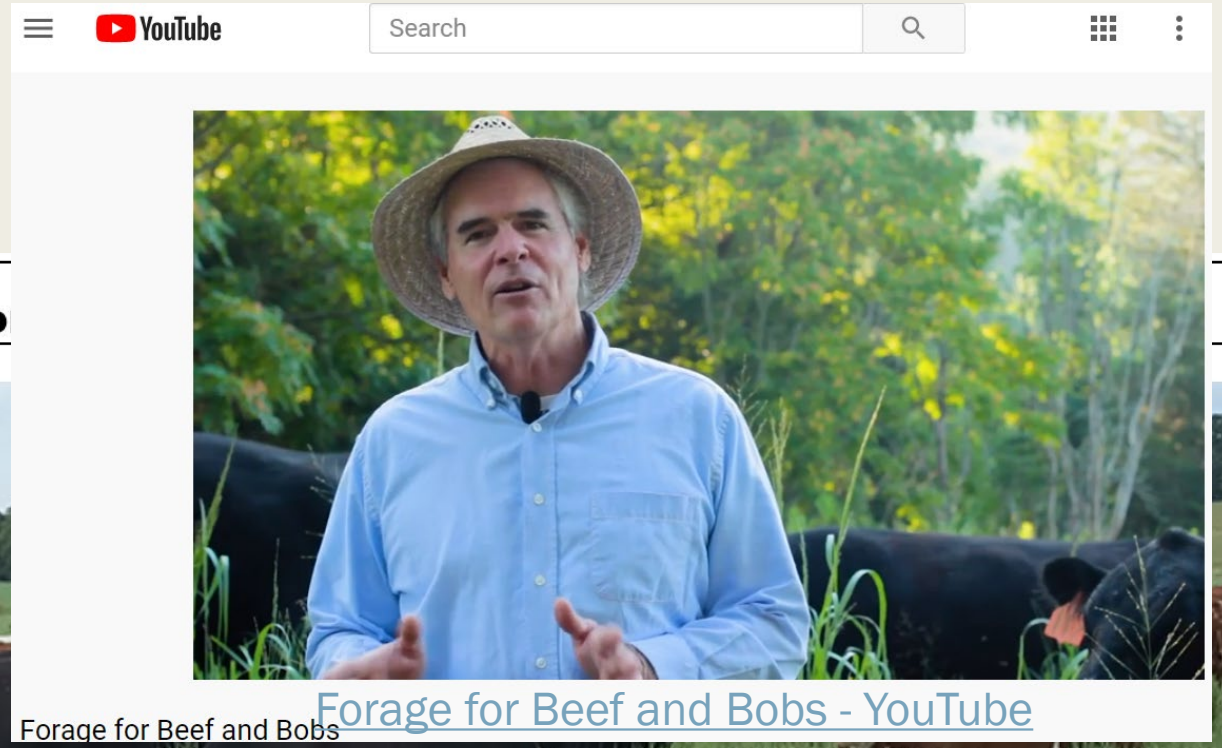
Follow Up Seedling ID and Management

NWSG Champions who had Successfully Used them for Grazing Livestock

Program Structure Development

- Funding Pool Allocation
- Ranking Tool Questions
- Priority Practices
- Fact Sheet
- Sharing real-time with producers

Publicity and Outreach



Forage for Beef and Bobs

[Forage for Beef and Bobs - YouTube]

