USDA Natural Resources Conservation Service
East National Technology Support Center
2014 Webinar Series

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Date	2014 ENTSC Webinar Topics
Jan 29	Addressing Resource Concerns…NRCS' New Land Use Planning Criteria
Feb 26	Overview and Recent Updates of Engineering Field Tools
Mar 26	Wetland Restoration Hydrology and Design Overview
Apr 30	Writing a Seeding Plan for Conservation Practices: Critical Areas, Natives and More
June 18	Managing Troublesome Invasive Grasses in Eastern Forests
Jun 25	**Using Diverse Cover Crop Mixes to Improve Soil Health and Livestock Nutrition on Grazing Lands**
Jul 30	Planning Considerations for Confined and Other Animal Feeding Operations
Aug 27	Solar-powered Water Systems for Grazing Operations
Sep 24	Basic Pump and Pipeline Design
Oct 29	Planning and Design of Stream Crossings
Nov 19	Fencing for Livestock and Improved Pasture Management

On-demand replays are available within one week of the live webinar.

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SREF

Improving soil health through thoughtful and adaptive forage and grazing management

Matt Poore,
NCSU Animal Science

NC STATE UNIVERSITY
College of Agriculture & Life Sciences

NC State University
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COOPERATIVE EXTENSION
Empowering People · Providing Solutions

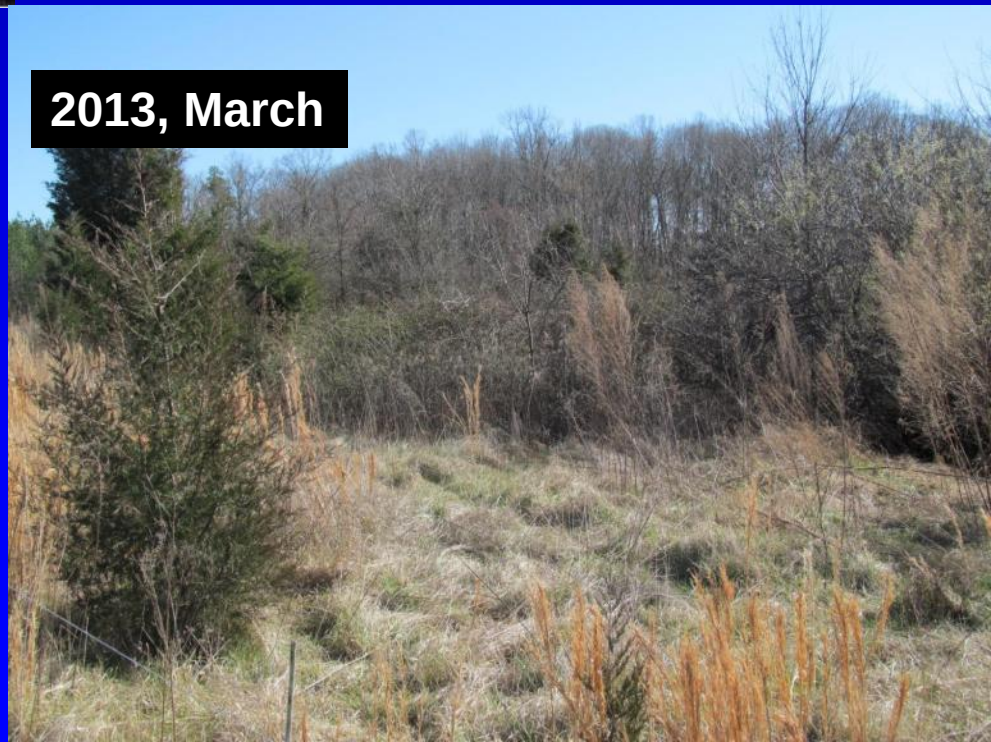
Amazing Grazing
NC STATE UNIVERSITY'S
Livestock Pasture Educational Program

Matt Poore, PhD
Extension Beef Specialist
North Carolina Cooperative Extension
Department of Animal Science
North Carolina State University

1999, March

1999, July

2001, March


2013, March

Why the fuss about soil health on pastures?

