AgriLIFE EXTENSION

Texas A&M System

Can We Produce an 850 lb Stocker Calf in Florida

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Texas AgriLife Extension Service & Texas A&M University

Overton, TX

Can we produce an 850 lb stocker calf in Floridia?

- the easy answer is yes

The other questions that should be asked are:

- How do we do it?
- What are the best options?
- Is it cost effective?
- Are there better uses for the available forage resources?

Ownership Scenarios

- early weaned
- normal weaned
- purchase

850 -500 = 350 lbs

need 350 lbs of gain

ADG	Days
~~1.0~~	~~350~~
~~1.5~~	~~234~~
2.0	175
2.5	140
3.0	117

Nutrient Requirements

700 lb yearling steer

ADG	% TDN	% CP	% Ca	Ca, gm	DMI, lb
1.0	53	8	0.26	21.3	18.1

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

Nutrient Requirements

700 lb yearling steer

ADG	% TDN	% CP	% Ca	Ca, gm	DMI, lb
1.0	53	8	0.26	21.3	18.1
1.5	57	9	0.32	26.5	18.5

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2.5	65	11	0.43	36.1	18.7

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2.0	61	10	0.38	31.6	18.7
2.5	65	11	0.43	36.1	18.7
3.0	70	12	0.50	41.7	18.7

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**


385
12
388

Nutrient Requirements

comparison at 2.0 lb/d

weight	% TDN	% CP	% Ca	Ca, gm	DMI, lb
500	65	12.7	0.55	32.2	13.0

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

Nutrient Requirements

comparison at 2.0 lb/d

weight	% TDN	% CP	% Ca	Ca, gm	DMI, lb
500	65	12.7	0.55	32.2	13.0
600	63	11	0.45	32.3	15.9

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

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500	65	12.7	0.55	32.2	13.0
600	63	11	0.45	32.3	15.9
700	61	10	0.38	31.6	18.7
800	61	9.5	0.34	31.4	20.6

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

Nutrient Requirements

500 lb steer calf

ADG	% TDN	% CP	% Ca	Ca, gm	DMI, lb
1	56	10.0	0.36	20.0	12.5
1.5	60	11.5	0.44	25.6	12.8
2	65	12.7	0.55	32.2	13.0
2.5	70	14.0	0.65	38.1	13.0
3.0	75	15.3	0.75	43.8	13.0

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

Nutrient Requirements

600 lb steer calf

ADG	% TDN	% CP	% Ca	Ca, gm	DMI, lb
1.0	55	9	0.31	20.9	15
1.5	59	10	0.38	26.8	15.6
2.0	63	11	0.45	32.3	15.9
2.5	67	12	0.52	37.0	15.9
3.0	72	13.1	0.60	42.7	15.9

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

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1.0	53	7.8	0.25	22.0	20.0
1.5	57	8.6	0.30	26.9	20.5
2.0	61	9.5	0.34	31.4	20.6
2.5	65	10.3	0.39	35.6	20.6
3.0	70	11.1	0.44	40.6	20.6

***Estimated dietary requirements for Brangus type steer under typical production conditions (Beef Cattle NRC, 1996). These requirements will vary depending on numerous factors including body condition, health, breed, environmental factors, use of growth promotants, and others.**

Mineral Nutrition

UF UNIVERSITY of FLORIDA
IFAS Extension

Mineral Concentrations in Grazed Cool-Season Annual Grass Pastures in North Florida[1]

Bob Myer, G. Chelliah, Lee McDowell, Nancy Wilkinson, Ann Blount, and Cheryl Mackowiak[2]

Minerals make up a small portion of an animal's diet; however, they play an important role in health, growth and reproduction.

While free-choice mineral supplementation is common for beef cattle on pasture, pasture forage is still the main source of many nutritionally essential minerals. In the southeastern USA when permanent warm-season pastures are dormant, cool-season annual grasses, such as oats, rye and annual ryegrass, are commonly planted to provide forage for grazing by beef cattle during the late fall to spring period. These forages are highly digestible and are high in energy and protein; however, there is limited information about concentrations of various nutritionally important minerals.

North Florida Grazing Study

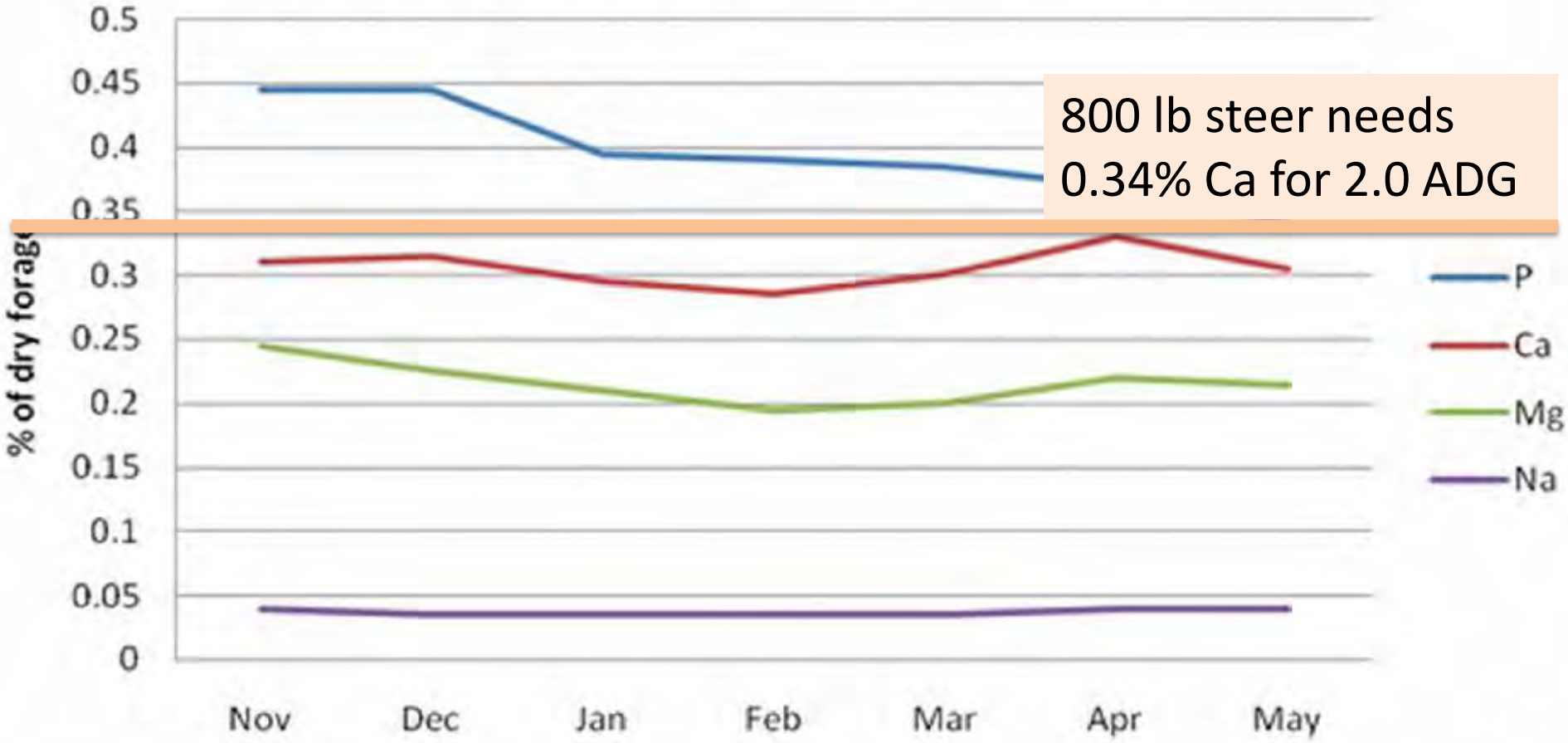
A four-year grazing study was conducted at the North Florida Research and Education Center (NFREC) Beef Unit which is located near Marianna in northwest Florida. The study evaluated two cool-season pasture establishment methods (sod-seeding into dormant warm-season pasture or planting into a clean tilled prepared seed-bed) and two forage treatments (mono-crop vs. a mixture of forage species) for grazing by growing beef cattle. A mineral study was a component of this grazing study. The purpose of the mineral study was to measure monthly concentrations of selected minerals in forage from the various pastures used in the grazing study during the late fall-winter-spring grazing season in north Florida. The minerals measured were the macro minerals calcium (Ca) phosphorus (P), sodium (Na), potassium (K) and magnesium (Mg), and the trace minerals copper (Cu), iron (Fe), zinc (Zn), manganese (Mn), cobalt (Co) and selenium (Se).

