

# 29th Annual



# 12th Annual



**February 25 & 26, 2013**  
**University Plaza Hotel**  
**Springfield, Missouri**

Welcome to the  
29th Annual Southwest Missouri Spring Forage Conference  
and 12th Annual Heart of America Conference

This year marks are 29th Annual Southwest Missouri Spring Forage Conference and combining with the 12th Annual Heart of America Grazing Conference for two days of education and information about agriculture related topics. This conference has grown throughout the years and we hope to make this one even better as we combine the two conferences into one location for your convenience this year.

We are privileged to have three different main speakers about forages and livestock, along with a humorous speaker to add to your listening pleasure and also your choice of four different breakout sessions that you can attend on Tuesday. . Monday afternoon starts with Richard McConnell, Stockmanship-Low Stress Livestock Handling, Monday evening we have Dr. Garry Lacefield, Forages: Change-Challenges-Opportunities and Dr Jerry Crownover, Humorist to round out the evening. On Tuesday we have Kathy Voth, Training Your Cows to Eat Weeds along with two breakout sessions in the morning and afternoon covering a variety of topics. Between each session, please take time to visit out trade show. We have 30 to 40 vendors available for you to view and discuss their services and/or products

Each year, the Planning Committee strives to improve upon our previous conference. This year is no exception to that and we are pleased to combine the two conferences into one location for you. We appreciate your comments and ask that you take a few minutes to complete the conference evaluation before leaving Tuesday.

The Spring Forage Conference planning committee is a partnership of the USDA Natural Resources Conservation Service, Soil & Water Conservation Districts of Southwest Missouri, University of Missouri Extension, USDA Farm Service Agency, Missouri State University William H Darr School of Agriculture, and the Missouri Department of Conservation, along with the following agencies with the Heart of America Conference; Illinois Forage & Grassland Council, Illinois Grazinglands Conservation Initiative Association, University of Illinois Extension, Indiana Forage Council, Purdue University Cooperative Extension, Kentucky Forage and Grassland Council, Kentucky Grassland Conservation Initiative, University of Kentucky Cooperative Extension, Ohio Forage & Grassland Council, The Ohio State University Cooperative Extension, Missouri Forage and Grassland Council/Grazing Lands Conservation Initiative, University of Missouri Extension, USDA – Natural Resources Conservation Service – Illinois, Indiana, Kentucky, Ohio, Missouri.

Many thanks to the vendors, break sponsors, conference speakers and especially the producers for making this a quality conference. Thanks to all the hard work by the committee and affiliated agencies who are associated with both conferences.

If you have any questions or commits during the conference, all committee members will be wearing tan shirts on Tuesday displaying the Spring Forage Conference logo. We will be more than willing to help you.

Alan Garton  
2013 Chair, SW Missouri Spring Forage Conference

SW Missouri Spring Forage Conference & Heart of America Grazing Conference

Monday, February 25, 2013
12:00 noon - 6:00 pm - Registration
1: 00 - 5:00 pm
Stockmanship - Low Stress Livestock Handling Richard McConnell Hand N Hand Livestock Solutions, Bolivar, MO
5:00 6:30 pm - Social & Visit Trade Show
6:30 - 9:00 pm
Welcome, Introductions, Dinner Mark Green MFGC President, SFC Vice-Chair  Forages: Change - Challenges - Opportunities Dr. Garry Lacefield State Forage Specialist, University of Kentucky  Life is Simple Jerry Crownover Local Beef Producer & Humorist

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SW Missouri Spring Forage Conference & Heart of America Grazing Conference

Tuesday, February 28, 2012 8:00 - 8:45 am REGISTRATION & VISIT TRADE SHOW	
8:45 - 9:30 -- CONCURRENT SESSIONS A (Select one of these four sessions to attend)	
((A1)Management of Fescue Toxicity Dr. Craig Roberts, State Forage Specialist University of Missouri, Columbia, MO	
(A2) Grazing System Layout and Design (REPEATED at 2:45 pm) Mark Green, NRCS District Conservationist Springfield, MO	
(A3) Alfalfa Management for Quality Forage Dr. Garry Lacefield, State Forage Specialist University of Kentucky	
(A4) Forages & Wildlife Mark Hutchings, Private Lands Conservationist Missouri Department of Conservation, Mt. Vernon, MO	
9:30 - 10:15 am -- BREAK & VISIT TRADE SHOW	
10:15 - 11:00 -- CONCURRENT SESSIONS B (Select one of these four sessions to attend)	
(B1) Novel Endophyte Fescues for Missouri Dr. Craig Roberts, State Forage Specialist University of Missouri, Columbia, MO	
(B2) Selecting Livestock to Fit Your Environment (REPEATED at 2:45 pm) David Hall, Owner, Ozark Hills Genetics West Plains, MO	
(B3) Evaluating the Income Potetial & Demands of Different Livestock Enterprises for Your Farm (REPEATED at 2:45 pm) Wesley Tucker, Agriculture Business Specialist University of Missouri, Columbia, MO	
(B4) Taxes and Farm Records Larry King, 21st Century Tax Services Buffalo, MO	
11:00 - 11:30 am BREAK & VISIT TRADE SHOW	
4	11:45 -- LUNCHEON

SW Missouri Spring Forage Conference & Heart of America Grazing Conference

Emcee - Lynzee Glass Managing Editor of Ozark Farm and Neighbor  Keynote Address “ <i>Training Your Cows to Eat Weeds</i> ” KATHY VOTH Founder - Livestock for Landscapes LLC - Loveland, Colorado	
1:00 - 1:45 pm -- BREAK and Visit Trade Show	
1:45 - 2:30 -- CONCURRENT SESSIONS C (Select one of these four sessions to attend)	
(C1) Question & Answer time with Keynote Speaker Kathy Voth Founder - Livestock for Landscapes LLC	
(C2) Establishing & Maintaining Native Warm Season Grasses Tim Schnakenberg, Agronomist Missouri University Extension, Galena, MO	
(C3) Direct Sales of Grass-Fed Beef (Producer Panel) Chris Boeckmann, Boeckmann Family Farms, Osage County Meera & Allen Scarrow, Ozarks Natural Beef, Greene County	
(C4) Inter-seeding Annuals into Perennial Pasture Dr. Rob Kallenbach, State Agronomy Specialist University of Missouri, Columbia, MO	
2:30 - 2:45 pm -- BREAK	
2:45 - 3:30 – CONCURRENT SESSIONS D (Select one of these four sessions to attend)	
(D1) Pasture Renovation With Livestock Mark Kennedy, NRCS State Grassland Specialist Houston, MO	
(D2) Grazing System Layout and Design Mark Green, NRCS District Conservationist Springfield, MO	
(D3) Selecting Livestock to Fit Your Environment David Hall, Owner, Ozark Hills Genetics West Plains, MO	
(D4) Evaluating the Income Potetial & Demands of Different Livestock Enterprises for Your Farm Wesley Tucker, Agriculture Business Specialist University of Missouri, Columbia, MO	
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Southwest Missouri Spring Forage Conference & Heart of America  
Grazing Conference, February 25 & 26, 2013

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*The Conference Committees would like to thank all the sponsors and vendors  
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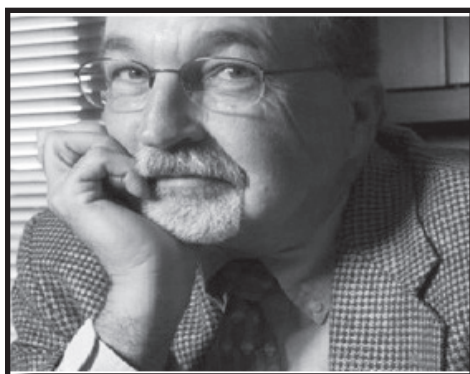
# Southwest Missouri Spring Forage Conference and Heart of America Grazing Conference Speaker Biographies



**Richard McConnell** grew up on a dairy farm near Republic, Missouri. In 1980 he graduated from the University of Missouri-Columbia with his B.S. in Agriculture Education. He received his M.S. in Ag Ed in 1983 and taught Vocational Agriculture for 13 years in Odessa, Missouri. In 1993 Richard bought a farm in Polk County, Missouri where he currently runs a profitable cattle operation. Using stockmanship, Richard and Tina are able to manage the herd to utilize forages ready for harvest, sustain herd health, and make a profit.

**Tina Williams** was born in northern California and has lived on various ranches through that area with her parents, Bud and Eunice Williams. As an adult, she lived in California, Oregon, and Alaska before moving to Missouri in 1982. From 1990 through 2000 she managed a farm with cattle, hair sheep, dairy goats, and pastured hogs.

In 2002 Richard and Tina met and ultimately married. They shifted their stockmanship skills from “doing” to “teaching” through attending many Bud Williams Stockmanship Schools. They have presented Stockmanship Schools of their own from Saskatchewan to Louisiana and from Montana to West Virginia since 2005.



**Jerry Crownover** was raised on a diversified livestock farm, deep in the heart of the Missouri Ozarks. For the first few years of his life, he did without the luxuries of electricity or running water and received his early education in one of the many one-room schoolhouses of that time. After graduation from Gainesville High School, he enrolled at the University of Missouri in their College of Agriculture, where he received a BS degree in 1974 and a Masters of Education Degree in 1977.

After teaching high school Vocational Agriculture for five years, Jerry enrolled at Mississippi State University where he received a Doctorate in Agricultural and Extension Education. Dr. Crownover then served as a Professor of Agricultural Education at Missouri State University for 17 years.

In 1997, Dr. Crownover resigned his position at MSU to do what he originally intended to after he got out of high school--raise cattle. Jerry now works and lives on a beef cattle ranch in Lawrence County, Missouri with his wife, Judy and sons, Seth and Zach. In addition to ranching, Jerry writes a bi-monthly column dealing with agriculture and life that appears in many magazines and newspapers throughout the Midwest. He has also appeared many times on Public Television as an original Ozarks Storyteller and travels throughout the U.S., presenting both humorous and motivational talks to farm and youth groups.



In 2004, **Kathy Voth** invented a method for training cows to eat weeds. She started by taking a close look at the last century of animal behavior research. Then she took all the different pieces and translated them into an easy-to-understand process that adapts easily to any producer’s needs.

Kathy has now trained over 1000 cows to eat many of our most problematic weeds, adapting her process for small herds of 10 cows to as many as 110 pairs, for dry lot and pasture, and for novice and experienced producers. Her book, “Cows Eat Weeds” was published in 2010 and her articles appear in BEEF magazine, Stockman Grass Farmer, and Acres USA.

Kathy is known for her entertaining and inspiring presentation style that includes lots of video, sometimes some unusual “snacks,” and examples from producers she’s worked with.

Kathy is also known for thinking up unusual solutions to problems:

When her community was suffering from an economic down turn she became one of two head volunteers building a mountain bike trail from Grand Junction, Colorado to Moab, Utah. The result - today the Grand Valley is a mountain biking mecca with a healthier economy. Her efforts earned her the Department of the Interior’s National Conservation Service Award. • Her seven years of research on using goats to reduce fire danger in suburban areas resulted in the only handbook describing how to manage goats to increase firefighter safety and save homes. • For developing a novel internship program to help students transition into agency employees, Kathy was awarded the Bureau of Land Management’s “Excellence in Environmental Education” award.

Kathy’s experience includes twelve years as an educator and public information officer with the Bureau of Land Management where she focused on her goal of helping communities live sustainably in their environment. She lives in Loveland, Colorado with her husband, a cat, two goats, and a flock of chickens.



**Larry King** is a Dallas County native and owns and operates 21st Century Financial Services in Buffalo. His business provides tax services to individuals, partnerships and LLC entities with a specialty in farm taxes.

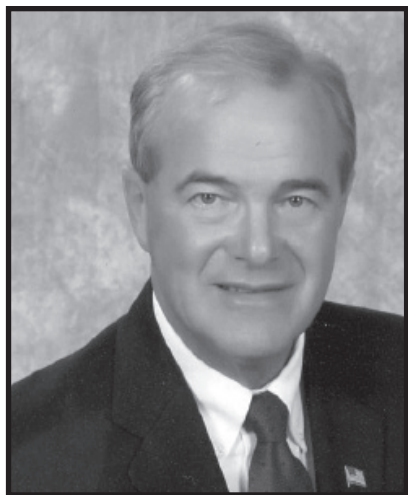
King entered the tax business as a second career after having spent 25 years in public education in Missouri, Florida and New Zealand as a math teacher, counselor and superintendent of schools.

Larry has the following credentials: Registered Tax Return Preparer (RTRP), Accredited Tax Preparer (ATP), Accredited Tax Advisor (ATA), Accredited Retirement Advisor (ARA), Enrolled Agent.

He is a member of the following associations: National Association of Tax Professions (NATP), National Association of Enrolled Agents (NAEA), National Society of Accountants (NSA).

Larry has operated a 200 cow-calf & back-grounding operation on 650 acres west of Buffalo for a total of 35 years. Cattle are mostly cross bred with a heavy emphasis on the Limousin breed. Calves are usually sold after preconditioning and may be taken to yearlings if pasture and market conditions warrant.





**Dr. Garry Lacefield** is a native of McHenry, Kentucky (Ohio County) and grew up on a crop-livestock farm in the Western Kentucky Coal Field Area. After graduation from Centertown High School, he entered the U.S. Army and served 2.5 years in Germany. He received his B.S. and M.S. degrees from Western Kentucky University with a major in Agriculture and Biology. He received the Ph.D. degree from the University of Missouri in 1974.

Dr. Lacefield joined the University of Kentucky staff in 1974 as Extension Forage Specialist. He has authored and co-authored over 300 extension publications, papers, articles and book chapters. He is co-author of the book “Southern Forages”. He developed and is senior author of a monthly newsletter and writes a monthly column for the Kentucky Cattlemen’s Association magazine.

Dr. Lacefield has emphasized the team approach in his forage extension program. As evidenced by his list of publications, he has worked harmoniously with other agronomists in a complementary and unified program for the benefit of Kentucky’s forage-livestock industry. In addition to working closely with other agronomists, Dr. Lacefield has served in the leadership role in developing programs to meet the ever changing needs of the forage-livestock industry of the state. He organized the Kentucky Alfalfa Conference in 1980 and has served as Chairman each year.

Dr. Lacefield is a member of many professional organizations including ASA, CSSA, CAST and AFGC. He serves on the Advisory Board of the Oregon Tall Fescue Commission and Oregon Clover Commission. He is secretary of the Forage and Grassland Foundation. He received the Merit Certificate and Medallion Award from the American Forage and Grassland Council, Public Service to Forage Award from the Kentucky Forage and Grassland Council and the U.K. Outstanding Extension Specialist award. He is a “Fellow” in the American Society of Agronomy and Crop Science Society of America. He was selected 1989 Alumnus of the Year by the College of Agriculture, Western Kentucky University. He received the 1991 Alfalfa Extension Award from the Certified Alfalfa Seed Council. In 1992, he received the American Society of Agronomy Agronomic Extension Education Award. He was selected as Progressive Farmer’s “1993 Man of the Year in Agriculture”. He was inducted into the Western Kentucky University “Hall of Distinguished Alumni” in October 1995. The Certified Alfalfa Seed Council honored him in 2001 with their Distinguished Service Award. In recognition of his leadership in the Kentucky Alfalfa Program, the Public Service to Alfalfa Award was named in his honor in 2000 by the Kentucky Forage & Grassland Council. Dr. Lacefield was inducted as an Honorary Member of the North American Alfalfa Improvement Conference in 2002 making the third Extension Forage Specialist ever inducted. The CSREES/USDA presented him with the 2008 Regional Award for Excellence in Extension on November 9, 2008.

Dr. Lacefield serves on a number of state and National boards and committees and is Past President of the American Forage and Grassland Council. Dr. Lacefield has traveled and lectured throughout the U.S. and abroad. In the last decade, he has traveled and lectured in Japan, China, Hong Kong, New Zealand, Australia, Canada, Argentina, Chile, Brazil, Uruguay, South Africa, England, Germany, Mexico, the Czech Republic, South Korea, Switzerland, Croatia, Slovenia, Hungary, Sweden, Norway, Russia and Poland.

In addition to professional responsibility, he is in demand as a banquet speaker. Garry is married to the former Cheryl Cavender and has two sons, two granddaughters, and two grandsons.



**David Hall** owns and manages, along with his father Jerry, Ozark Hills Genetics, a Red Angus and Hereford seedstock operation near West Plains, Missouri. Ozark Hills Genetics was a cooperator herd with Pharo Cattle Company for 12 years that places emphasis on the importance of efficiency and productivity in a total grass-based environment, specifically tall fescue. Ozark Hills Genetics is known for producing functionally efficient beef cattle. The 3 traits that are paramount in their selection process are: fertility, performance and longevity. These 3 traits are overriding to profitability in the beef business according to David. David will discuss the importance of these traits and how he selects for them.



**Craig Roberts** is Professor of Plant Sciences and State Forage Specialist at the University of Missouri. He was raised in Oklahoma, Texas and Kansas, and his academic training was at Florida College, University of North Alabama, and the University of Arkansas. His graduate research was in forage crops at the University of Arkansas, and his postdoctoral research was in forage quality at the University of Illinois. He has been at MU for 24 years.



**Mark Green**, District Conservationist, USDA Natural Resources Conservation Service (NRCS), Springfield, MO. Mark was born in Scottsbluff, Nebraska and was raised on a ranch southwest of Denver, CO. He received his Bachelor of Science Degree in Agronomy from Southwest Missouri State University in 1983. Mark has worked for the SCS/NRCS since 1981. He has worked as Soil Conservationist, Area Resource Conservationist and District Conservationist for SCS/NRCS. He has been serving in Greene and Webster Counties in SW Missouri since 1994. He also worked in Caldwell County in NW Missouri early in his career. Prior to working for NRCS Mark worked for Haubien Farms at Lockwood, Missouri. Other jobs prior to college included Beechwood Ranch, Joplin, MO; Corder Ranch, Avilla, MO and Limon, CO; Deer Creek Valley Ranch, Pine, CO. Mark grew up in a ranching family in Colorado. Currently Mark serves as an instructor and regional coordinator for

SW Missouri Regional Management-Intensive Grazing Schools. Mark is a member of American Forage and Grassland Council and is a Board Member for Missouri Forage and Grassland Council. Mark has worked with grazing management in SW Missouri for the past 32 years. He has been married to Jill for 34 years and has three grown children and one grandchild, plus another one on the way!





**Meera Scarrow** is a physician/farmer who started Ozarks Natural Foods in 2007 with her husband, Alan to produce humanely raised, grass-fed beef that is antibiotic, hormone and grain free. The animals were originally sold through American Grass-Fed Beef. However, after the first year, the philosophy changed and the decision was made to change to a direct sale model that focused on local markets. Currently, the beef is sold directly to consumers from the farm, online and through the farmer's market. The farm provides beef to two local groceries and 2 restaurants. You can find the farm at [www.ozarksnaturalfoods.com](http://www.ozarksnaturalfoods.com).

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**Dr. Robert Kallenbach** is a Professor at the University of Missouri in the Division of Plant Sciences. He received a B.S. in Agronomy from Southwest Missouri State University, the M.S. in Agronomy from the University of Missouri and the Ph.D. in Agronomy from Texas Tech University. Rob has an extension/research appointment in forages. His program emphasizes forage-livestock systems with an emphasis on winter feeding. Specific projects include optimizing the use of stockpiled tall fescue, understanding residual feed intake in beef cattle, and performance of stocker cattle in season-long systems.

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**Tim Schnakenberg** serves as Regional Agronomy Specialist based in Stone County. He is one of two Agronomy Specialists serving the Southwest Region of Missouri. He has worked as an Agronomy Specialist since 1991 and currently focuses on pasture and hay management, crop production, pest management, pesticide training, soil fertility and soil conservation. Ongoing educational efforts include Livestock and Forage Conferences, an annual Dairy Day, regional hay production schools, regional grazing schools, farm tours, on-farm demonstrations and pesticide applicator training.



**Chris Boeckmann**, along with his wife and their four children, operate a livestock operation in Loose Creek, Missouri that consists of cattle and turkeys. The turkey operation is a contract arrangement with Cargill in California, Missouri that consists of 50,000 turkeys per year and has been in place for over 25 years. The cattle enterprise is a stocker/finisher grazing operation that produces the All Natural Grass-Fed Beef that they direct market to individuals, restaurants, and health stores under the Boeckmann Family Farm label. They focus on producing a superior quality product utilizing cattle that possess the genetics to maximize performance in a low-input grass-based system. Chris received a Bachelor of Science from the University of Missouri in Columbia in 1987 where he was a member of the Alpha Gamma Sigma agricultural fraternity. He has served on several local boards including the Fatima RIII School Board, the Fatima A+ Advisory Committee, and Immaculate Conception Parish Council.