- Many pastures are overgrazed throughout the world and in the US
- Overgrazing causes runoff of water and nutrients, reduces forage production and shortens stand life
- Well managed pastures can benefit the environment through reducing runoff of rain and nutrients, and also improves the cycling of nutrients.

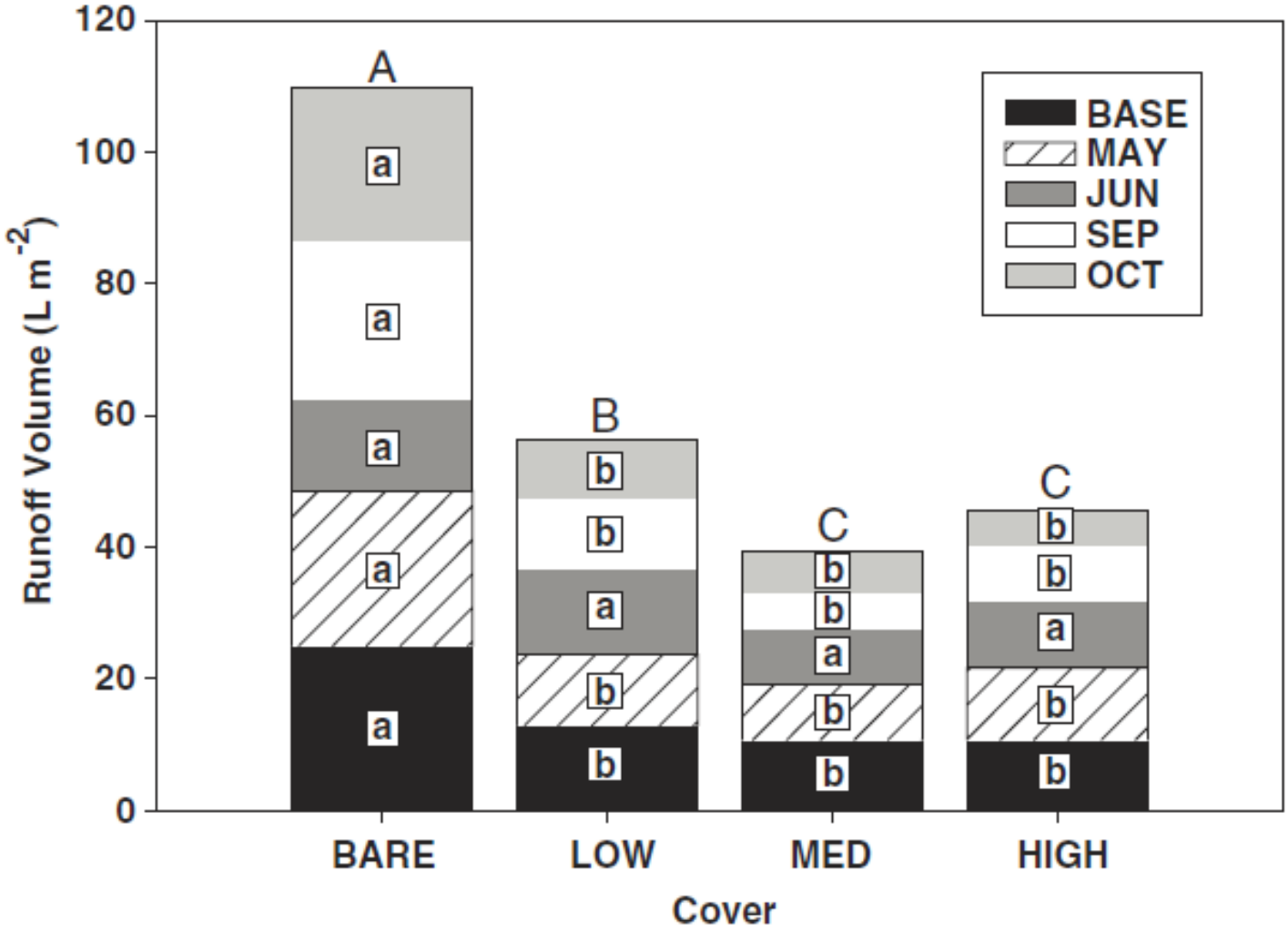


Fig. 1. Mean volume of 30 min of runoff as affected by cover, averaged across sites (means within the same rain event indicated by the same letter are not significantly different; capital letters indicate differences among the means of all rain events, $P > 0.05$).