The pasture soils were well-drained acidic, sandy soils (fine loamy, kaolintic, thermic Kandiudults) typical of the Southern Coastal Plain. Prior to planting each year, pastures were fertilized and, if needed, dolomite lime applied based on soil analyses by a commercial laboratory. All pastures over the 4 yr period were grown under dry land conditions. The pastures were top dressed twice, with 75 lb N/ac., within each year.

1. This document is AN224, one of a series of the Animal Science Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date August 2009. Visit the EDIS Web Site at http://edis.ifas.ufl.edu.

2. Bob Myer, professor, Department of Animal Science, North Florida Research and Education Center (NFREC)--Marianna FL; G. Chelliah, former graduate student, Department of Animal Science; Lee McDowell, professor emeritus, Department of Animal Science; Nancy Wilkinson, chemist, Department of Animal Science; Ann Blount, associate professor, Department of Agronomy, NFREC--Marianna FL; Cheryl Mackowiak, assistant professor, Department of Soil and Water Science, NFREC--Marianna FL; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

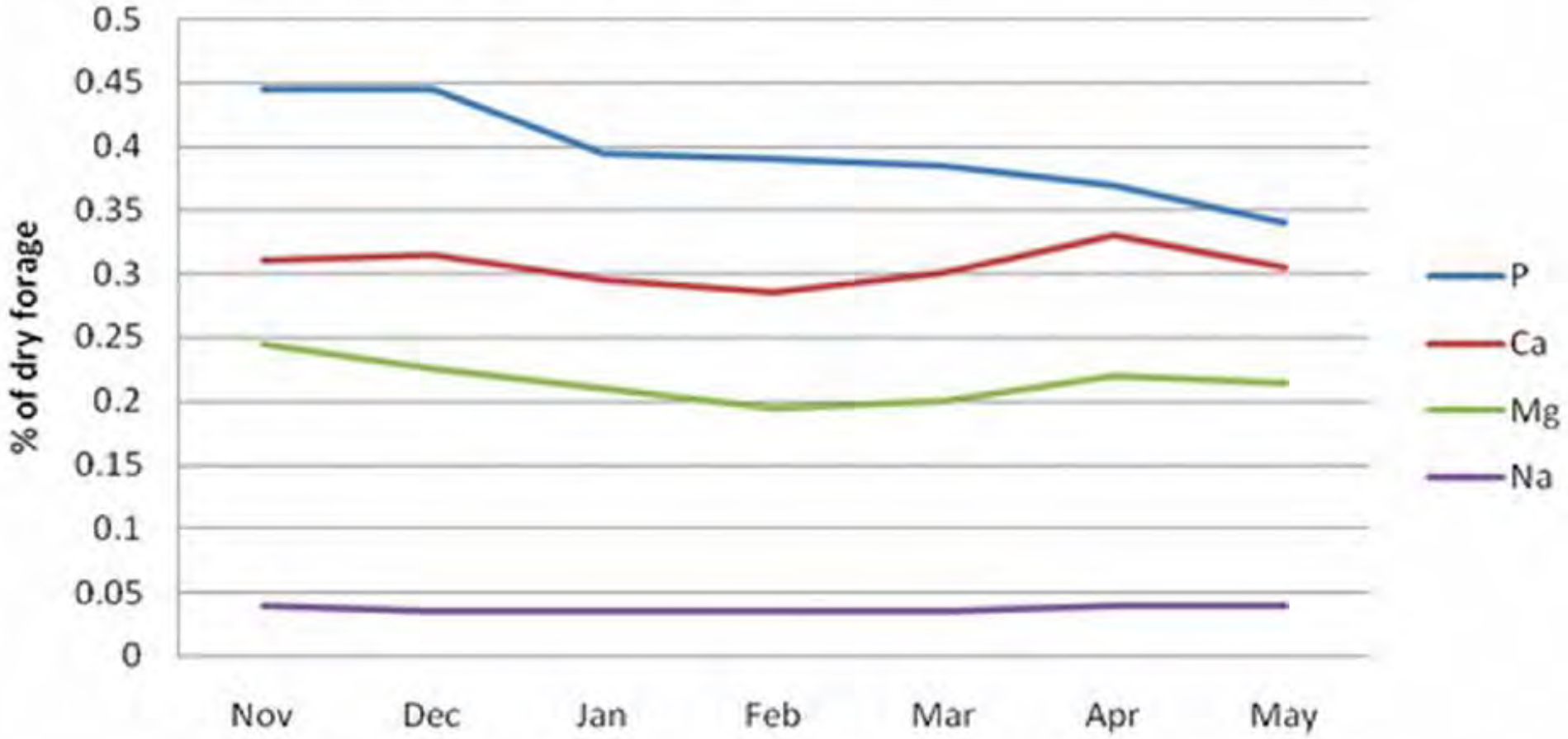
Figure 1. Average monthly macro-mineral concentrations in forage from annual cool-season pastures



(Myer et al., 2009; Mineral concentrations in grazed cool-season annual grass pastures in north Florida)

500 lb steer needs
0.55% Ca for 2.0 ADG

Figure 1. Average monthly macro-mineral conc
from annual cool-season pastures



(Myer et al., 2009; Mineral concentrations in grazed cool-season annual grass pastures in north Florida)

Oklahoma Winter Wheat

Treatment	2004 to 2005 ADG, lbs	2005 to 2006 ADG, lbs
pasture only	1.08[a]	1.92[a]
+ mineral	1.21[a]	2.40[b]

November 2005: 0.55% Ca

March 2006: 0.38% Ca

4 year average:

no mineral: 1.57 lb/d with mineral 1.81 lb/d

0.24 lb/d increase due to mineral

(Fieser et al., 2007; Effects of energy, mineral supplementation, or both, in combination with monensin on performance of steers grazing winter wheat pasture)

Forage Options

Forage Options

- warm season perennials
- warm season annuals
- cool season annuals

What are the performance expectations with these forages?

Warm Season Perennials

Warm Season Perennials

Similar ADG (0.75 to 1.25 lbs/d):

- bahiagrass (generally lowest)
- hybrid bermudagrass
- limpograss
- stargrass (South Florida only, generally higher)
- digitgrass (South Florida only)

Tifton 85

Bermudagrass Studies @ Overton

Study	Forge Type	Grazing Length	Initial Wt.	SR, hd/ac	ADG, lb	Gain/ac, lb
1	Coastal	84	609	.	1.29	.
2a	Coastal	110	650	.	1.04	.
2b	Coastal	110	620	.	0.84	.
3a	Coastal	92	.	3	1.01	279
3b	T85	92	.	3	1.69	465
4	T85	83	~710	4.5	1.61	551
5	T85	90	759	3.5	1.55	.