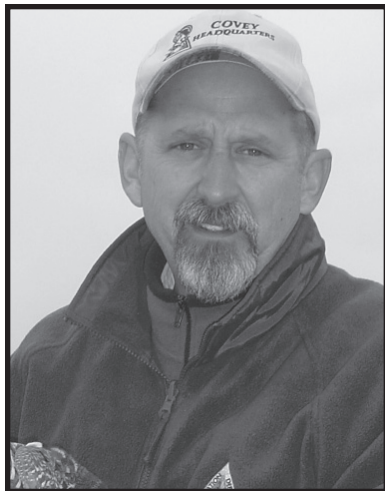
Chris also currently serves as the Farm Manager of the Lincoln University Busby Research Farm in Jefferson City, Missouri. The Busby Research Facility is a 280 acre operation with research and demonstration projects related to organic and integrated production systems. Currently, the organic research involves three thousand blueberry plants with topics that include organic fertilizers, mulching, weed control, integrated pest management, irrigation, and soil properties. Anticipated future organic research and demonstration will include blackberries, elderberries, apples and pears. Additionally, livestock at the Busby Facility includes cattle, sheep, and goats that are being utilized for research and demonstration in a multi-species grass-based system. Topics of interest for the livestock include mineral supplementation, fencing, watering systems, silvopasture, and forage utilization. Research is also currently underway involving the use of forages as a dual purpose crop for grazing livestock and a biomass energy source. A solar watering system provides the watering needs of the livestock, as well as, the drip irrigation requirements for the small fruit orchard.

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**Mark Kennedy** was raised on a family beef, dairy, and catfish farm in central Arkansas and received a BS degree in animal science and forages from Arkansas State University in 1977. He has been employed by USDA – SCS/NRCS since 1978, serving at various locations in Arkansas and Missouri. Since 1995 he has been the State Grazingland Specialist for USDA-NRCS in Missouri, headquartered in Houston, Missouri. Mark serves as an instructor at 18 to 20 grazing schools throughout Missouri each year. He speaks at 20 to 30 forage conferences, field days and workshops each year throughout Missouri. He is a Certified Forage & Grassland Professional through the American Forage and Grassland Council. In 2004 he received the Missouri Forage and Grassland Council's Grasslander of the year award. In 2006 he was awarded the NRCS National Pastureland Conservationist of the Year award. He received the Merit Award from AFGC in 2011. He currently serves on the board of directors of the Missouri Forage and Grassland Council/Grazinglands Conservation Initiative, and the American Forage and Grassland Foundation board. He is a past board member of the American Forage and Grassland Council and the

Society for Range Management Southern Section. Mark and his wife Anita live on a small farm near Houston, Missouri where they raise meat goats.



**Mark Hutchings** is a Missouri native; he received a B.S. Degree in Wildlife Conservation and Management from Missouri State (SMSU) in 1981. He started his career with MDC in 1982 with Wildlife Division & worked as a Wildlife Biologist for 21 years managing public lands and assisting private landowners with resource management concerns in several locations around the state. During those years he managed the Talbot Demonstration Farm in Lawrence County for 5 years; he served on the MU SW Center Advisory Board for several years; transferred to Private Land Services Division in 2005 and is currently working as a Private Land Conservationist in Lawrence and Dade Counties with 30+ total years w/ MDC. He has been married for 33 years and raised two beautiful daughters on a farm in Lawrence County he and his wife have owned for 20+ years. They operate and manage the farm for beef cows and wildlife.



**Wesley Tucker** is an Agriculture Business Specialist for University of Missouri Extension. His specialties include livestock marketing, financial management, forages, beef production, MiG, budgeting, fence law, and farm leases. A Southwest Missouri native, Wesley grew up on the family beef operation where he continues to farm today. He and his wife, Heather, a local veterinarian, and their daughter, Jordan, operate a crossbred cow-calf operation in Dallas, Polk, and Hickory Counties. As a University of Missouri Extension specialist, Wesley's primary educational focus is helping producers improve the profitability of their farming operation.



**Lynzee Glass**, of Lebanon, Mo., is the Managing Editor of Ozarks Farm & Neighbor, a farm newspaper that reaches 58,000 readers in Missouri, Arkansas and Oklahoma. Lynzee is a graduate of Missouri State University, where she earned her bachelor's degree in agricultural communications. Lynzee got her start in agriculture as a young girl growing up on a commercial beef cattle farm in Dallas County.

## Hand 'n Hand Livestock Solutions Stockmanship School

**First, we must understand the importance and value of good Stockmanship.**

Ranchers, feedlot owners and veterinarians all tell us the differences they have seen using proper stockmanship.

Almost anybody can do this,  
Almost nobody will do it.  
Anyone can improve!

We all want a shortcut, there is none.  
*Experience is the only teacher.*

*"The majority of cattle handling problems stem from instinctive human behaviors. Once people are aware of and in control of their counterproductive instinctive behaviors, then they are ready to learn a new set of cattle handling skills that will enable them to get the job done in a calm, controlled, safe and efficient manner."*

—Dylan Biggs

### Three important parts of working animals:

1. Proper pressure
2. Proper communication
3. Proper emotion/attitude

### Three important parts of pressure:

1. Amount of pressure applied; Speed of pressure and distance to animal.
2. Duration of pressure.
3. Angle of pressure.

### Pressure and Release

- We must always move in straight lines with confidence; be deliberate. General requests get general responses.
- Curved lines represent a predator.
- When we walk straight, animals know where we are going.
- Pressure to livestock is like moving walls to us.
- All our animals should be taught to take pressure and know release is coming.
- Pressure and release builds trust.
- We must be careful not to get caught up in "right and wrong." (right/not quite right)
- We will almost always be not quite right before we can be right.
- Once we have seen that we are not quite right, we can back up and correct our position and make it right.
- This is the key to being a good stockman.
- "Experience is another word for mistakes."

*"It's what happens before what happens, happens."* — Roy Hunt

### Advantages to the Handler

- The people involved can work together happily and effectively.
- Cattle are easily sorted and loaded.
- Reduced fence repair cost.
- Avoid purchasing fancy tubs/corals.
- Save time, more efficient use of energy.
- Cattle are easily driven as a herd or as a single.
- Cattle will stay where they are placed.
- We are able to drive cattle anywhere we want for improved pasture/herd management.
- The satisfaction of a job done right.
- Expanded management potential
- Graze anywhere, anytime
- Sort anywhere, anytime
- Place stock anywhere, anytime
- What advantages have you found?

### Advantages to the Livestock

- Sickness is more easily determined because animals are more willing to express illnesses.
- Sickness caught in its early stages will be more successfully treated.
- Medications are more effective when cattle are handled correctly.
- Less shrinkage during shipping.
- Lowering stress on calves and cows at weaning will result in benefits for both.
- Sorting at the gate for weaning will leave both the cows and calves with only minimal stress.
- Cattle will continue to graze rather than stand at the gate.
- Contented livestock.

**Richard McConnell & Tina Williams**

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**Richard@handnhandlivestocksolutions.com • www.handnhandlivestocksolutions.com**



Forages: Change – Challenges – Opportunities

Dr. Garry D. Lacefield

Professor of Agronomy Extension

University of Kentucky

This marks the 12<sup>th</sup> consecutive Heart of America Grazing Conference and I’m still finding it hard to believe the past twelve years have passed so quickly. Over the years I have had numerous conversations with two of the co-organizers Mark Kennedy and Ed Ballard about some of those early discussions and our strong belief that grazing in the “Heart of America” had so much potential. The need and opportunities were indeed great then; however, the needs, opportunities are much greater now than when we started this Conference.

CHANGE

The only real constant in life is “change” and “change” is often more rapid than this conservative country boy can handle. Just think about the changes in medicine, lifestyles, culture, etc. and, of course, “technology”. I began my career with an overhead projector and never dreamed I would have cell phone, I-Pad, I-Phone, computer, PowerPoint, website, e-mail, facebook, twitter and google. In fact, I grew up in a home, oldest of ten children, without electricity, running water and indoor plumbing. Last year I flew over 50,000 miles and three International countries but remember as a child riding on a horse to town and later we got a pickup so I rode in the back, rain or shine. I went in the military at 17 just out of high school and spent 30 months in Germany. While there I never made or received one phone call and only communicated with family and friends by letter. Last year I was in Germany and used my cell phone to call home/office each day and exchanged e-mail from my laptop in the hotel room at night.

Last year we reached a milestone in the World when on 11-30-2011 the one billionth person was born. Population is expected to add another billion in the next fifteen years. More people and people are living longer with an increase in average life expectancy in the U.S. to 78.37 years. More people, living longer BUT eating less of the products we produce. Per capita consumption of beef in the U.S. reached a record low of 59 pounds last year. This is the lowest since the database started in 1955. Chicken on a per capita basis has shown dramatic increases passing pork in the mid-80’s and beef in the early 1990’s. In addition, we have fewer farms today than ever. Less than 1% of our population is currently considered fulltime and only 2% live on farms. We have seen a steady decline in the number of beef and dairy farms for over twenty years. Fewer farmers on fewer farms with fewer cows are still producing an abundant supply of wholesome meat, milk and dairy products. Larger farms and more production per cow have helped to compensate for the reduced farm-farmer-animal base.

CHALLENGES

Farmers in the Heart of America face more challenges today than ever. Time, space and knowledge does not permit me to address all but a few examples include rising production cost, animal rights-animal welfare, environmental issues, food-feed-fuel, health issues, governmental regulations and uncertainty of competition and weather. I remember my first car (1950 V-8 flathead Ford with overdrive) and could go to the gas station in McHenry, Kentucky and buy a gallon of gas for 23 cents and Mr. Phelps would pump the gas, wash my windshield, check the oil and air up any low tires. I never dreamed I would see gasoline go to \$5.00/gal. Likewise, when I gathered the down row of corn with a wagon pulled by horses I never dreamed I would see corn reach \$8.00, and soybeans \$17.00. These factors and others have resulted in average U.S. farmland increasing drastically. In 2011, U.S. average farmland increased 6.8%, in the Heart of America 16% and in Iowa 24%. USDA and University budgets have been reduced. In 2011, the USDA announced the closing of 259 facilities in the U.S. We have seen a 60% loss in forage-livestock researchers, 40% drop in forage-livestock teachers and the loss of extension specialist is approaching 50%.

OPPORTUNITIES

Grazing has played a critical role historically, interest and opportunities for grazing are the highest I have seen in my career; however, the most important role for forages and indeed grazing is the Future. We can produce quality animal products with quality forages. We will not have the luxury of substituting cheap energy and proteins for low quality forages. The good news is we don’t have too. Graziers today are recognizing the value of forage quality, factors affecting quality and management required to achieve an acceptable quality to meet desired animal performance results.

In 1989, Drs. Don Ball, Carl Hoveland and I put together ten key factors that were the foundation of the book “Southern Forages”. These concepts can play a critical role toward the ultimate goal of producing “Quality Forages” for environmental-sustainable-profitable forage-livestock programs.

KEYS TO FORAGE PROFITABILITY

**Know Forage Options and Animal Nutritional Needs.** Forages vary as to adaptation, growth, distribution, quality, yield, persistence, and potential uses. Also, various types and classes of animals have different nutritional needs. Good planting decisions require knowing forage options for the land resources and nutritional needs of the animals.

**Establishment is Critical.** Good forage production requires an adequate stand of plants. Mistakes during establishment often have long-term consequences. Use of high quality seed of proven varieties, timely planting, and attention to detail lead to establishment success.

**Soil Test, then Lime and Fertilize as Needed.** This practice, more than any other, affects the level and economic efficiency of forage production. Fertilizing and liming as needed help ensure good yields, improve forage quality, lengthen stand life, and reduce weed problems.

**Use Legumes Whenever Feasible.** Legumes offer important advantages including improved forage quality and biological nitrogen fixation, whether grown alone or with grasses. Every producer should regularly consider on a field-by-field basis whether the introduction of legumes would be beneficial and feasible. Once legumes have been established, proper management optimizes benefits.

**Emphasize Forage Quality.** High animal gains, milk production, and reproductive efficiency require adequate nutrition. Producing high quality forage requires knowing the factors that affect forage quality and managing accordingly. Matching forage quality to animal nutritional needs greatly increases efficiency.

**Prevent or Minimize Pests and Plant-Related Disorders.** Diseases, insects, nematodes, and weeds are thieves that lower yields, reduce forage quality and stand persistence, and/or steal water, nutrients, light, and space from forage plants. Variety selection, cultural practices, scouting, use of pesticides, and other management techniques can minimize pest problems. Knowledge of potential animal disorders caused by plants can reduce or avoid losses.

**Strive to Improve Pasture Utilization.** The quantity and quality of pasture growth vary over time. Periodic adjustments in stocking rate or use of cross fencing to vary the type or amount of available forage can greatly affect animal performance and pasture species composition. Knowing the advantages and disadvantages of different grazing



methods allows use of various approaches as needed to reach objectives. Matching stocking rates with forage production is also extremely importance.

**Minimize Stored Feed Requirements.** Stored feed is one of the most expensive aspects of animal production, so lowering requirements reduces costs. Extending the grazing season with use of both cool season and warm season forages, stockpiling forage, and grazing crop residues are examples of ways stored feed needs can be reduced.

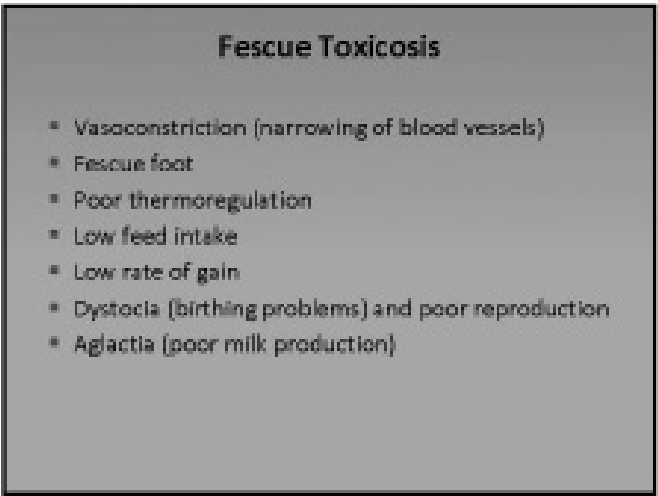
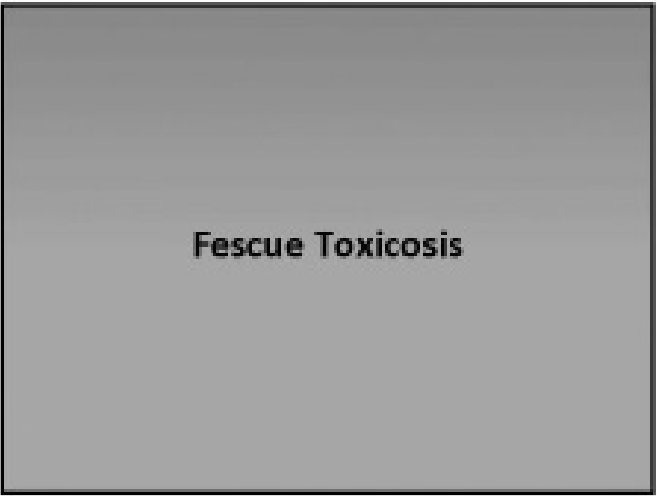
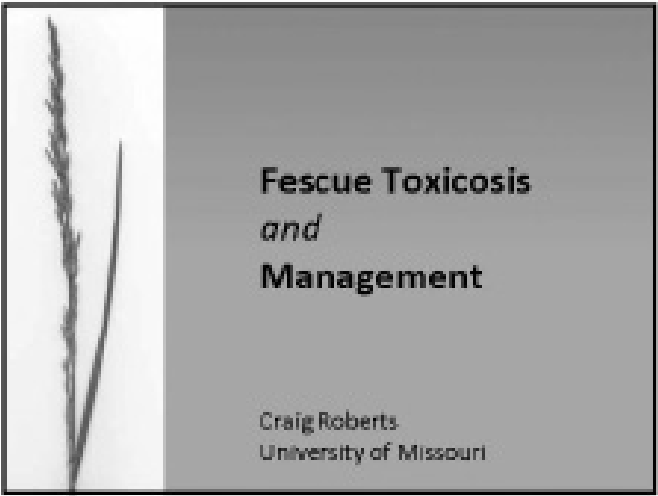
**Reduce Storage and Feeding Losses.** Wasting hay, silage, or other stored feed is costly! On many farms the average storage loss for round bales of hay stored outside exceeds 30%, and feeding losses can easily be as high or higher. Minimizing waste with good management, forage testing, and ration formulation enhances feeding efficiency, animal performance, and profits.

**Results Require Investments.** In human endeavors, results are usually highly correlated with investments in terms of thought, time, effort, and a certain amount of money. In particular, the best and most profitable forage programs have had the most thought put into them. Top producers strive to continue to improve their operations.

REFERENCES

Ball, D.M., C.S. Hoveland, and G.D. Lacefield. 2007. Southern Forages (Fourth Edition). Potash & Phosphate Institute and Foundation for Agronomic Research. Atlanta, Georgia.

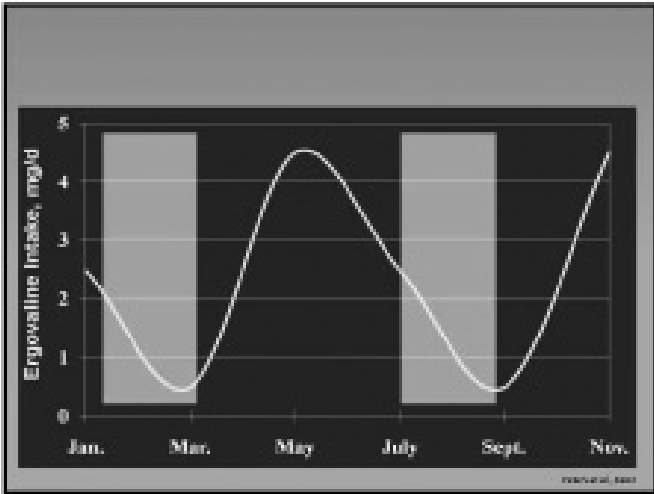
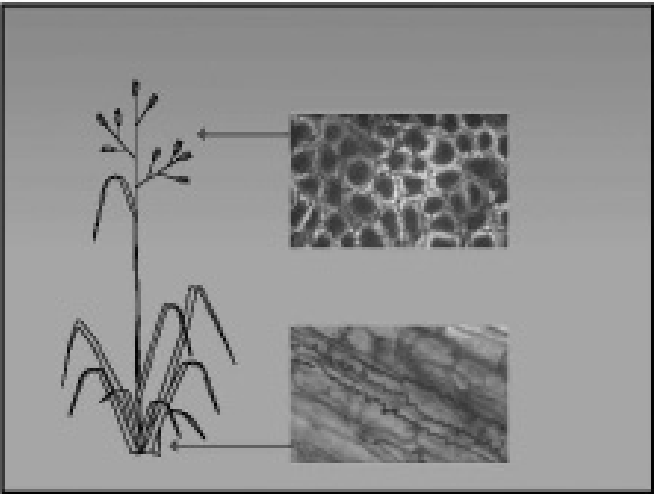
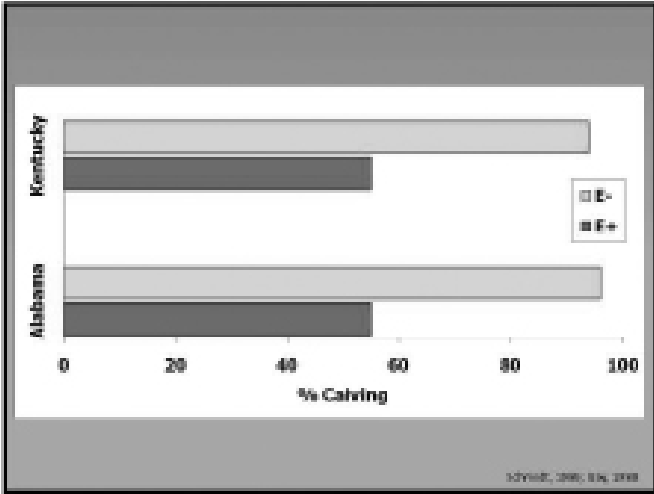
Management of Fescue Toxicity  
Dr. Craig Roberts, State Forage Specialist, University of Missouri



# Management of Fescue Toxicity

Dr. Craig Roberts, State Forage Specialist, University of Missouri

	E+	E-
	lb/day	lb/day
Texas	0.99	2.14
Alabama	1.41	2.18
Georgia	1.02	1.31
Alabama	1.00	1.83
Missouri	0.97	1.41
Alabama (seed)	0.44	2.12
Alabama (hay)	0.62	1.46



Does not include economic losses to dairy, horses, sheep.

Does not include impact on wildlife.