Butler et al., 2006

Drought Response Program

NC STATE UNIVERSITY

NC STATE UNIVERSITY A&T STATE UNIVERSITY COOPERATIVE EXTENSION

Helping People Put Knowledge to Work

N.C. DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FOUNDED 1877

North Carolina

Tobacco Trust Fund Commission

NRCS

Natural Resources Conservation Service

The Rural Center

NORTH CAROLINA SOIL & WATER CONSERVATION

NCDENR

What is Amazing Grazing?

An educational program striving to improve pasture management and profitability of pasture-based livestock production through a better understanding of Pasture Ecology

- Training for advisors. Extension agents, conservationists, veterinarians, industry consultants
- Training for producers
  - Publications
  - Hands-on workshops
  - Demonstrations
  - Applied Research

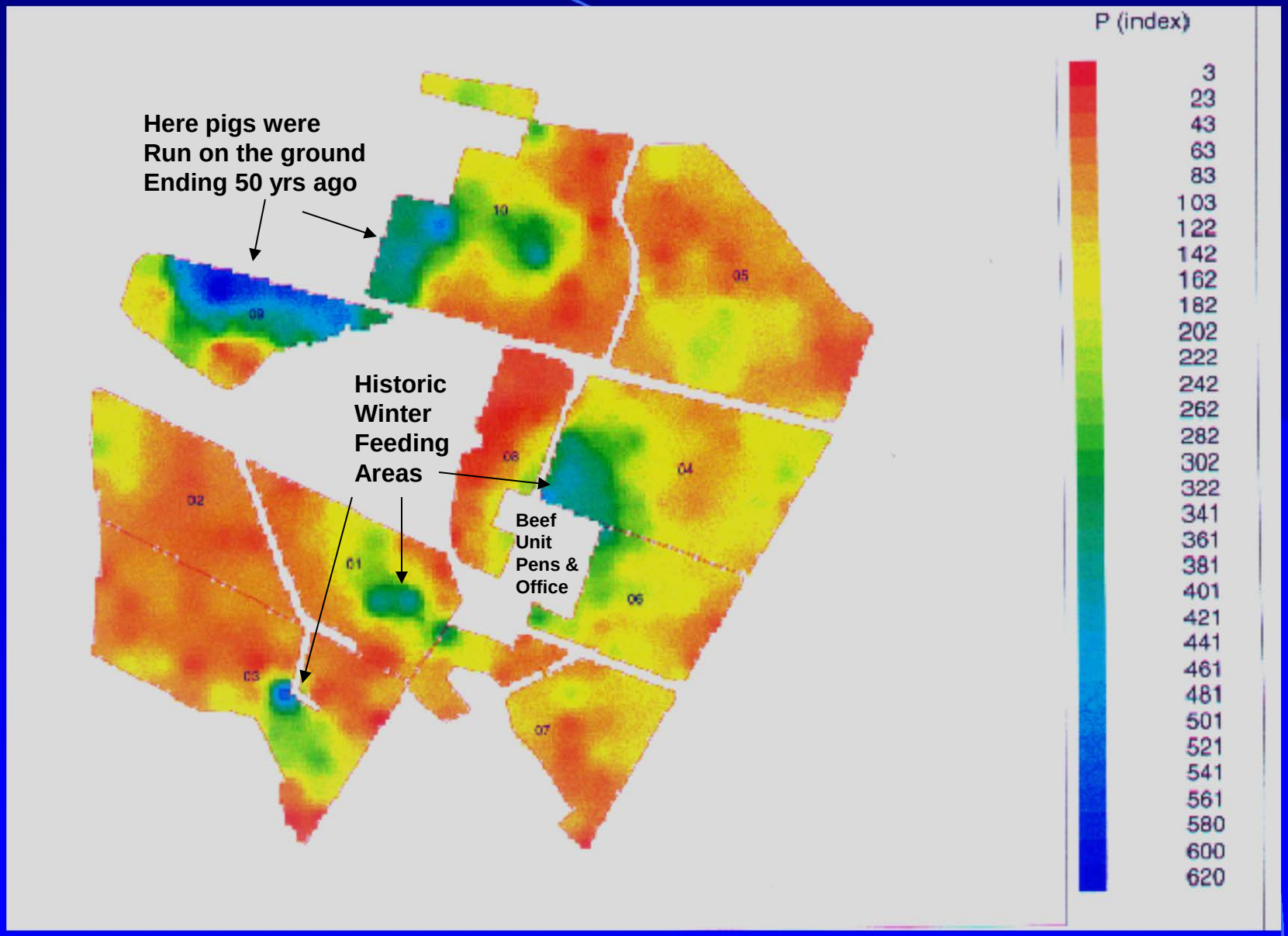
How to Achieve AMAZING GRAZING

- Understand that pastureland is a complex ecosystem
- Understand animal requirements for desired level of performance
- Understand the growth nature of various pasture species
- Develop a management style that meets the production goals while minimizing cost and improving the resource base

Dung Beetles move fecal material down up to 18 inches

Precision Nutrient Map (interpolated from grid samples) showing Phosphorus (manure) distribution