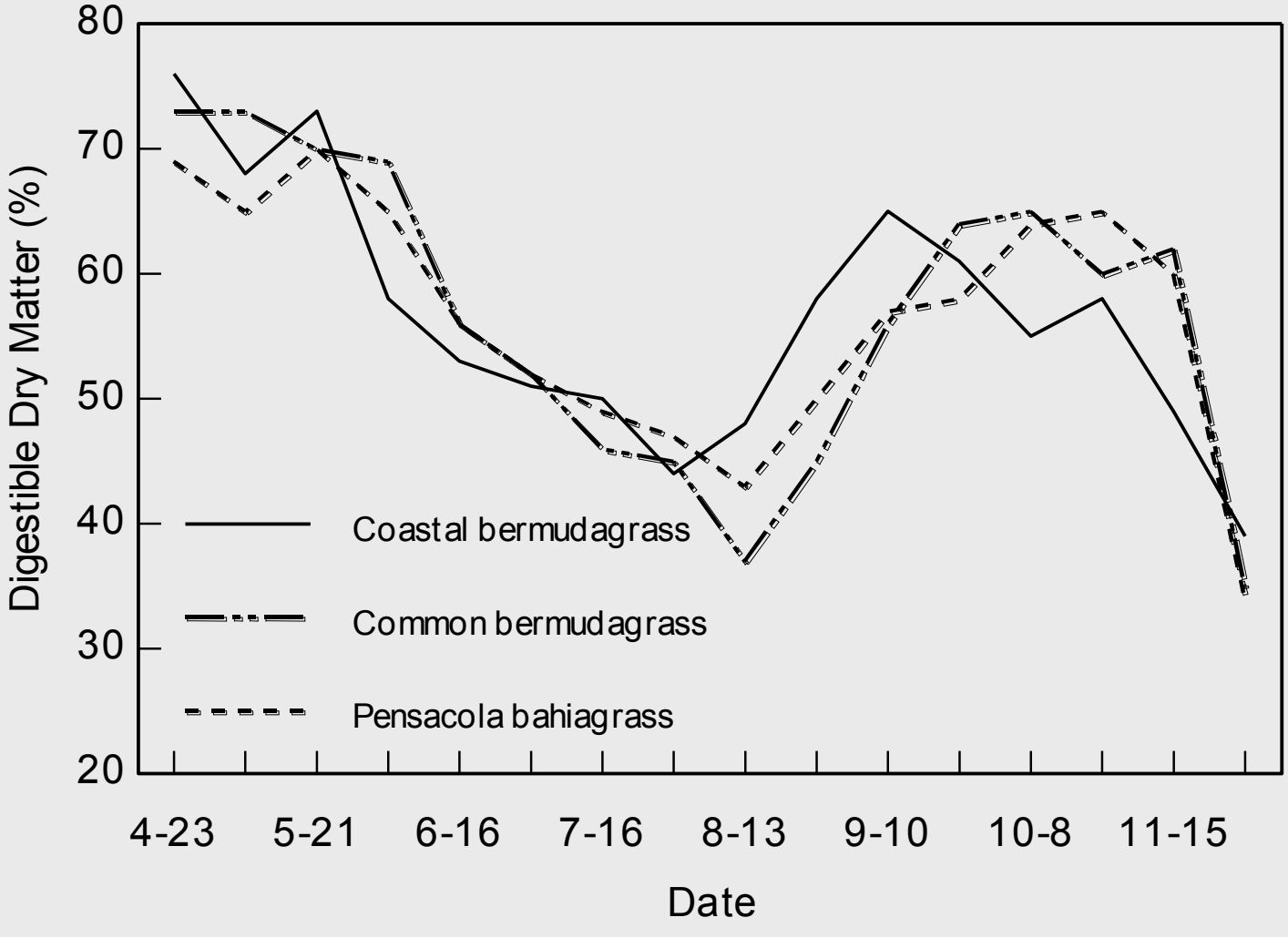


Figure 3. Influence of season on digestibility of continuously grazed sod grass at Overton, Texas, sampled at 2 week intervals (Duble, 1970).

Time of year influences the quality of warm-season perennial grasses.

(Duble, 1970; pasture samples taken at Overton)

Warm Season Annuals

Warm Season Annuals

- sorghum x sudangrass
- sudangrass
- pearl millet
- crabgrass

General expectations:

- 60 to 120 days grazing
- ADG: 1.5 to 2.75 lbs

BMR

Amarillo: Sorghum x Sudan

Variety	Year	SR, hd*d/ac	ADG, lbs	Gain/ac, lbs
BMR	1999	109	2.91	316
	2000	121	2.97	359
non-BMR	1999	111	2.74	305
	2000	117	2.51	295

across all varieties over 5 years:

- ADG: 2.58 lbs average (1.99 to 3.04 lbs)
- gain/acre: 340 lbs average (295 to 459 lbs)
- stocking rate: 1.5 to 3 hd/ac

(McCollum et al., 2005. Five year observations on grazing capacity and weight gains of stocker cattle grazing summer annuals)

Sudangrass & Sorghum

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Sudangrass & Sorghum

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midrib trait forage sorghum, sudangrass and sorghum x
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2007

HI-GEST® SUDANGRASS

Crop Overview and Forage Production Guide

A Guide for Producers, Extension Educators and Seed Marketers

FORAGE FIRST
WHEN YIELD AND QUALITY MATTER

BMR 209

HYBRID PEARL MILLET

BMR 209 is hybrid pearl millet featuring the Brown Midrib trait. The BMR concept in Hybrid Pearl Millet is the similar to Sorghum x Sudangrass BMR hybrids, offering greater digestibility and palatability of the forage compared to conventional hybrids. It is well adapted to dry climates, making it ideal as a warm season grass option or for emergency summer forage. BMR 209 produces high quality hay or excellent late summer grazing. When planted ¼ to ½ inch deep under optimum conditions, a stand should be established within 5 to 7 days.

- **Brown midrib Hybrid Pearl Millet**
- **Yields greater returns such as weight gains and/or milk per ton**
- **Excellent standability, tillering capacity & regrowth**

Morphological Characteristics

- **High leaf to stem ratio**
- **Higher protein content**
- **Smooth leaves with thinner stems**

Agronomic Characteristics

- **Little to no prussic acid dangers**
- **Adaptable to marginal soil types**
- **Excellent choice for grazing and/or hay**
- **60-65 days to 50% Anthesis**

Management

- **Apply 50-60# N at planting**
- **Plants should be 2 ft before grazing**
- **Avoid grazing to ground**
- **Harvest at pre-boot (approx 5-6 ft) to avoid lodging**
- **Leave minimum 6-8 inches for optimal regrowth**

ESTABLISHMENT	DROUGHT TOLERANCE	PALATABILITY	YIELD POTENTIAL	GRAZING TOLERANCE
FAST	HIGH	VERY HIGH	HIGH	HIGH

PLANTING RATE

	Dryland	Irrigated
Drilled/Rows	4-8 lbs	10-20 lbs
Broadcast	5-10 lbs	15-25 lbs

Average Seeds per Pound: 53,000

PLANTING TIMES

Do not plant until soil temperatures reach and sustain a minimum of 65 degrees Fahrenheit.