Related Topics

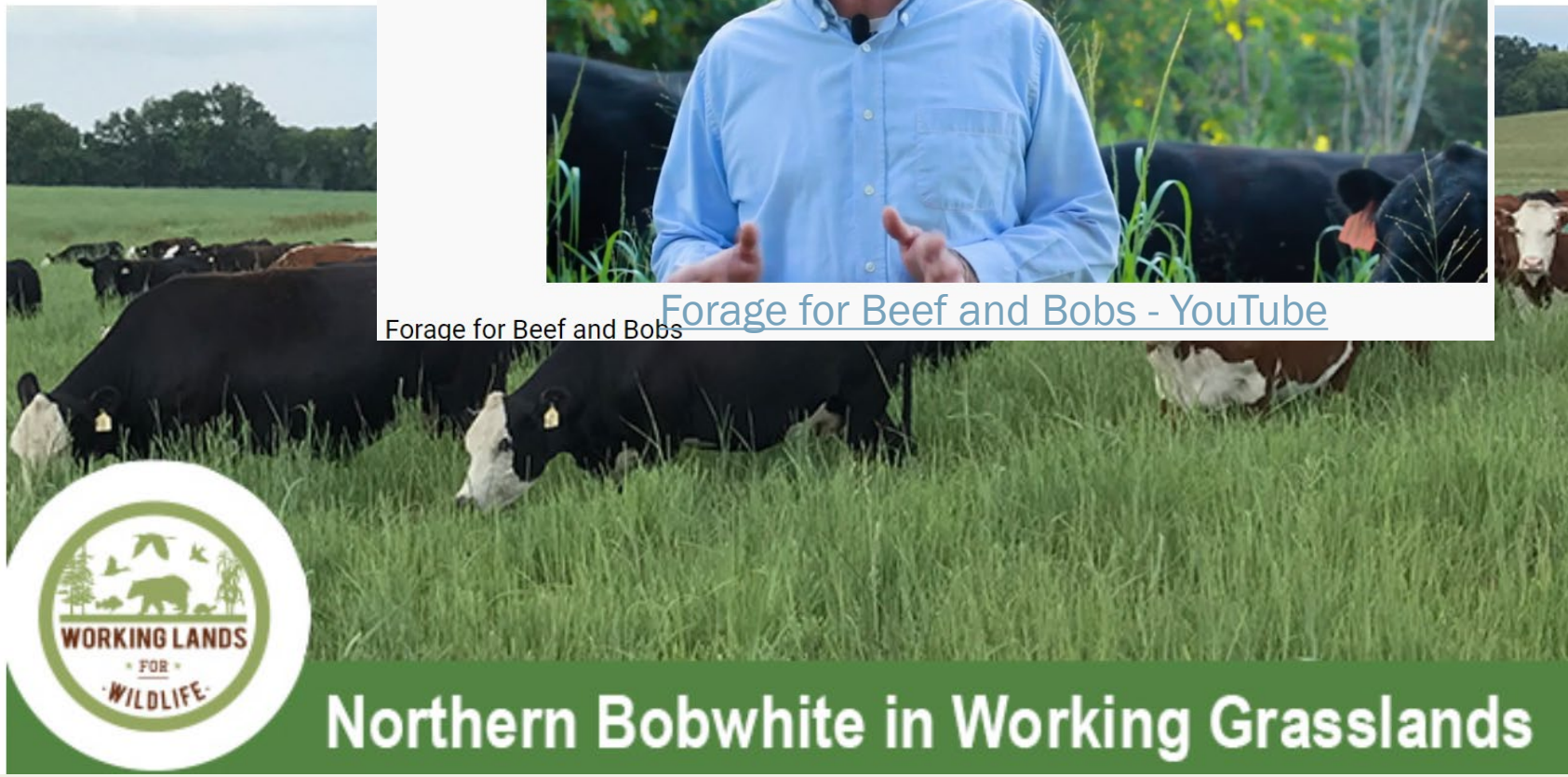
Programs

- The Farm Bill and Wildlife
- Working Lands for Wildlife - American Black Duck
- Working Lands for Wildlife - Golden-Winged Warbler

Related Links

- Program Fact Sheet
- Frequently Asked Questions
- NRCS Tech Note #12
- The Center for Native Grasslands Management

Working Lands fo



Highlighting Success Stories

- Writing articles
- Developing case study summaries
- Hosting pasture walks at new establishment sites
- Give the farmer and platform and let them tell their story!
- Be ready for questions and follow-up farm visits
- Getting more NWSG drills at SWCD offices!

State Level CIG Project in VA

- SPAREC establishment and use
- Evaluate and compare cultivars
- Platform for grazing research

Continue to Share and Enable Success!

- Highlight Successful Producers
- Replicate their success!
- Introduction to a successful producer

My Experience with Native Warm Season Grasses

Keith Tuck, Moneta, VA

Summer Weather is Rough on a Cool Season Grass Pasture

- I've previously worked with NRCS and my local SWCD to develop a well-designed grazing system
- I'm located just north of the Smith Mountain Lake
- Summer thunder-storms often develop south of my farm over the lake and my pastures are left hot and dry
- My cool season grass pastures do not meet my summer forage needs

I Heard About the Working Lands for Wildlife Program at Educational Events

2018 VIRGINIA ASSOCIATION OF SOIL AND WATER CONSERVATION DISTRICTS ANNUAL MEETING

2019 Virginia Forage and Grassland Council Winter Forage Conferences Alternative Forages for Grazing Systems

- JB Daniel conducted a breakout session at the December 2018 VA Association of SWCD on Establishing Native Forages Using the Working Lands for Wildlife Program
- Dr. Pat Keyser was a keynote speaker at the VFGC Winter Forage Conference in January 2019 presenting on how to Establish and Manage NWSG's for Grazing Livestock

Planting Switchgrass March 30, 2019

- The field was prepped the previous season by killing the sod and planting a warm season annual mix for summer grazing
- The field fallowed over winter
- 2 quarts/ ac of Roundup was applied to kill the winter annual weeds
- Planted ‘Carthage’ switchgrass March 30, 2019
- Drilled the seed at 8 lbs. PLS per acre at approximately ¼” deep

Switchgrass Seedling Emergence 10 weeks

Early planting resulted in emergence and young seedling growth to get ahead of the spring weed crop.

Summer weed and Grass Management

Foxtail and Crabgrass in late July

Clipped Aug 15, 2019

We have no effective post-emergence herbicide to use after planting the switchgrass.

After Frost-Killed Switchgrass December 2019

Switchgrass Emergence April 8 2020

First Grazing Early June 2020

September 6, 2020 Switchgrass

Great 16 Acres of Switchgrass

- 3 grazing rotations in 2020
- Good forage production
- Glad to have this 16 acres
- Might apply broad leaf herbicide next year

NWSG Mix planting Spring 2020

- Prepared the field fall of 2019 with a fall application of glyphosate at 2.5 quarts/acre to kill the mixed fescue sod
- Planted 27 acres of the native warm season grass mix March 20th
  - Big bluestem 5 lbs. PLS/ac
  - Indiangrass 2 lbs. PLS/ac
  - Little bluestem 3 lbs. PLS/ac
- Applied a mixture of glyphosate plus 5 oz per acre of Plateau right after planting to kill the winter weeds and provide 6 weeks of early season weed and grass suppression

Seedling Stand June 15, 2020

- 85 days after planting
- Good weed control so far

Mid-summer Grassy Weed Control

- By mid-summer the Imazapic herbicide had played out
- The main competition to the native grass seedlings was crabgrass and foxtail
- I clipped the field on August 6th to a height of about 15 inches

NWSG Mix September 8, 2020

What a difference one month makes!

With 40+ acres NWSG, we're all looking forward to the summer of 2021!