Phosphorus Index at CEFS Beef Unit, 1999



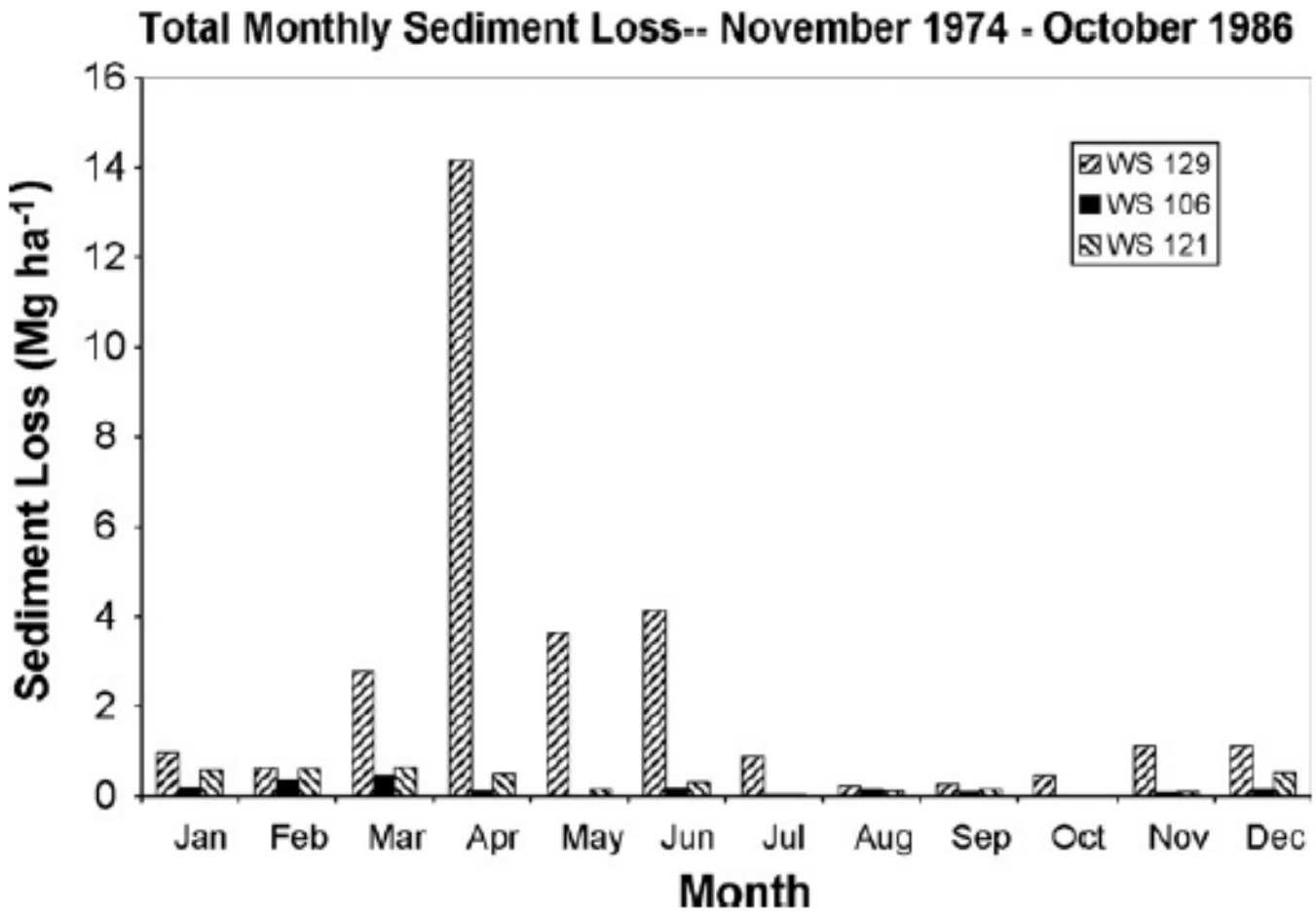
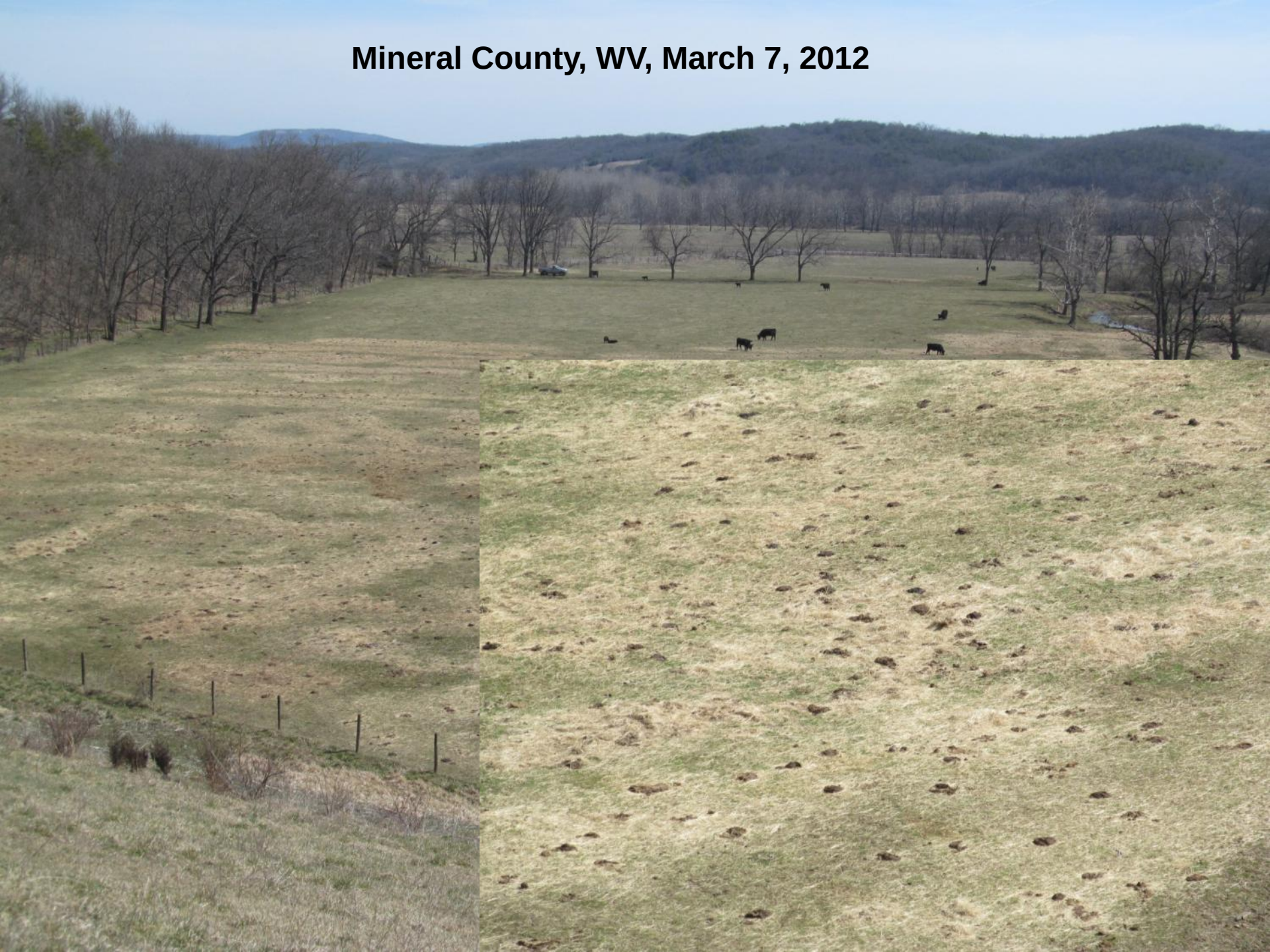