PLANTING ZONES

Adapted throughout the US

SS-AGR-193

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IFAS Extension

Crabgrass as a Forage and Hay Crop [1]

A.R. Blount, D.M. Ball, R.K. Sprenkel, R.O. Myer, and T.D. Hewitt[2]

Crabgrass is a high quality summer annual forage grass that is well adapted to the sandy soils and climatic conditions of the southern Coastal Plain. While it is often considered to be a weedy species, it is a valuable temporary summer forage crop, particularly on open land that is planted to vegetables or row crops, and used in a rotation as pasture for livestock grazing or hay production.

Several species of crabgrass are found in the southern Coastal Plain. The two most widely recognized are large or hairy crabgrass (*Digitaria sanguinalis*) and the smooth crabgrass (*D. ischaemum*). Large crabgrass is the most common species that occurs naturally or is intentionally planted as temporary pasture. It appears similar in size and flowering to bermudagrass, but the flowering culm, or tiller, is slender and rises separately from the stalk. The flowers are held in 3 to 7 slender fingerlike branches on the end of the flowering stem, from which it gets its common name, digitgrass. In comparison, bermudagrass may have several flowers on the same tiller, often called a runner. The large crabgrass seedling is usually pale green and has wide leaves that are covered in coarse hairs. The young leaves of crabgrass unroll as they grow out from the center of the plant. Large crabgrass also has a membranous ligule that is stiff and papery, and there are no auricles. There may be stiff white hairs located along the edges of the leaf, but there are no hairs found on the ligule. Large crabgrass is a clump grass and may grow up to 2 feet (60cm) tall.

The other common species is smooth crabgrass. It is easily distinguished from the large-type crabgrass because of its short, wider leaf, blackish-brown bract and lack of noticeable hairs. Smooth crabgrass is generally considered a weed problem in turfgrass and has little forage potential. For the purpose of this article, the discussion will be limited to information concerning large crabgrass as a forage and hay crop.

Crabgrass is an annual grass, and reseeds itself year after year, if managed to allow the plant to flower and produce seed during the previous season. Crabgrass forage has excellent quality and palatability, but yield is variable and is dependent on soil fertility and rainfall. The forage quality of crabgrass is typically better than that of most other

1. This document is SS-AGR-193, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Published August 2003. Revised August 2006. Reviewed March 2010. Visit the EDIS Web site at http://edis.ifas.ufl.edu.

2. A.R. Blount, assistant professor, Agronomy Department, NFREC-- Marianna FL.; D. M. Ball, Extension Forage Crops Agronomist, Auburn University, Auburn GA; R.K. Sprenkel, former professor and associate center director (retired), Entomology and Nematology Department, NFREC--Quincy, FL.; R.O. Myer, professor, Animal Science Department, NFREC--Marianna, FL.; T.D. Hewitt, former professor, Food and Resource Economics Department, NFREC--Marianna, FL. Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

Crabgrass for Forage: Management from the 1990s

by R.L. Dalrymple

Agricultural Division Publication
Other Forage Articles

Preface

No legal crop has been more maligned and joked about by late-night comedians, politicians, and the funny pages than crabgrass. When we get past the jokes, though, and look at the science, good crabgrass is an excellent, nutritious, palatable, very productive forage crop with many uses.

This publication is part of the result of twenty-six years of grazier experiences and crabgrass use, demonstrations and research by specialists at The Samuel Roberts Noble Foundation in Ardmore, Oklahoma. It is part of the ongoing mission of the Noble Foundation's Agriculture Department to provide the most up-to-date information to our nation's farmers and ranchers.

The authors credit Julie Barrick and Scott McNeill for processing and Cara Wallace for technical editing. Thank you.

About the Authors

R.L. Dalrymple is a forage agronomist.
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Bret Flatt is a research technician. He has been with the Noble Foundation since 1985.
Wayne Dobbs is a farm manager.
Shan Ingram is a livestock specialist. He has been with the Noble Foundation since 1975.
Sam Coleman is an animal nutritionist with the USDA, El Reno, OK.

Next: Crabgrass: A Synopsis >

Cool Season Annuals

Cool-Season Annuals in Florida

Study	Forge Type	Grazing Length, days	Initial Wt.	Stocking Rate, hd/ac	ADG, lb	Gain/ac, lb
1	R,O	114	~570	1.6	2.2	405
	R,O,RG	118	~570	1.5	2.1	375
2	O, RG	104	~591	1.7	2.24	364
	RG	90	~591	1.6	2.46	333
3	R	77	~548	2.0	2.24	364
	T	80	~548	1.7	2.46	325
	R, RG	101	~548	1.8	2.42	490
	T, RG	112	~548	1.7	2.64	497

Sod-Seeded vs. Prepared Seedbed: Florida

- bahiagrass

(Myer et al., 2005, 2007)

Item	Fall 2001 Fall 2002		Fall 2003 Fall 2004	
	PS	SS	PS	SS
Forage, lb/ac	4,879[a]	3,306[b]		
Start of grazing		-58		
Length of grazing	137[a]	92[b]		
Grazing d/ac	226[a]	126[b]		
ADG, lb	2.3[a]	2.0[b]		
Gain/ac, lb	530[a]	250[b]		

Sod-Seeded vs. Prepared Seedbed: Florida

- bahiagrass sod

(Myer et al., 2005, 2007)

Item	Fall 2001 Fall 2002		Fall 2003 Fall 2004	
	PS	SS	PS	SS
Forage, lb/ac	4,879[a]	3,306[b]	3,636[a]	3,056[b]
Start of grazing		-58		-42
Length of grazing	137[a]	92[b]	115[a]	80[b]
Grazing d/ac	226[a]	126[b]	174[a]	131[b]
ADG, lb	2.3[a]	2.0[b]	2.42	2.31
Gain/ac, lb	530[a]	250[b]	407[a]	289[b]

Suitability of Triticale, either as a Mono-crop or in a Blend with Annual Ryegrass as Pasture Forage for Grazing by Growing Beef Cattle during the Cool Season

Bob Myer, Ann Blount, Cheryl Mackowiak, and Ron Barnett[1]

Forage triticale is suitable for cool-season pastures for grazing by growing beef cattle.

Summary

A two- yr, 2 x 2 factorial study was conducted to evaluate the suitability of triticale forage, either as a mono-crop or in a blend with annual ryegrass, for grazing by growing beef cattle during the cool season. These two triticale treatments were compared to rye forage, either as a mono-crop or in a blend with ryegrass. The triticale ('TriCal 342'), rye ('Wrens Abruzzi') and their respective blends with annual ryegrass, ('Venture') where planted into clean-tilled pastures during early November (Yr 1) or late Oct. (Yr 2). In all, 8, 1.6 acre pastures were planted each year (two replicates). For each year, 16 tester growing beef heifers (Yr 1; 537 ± 59 lb avg. body wt.) or steers (Yr 2; 559 ± 147lb) divided among two blocks were used. Grazing started in late January and lasted until April or May of each year. Overall, estimated forage dry matter yield, animal grazing days and cattle body weight gain per acre were not affected ($P > 0.05$) by pasture forage species; however, average daily weight gain of tester cattle tended to be greater ($P = 0.04$) for triticale vs. rye treatments. Blending ryegrass with the forage cereals resulted in longer grazing periods ($P < 0.001$), and increases in forage yield ($P < 0.001$), grazing days ($P < 0.001$), and gain per acre ($P < 0.001$) with no species by mono-crop vs. blend interaction; however, a species by year interaction ($P = 0.04$) was obtained for forage dry matter yield in that the triticale was better than rye in Yr 1 and rye better than triticale in Yr 2. The triticale pastures were more even in forage availability during the cool season whereas rye tended to have a large "spike" in forage growth during the early spring. The results suggest that forage triticale is suitable for cool-season pastures, especially if blended with annual ryegrass, for grazing by growing beef cattle.