## Potential Impact to Missouri Beef Industry

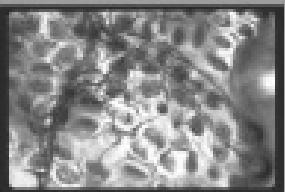
Stockers:  
\$30 million /year

Cow-calf:  
\$130 million /year

## The Cause

## Management

## Test!



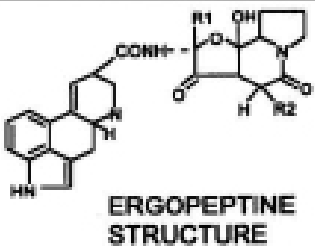
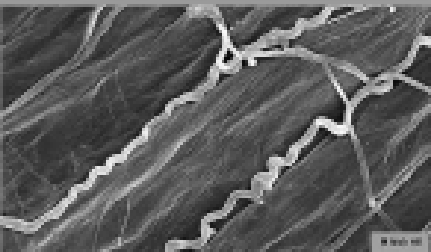
Seed



Sheath

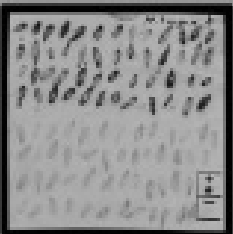
## Tall Fescue:

the endophyte and its toxins

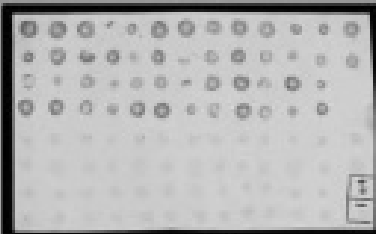


R1	METHYL	ETHYL	ISOPROPYL
R2	ISOPROPYL	ERGONINE	ERGOCORINE
ISOBUTYL	ERGOSINE	ERGOPTINE	ERGOCRYPTINE
ISOPHENYL	ERGOTAMINE	ERGOSTINE	ERGOCRISTINE

## Test!

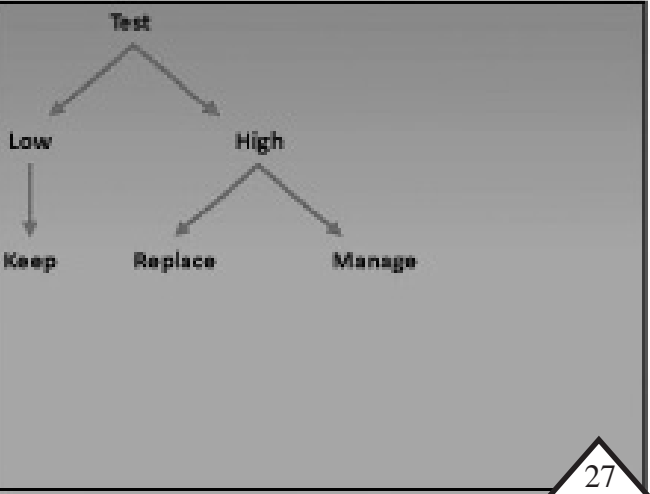


Seed



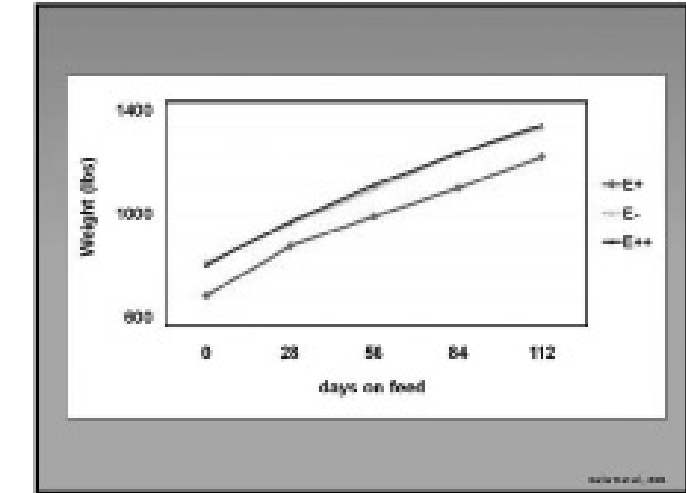
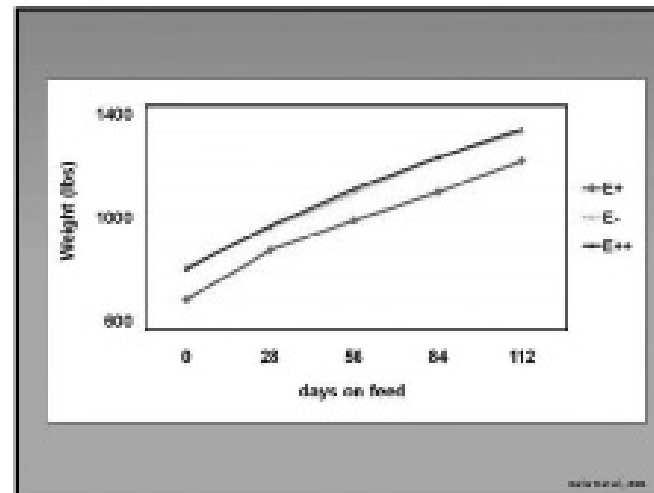
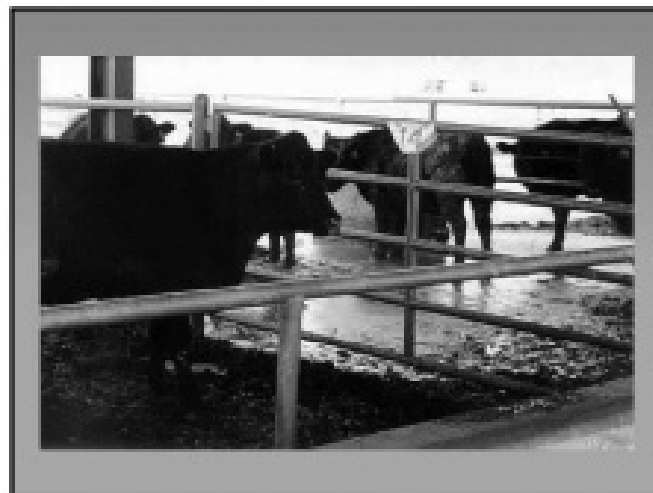
Tillers

[www.agrihostks.com](http://www.agrihostks.com)



# Management of Fescue Toxicity

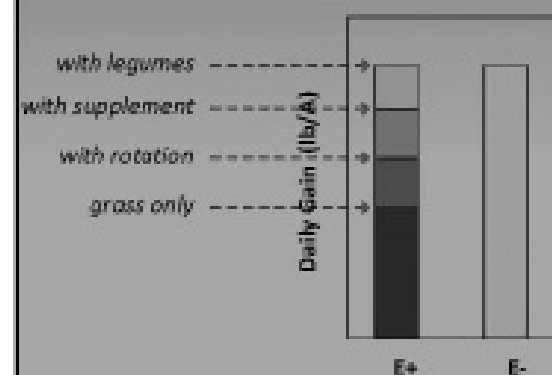
Dr. Craig Roberts, State Forage Specialist, University of Missouri



## Alkaloid Management!

- In endophyte (replant)
- In plant (fertilizers, seasonal, anatomical)
- In pasture (dilution, rotations)
- In diet (ammoniation, supplementation)

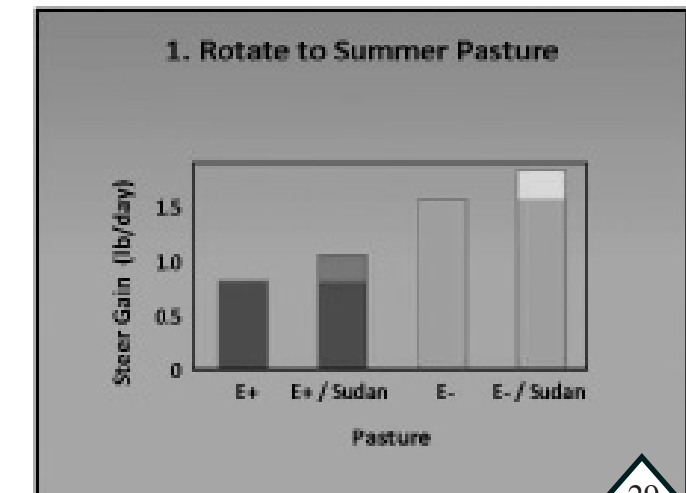
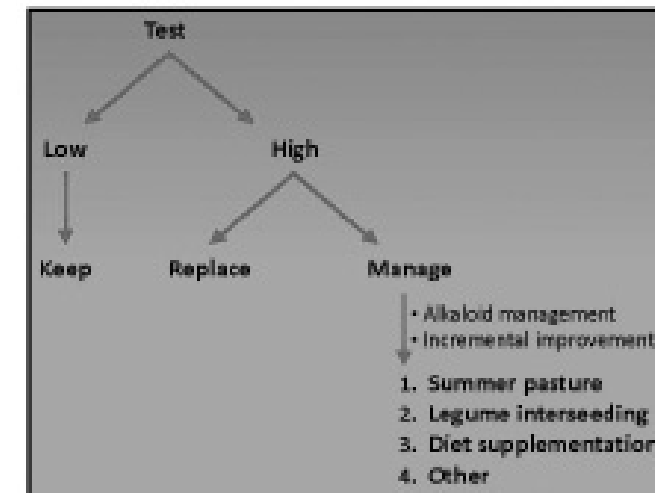
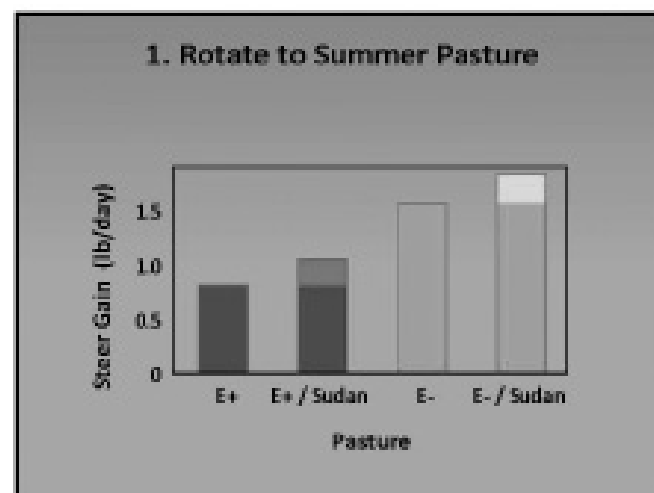
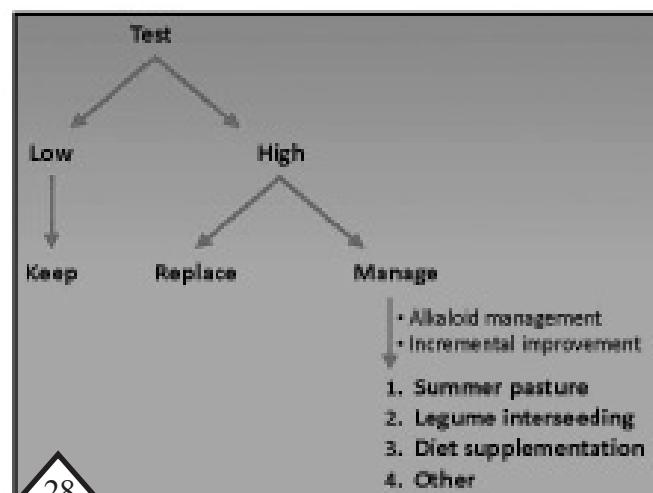
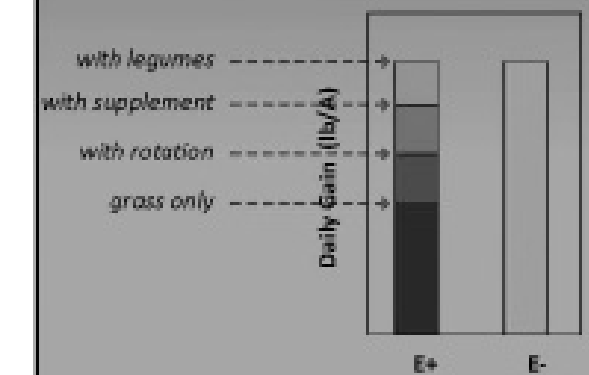
## Incremental Alleviation



## Alkaloid Management!

- In endophyte (replant)
- In plant (fertilizers, seasonal, anatomical)
- In pasture (dilution, rotations)
- In diet (ammoniation, supplementation)

## Incremental Alleviation



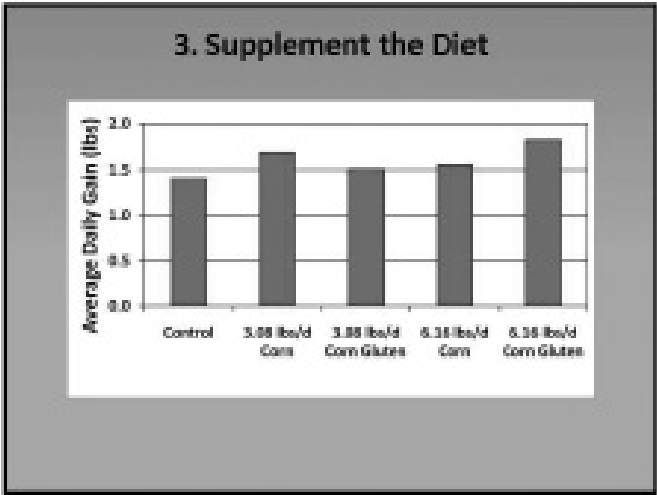
# Management of Fescue Toxicity

Dr. Craig Roberts, State Forage Specialist, University of Missouri


2. Dilute the Field



- Tall fescue
- Smooth bromegrass
- Orchardgrass
- Red clover
- White clover
- Birdsfoot trefoil




1. Weigh and stack hay.

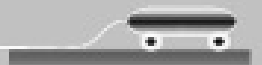


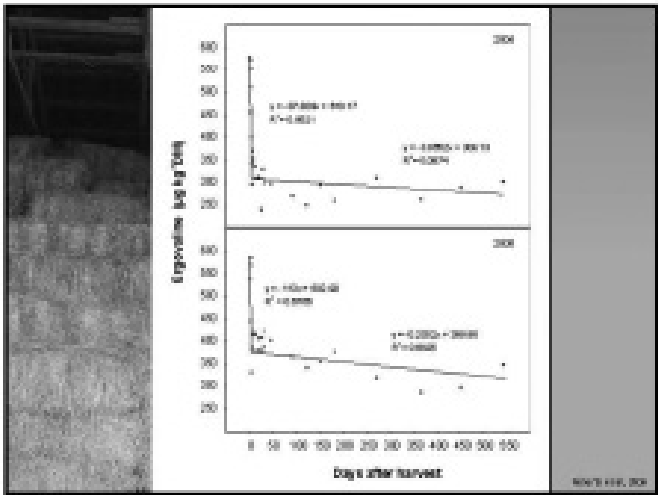
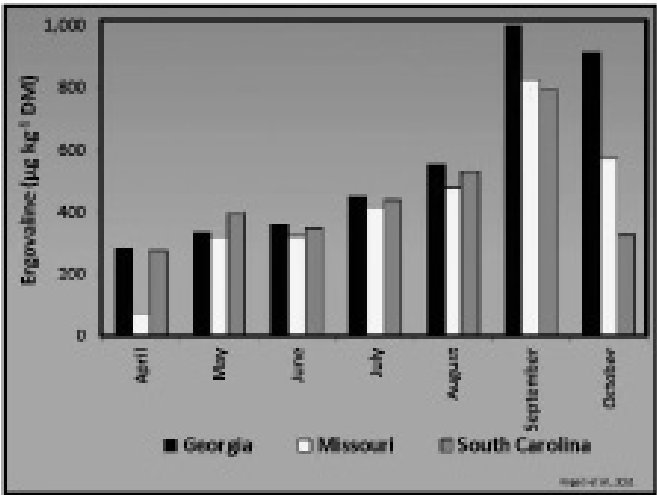
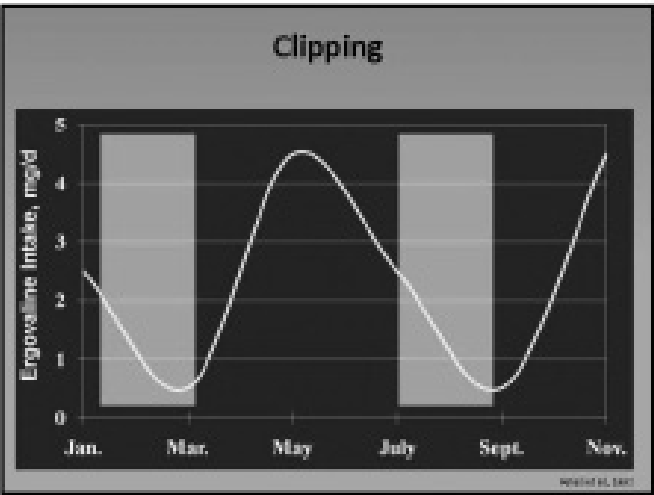
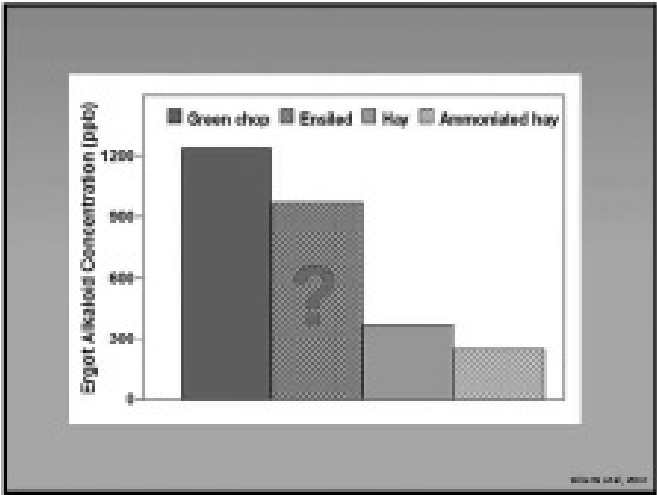
*N used in feed improvement.*

2. Cover with heavy plastic, bury edge.






3. Treat with anhydrous ammonia at 3% (weight basis).





Graze Stockpile Late Winter

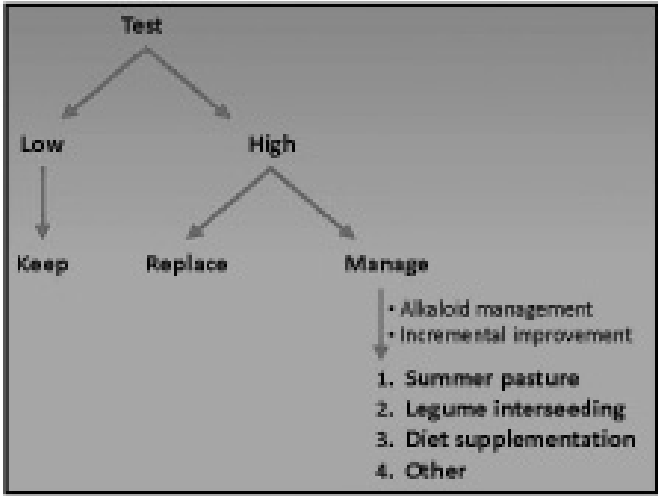
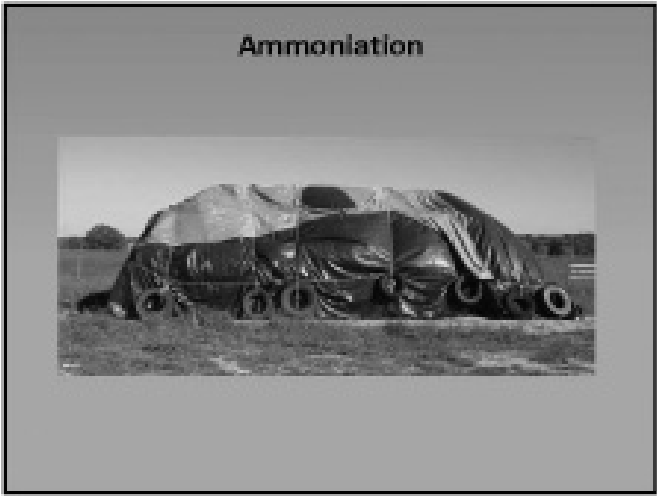




Careful Fertilization

- Nitrogen increases alkaloid concentration
- High nitrogen associated with toxicosis

	Nitrogen Fertilizer (lb/acre)		
	0	60	120
	Ergovaline (ppb)		
Leaf	258	306	485
Stem and Sheath	494	561	1,003
Seedhead	895	1,050	1,488





# Design and Layout of Management-intensive Grazing Systems

Mark Green, NRCS District Conservationist, Springfield, MO

There are many factors to take into consideration when designing and laying out a management-intensive grazing system. When working on the design most decisions should be based around trying to keep the system as flexible as possible. The following outline provides information to consider when designing a grazing system

There are four main components of a grazing system.