Fig. 4. Total sediment losses by month from the continuous winter feeding system (WS 129) and the rotational winter feeding system (WS 106 and WS 121); November 1974–October 1986.

Mineral County, WV, March 7, 2012



What to do about the Fescue Problem?

- Shift to fall calving
- Shift fertilization to late summer
  - Increases clover in spring and balances yield pattern
- Supplemental feed
- Add warm season or non-toxic fescue to the system
- Select for fescue resistant cattle
  - Heat tolerance (hair shedding)
  - Research on this is pending

Fescue toxicity remains a key problem!

Heifers on toxic fescue

Heifers on MaxQ fescue

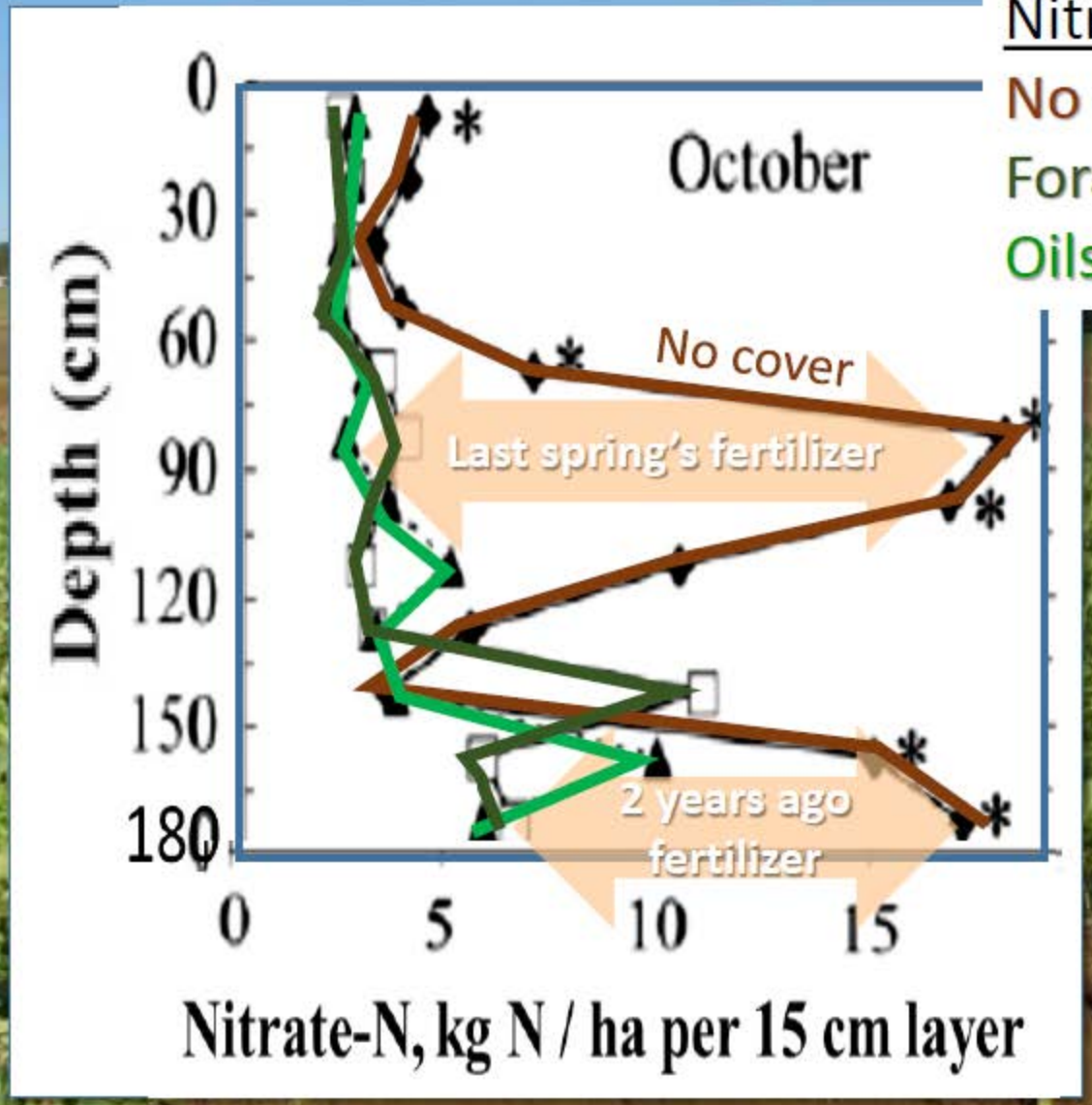
Using annuals to transition from toxic fescue to non-toxic fescue or native warm season grasses