Introduction

In the Coastal Plain region of the Southeastern United States, the planting of cool-season annuals such as annual ryegrass (*Lolium multiflorum* L.), oat (*Avena sativa* L.), and (or) rye (*Secale cereale* L.) is common to provide grazing or harvested as green chop and (or) silage for cattle during the winter-spring season (typically from December to May). New forage varieties of triticale (*X Triticosecale* Wittmack) have gained popularity in this region by dairy producers for silage and green chop. We are not aware of any trials on the evaluation of these newer triticale varieties as pasture forage for grazing by growing beef cattle during the cool season. Additionally, there is some evidence from research conducted elsewhere that triticale may be a more suitable crop in a blend with annual ryegrass than rye (Myer and Lozano del Rio, 2004). We hypothesize that a new variety of forage triticale will be suitable forage, especially if blended with annual ryegrass, for grazing by growing beef cattle.

The objective of this study was to evaluate the suitability of triticale forage, either as a mono-crop or in a blend with annual ryegrass, for grazing by growing beef cattle during the cool season.

Materials and Methods

This study was conducted at the University of Florida's North Florida Research and Education

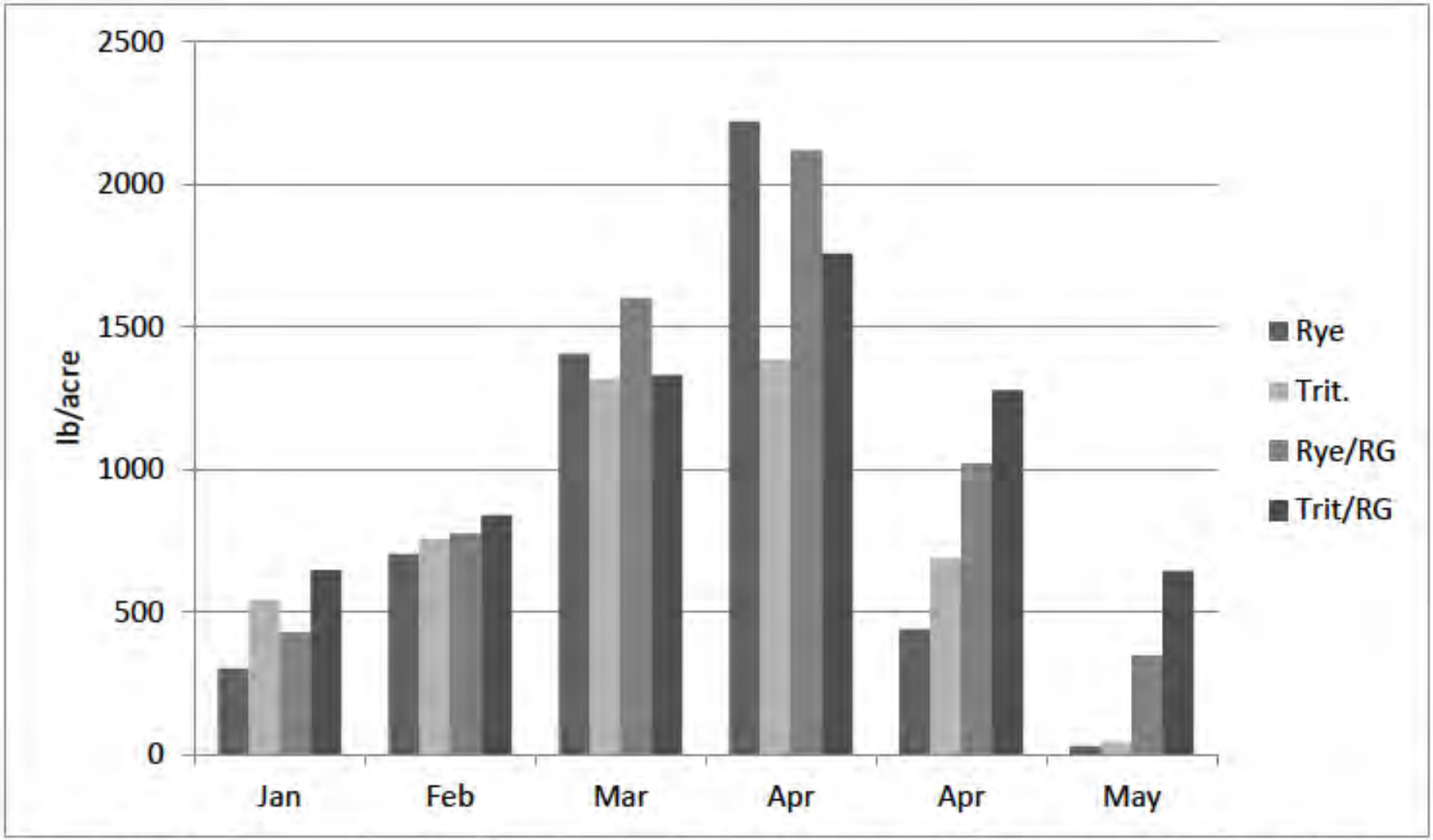

Figure 2. Average pasture forage dry matter yield measured every three wk of the four pasture treatments during the grazing seasons (RG – ryegrass; SE = 50, 52, 59, 75, 137, and 77 for the six sampling dates, respectively; n = 4).