- Landscape; Forage; Livestock; Water.

## Guidelines for Grazing System Design

- Fence

- What types of fence are appropriate for grazing systems?
  - Psychological Barrier: Electric or Power fence
  - Physical Barrier: Barbed wire, Woven wire, Plank, Pipe.
- How do I decide which to use?
  - Existing fences; Livestock to be controlled; Cost; Ease of construction; Intensity of rotation grazing; FLEXIBILITY

### Electric Fencing

- Pros: Least expensive; Durable; Easy to install; Most Flexible
- Cons: Bad experiences; Most misunderstood; Least familiar

- Keep livestock within 800 feet of water

- Water is generally the most limiting factor in maintaining flexibility of a grazing system. Water deficiency will reduce animal performance more quickly and more severely then will any other nutrient (feed or mineral).
- Travel distance to water: Cattle with water within 600 to 800 feet drank 15% more than cattle walking > 1000 feet to water. As livestock travel more than 600 to 800 feet for water, grazing efficiency of the forage resource reduces significantly.
- Improves grazing distribution; More uniform manure distribution; Increased water consumption
- Water should be available in EVERY Paddock

- Follow contour lines of the landscape for paddock boundaries

- Soil drainage; Plant communities will be similar on different landscapes; Slope and aspect will effect plant communities and forage production; Can reduce erosion problems by staying on contour.

- Make paddocks as near to square as possible

- It takes less fence to enclose a square paddock of the same area than any other shape of paddock. Livestock are usually closer to water in square paddocks. More uniform grazing distribution in square paddocks.

- Size paddocks of similar grazing capacity not similar acreage

- Keeps diet (availability) more consistent. Easier rotation management when each paddock has a similar amount of forage available. Desired rest periods can be maintained regardless of the order pastures are grazed

- Lanes

- Lanes allow movement of livestock
  - from any paddock to any other paddock without going through a third paddock
  - from any paddock to working facilities without going through another paddock
- Plan lanes for livestock movement only
  - 15 - 20 % of manure is deposited in lanes if the only water supply is located in the lanes.
  - Cattle with water available in the paddock drink about 15% more water per day
  - Most erosion in lanes begins in vehicle tracks
- Width
  - If machinery movement through lanes is planned, lanes will need to be wider. Keep lanes small. Make gates same width as lanes
  - 25 feet wide seems to work well for our average size herds
- If trail begins to erode, run hotwire down middle of trail to make livestock move over and allow trail to heal. Keep lanes on the contour when possible. Avoid wet areas when possible. Use lanes for access to winter water, but provide water in each paddock during the growing season.

- Provide secure training facilities

- When exposing new animals to electric fencing they must be trained to respect psychological barriers. Training Area must be a physical barrier. Crowd animals within physical barrier with electric fencing material inside the physical barrier. Use any electric fence material that will be used in the grazing system. Goal is to get as many animals educated (shocked) in as short of time as possible

- Plan for adverse weather conditions

- Sacrifice paddock for extremely wet conditions and during drought. Shelter from extreme cold/wet conditions

- Shade

- Cattle tend to congregate under shade even when they don't need it. Time spent under shade reduces time spent grazing. Less grazing time results in less intake and reduced performance. Shade is probably needed to help reduce heat stress any time the heat index is 100 or above. Especially if livestock are grazing endophyte infected fescue. When shade is isolated in only a few isolated areas of a paddock there is nutrient transfer from the grazing area to the shade, eventually killing the trees and lowering productivity of the paddock.
- Shade can be portable, natural shade within the paddocks, or shaded areas to move livestock to. Portable shade must be moved often to prevent nutrient displacement and maintain good ground cover. Some producers successfully graze shady paddocks during the day and move to paddocks with no shade at night
- Have some paddocks with shade available. On hot, high humidity days, turn livestock into paddocks with shade. On cooler or low humidity days, rotate livestock to paddocks without shade.
- Cull animals with overheating problems.

- Animal Movement

- Move animals by watching the forage,

- NOT by order of paddock, NOT by the calendar

□ Number of Paddocks:

- Grazing period length:
  - Plant based:
    - 2 - 5 days fast grow
    - 5 - 9 days moderate
    - 9 - 12 days slow growth
  - Animal performance:
    - 0.5 - 1 day dairy cows
    - 1 - 2 days growing/fattening
    - 2 - 4 days lactating beef cattle, sheep, goats, horses
    - 4 - 7 days dry animals
- Rest period needs
  - 15 - 20 days during rapid growth
  - 20 - 30 days during moderate growth
  - 30 - 40 days during slow growth
  - 40 - 60 days very slow growth

Paddock Number =  $\frac{\text{rest period}}{\text{Grazing period} + 1}$

Example:

20 day rest period - spring  
3 day grazing period + 1 = 8

40 day rest period - summer  
3 day grazing period + 1 = 14

Or:  $\frac{40 \text{ day rest period}}{5 \text{ day grazing period} + 1} = 9$

You either have to have flexible paddock numbers or flexible grazing periods...they both can't be static!

□ Fixed system - Uses permanent fence and watering points

- Advantages: Relatively low cost on large installations; Minimal daily labor; Low maintenance
- Disadvantages: Relatively high cost on small operations; Limited management flexibility

□ Flexible system - Uses portable fence and water facilities in a framework of permanent fence

- Advantages: Maximum management flexibility; Lower initial capital cost; Works well on rented land
- Disadvantages: More daily labor required; More maintenance

□ **Summary:** There is no perfect system, only those that use good management principles to best fit available resources. The most flexible system will have some combination of permanent and portable fencing and water.

# Alfalfa Management for Quality Forage

Dr. Garry Lacefield  
State Forage Specialist  
University of Kentucky

## ABSTRACT

Alfalfa is a premier forage legume with potential for high yields, quality and stand persistence. Alfalfa quality is defined in many ways, but is usually more meaningful to producers when associated with animal performance. Alfalfa quality is influenced by many factors, but stage of maturity at harvest offers the best opportunity for improvement. Managing for quality will usually result in positive rewards. Animal feeding programs are more efficient and economical when alfalfa quality is known and matched to animal nutritional needs.

## INTRODUCTION

Profitable livestock production almost always requires a forage program that will supply large quantities of adequate quality, homegrown feed. A major percentage of the feed units for beef (83%) and dairy cattle (61%) come from forages. In addition, forages supply an estimated 91%, 72%, 15% and 99% of the nutrients consumed by sheep and goats, horses, swine, and wildlife, respectively.

Although both alfalfa quantity and quality are important, it is easier for livestock producers to recognize problems associated with alfalfa quantity than with alfalfa quality because quantity can be readily assessed visually; whereas, a laboratory analysis of a sample is required to determine quality. Fiber, which is less digestible than other components of alfalfa, increases with age, so it is not possible to simultaneously maximize alfalfa quantity and quality from a given alfalfa stand.

## WHAT IS ALFALFA QUALITY?

Alfalfa quality has been defined in many ways, including protein, fiber, lignin content, relative feed value, relative forage quality, color, smell, leafiness, fineness of stems, total digestible nutrients, and other physical and/or chemical components. Each of these has merit, but all fall short of clearly defining forage quality. Factors such as average daily gains, conception rates, milk production, wool production, etc. are reliable indicators of alfalfa quality.

Perhaps the best concise definition of alfalfa quality is: the extent to which alfalfa (pasture, hay, or silage) has the potential to produce a desired animal response. This definition acknowledges the necessity of considering the animal. As an example, a high producing dairy cow needs higher quality feed than a dry, pregnant beef cow. Animal performance is influenced by a number of factors, including:

**Palatability - Will the animals eat it?** Animal selection of one forage species over another depends on smell, touch, and taste. Therefore, palatability may be affected by texture, leafiness, fertilization, dung or urine patches, moisture content, pest infestation, or compounds that cause a forage to be sweet, sour, or salty. In general, high quality alfalfa is highly palatable and vice versa.

**Intake - How much will they eat?** Alfalfa must be consumed in adequate quantities to enable animals to perform well. In general, the higher the palatability and forage quality, the more that will be consumed. The poorer forage quality is, the longer it remains in a ruminant animal's digestive system, resulting in lower animal performance.

**Digestibility** - Of the alfalfa consumed, how much will be digested? Digestibility (the portion of the forage consumed as it passes through an animal's body) varies greatly. Immature, leafy alfalfa may be 80 to 90 percent digested, while mature, stemmy material often has a digestibility below 50 percent.

**Nutrient content** - Once digested, does the alfalfa provide an adequate level of nutrients? Leafy, growing forage plants usually contain 70 to 90 percent water. Because of this range in water content, for most purposes, it is best to express forage yield and nutrient content on a dry matter basis. Forage dry matter can be divided into two main categories: (1) cell contents (the non-structural part of the plant tissue such as protein, sugar, and starch); and (2) structural components of the cell wall (cellulose, hemicellulose, and lignin).

**Anti-quality factors** - Depending on the plant species, time of year, environmental conditions, and animal sensitivity, various compounds may be present in forage that can result in reduced animal performance, sickness, or even death. Such compounds include tannins, nitrates, alkaloids, cyanoglycosides, estrogens, and mycotoxins. High quality forages must not contain harmful levels of anti-quality components.

The ultimate test of alfalfa quality is animal performance. Alfalfa quality encompasses its "nutritive quality" (its potential for supplying nutrients), the intake that results when it is made available to animals, and any anti-quality factors present. Animal performance can be influenced by any of a number of factors associated with plants and forage-consuming animals (Figure 1). A failure to give proper consideration to any of these factors may result in a level of performance less than is desired.

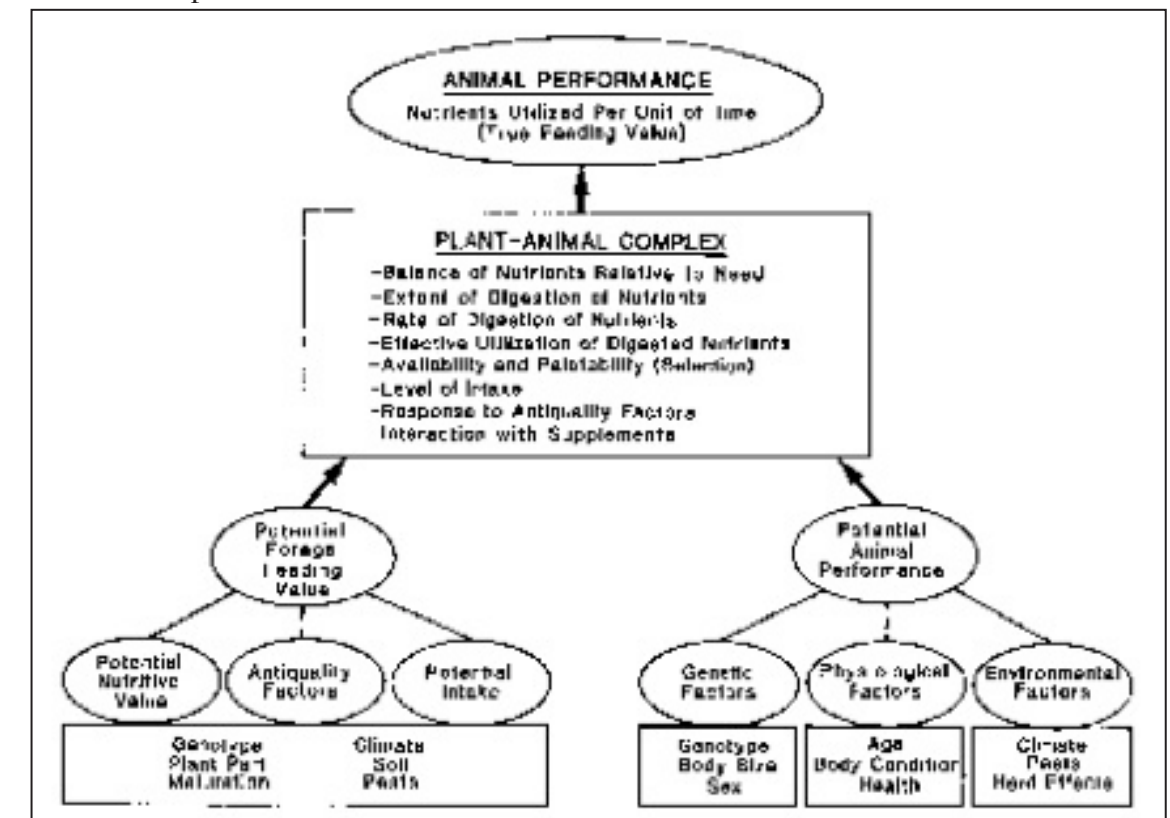


Figure 1. Factors associated with true forage feeding value (Marten et al.)

## ALFALFA AS A GRAZING CROP

**Versatile Use** – Alfalfa can be ideal on farms where it can be used for hay, silage, or grazing. Virginia workers studied grazing alfalfa systems based on need and environmental conditions. Systems of grazing the early spring growth provided quality feed and delayed the first hay harvest until more favorable weath-

er conditions for curing. Other systems provide grazing during midsummer when cool-season grasses are often less productive. These studies show that total seasonal yield is not reduced by any graze-hay systems.

With proper grazing management, alfalfa’s high yield potential can be converted to high levels of animal production per acre. Liveweight gains per acre are quite high for grazing beef cattle with total season gains of 500 to 800 pounds per acre in research trials and on-farm demonstrations. The Kentucky record is 1,354 pounds of beef per acre on alfalfa-orchardgrass without irrigation or grain supplement.

In grazing trials and demonstrations, forage quality of alfalfa pasture is excellent, resulting in total season average daily gains of over 2 pounds per day. In addition, milk from dairy cows and gains of lambs are greater when these animals graze alfalfa compared to grass.

The deep root system of alfalfa makes it more drought-tolerant than cool-season legumes and grasses. Although alfalfa does not make maximum growth during summer droughts, it usually provides good summer pastures. During extreme drought, this aspect is even more important since cool-season grasses become dormant.

Extended Use of Stand – Grazing can extend the useful life of a stand by a year or more for old alfalfa hay fields where some of the stand has been lost or has become weedy. Grazing may also rejuvenate some stands by reducing grass and weed competition. Research has shown that alfalfa stands with fewer than three plants per square foot may not produce maximum hay yield; however, excellent beef gains have been made on alfalfa stands with as few as one plant per square foot.

Reduced Machinery Cost – Over 40 percent of the cost of producing alfalfa hay is machinery and equipment. In a total grazing system, this cost can be greatly reduced or eliminated.

Lower Fertilizer Expense – Under grazing, over 80 percent of the plant nutrients ingested are returned as dung and urine. Therefore, annual fertilizer needs are lower than where plant nutrients are removed from a field as hay. However, manure distribution is not uniform in a grazing environment because of concentration around water points and shade.

WHAT CAN WE DO ABOUT ALFALFA QUALITY?

Alfalfa has high quality potential. Our ability to manage all the factors impacting quality will determine how much of this “potential” we can capture and have available for use by our animals or for sale.

Alfalfa quality is influenced by soils and fertility, varieties, other species, pests, growing conditions, season of the year, time of day, stage of maturity, harvesting, handling and storage, and of course weather. All of these factors can have an impact on alfalfa quality regardless of whether we are using it as pasture, hay, or silage.

Although all of the above are important, in general, the most important and the one that will have the greatest impact on alfalfa quality is the “stage of maturity” when harvested. As alfalfa plants advance from the vegetative to reproductive (seed) stage, they become higher in fiber and lignin content, lower in protein, digestibility and acceptability to livestock (Figure 2 and Tables 1 & 2). Delaying harvest from late bud to full bloom (early seed stage) can result in over 45 percent loss in protein. Digestibility can drop by up to 0.5 percent per day and RFV by 5 points per day.

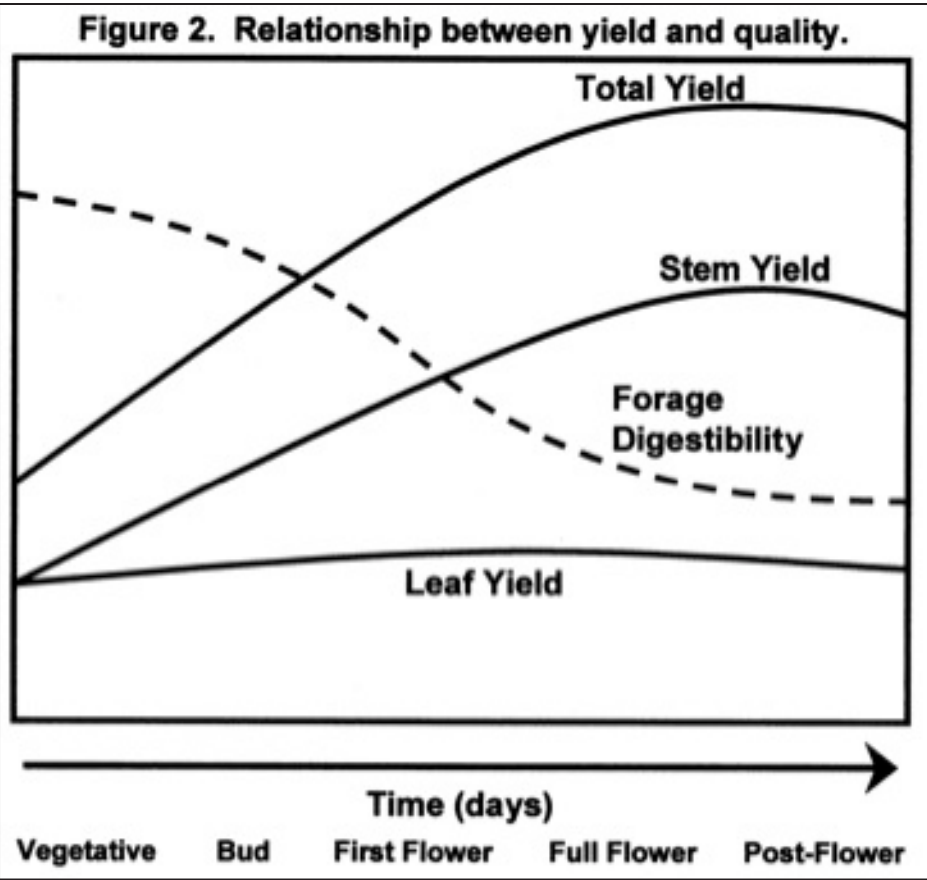


Table 1. Effects of Alfalfa Hay Quality on Animal Performance			
Alfalfa Hay	Quality		
	Good	Fair	Poor
Crude Protein	18.7	15.9	13.7
Crude Fiber	29.4	35.4	46.7
<u>Animal Performance*</u>			
Hay consumed/day	17.1	16.5	13.8
ADG	1.85	1.49	0.06
*550 lb. beef steers - Tennessee			

Table 2. Estimated Grade, Average Concentration of Crude Protein (CP), Acid Detergent Fiber (ADF), Neutral Detergent Fiber (NDF) and Milk Yield in Wisconsin Forage Council Green Gold Project.					
Estimated Grade	Number of Cuts	CP%	ADF %	NDF%	Milk lbs/A
Prime to 1	5	22	31	43	10,688
No. 1	4	21	32	44	9,120
No. 1 to 2	3	19	35	46	7,022
No. 2	2	17	36	48	4,259
SOURCE: Adapted from D.A. Rohweder, et al., University of Wisconsin.					



WILL IT PAY TO PRODUCE HIGHER QUALITY?

This is an excellent question and one that I would like to say a resounding YES to; however, it’s not always that easy and true. To say “it depends” may seem like a very weak answer, but in this case I think it is true. For example, if you are selling by the ton or bale and quality is not a factor, then it will likely not pay you to go the extra mile to achieve the highest quality if overall yield is reduced in the process or stand persistence is compromised. There are some markets where this is the case, but things are changing.

In general, most people are able to market their highest quality alfalfa even during surplus production years. The biggest challenge during these years is how to market the medium and low quality.

With advances in testing and marketing, and with greater awareness of the relationship between quality and animal performance, and with a greater database showing the relationship between quality and price (Table 3), it appears the answer to the question “Will it pay?” is appearing more positive all the time.

Table 3. Forage Quality Values as Alfalfa Advances in Maturity.						
Stage of maturity	Crude protein	Acid detergent fiber	Neutral detergent fiber	Digestible dry matter	Relative feed value	Market value <sup>1</sup> average
	----- % of dry weight -----				index	\$/T
Vegetative	>22	<25	<34	>69	>189	144
Bud	22-20	25-31	34-41	69-65	189-147	126
Early Bloom	19-18	32-36	42-46	64-61	146-123	96
Late Bloom	17-16	37-40	47-50	60-58	122-107	78
Seed pod	<16	>41	>50	<58	<107	72

<sup>1</sup>Market value based Y = .88X - 22.3 where, Y = \$/T and X = RFV index.  
SOURCE: Dr. Neal Martin, Director, Dairy Forage Research Center, Madison, WI, personal communications.