- Take time to do the conversion. Not too much at once, and use annuals several years.
- Annuals for several years will
  - Improve the elimination of toxic fescue
  - Break weed cycles and control populations
  - Selecting annuals that improve soil health will prove beneficial once new pasture is established.
- We have been working with annuals in conversion for the last 3 years

“Ray’s Crazy Mix?”
“or should it be Crazy Ray’s Mix?”
Paige Kennedy, NCSU Undergraduate

How do you design these annual mixtures?

- There is little data to help design mixtures
- Functional groups based on root type is one consideration
  - Grasses (generally fibrous roots)
  - Legumes (tap and fibrous roots plus N fixation)
  - Forbes/brassicas (often tap roots)
- Success of the mix is determined by:
  - Initial plant population (number of seeds)
  - Conditions during establishment
  - Competitiveness of the various species



Nitrate-N in 180 cm soil

No cover: 173 kg/ha

Forage radish: 48 kg/ha

Oilseed radish: 62 kg/ha

Loamy sand,
Beltsville, Maryland

Dean, J.E., and R.R. Weil. 2009. Jou

Ray's crazy mix, summer 2014

lb/acre		Seeds per lb	seeds/ac	seeds/sq foot	7 inch row space seeds/foot of row
5	Mastergraze Corn	1,810	9,050	0.21	0.09
9	SB 360 Conventional	2,550	22,950	0.53	0.23
19	Cowpea	4,090	77,710	1.78	0.76
4	Sorghum Sudan AS6501	11,947	47,788	1.10	0.47
4	Sorghum Sudan AS6201	12,971	51,884	1.19	0.51
2.75	Wonderleaf Pearl Millet	75,667	208,084	4.78	2.04
1.75	Perdovik Sunflower	10,558	18,477	0.42	0.18
2.25	Hybrid brassica	113,500	255,375	5.86	2.51
2.25	Daikon Raddish	37,833	85,124	1.95	0.84
50			total	17.82	7.62