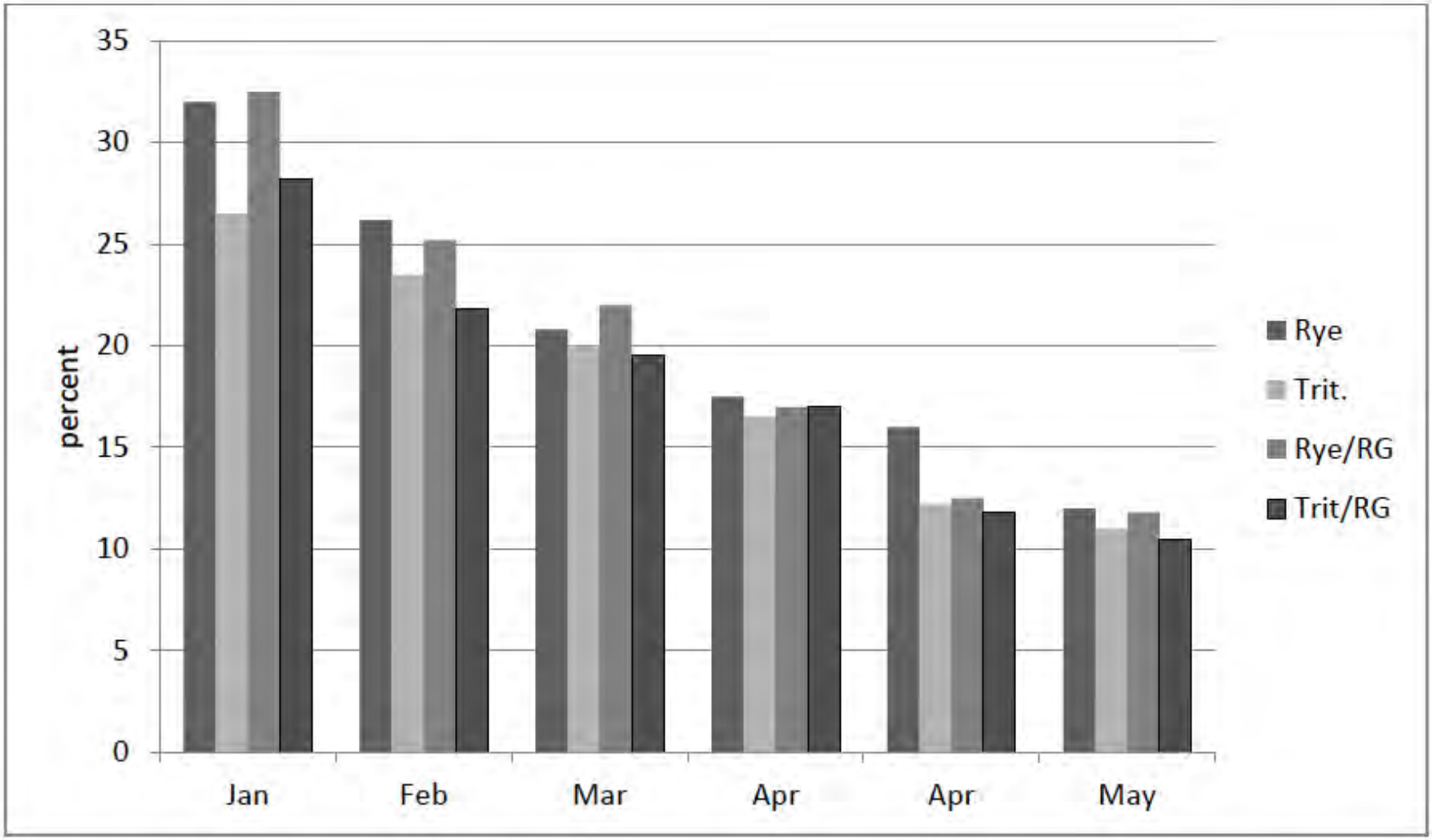

Figure 5. Average pasture forage crude protein concentrations measured every three weeks during the grazing seasons, % dry matter basis (RG – ryegrass; SE = 0.8, 0.6, 0.2, 0.4, 0.5 and 0.8 for the six sampling dates, respectively; n = 4).

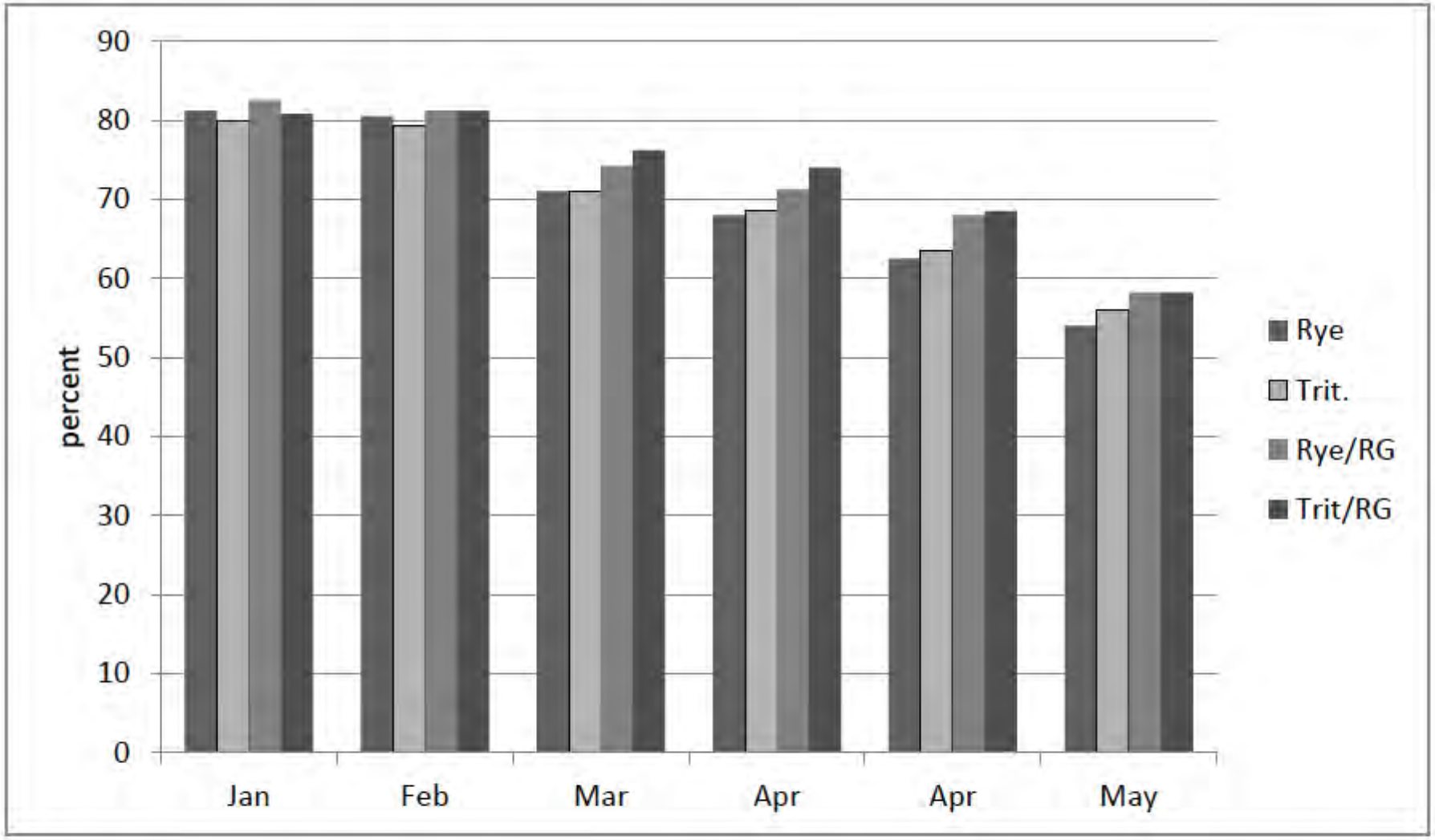

Figure 6. Average in-vitro organic matter digestibility (IVOMD) of pasture forage measured every three weeks during the grazing seasons, % dry matter basis (RG – ryegrass; SE = 0.3, 0.7, 0.8, 1.1, 1.9 and 1.0 for the six sampling dates, respectively; n = 4).