SUMMARY

Alfalfa is a premier forage legume with potential for high yield, quality and stand persistence. Our challenge is: establish to get good stands, produce for high yields, harvest for highest quality and market for profit.

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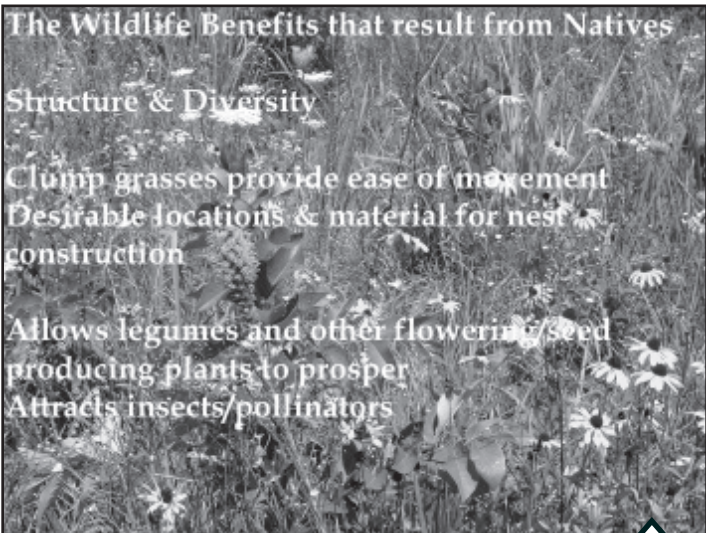
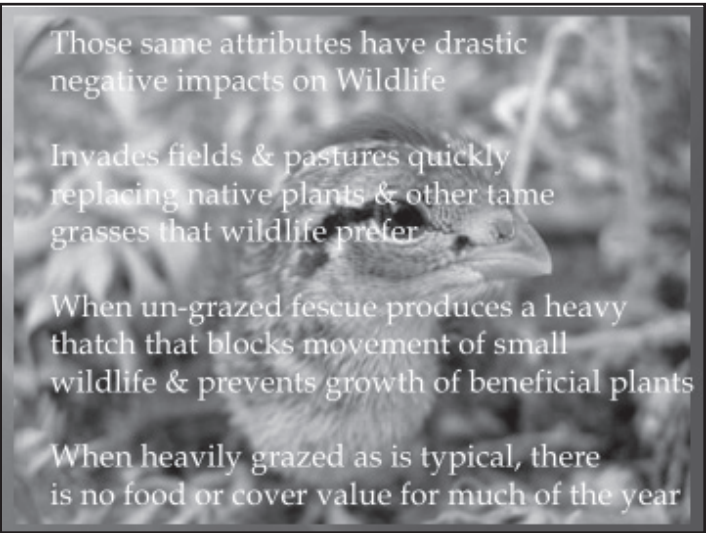
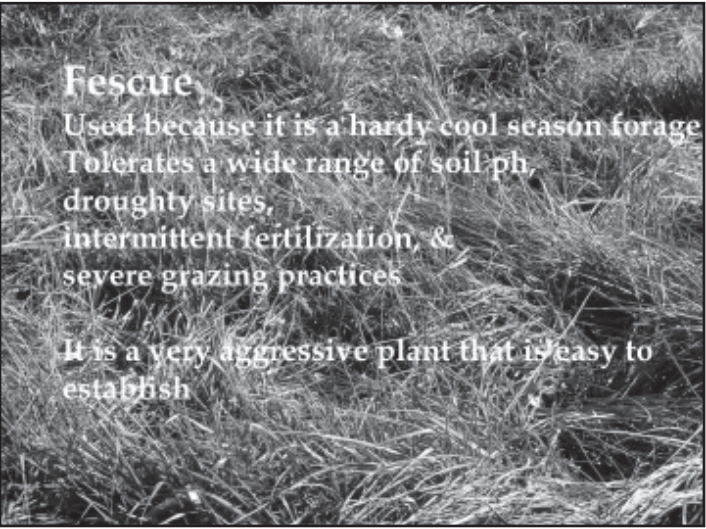
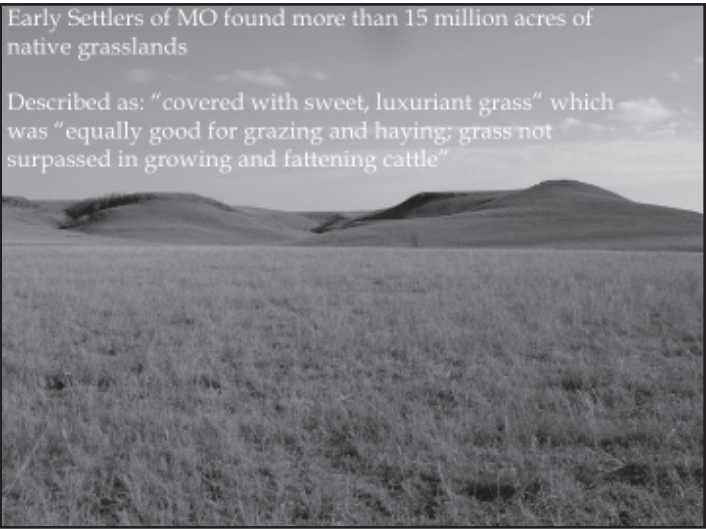
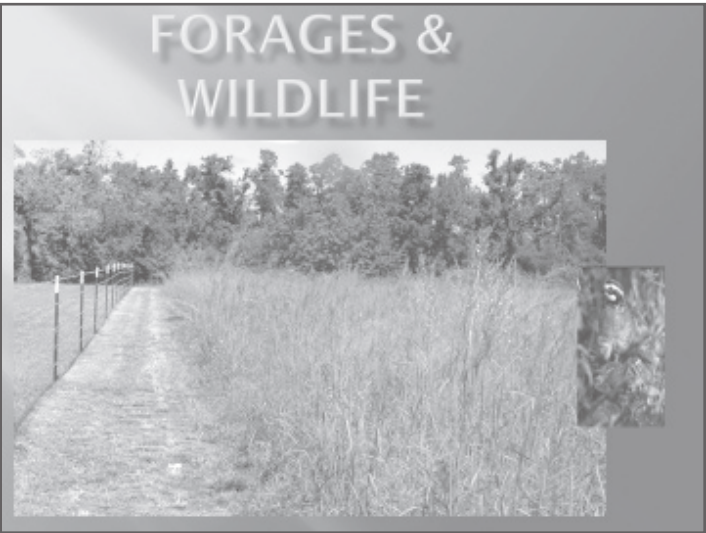
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Forages & Wildlife

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Two Choices of Management  
To Provide Livestock & Wildlife Benefit

1<sup>st</sup>: Manage to create a plant structure & composition preferred by grassland or early successional wildlife  
Using a combination of:  
Grazing  
Prescribed fire  
Herbicide  
Disking &  
Legume inter-seeding

2<sup>nd</sup>: Eliminate the fescue and replace with other grasses and broadleaf plants that are beneficial to wildlife and provide livestock forage

Best if both are combined



Forage Choices:

Grasses  
Cool season &  
Warm season

Legumes

Annuals  
summer & winter

Cool Season Grass Options

Tall Fescue  
Orchard grass  
Smooth Brome  
Timothy  
Red Top  
Virginia or Canada Wild Rye

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Cool Season Forage for Wildlife

Timothy Grass

- Bunch grass
- Highly palatable for deer, Provides good bugging sites for turkey, good rabbit forage
- High quality hay w/ forage yields of 1.5-2 tons/acre and is a later maturing cool season

Low drought tolerance

Cool Season Cont.

Orchard Grass: another bunch grass

- Fair to good deer palatability
- Provides turkey bugging sites
- Good Livestock Palatability & performance
- Forage yields up to 1.5 tons
- Not as drought tolerant or winter hardy as fescue

Cool Season Cont.

Virginia wild rye (perennial)  
Native cool season bunch grass

- Adapted to diverse environmental conditions
- Easy to establish
- Palatable to both livestock & wildlife
- hay or graze best early
- Good nesting cover for ground nesting birds
- Yields up to 1.65 T/ac
- Good seed production

Native Warm Season Grasses

Big Bluestem  
Indian Grass  
Little Bluestem  
Sideoats gramma  
Switch grass  
Eastern gamma grass

When incorporating a native warm season grass Component. Ideally 30% of a grazing system would be native warm season grasses & forbs

Why?

- Increased gains by providing higher quality feed to cattle year round
- Improved rest rotations for all pastures in the system
- Improved wildlife habitat for grassland associated species including pollinating insects

Little Blue Stem

- Short warm season bunch grass
- Preferred wildlife grass
- 2-4 ft. tall at seed stage
- Maintenance fires are not as intense
- Nesting Cover for grassland birds
- Escape & concealment cover

Excellent brood cover when planted in a mix with native forbs such as partridge pea, round head lespedeza, or Illinois bundle flower



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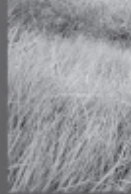
### Side Oats Grama

- Short warm season grass
- Typically same sites as little blue stem
- Similar growth structure
- Preferred wildlife grass
- Quality nesting cover





### Big Blue Stem

- Tall warm season bunch grass
- High quality hay and grazing for livestock & wildlife
- At peak crude protein 16-18%
- Yields up to 3.5 Ton/acre
- Excellent nesting and concealment cover

### Indian Grass

- ☐ Warm season bunch grass
- ☐ 5-7 ft. tall at seed stage
- ☐ Tall grass palatable
- ☐ High forage yields up to 3.8 T/ac

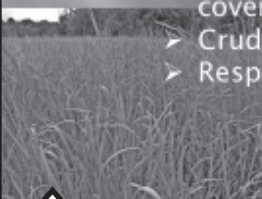

### Eastern Gama Grass

- ☐ Tall warm season bunch grass
- ☐ 5-8 ft. tall at seed stage
- ☐ Attractive to deer & excellent livestock forage usually first grazed / very palatable
- ☐ High forage yields as high as 6 Tons
- ☐ Responds to nitrogen fertilizer
- ☐ Good nesting cover for ground nesters
- ☐ Growth earlier than other warm seasons



### Switchgrass


- Tall warm season bunchgrass
- Early warm season grass 2-3 weeks earlier than big bluestem
- High yield up to 4 Ton
- Excellent nesting and concealment cover
- Crude protein as high as 14%
- Responds to nitrogen fertilizer

Production comparable to cool season grass  
Pure grass stands average 1.75 to 3.5 tons/acre

3.8 tons reported from pure stand of Indian grass  
At Elsberry, MO 70% of that production occurred after June 15

Crude Protein levels of native grass stands reach about 15% early in the growing season declines to about 8% by August



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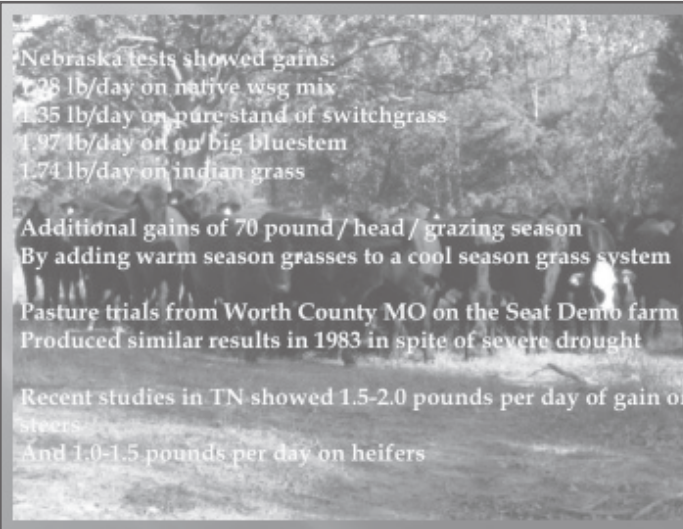
Nebraska tests showed gains:

- 1.28 lb/day on native wsg mix
- 1.35 lb/day on pure stand of switchgrass
- 1.97 lb/day on pure big bluestem
- 1.74 lb/day on indian grass

Additional gains of 70 pound / head / grazing season  
By adding warm season grasses to a cool season grass system

Pasture trials from Worth County MO on the Seat Demo farm  
Produced similar results in 1983 in spite of severe drought

Recent studies in TN showed 1.5-2.0 pounds per day of gain on steers  
And 1.0-1.5 pounds per day on heifers



Native warm season grass/for mix

fescue

Drought condition Summer of 2012



### Native Warm Season Grass Summary

- Clump Grass
- Good for bobwhite quail & other ground nesting birds
- Excellent bedding & fawning habitat
- When mixed w/ native forbs provide pollinator habitat
- Provide additional forage to livestock during summer months when cool season grass is dormant
- 3-4 tons per acre of hay

Seeding Options:

### Fescue Conversion

- Typical scenario: Graze, hay, mow, or burn in July/ August
- Sept 1-Nov 1 when fescue is 8-10" & actively growing apply herbicide
- Feb-March if fuel load will facilitate
- Fire burn
- April-May re-treat with herbicide

### No-Till



### Conventional Seeding





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Management: Very important part of incorporating Native warm season grasses


Grazing & Haying dates

Grazing and mowing Heights

Less fertility inputs especially Nitrogen

Periodic burning is beneficial

Much of the wildlife benefit is derived from this Management because it affords nesting opportunity & residual cover values



Management is key for all Forage systems

- Wildlife benefits

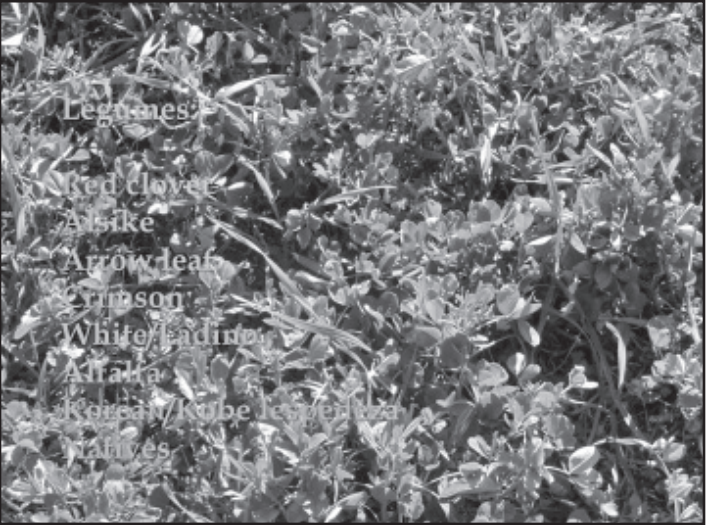
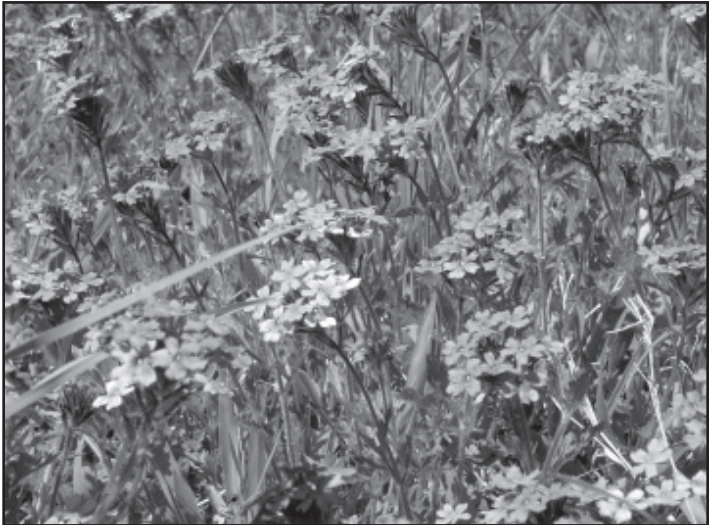
Grazing management

Fertility

Rest/Rotations

Prescribed burning

Inter-seed Legumes



Legumes:

- Red clover
- Alsike
- Arrowleaf
- Crimson
- White/ladino
- Alfalfa
- Korean/Rube leaved clover
- Orchard



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Annuals

Summer:

- Pearl Millet
- Beans/millet

Winter:

- Wheat
- Rye
- Brassicas

Pearl Millet (summer annual)

Quail/Dove/turkey/deer

Good structure for wildlife movement

2-4 tons of hay per acre

Start grazing at 18 in. and pull off at 10 in.


No Prussic acid



Pearl millet

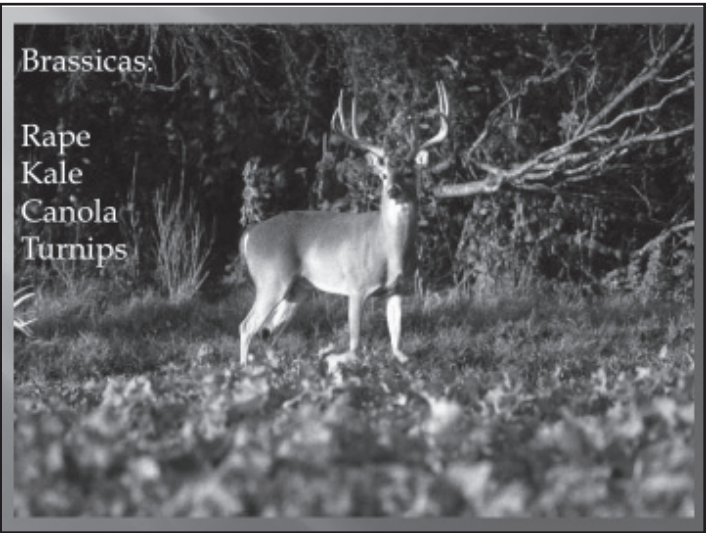
Wheat (winter annual)

- Provides green browse through out winter
- Can be used by quail as nesting cover
- Turnips or clover can be planted with wheat
- Provides seeds for ground birds and migratory birds such as dove if allowed to mature
- Easy to incorporate into a crop rotation plan
- Provide fall & winter grazing



Brassicas:

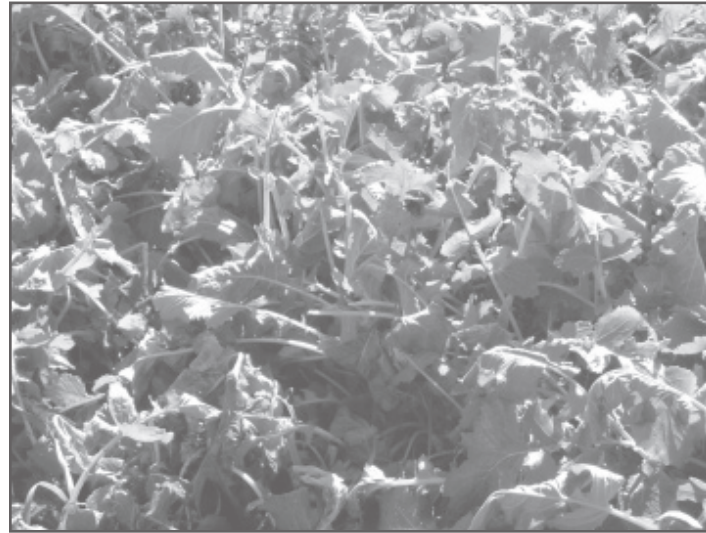
- Rape
- Kale
- Canola
- Turnips





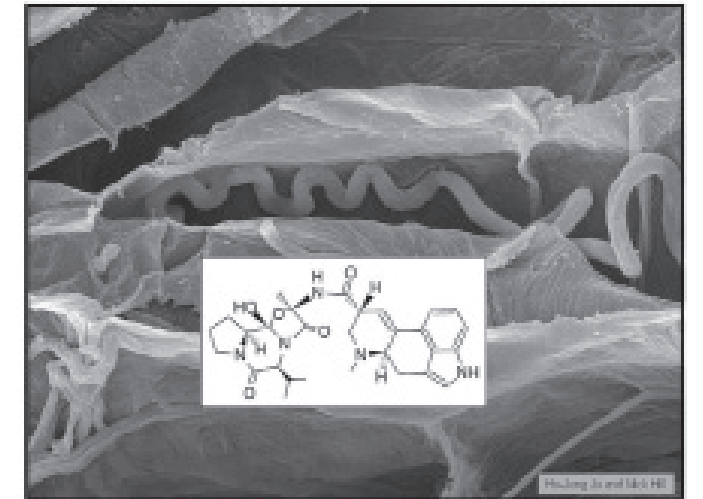
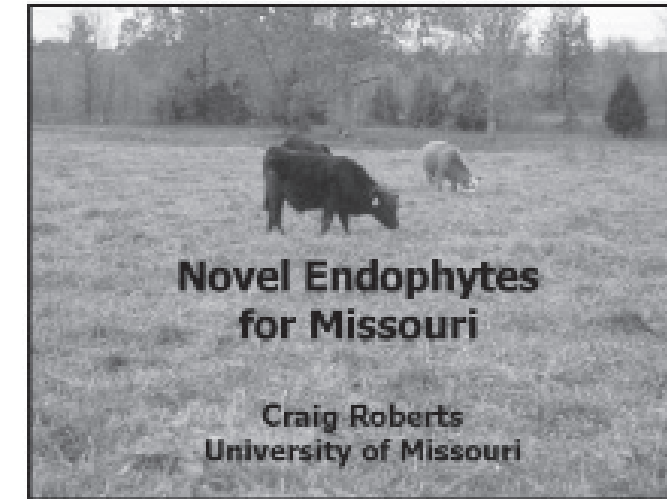
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# Novel Endophyte Fescues for Missouri