Ray's Crazy Mix For Summer Grazing

Species	2012	2013	2014
Grazing Corn			5
Soybean	15	9.5	9
Cowpea	12.5	12.2	19
Sorghum Sudan	8.75	12.8	8
Pearl Millet	2.5	6.1	2.75
Foxtail Millet	2.5	2	
Sunflower	3.75	2	1.75
Turnip	1.25	1.4	
Hybrid brassica	1.25	1.4	2.25
Daikon Raddish	2.5	1.4	2.25
Total per acre	50	48.8	50

SIDEKICK

2013, Virgilina, VA

ingGrazing
NIVERSITY'S
Pasture Educational Program

3018

Recommendations for grazing annual cover crops

- Know your goal. High quality forage production or high biomass yield and cover?
- Plant into a non-competitive situation. Are there a lot of weeds that will compete for moisture? Do you want to kill fescue anyway?
- Results are generally better with a burn down with glyphosate, but success sometimes comes without.

← Stanly County

Union County

↓

What is our main limiting factor preventing widespread adoption of thoughtful grazing management?

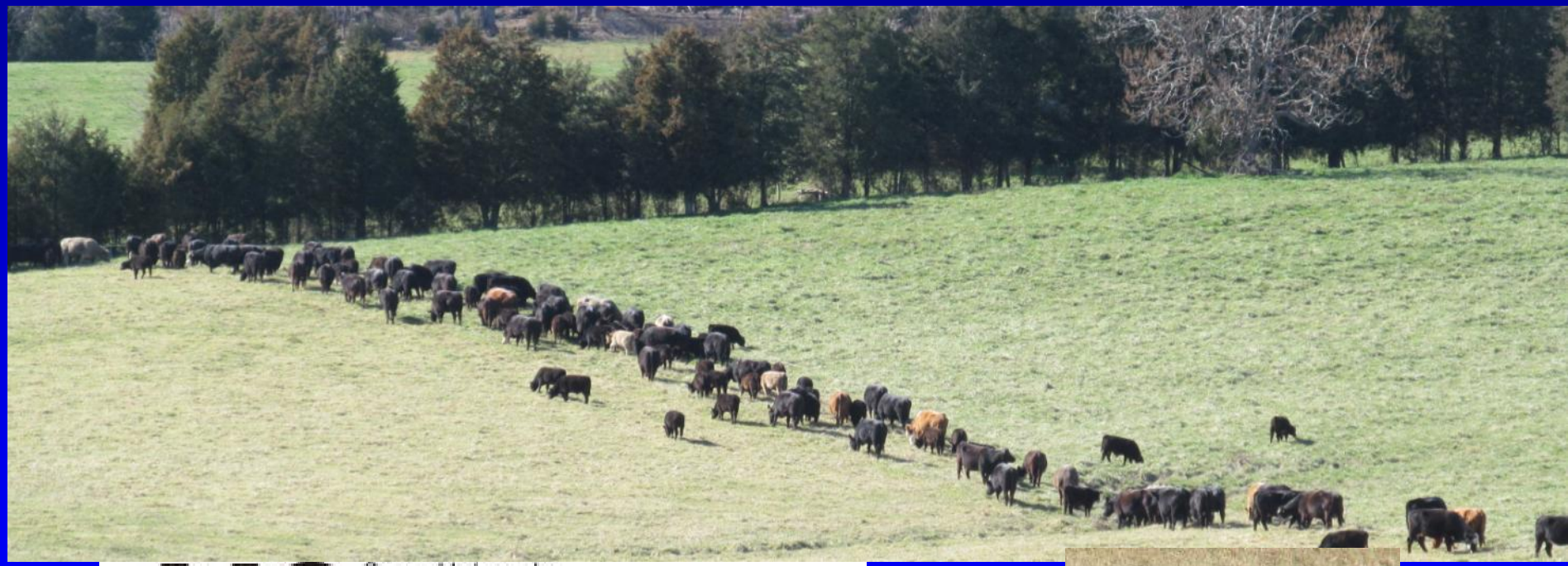
Temporary Fencing

Amazing Grazing

NC STATE UNIVERSITY'S

Pasture-Based Livestock Education Program

NC Choices



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CENTER for ENVIRONMENTAL FARMING SYSTEMS

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