Stocking Rate

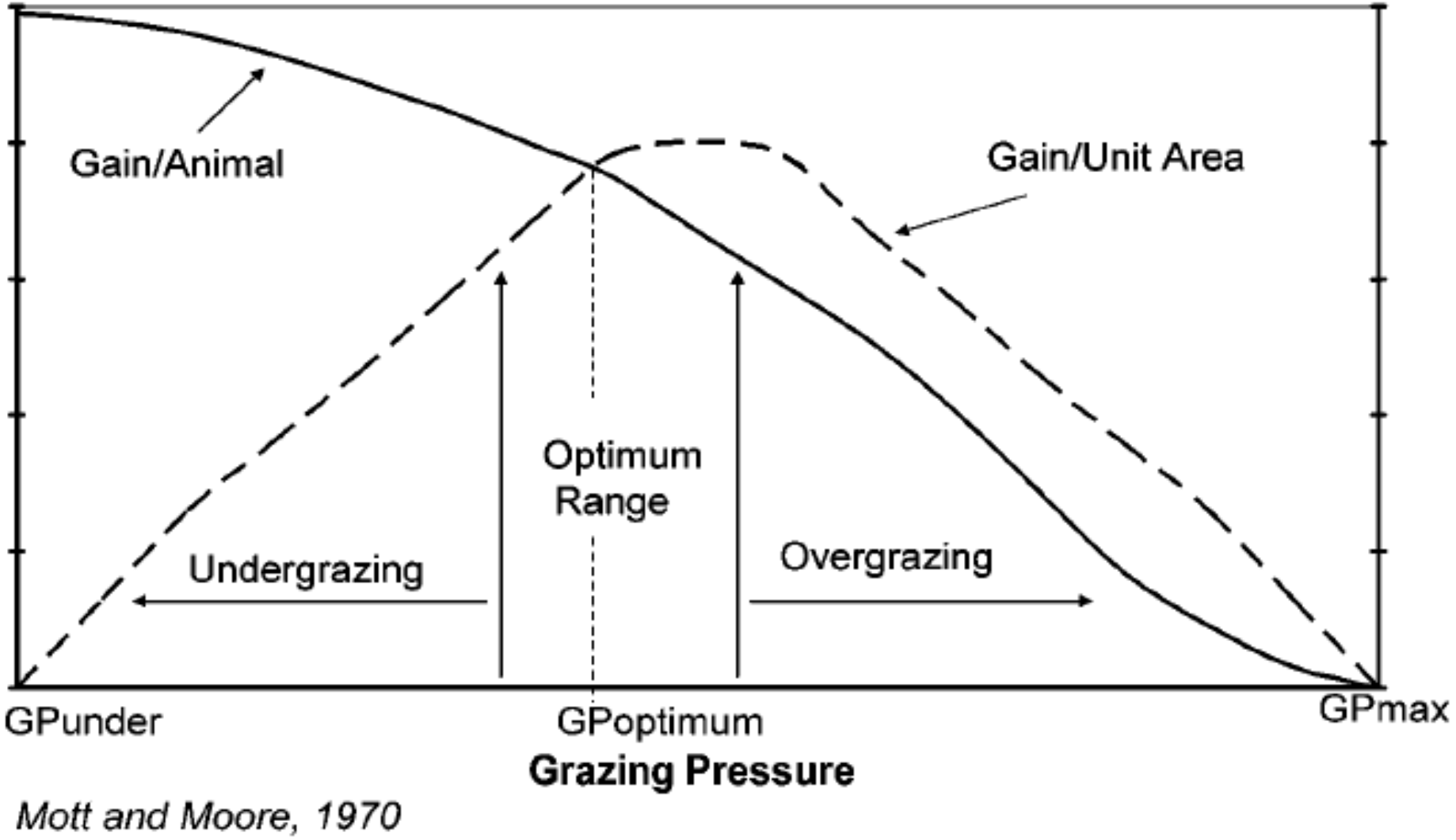

Figure 1. The relationship of grazing pressure and animal performance.

Overton SR Study: Spring + Summer

- Coastal overseeded with ryegrass and clover
- 212 days: March 1 to September 29
- 250 lb of N

Stocking Rate, hd/ac (600 lb)	ADG, lbs	Gain/acre, lbs
3.9	1.75	1,451
5.0	1.45	1,545
6.5	1.20	1,651
9.7	0.51	1,067

(Rouquette et al., 1984; Liveweight gains of weaned calves from four levels of available forage)

Overton SR Study: Tifton 85

- 92 days of grazing
- June through September
- 207 lb of N

Stocking Rate, hd/ac (700 lb)	ADG, lbs	Gain/acre, lbs
4.79	1.39	613
6.97	0.66	418
8.91	0.26	215

Rouquette et al., 2010; Soybean meal-corn supplement and stocking rate effects on performance of fall-born calves stocked on tifton 85 bermudagrass

Overton Stockpiled Tifton 85

- deferred from 9-25 to 10-31
- stocking rate: 6 hd/ac; 515 lb weaned calves
- 8,000 lb of DM at start
- 2 lb/d of supplement = corn:SBM and rumensin

TRT	% CP of Supp.	10-31 to 12-2, lb	12-2 to 1-09, lb	Overall ADG, lb
pas. only		1.59	-1.71	-0.20
2:1	22	2.30	-0.72	0.66
1:1	28	2.36	-0.25	0.94
1:2	34	2.04	-0.34	0.75

(Rouquette et al., 2004. Backgrounding stocker calves on stockpiled tifton 85 bermudagrass with various protein supplementation rations)

Overton Stocking Rate Study: Winter Pasture

- 2 years: 1997-1998 and 1998-1999
- rye/ryegrass overseeded on bermudagrass
- 158 days of grazing: Dec. to May
- 267 lbs of N

initial weight of steer: 600 lbs

low: 1.6 hd/ac = 960 lbs

medium: 2.2 hd/ac = 1,320 lbs

high: 2.8 hd/ac = 1,680 lbs

(Rouquette et al., 2000; Steer performance affected by grazing method and stocking rate)

Overton Stocking Rate Study

Grazing System (Continuous)	Stocking Rate, hd/ac	ADG, lbs	Gain/acre, lbs
Low	1.6	2.95	743
Medium	2.2	2.12	740
High	2.8	0.96	436

(Rouquette et al., 2000; Steer performance affected by grazing method and stocking rate)

Economics

Forage Species	Rye	Rye (higher yield)	Rye (need P & K)
Seed, $/bag	$15.00		
Planting rate, lbs/ac	100		
Seed cost, $/ac	$30.00		
lbs of Nitrogen	125		
Fertilizer (N only), $/ac	$81.25		
Fertilizer (P and K), $/ac	$0.00		
Total fertilizer, $/ac	$81.25		
Total cost, $/ac	$111.25		
DM yield, lbs	5,000		
Forage cost, $/ton	$44.50		
Cost of gain, $/cwt	$22.25		

Forage Species	Rye	Rye (higher yield)	Rye (need P & K)
Seed, $/bag	$15.00	$15.00	
Planting rate, lbs/ac	100	100	
Seed cost, $/ac	$30.00	$30.00	
lbs of Nitrogen	125	175	
Fertilizer (N only), $/ac	$81.25	$113.75	
Fertilizer (P and K), $/ac	$0.00	$0.00	
Total fertilizer, $/ac	$81.25	$113.75	
Total cost, $/ac	$111.25	$143.75	
DM yield, lbs	5,000	7,000	
Forage cost, $/ton	$44.50	$41.07	
Cost of gain, $/cwt	$22.25	$20.54	

Forage Species	Rye	Rye (higher yield)	Rye (need P & K)
Seed, $/bag	$15.00	$15.00	$15.00
Planting rate, lbs/ac	100	100	100
Seed cost, $/ac	$30.00	$30.00	$30.00
lbs of Nitrogen	125	175	175
Fertilizer (N only), $/ac	$81.25	$113.75	$113.75
Fertilizer (P and K), $/ac	$0.00	$0.00	$29.50
Total fertilizer, $/ac	$81.25	$113.75	$143.25
Total cost, $/ac	$111.25	$143.75	$173.25
DM yield, lbs	5,000	7,000	7,000
Forage cost, $/ton	$44.50	$41.07	$49.50
Cost of gain, $/cwt	$22.25	$20.54	$24.75