Dr. Craig Roberts, State Forage Specialist, University of Missouri



## In Summary

- Over seeding of legumes/ forbs into pasture land
- Planting a mixture of cool season grass such as Timothy, Orchard, and Canada Wild Rye
- Incorporating WSG
- Use of Annuals
- Provide year round food and cover when coupled w/ other practices



- At the same time you are providing quality forage to grazing livestock:
- Provide nesting & brood cover by managing pastures for structure and diversity
- Providing browse & grazing opportunity
- Create & provide concealment cover, roosting cover, escape cover



Type of Stocker	Head
Steers > 500 lb	400,000
Bulls > 500 lb	120,000
Heifers > 500 lb	270,000
Cattle on feed for slaughter	75,000
Bulls for breeding	90,000
<b>Total Stockers</b>	<b>685,000</b>
<b>Other Parameters</b>	
Grazing Season	75 days
Increased Rate of Gain	0.5 lb/day

685,000 stockers @ 0.5 lb/day @ 75 days @ \$1.15/lb



Aldo Leopold: "man and land should live in a state of harmony. A condition where both men and the land will end up better by Reason of their partnership"



Type of Stocker	Head
Steers > 500 lb	400,000
Bulls > 500 lb	120,000
Heifers > 500 lb	270,000
Cattle on feed for slaughter	75,000
Bulls for breeding	90,000
<b>Total Stockers</b>	<b>685,000</b>
<b>Other Parameters</b>	
Grazing Season	75 days
Increased Rate of Gain	0.5 lb/day

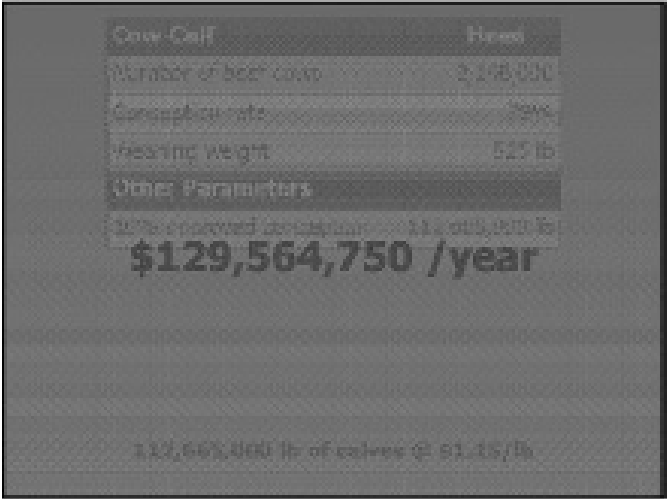
685,000 stockers @ 0.5 lb/day @ 75 days @ \$1.15/lb

Cow-Calf	Head
Number of beef cows	2,146,000
Conception rate	79%
Weaning weight	525 lb
<b>Other Parameters</b>	
10% improved conception	112,665,000 lb

112,665,000 lb of calves @ \$1.15/lb

# Novel Endophyte Fescues for Missouri

Dr. Craig Roberts, State Forage Specialist, University of Missouri



Does not include economic losses to dairy, horses, sheep.

Does not include impact on wildlife.

## Potential Impact to Beef Industry

Stockers:  
\$30 million /year

Cow-calf:  
\$130 million /year

# Novel Endophyte Fescues for Missouri

Dr. Craig Roberts, State Forage Specialist, University of Missouri

## Tall Fescue:

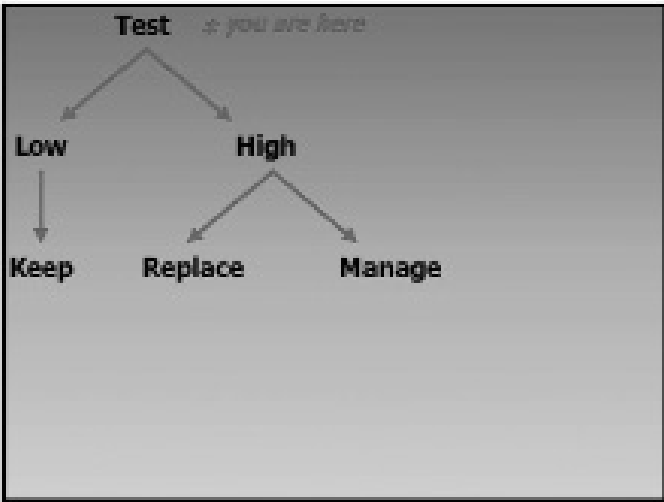
steer gains on three types

	1999	2000
	----- lb/d -----	
Toxic endophyte	0.73	0.50
Endophyte-free	1.26	1.56
Novel endophyte	1.30	1.54

- Experiment with small acreage
- Plan for fall plant if possible (Sept. 1 for mid-MO)
- If replating E+ KY31, may clip seed heads in spring
- Also if replating E+ KY31, "spray-smother-spray"
- Add legumes later (except for BFT)
- 15 lb/A drilled; 1/8" deep
- Add N for "pop-up" (30 to 40 lb/A)

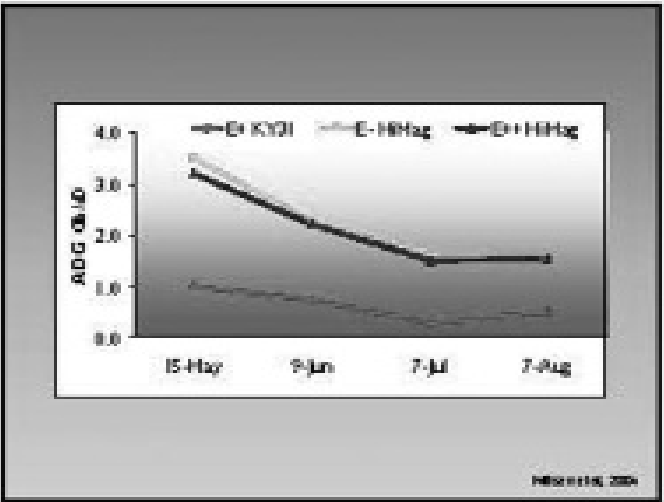
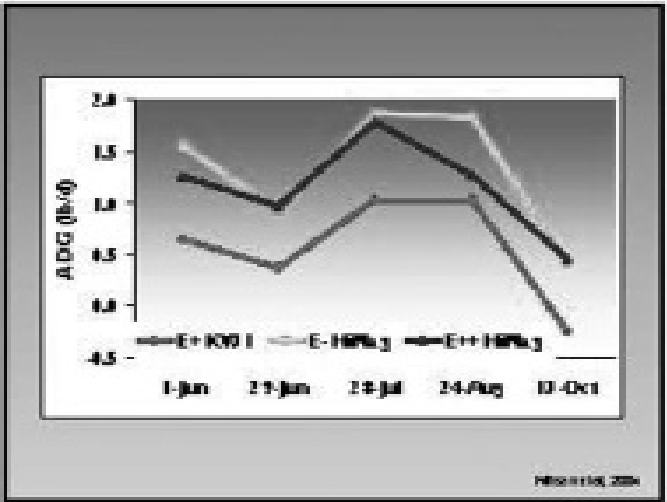
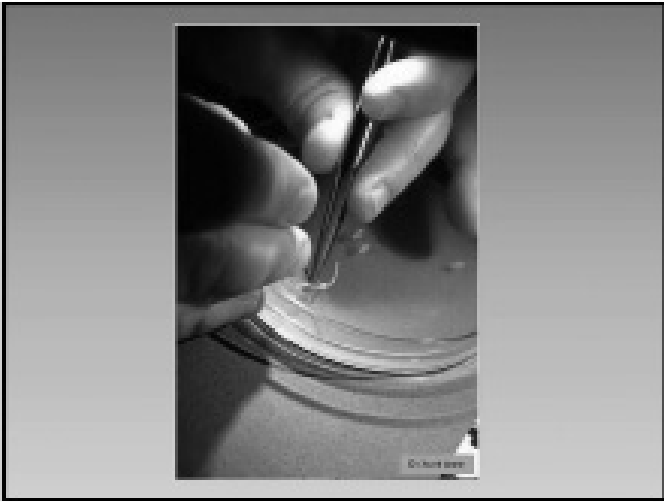
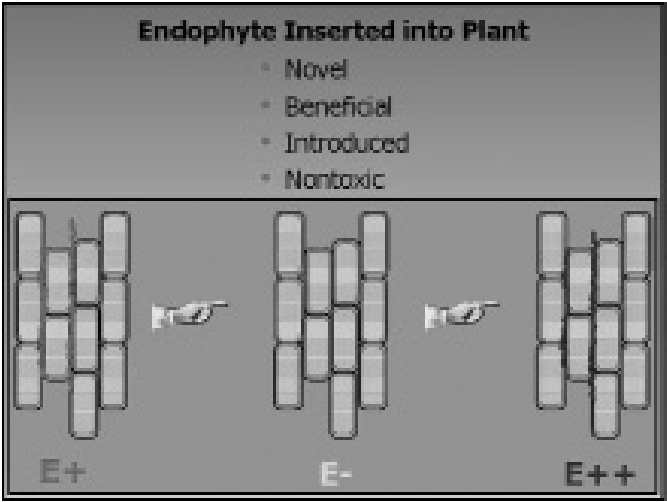


Management



Company	Plant	Endophyte
Pennington	Jesup	MaxQ
DUF	Duramax	Armor
Pennington	Texoma	MaxQII
Gentos	Flecha	MaxQ
Barenbrug	BarOptima	ES4plus
Grasslands	Advance	various endophytes
Mt. View	Estancia	ArkShield
in testing	GT-213	AR584 (MaxQ II)
in testing	KYF98301	AR584 (MaxQ II)
in testing	GA336	AR584 (MaxQ II)
in testing	KYF98621	AR584 (MaxQ II)

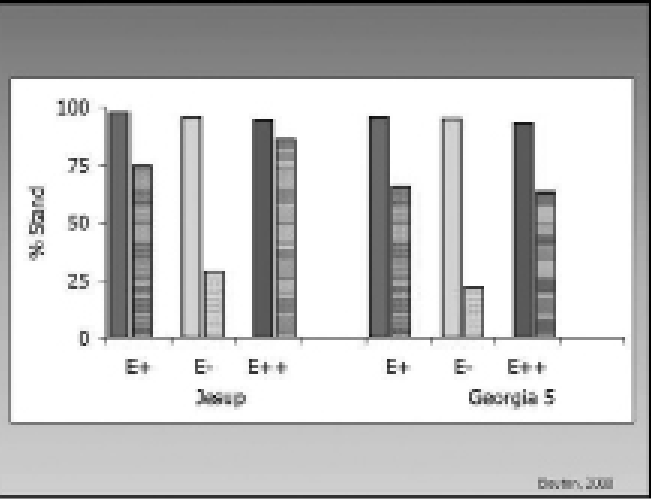
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Pennington	Texoma	Max QII
Barenbrug	BarOptima	ES4plus
Mt. View	Estancia	ArkShield
in testing	GT-213	AR584 (MaxQ II)
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Novel Endophyte Fescues for Missouri

Dr. Craig Roberts, State Forage Specialist, University of Missouri



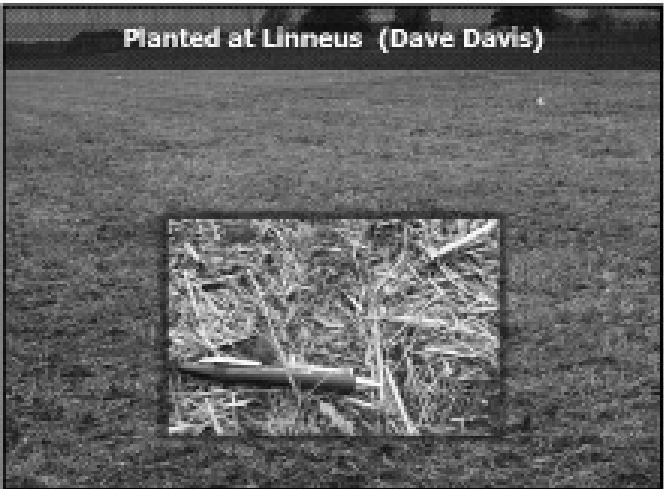
Why Some People Don't Plant New Endophytes

-- understandable reasons --

- Level of toxic endophyte
- Land ownership
- Landscape
- Livestock class
- Grazing management
- Seed production

Novel Endophyte Fescues for Missouri

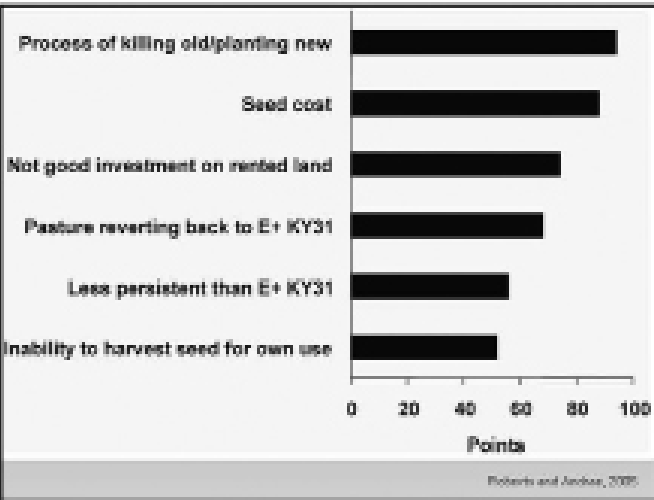
Dr. Craig Roberts, State Forage Specialist, University of Missouri



Why Some People Don't Plant New Endophytes

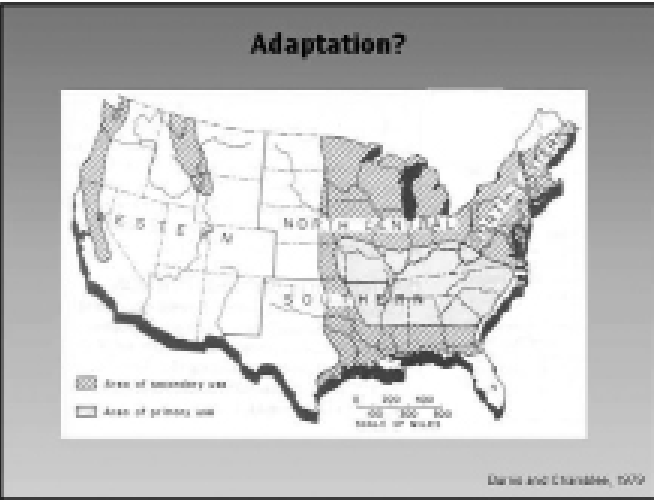
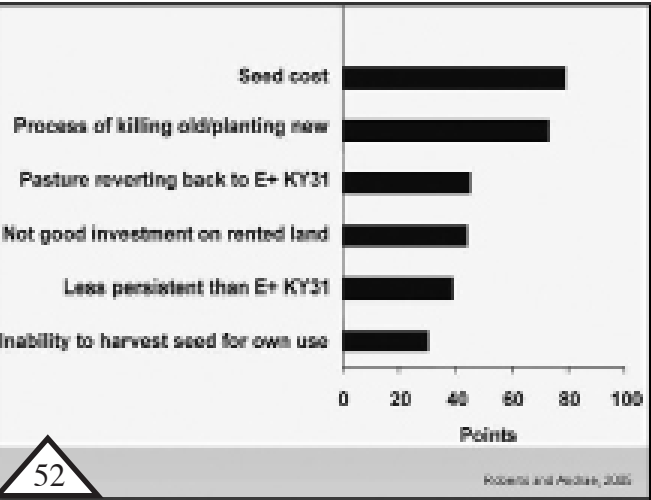
-- additional reasons --

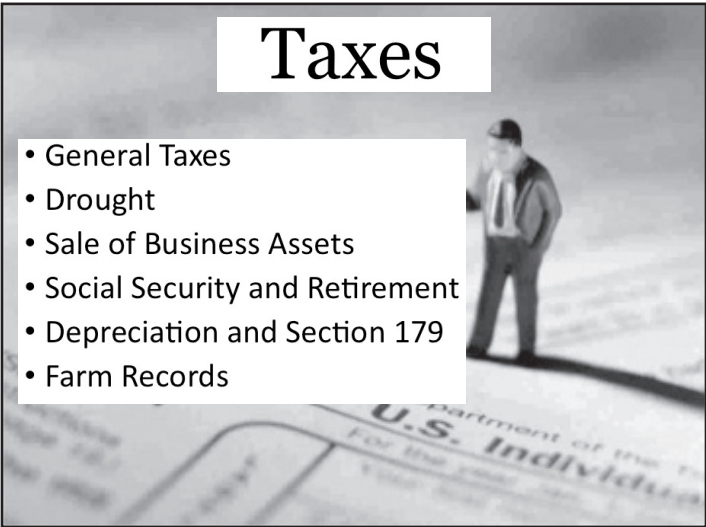
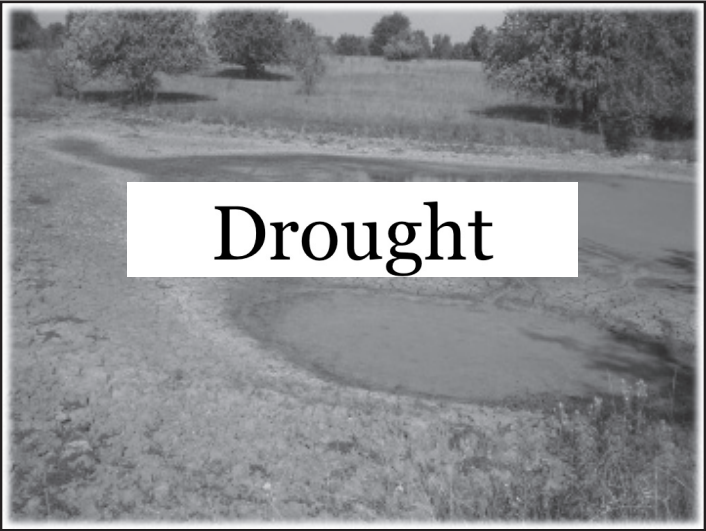
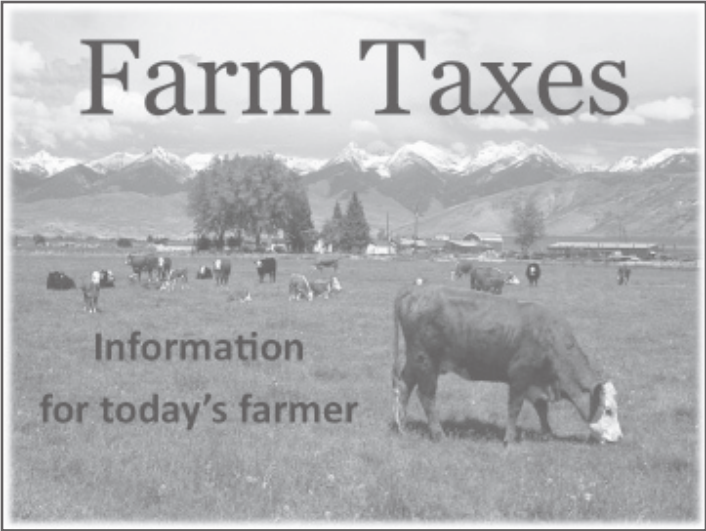
- 1<sup>st</sup> slide = State Specialists' reasons
- 2<sup>nd</sup> slide = Producer reasons predicted by specialists



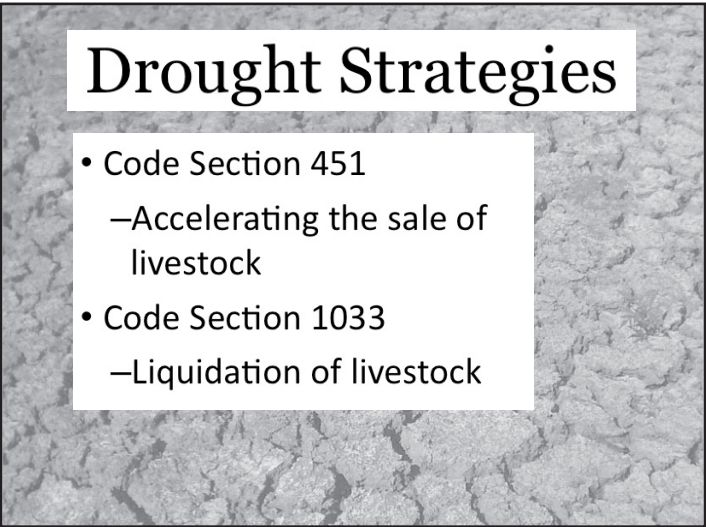
Conclusions:  
New Endophytes ...

- Excellent animal performance
- Improved persistence (over E-)
- Most hesitation related to establishment and cost
- Obtaining more data for adaptation to Missouri

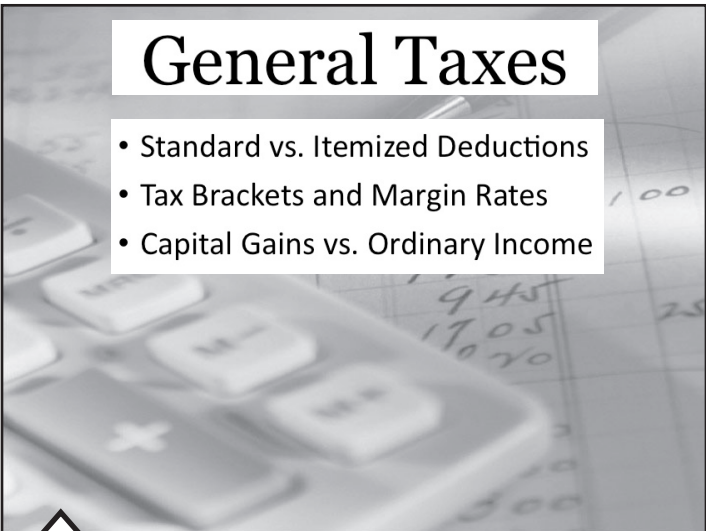




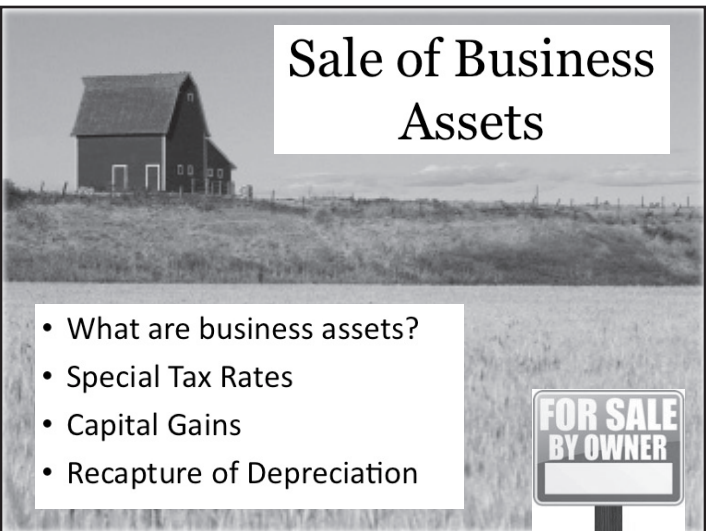
- General Taxes
- Drought
- Sale of Business Assets
- Social Security and Retirement
- Depreciation and Section 179
- Farm Records



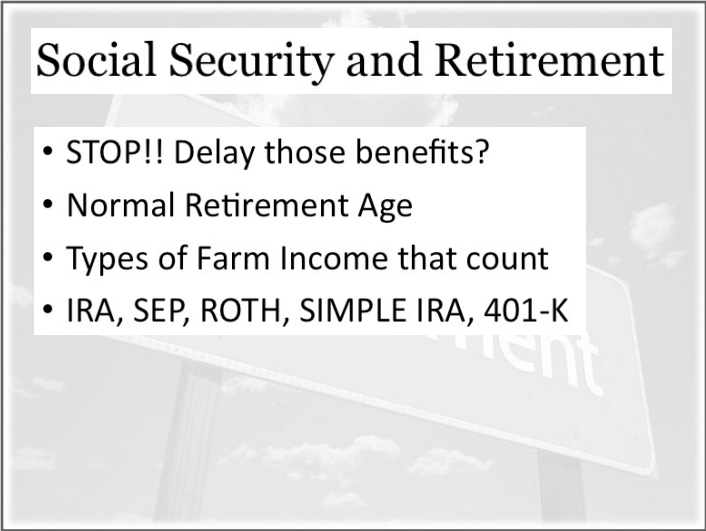
- Code Section 451
  - Accelerating the sale of livestock
- Code Section 1033
  - Liquidation of livestock



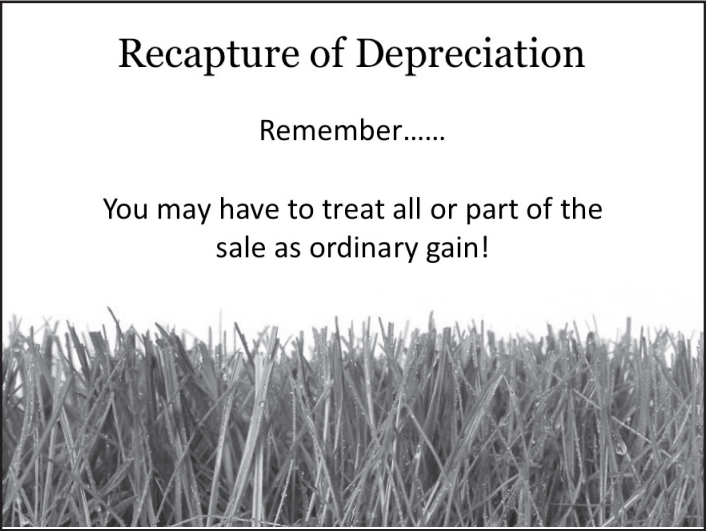
- Standard vs. Itemized Deductions
- Tax Brackets and Margin Rates
- Capital Gains vs. Ordinary Income



- What are business assets?
- Special Tax Rates
- Capital Gains
- Recapture of Depreciation



- STOP!! Delay those benefits?
- Normal Retirement Age
- Types of Farm Income that count
- IRA, SEP, ROTH, SIMPLE IRA, 401-K



**Recapture of Depreciation**

Remember.....

You may have to treat all or part of the sale as ordinary gain!

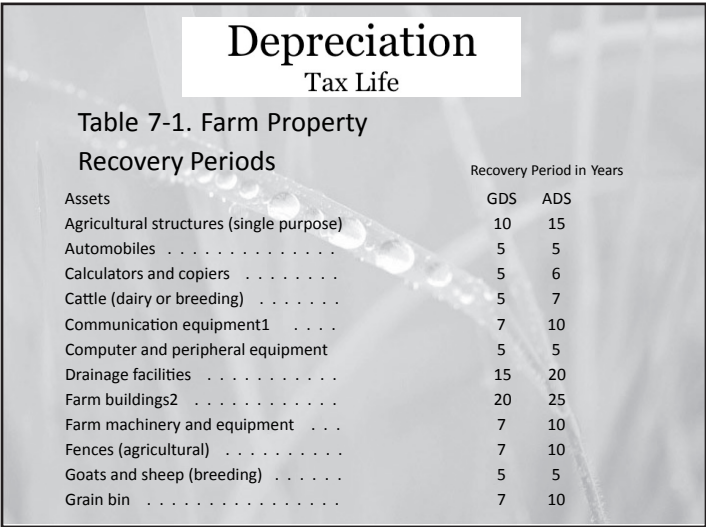
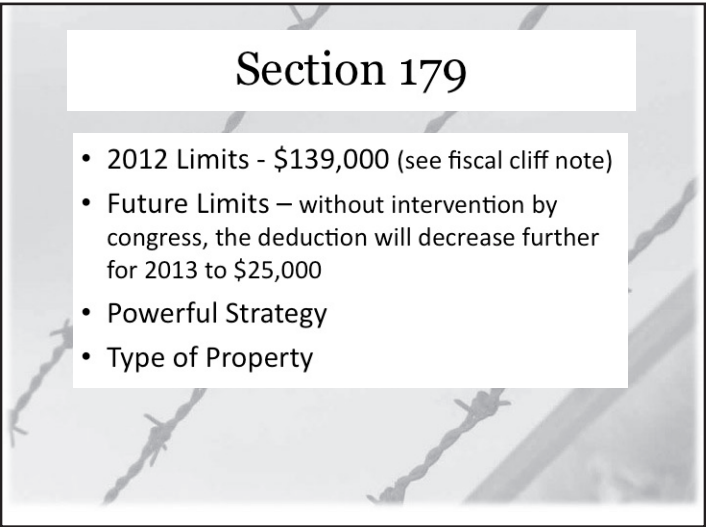


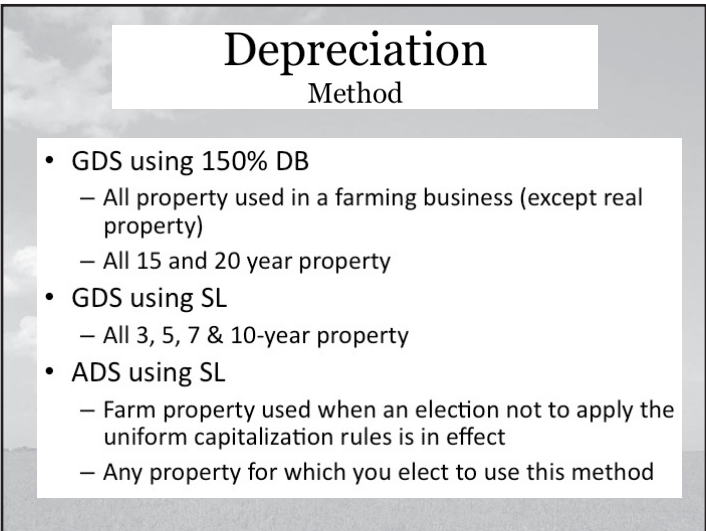
Table 7-1. Farm Property Recovery Periods

Assets	Recovery Period in Years	
	GDS	ADS
Agricultural structures (single purpose)	10	15
Automobiles	5	5
Calculators and copiers	5	6
Cattle (dairy or breeding)	5	7
Communication equipment <sup>1</sup>	7	10
Computer and peripheral equipment	5	5
Drainage facilities	15	20
Farm buildings <sup>2</sup>	20	25
Farm machinery and equipment	7	10
Fences (agricultural)	7	10
Goats and sheep (breeding)	5	5
Grain bin	7	10

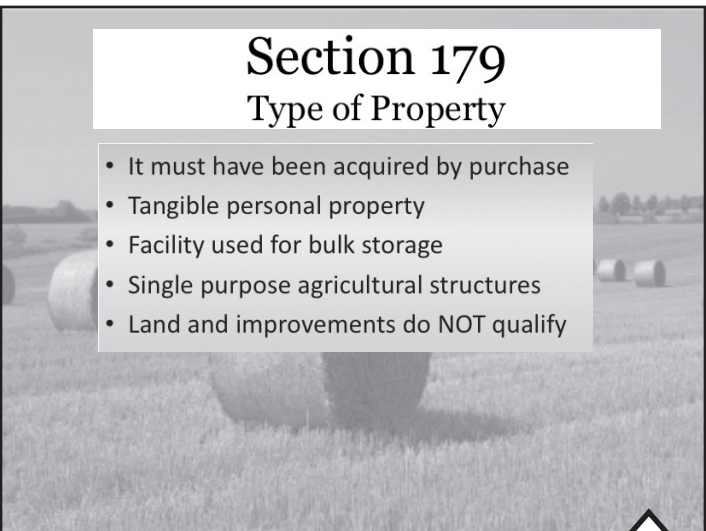


**Section 179**

- 2012 Limits - \$139,000 (see fiscal cliff note)
- Future Limits – without intervention by congress, the deduction will decrease further for 2013 to \$25,000
- Powerful Strategy
- Type of Property



- GDS using 150% DB
  - All property used in a farming business (except real property)
  - All 15 and 20 year property
- GDS using SL
  - All 3, 5, 7 & 10-year property
- ADS using SL
  - Farm property used when an election not to apply the uniform capitalization rules is in effect
  - Any property for which you elect to use this method



- It must have been acquired by purchase
- Tangible personal property
- Facility used for bulk storage
- Single purpose agricultural structures
- Land and improvements do NOT qualify



## Farm Records

- Profit and Loss Statement (P&L)
- Invoices/Receipts should show:
  - Date
  - Cost
  - What was purchased
  - Where the item was purchased
  - How it was purchased
    - (cash, check, credit card)
- Mileage Record



## Reference

IRS Publication 225

## Profit and Loss Statement

- P&L
- P&L Detail



Brought to you by:  
21<sup>st</sup> Century Financial Services  
Larry W. King

Questions? Comments? Contact us at:  
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1-888-345-8718  
[LarryWKing@hotmail.com](mailto:LarryWKing@hotmail.com)  
[BuffaloMOTax.com](http://BuffaloMOTax.com)

## Fiscal Cliff

- Updates on changes Congress has made



## What Do Cows Eat?

**Why Thinking Differently About Our Livestock and Our Pastures Makes Sense/Cents**

Kathy Voith  
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In 2004, I taught a small herd of shorthorns, longhorns, Herefords and Angus cross heifers to eat Canada thistle, leafy spurge and spotted knapweed. What began as a two-grazing-season pilot project at Grant-Kohrs Ranch National Historic Site in Deer Lodge Montana, has turned into a mission to change the way we think about forage and weeds, and to increase awareness of how flexible our livestock can be when it comes to food.

Over the past nine grazing seasons I've taught over 1,500 beef cattle, a small dairy herd, several flocks of sheep, and the bison on one of Ted Turner's Montana ranches to eat many of our most problematic weeds. The steps I use are based on decades of research about how animals learn, and how they choose what to eat. Working in California, Colorado, Montana, Oregon, Vermont, New Hampshire, Utah, and British Columbia and Alberta, Canada on a wide variety of farming and ranching operations, I've learned what it takes to adapt the process so that anyone, anywhere can use it.

It's now possible to teach a cow to eat a new weed in as little as 8 to 10 hours spread over 7 days. Educated cows teach their offspring and herd mates, breed back and calve at expected rates, and gain weight as well as, and sometimes better than, non-weed-eating cattle. Once cows learn that a weed is tasty, they continue to eat it the rest of their lives. Even better, the training process seems to result in "open-mindedness" about what food might be, so educated cows try other weeds in pasture on their own. The result is that by mixing educated animals with untrained animals and moving them through a variety of weedy pastures, in as little as one grazing season a producer could have a herd that eats just about everything found in pasture. In fact, my experience is that cows can eat just as many weeds and as much brush as the herd of goats I managed for my seven-year research project on fire danger mitigation.

## Teaching Cows/Livestock to Eat Weeds Is Something Anyone Can Do

Before I tell you why we should think differently about forage and weeds, I'll share the training steps.

### Step 1: Know Your Plant

In the last 20 years, scientists at Utah State University have discovered that animals learn what to eat based on the internal feedback they get from nutrients and toxins in forages. The higher the level of nutrients, the more likely they are to eat that food, and the higher the level of toxins, the less they eat of that food. With this in mind, the first thing we need to know about our plant is what toxins it might



contain. I always make sure that a plant will not cause illness, death, abortion or deformities to offspring.

### **Step 2: Choose Your Trainees**

The animals, and how many you'll train depends on how your operation functions. Some producers choose to train their replacement heifers because they are pastured separately. Others have several herds of cow calf pairs in various pastures. They choose the herd that is most accessible by vehicle. Of the two dairies I've worked with, both chose to train in the barn because animals were used to being fed there. I recommend doing whatever is easiest for you. As you choose, consider where the weeds are and be sure the group you train will have access to that pasture.

For instant access to plants that are edible or which plants to avoid, visit my website where I keep a constantly growing list.

### **Step 3: Make the unfamiliar seem familiar**

Once I know my plant is safe to eat and I've picked my trainees and training location, I'm ready to start the training process. Since animals develop expectations based on their experiences and then respond accordingly, I want to create an expectation that everything I bring them is good to eat, even if it looks a little strange. In effect, what I'm doing is creating a "language" that includes visual and audio cues that tell my trainees, "Here she comes again! I bet she's bringing good stuff! We should

run over there and eat whatever it is!" Here's how it works:

- **Morning and afternoon for 4 days I bring the trainees an unfamiliar, but very nutritious food.** This is as simple as going to your local feed store and picking up 8 different bags of feed. It doesn't really matter what you choose as long as it's got good protein. Be sure to pick things that have different flavors, sizes, shapes and smells. By trying lots of different things they get used to the idea that food can come in all shapes and sizes, so when you bring them the target weed to try, it's just one more strange looking thing in a series of strange things. I use one 50-pound bag of feed per 25 animals per feeding. So if you have 25 trainees, you'll need 8 bags of feed for these 4 days.

- **It's important that the same person bring the food at about the same time every day.** I've learned that each person does things in a slightly different way so animals have a hard time developing solid expectations.

- **I let them know I'm coming before they can actually see me by honking the horn on my truck as I drive to the training area.** I honk a lot because I want them to come in from where ever they're grazing, and because it is the first cue telling them, "Something great is coming!" (See Pavlov's Dog.)

- **I use empty 250-pound supplement tubs as my feeders.** The feeders are just another cue saying "Look! Here's something good!" and their depth creates competition.

Two cows or three heifers can put their heads in one tub at a time, but one animal can't really see what the other is eating, so they all grab whatever they can get. I assume they're each thinking "Well, she's eating it, so it must be good! I'm going to grab whatever I can get before she eats it all!"

- **On Day 5, I introduce the target weed for the first time.** I skip the morning feeding and feed weeds in the afternoon, mixed with about a ½ bag of a feed they've eaten on one of the first 4 days. On day 6, I provide another afternoon feeding of the target weed mixed with about a ¼ bag of feed. On day 7, I feed the weed plain. I don't pick a lot of weeds, because this is just a snack, and trainees may not finish all I bring them. That's fine. All I want is for at least one cow to swallow one bite of my target weed so that they will get the good feedback from the weed's nutrients. When that happens, I know they will eat the weed in pasture.

- **Trainees in pasture may start eating the target weed after their very first snack.** By paying attention to what I see them doing and eating in pasture, I can often reduce the number of times I feed weeds. I look for bent over and bitten off stems and leaves. I also take time to sit down in pasture with my trainees in a patch of the target weed. Because they are accustomed to being fed by me, they come over to see what I'm doing. When I do nothing, they get bored and begin grazing, often sampling the target weed. As soon as I see evidence of grazed weeds, I end the training.

### **Why skip the morning feeding on the 5<sup>th</sup> day?**

First, I want the animals to come to the tubs whenever I show up so that I can always use them as a tool. Research shows us that when animals get intermittent feedback for something they do, they will keep on trying until they get the feedback. For example, if a rat gets a pellet every time he presses a lever, when he stops getting the pellet, he stops pressing the lever. But if he gets the pellet sometimes when he presses, and not other times, he will always press the lever on the off chance that this is the time he gets a pellet. Translated to the cow training, when I skip the morning feedings I start the process of ensuring that they don't quit coming to the tubs when I stop putting things in

- **If you have more than one target weed, you can introduce it to your trainees as soon as they've finished the first weed.** You don't have to start again from the beginning. If your trainees are in a pasture with that weed, you can wait to see if they try it on their own, and if they don't, you can always bring the tubs back out, and throw a bit of the second weed in the tubs to show them that it is good to eat.

Each group of trainees behaves differently so I observe what they're doing and adjust the process here and there to meet their needs. More information about challenges I've encountered and how I've solved them



is available in my book “Cows Eat Weeds” and the DVD “Teaching Cows to Eat Weeds.” Both are available on my website. You can see a condensed version of the training here: [http://www.youtube.com/watch?v=sVk-YKq\\_xNo&list=UUTLRnl4QeHrvHMrHLTsVAeg&index=1&feature=plcp](http://www.youtube.com/watch?v=sVk-YKq_xNo&list=UUTLRnl4QeHrvHMrHLTsVAeg&index=1&feature=plcp). Other videos are available on my youtube channel at <http://www.youtube.com/kathyvoth>.

**Why Cows/Livestock Should Eat Weeds**

Forage quantity, quality and cost limit how many cattle a producer can raise, and how much money he makes doing it. Our emphasis on pasture grasses has led to decades of research to improve grass varieties, and farmers and ranchers have sprayed, burned, mowed, seeded, and invested in the necessary equipment for all this in an effort to increase the quantity and quality of pastures at a not insignificant cost.

My suggestion is that we take advantage of what our livestock are capable of eating to reduce expenses and increase the numbers of cattle we can produce. When cows eat weeds, producers can potentially raise more cattle, and spend less money doing it. Let’s break it down:

**Forage Quantity**

Economist John Morley found that, based on average pasture weed populations, if a producer’s cattle ate just 70% of the weeds available, that producer would have about 43% more forage. This is just an average and your percentage will be different

based on your past weed management practices.

But quantity isn’t limited to just what is in the pasture at the beginning of the grazing season. So, do weeds regrow the same way we count on pastures grasses to do? The answer in many cases is “Yes.” Depending on the time of year, every weed I’ve seen grazed by cattle has responded by producing more stems or buds.