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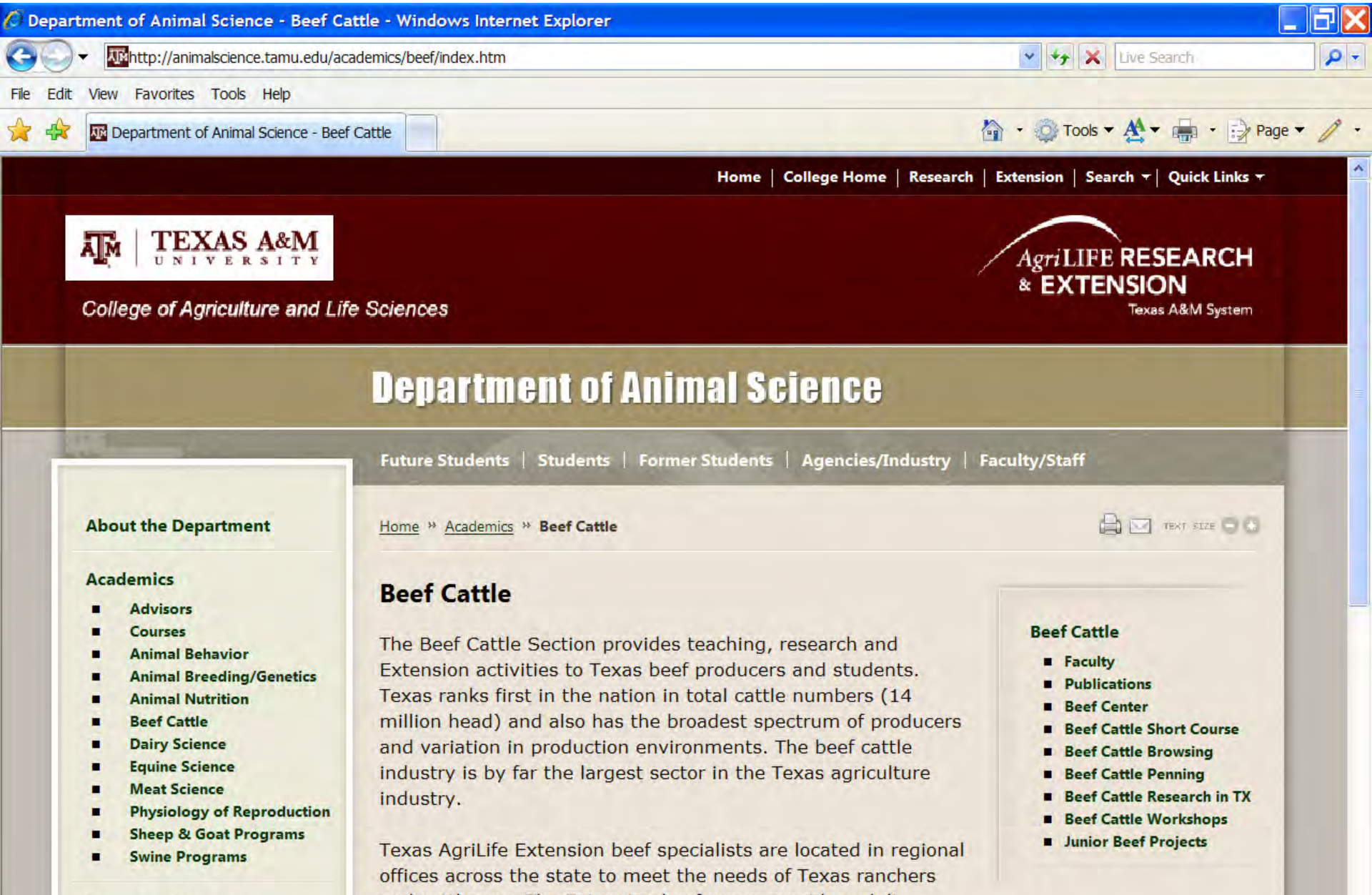

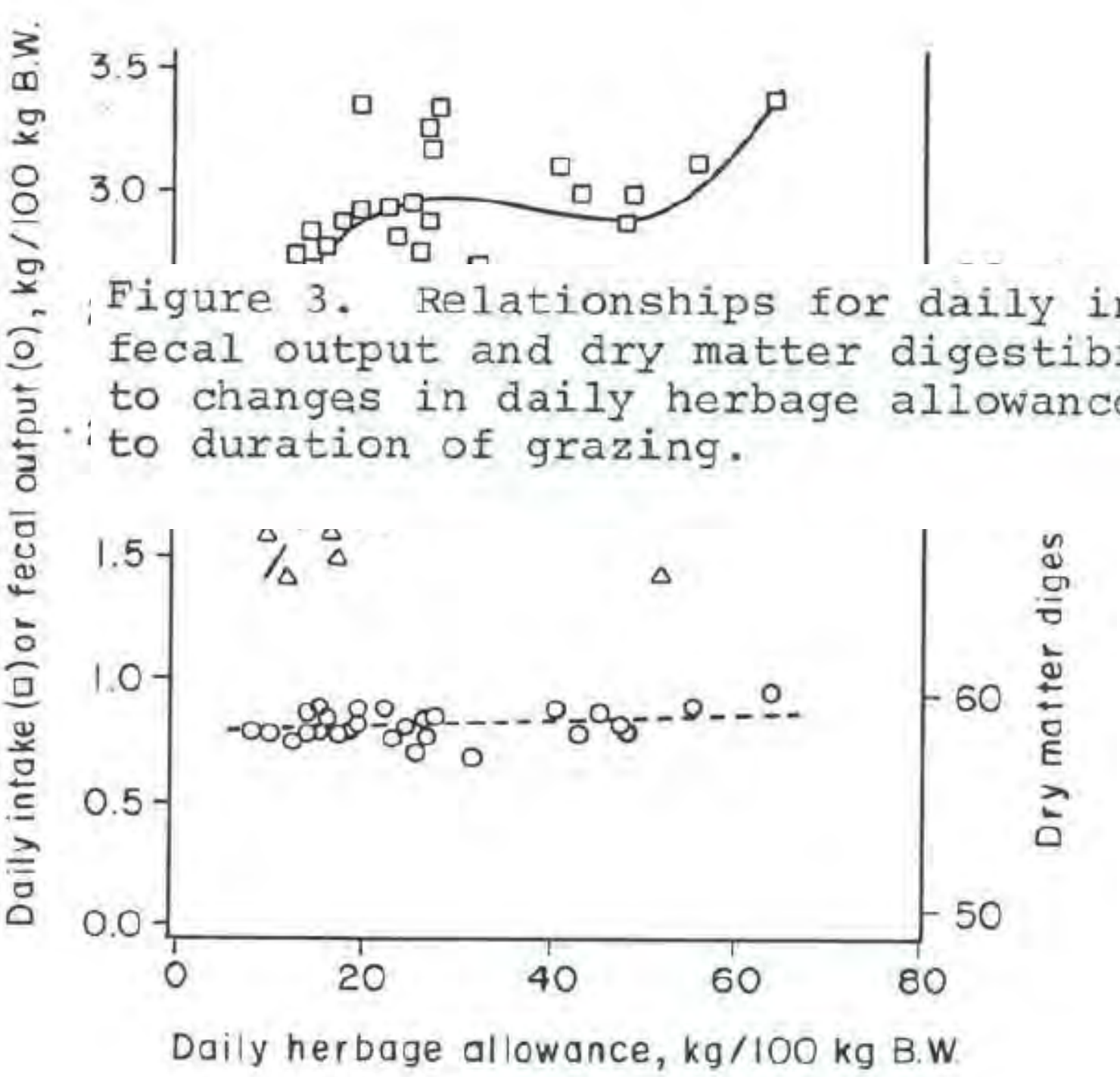

Figure 3. Relationships for daily intake fecal output and dry matter digestibility to changes in daily herbage allowance due to duration of grazing.