Nevada Rancher Lance Knudsen, who trained his cows to eat Russian Knapweed says that “Knapweed has become a really good source of feed this year when the grass isn’t doing much because of drought. We graze it before it seeds out and it just keeps growing back. After just a week and a half we have 6 to 7 inches of regrowth and we can put the cattle in again.” This is in an area receiving little to now precipitation. He said he’d already grazed that pasture three times for the 2012 grazing season, when typically he can only get one week’s worth of feed from it. His cattle began eating all the thistles in his pastures as well without any additional training. He noted that as soon as the cattle graze the buds off the tops of the musk thistle stems, the branches below produce buds, and when the cattle eat those buds, the branches below them produce more buds. “So feed is being created as they graze it,” he said.

**Forage Quality**

Weeds are high quality forage, maintaining much higher levels of protein through the growing season than typical pasture grasses. Because they have a higher leaf to stem ratio

than grasses, they generally have better digestibility numbers as well. A maintenance ration for cattle requires 8% protein, so when grasses dry in mid-summer and drop below 8%, weeds can provide the protein cattle need to maintain, or even to gain weight. Higher levels of protein in weeds can also provide the nutrients rumen microbes need to process lower quality forages, so we can take advantage of forage that might not otherwise have been useful.

Examples of 15-20% Protein Weeds	
Canada Thistle	Leafy Spurge
Spotted Knapweed	Russian thistle
Russian Knapweed	Distaff thistle
Whitetop	Musk thistle
Pigweed	Bindweed
Wild licorice	Ragweed
Typical protein values of grasses run between 2 and 11%	

**Cost**

Weeds are a free, and widely available forage. In addition to being nutritious, they are often available when other forages aren’t either because of the time of year, or due to drought conditions. They reseed themselves with ease, and require no effort at all on our part to grow.

**Difficulty, Risk and Investment Cost of Turning Livestock Into Weed Grazers**

Changing our minds about forage and weeds is probably the most difficult part of the entire training process. Our centuries-long War on Weeds has left us all with an ingrained hatred of our “enemy.” Even when we know that weeds are a high quality, resilient

forage, most producers continue to think of grazing them in terms of eliminating or reducing them. If you don’t feel comfortable taking the step of thinking of weeds as just another forage, don’t let that stop you from deciding to teach your animals to eat them. Just think of using your livestock as less expensive tool for reducing and managing weed populations.

The second most difficult step is learning how to be a successful trainer. I’ve worked hard to make this simpler with a book and a DVD that explain all the steps and what to do at each stage. For those too busy to read a book (\$38) or watch a DVD (\$45). I even offer a \$100 coaching program where I write up the steps in recipe format and coach the trainer by phone and/or email as he/she goes through the process.

In addition to the cost of the educational materials and/or coaching program, there is the cost of the training feeds (about \$135 to train 25 animals), 10 hours of labor, and the effort necessary to carve that much time out of an already busy schedule. The last is probably the hardest to do. We are all captive to the inertia created by our habits, and our schedules, and it can take a lot of energy to jump ourselves out of a rut.

**Examples of Others Who Have Jumped Out Of Their Old Weed Management Rut**

Researchers say that the more examples we have of how an innovation has worked for others, the more likely we are to try it out. With

that in mind, here are some emails I've received from others talking about their training:

From: Selina and Warren Koster,  
Clinton, BC Canada  
Subj: B.C. Cattle Co. LTD Heifers  
loving Leafy Spurge  
We just wanted to fill you in on our progress with teaching/introducing weeds to our cattle. It WORKS!!!!!!!!!!!!!! My husband Warren set about in June with the replacement heifers and a small group of 1st time calved heifers and their calves, to introduce the leafy spurge. It was so lovely to see the cattle bucking and twisting, racing to him and the feed tubs. It took no longer than 7 days. The heifers are now in an enclosure of leafy spurge/grasses/shrubs with their bulls before turning out on range. We are so enthused by the simplicity of the whole idea, and how cooperative the heifers were about it. Thank you for all your dedicated research in this study and passion on your knowledge to others. My daughter, Camilla, and I attended your seminar in Williams Lake, last year.

From: Wendy Braim, Lac La Hache,  
B.C. Canada  
Subj: Update fr 130 Mile Ranch  
I did a refresher session this summer on the cows for the [spotted] knapweed and they have really done a number on the plants in the big pasture at the 150 Mile. I am very impressed! Great work, so glad you came up and did the seminar.

From: Rod Hewitt  
Subj: Sheep and weeds  
We met at your workshop in Randolph,

VT (Katahdins and Dexters). You might be interested to know that my Dorper sheep last night had their first weed salad of mostly prickly bull thistle and a few burdock leaves. They cleaned both up completely. We followed your protocol exactly and are very excited with the result and grateful for what you taught us.

Julie Wolcott of Greenwind Farm in Vermont taught a small group of her heifers to eat milkweed, brown knapweed and thistles. Julie wrote to say that she was really happy with the result. In the past she'd found that heifers heading to pasture for the first time lost condition. But not these heifers. Julie said "Their transition from dry hay and being fed to grazing was remarkable. They didn't get gaunt. They didn't seem lost. And they are easy to handle. A few of them had pink eye this week and I could halter each one to treat them. Now I just need to share my enthusiasm for your work with others."

For additional examples visit my website or my blog.

### **What's Next?**

I've done the easy part. I translated the science available into easy steps that anyone can use to teach their livestock to eat weeds. To make sure it works, I've trained lots of animals in a wide variety of places and circumstances. What I've found is that educated cattle teach their offspring and herd mates, breed back and calve at expected rates, and gain weight as well as, and sometimes better than, non-weed-eating cattle.

The rest of my mission is much more difficult. The weight of centuries of prejudice about weeds is difficult to throw off. Even when I outline the benefits of these misunderstood, much maligned plants, my audience members shake their heads skeptically. Yet, little by little, I am making progress. The numbers of people asking me to speak at conferences is increasing dramatically, sales of my instructional materials is increasing slowly but surely, and the numbers of people calling me about the success they're having with their weed-eating cattle is on the rise.

Research into how farmers and ranchers adopt new things tells me that it takes about 10 years of background work before a few will begin to consider it, and twenty years total for an idea to become old hat. With that in mind, I'm planning a huge celebration in 2024, when most of you will have forgotten that weed-eating cows was ever a new idea.

(For links to scientific articles and more background on the work done by researchers at Utah State University visit <http://www.behave.net>.)



## Direct Sales of Grass-Fed Beef

Chris Boeckmann, Boeckmann Family Farms, Osage County

### BOECKMANN FAMILY FARMS

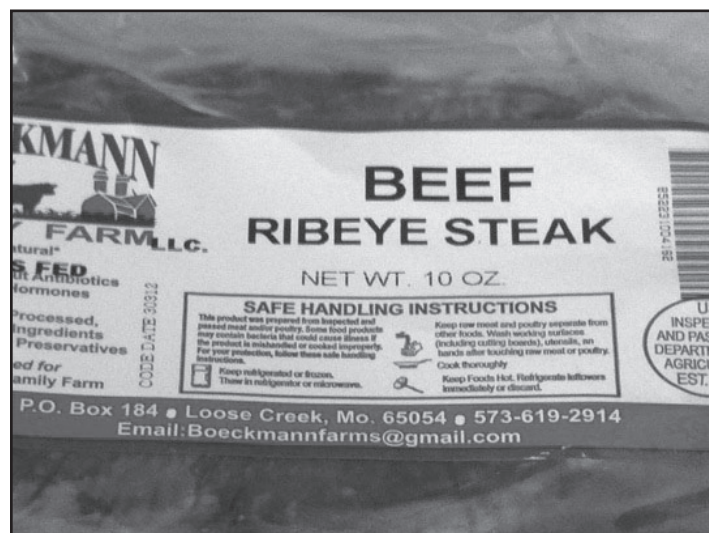
Cattle and turkey farm located in Loose  
Creek, Mo.

Turkey enterprise

- \*contractual arrangement with  
Cargill Inc. from 1987-2012

Cattle enterprise transition

- \*Cow/Calf operation
- \*Backgrounding stocker operation
- \*Grain finished beef
- \*Grass fed beef



## Direct Sales of Grass-Fed Beef

Chris Boeckmann, Boeckmann Family Farms, Osage County

### WHO ARE WE?

Boeckmann Family Farms is a family farm owned and operated by Denise and Chris Boeckmann of Loose Creek, Missouri. We operate our Boeckmann farm with the help of our children: Rae, Eric, Kristen, and Paul. Our operation consists of poultry and beef cattle. Chris grew up on the farm where Boeckmann Family Farm now operates. Chris graduated from the University of Missouri with a degree in Animal Science and returned to the family farm upon graduation in 1987. Denise graduated from the University of Missouri with a degree in Finance and later completed her Master of Public Administration degree through the University of Missouri. She is currently co-owner of Osage Accounting and Tax Service in Linn, Missouri.

Originally, our primary focus was selling a whole, half, or quarter of beef directly to local individuals. While this still represents a large portion of our overall beef sales, we also now sell individual cuts of steak, roasts, and ground beef. Further processed beef products such as beef jerky, snack sticks, sausage, summer sausage, and all beef hotdogs are also now available.

### WHAT IS 'NATURAL BEEF'?

Our All-Natural Beef is produced as a result of key management decisions and practices. We do not use antibiotics, added hormones, or growth promotants in our production process. If an individual animal requires therapeutic treatment, the calf is treated and then removed from the program. Management practices emphasize reduced stress, resulting in improved beef health and reduced reliance on antibiotic treatment.

### GRASS-FED BEEF.

The health benefits of grass-fed beef have been researched extensively and are well documented. Grass-fed beef has a higher ratio of Omega 3 fatty acids to the Omega 6 fatty acids. Omega 3 fatty acids have been linked to lower incidence of heart attacks and cancer. Additionally, grass-fed beef has a higher content of CLA (conjugated linoleic acid). CLA has been proven to help with weight control and there are indications of reduced cancer and diabetes as a result of diets high in CLA.

### WHICH BEEF CUTS ARE AVAILABLE?

Grass-Fed Natural beef can be purchased as a whole, half, or quarter of beef, as well as individual cuts of steaks, roasts, and ground beef. In addition, we now sell beef jerky, summer sausage, sausage, snack sticks, and all beef hotdogs.

### WHY BUY DIRECT FROM THE FARM?

There are several reasons our customers choose to buy beef direct from the farm or from one of our retail outlets, however, a few issues come to the forefront. Quality, flavor, tenderness, and the satisfaction of knowing where your food comes from are the issues our customers are most likely to mention. The calves we use in our program are selected for the proper genetics and good performance to insure our high standard of quality products. Additionally, our beef is produced without the use of antibiotics or added hormones. The cattle are managed in an intensive grazing system that relies on high quality forages to produce our beef.

The consumer in the United States has seen a tremendous increase in the number and size of food recalls. Buying beef from a known local source will increase your satisfaction in terms of both the quality and safety, plus allow the satisfaction of knowing the beef was produced without the use of antibiotics and added hormones. Additionally, we welcome visitors to our farm and encourage them to experience first-hand the what, how, and why details of our operation.

## MARKETING OPTIONS/ TOOLS

- Word of Mouth-Individual Sales
- Brochures
- Internet
  - Basic vs. Interactive
- Stores/Restaurant-HyVee, Chefs, Caterers
- Farmers Markets
- New Generation Coops
- Food Brokers

## PRODUCTION PROGRAM GRASS FED

- Purchase Stockers
  - Prefer South Polls and Angus Cross
- Utilize Management Intensive Grazing
- Mixture of cool season, warm season, legumes, annuals
- All Natural Program-No Antibiotics or Added Hormones
- USDA Label

## WHO DO WE SELL TO?

### Historically

- Individuals
- Local Restaurants
- Local Health Stores

### Sales strategy that were used

- Word of mouth
- Local newspapers
- Brochures

## SALES TARGETS

- Reap the benefits of the value-added product we produce
- Target Clientele with more disposable income
- Upgrade packaging and label
  - Health Benefits of Grass-fed Beef
  - All Natural
  - Locally Produced
  - Can Processor Offer Type of Packaging Needed (ie. Vacuum Packaging)
  - Portioned Cuts
- Bar code
  - May be required by some stores

## Marketing Tools

- Food Brokers
  - Compatibility with your goals
  - 'Pioneering'
  - Private labeling
  - Cost
    - % of sales vs. cents/lb.
    - May range from 4-8% vs. 8-12 cents per lb. (Often determined by value of product being marketed.)
  - Point of Sales Materials
    - Brochures
    - Product Samples
    - Pricing Specials-Broker will suggest 9-11% margin in price structure to cover this
- Food Distributor
  - % Markup
  - Exposure to potential accounts that as an individual you may not be able to get an opportunity to work with

## WHAT DO WE SELL

- \*All Natural Grass-Fed Beef
- All Natural Grain-Finished Beef
- Whole, Half, Quarter
- Individual Cuts
- Further Processed Products
- Jerky, Snack Sticks, Brats
- Beef Hotdogs

### BOECKMANN FAMILY FARM LLC

*All-Natural Grass-Fed Beef*

For more information, contact:  
Chris Boeckmann  
573-619-2914  
E-mail: Boeckmannfarms@gmail.com

Chris and Denise Boeckmann  
573-619-2914

## MARKETING CHALLENGES

- USDA Label
  - Approval Process- SLOW
  - Labels-Design and Production
- Pricing
  - Commodity vs. Superior Products
  - Finding right Markets
- Matching Market and Production Volume
- Product inventory



# Renovating Pastures with Livestock

**Mark Kennedy**  
**State Grazinglands Specialist**  
**USDA-NRCS Missouri**

I am often asked by producers “What forages should I plant?”. My standard answer has become to plant nothing but fence posts and waterlines for three years and employ grazing management to see what happens naturally. One of the reasons for this statement is that most producers have a budget they have to work within. If most of the budget is spent on seed, seedbed preparation, planting, etc, then there may not be any money left for the infrastructure necessary to manage the pastures properly. If management is not changed, then it doesn’t really matter what we plant because it will revert back to the degraded condition due to poor grazing management. Secondly, most people would be surprised what a little management will do to improve pastures condition. This presentation will discuss a few management techniques that can be used to renovate pastures using livestock and grazing management: Management-intensive Grazing; High stock density; Alternate/multiple livestock species.

## Management-intensive Grazing

Management-intensive grazing has been defined as “a goal driven approach to managing grassland resources for long term sustainability. Typically management-intensive grazing strives for grazing periods shorter than 5 days with rest periods of 20 – 40 days depending on plant growth rates. The idea is to keep plants in phase 2 or actively growing (vegetative to early reproductive). In order to accomplish this, multiple paddocks are needed. Depending on how short the grazing period is paddock numbers could range from 8 to 80 with stock densities ranging from 10,000 to 100,000 pounds per acre. Sufficient residual heights are managed during the grazing period to maintain growing points; leave enough leaf area for good photosynthesis and to keep the roots actively growing; and provide adequate bite size for the grazing animal. Rest periods are scheduled to allow leaves to regrow and replenish carbohydrates; provide adequate bite size for grazing livestock; and provide quality forage needed by the livestock. Typically, appropriate turn in height is somewhere between 6 – 10” tall for most introduced cool season grass/legume pastures. During any one grazing event about 50 – 60% of the top growth is removed for a residual height of 3 – 4”.

This strategy allows less persistent or higher quality plants such as orchardgrass and legumes an even chance to compete with more persistent plants such as tall fescue. MiG increases the diversity, health and vigor of the plant community. A healthier, more vigorous plant community keeps the soils covered and improves water infiltration. Leaving proper residuals followed by rest periods, keeps a layer of plant residue on the surface of the soil to cool the soil and hold in moisture. With grazing, this litter gets incorporated into the soil through hoof action and becomes organic matter. Also with MiG, due to more uniform grazing, manure is distributed more evenly across the pasture. The more uniform manure distribution improves nutrient cycling and maintains or improves soil fertility.

## High stock density

Stock density is the most powerful tool we have to manage grassland resources. It effects utilization, reduces spot grazing, controls weed competition, improves manure distribution, and produce seed/soil contact.

Mob grazing is defined as “grazing by relatively large numbers of animals at a high stock density for a short period of time.” (Allen, etal 1991) This strategy was first introduced into the U. S. by Allan Savory in the mid 1980’s and is carried on by Holistic Management International, Inc. and organization founded by Savory. The goal is to use the impact of high stock density to improve the land. Stock densities used vary from 100,000 to 500,000+ pounds per acre. Grazing periods are 1 day or less based on site, time and management objectives. Rest periods tend to be longer than with conventional management-intensive grazing ranging from 30 days to 180 days. The longer rest periods are based on the premise that the plants will be more fully rested and have a deeper root system. Paddock numbers are more variable and infinite. Typically forage is allocated by using temporary fencing in strips to achieve the desired stock density. The goal is to remove 60 – 70% of the topgrowth and trample the rest onto the soil surface. It is the increased amount of litter left on the soil surface, pruning of deeper root system through grazing and increased concentration of manure that should help increase organic matter and feed the micro-organisms in the soil. Generally, there are 2 different modes of mode grazing employed depending on the manager’s objective: landscape mode and animal performance mode. The landscape mode uses the high-

est level of stock density to create an effect on the landscape – remove undesirable species, remove over mature forage, provide greater hoof action to trample more residue. The most valuable tool for the landscape mode is the dry bred cow because of the lower nutritional requirements at that physiological stage. These animals also tend to be less selective in their diets, especially in high stock densities.

## Multi-species/Alternate species grazing

Grazing animals, especially sheep and goats, can be used to either promote or reduce weed and brush abundance. By itself, grazing may not give complete eradication of a particular species but can reduce it to a manageable or economic level. However, when a biological control such as grazing is combined with other control methods such as herbicides, mowing or burning, elimination may be possible and less expensive than by one of these methods alone. Use of grazing animals, particularly sheep and goats, may be increasingly important in areas where herbicides cannot be used, where other means of control are too expensive or where landowners desire biological control methods.

Cattle are bulk grazers and can utilize high fiber diets. Cattle tend to be somewhat non-selective and graze for quantity rather than quality. Cattle prefer grass to other types of plants. Cattle will eat taller, more mature grass plants than either sheep or goats. Sheep and goats on the other hand are more likely to eat broad-leaved plants. Goats, due to their smaller rumen capacity, are more selective for quality and eat the nutrient dense portions of plants. Sheep are somewhat intermediate to these extremes but strongly prefer short, tender forbs and short, young grass regrowth over mature grass and generally, grass over browse. Sheep vary according to their breed in use and preference of browse material. Hair sheep breeds tend to be heavier browsers than wool breeds. Shropshires, a wool breed, have been used to control herbaceous weeds in woody plantings. Goats prefer browse then grass then forbs. Goats clear brush more effectively and rapidly than sheep. Goats tend to eat a greater variety of plants than sheep. Grazing all three species together in a diverse pasture would result in more uniform grazing of all plants present. This would help control weeds and brush while yielding more pound of gain per acre compared to single livestock species grazing.

The addition of sheep and/or goats to cattle pastures has been shown to benefit the cattle by reducing browse plants, broad-leaved weeds and in some cases plants that are toxic to cattle. By reducing the canopy of undesirable vegetation desirable plants produce more growth. Cattle will graze near sheep and goat manure deposits while sheep and goats will eat around cattle manure deposits. This also results in more uniform utilization of the pasture and may help break parasite cycles. Cattle do not share parasites with sheep or goats. Sheep and goats however, do share the same parasites.

Plant species availability, plant diversity, animal hunger and previous diet experience can determine a grazing animal’s selection of particular food plants. Differences in vegetation quality or diversity may cause an animal to eat a particular species in one situation and to ignore or only lightly use in another. A period of adjustment may be needed to get grazing animals to eat a new type of plant that is unfamiliar to them. It may be advantageous to find animals that have previous grazing experience with the target plant species.

## Summary

Years ago I learned that the land can be manipulated by the cow, the plow, the match and the axe. These are all tools still available today. Many times though, we reach for the metal, fossil fuel or chemical to do the job and overlook the value of the grazing animal as a landscape tool. Often times the use of livestock and specific grazing management will be the most economical and sustainable method for affecting change. Manipulating grazing period lengths, rest period lengths, stock density and animal type can restore and rejuvenate abused or neglected pastures. Using these methods will require less monetary inputs but will require more time monitoring and managing. The first step in the process is to inventory existing conditions then determine problems and opportunities. Next, develop goals or objectives – what you want the future condition to be. Then develop a plan or strategy using the tools discussed. Implement the plan and start monitoring. Is the plan working? Do you need to increase stock density to accomplish desired results? Do you need to add sheep or goats to reduce the number of undesirable plants? Make the needed changes and continue to monitor. This is not an overnight process, but it will have long term effects. Restoring and improving degraded pastures using management and grazing animals can





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