The Oklahoma Forage-Based Buck Test 2011 Report

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Kerr Center for Sustainable Agriculture

Kerr Center for Sustainable Agriculture, Poteau, Oklahoma

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Reports for each year of the test, 2007 - 2011, as well as a summary report of those five years, are available online at www.kerrcenter.com/stewardship/goats.html or by calling the Kerr Center.

Preface

The Kerr Center Meat Goat Program began in 2007 with the establishment of the Oklahoma Commercial Meat Goat Forage Performance Test. The test was later renamed the Oklahoma Forage Based Buck Test, and is commonly known as the "Buck Test."

Each year, the Kerr Center teams up with the OSU Cooperative Extension Service to conduct the test. Meat goats are playing an increasingly important role in Oklahoma agriculture, and it's important to know which lines perform best on pasture. The buck test helps to answer that question.

The rationale behind the Oklahoma Forage-Based Buck Test is to identify individual bucks, as well as their sires and dams, that carry genetics expressing strong traits important in commercial meat goat production on pasture.

The test allows breeders to compare genetics within their herds, to make better management decisions as to herd lines that will produce profitable progeny for future herds. This test also provides valuable information for other goat producers, as well as the public.

Goat producers wishing to test their bucks' performance on forage are invited to enter bucks in the test, which runs from mid-July through late September.

For more information on the Kerr Center program, as well as links to goat resources, visit the Kerr Center website, www.kerrcenter.com/stewardship/goats.html.

Introduction

The U.S. meat goat industry has expanded significantly in recent years, especially in the South, where production was once largely confined to southwest Texas. Several factors have driven this growth. A rising demand for goat and lamb from growing ethnic minority populations is one. Another is the increased number of small farms and ranches. Most landholders entering into farming these days have small acreages that do not readily support cattle production. In such cases, small ruminants are an attractive and workable option.

Furthermore, many larger, established farmers and ranchers are discovering the benefits of adding meat goats to their cattle operations. Goats complement cattle on pasture by eating browse and weeds that cattle avoid; meat goats also provide a second income stream that is always welcome.

While these have been important factors in the changing the meat goat industry, the most compelling driver has been the show ring. Show goats have become a major source of interest and revenue for many producers, particularly due to growing demand from youth participating in 4-H and FFA competitions. This emphasis on show ring quality has had a significant effect on the commercial meat goat animal, which has been selected more for its physical appearance than for the commercial characteristics of foraging ability, foot soundness, and parasite resilience/tolerance.

In 2006, goat producers and agricultural educators approached the Kerr Center about hosting a commercial buck test. The goal of the test would be identification of the genetics required for forage-based goat production. Emphasis would be placed on weight gain using forage and minimal supplementation, parasite resilience/tolerance, and overall commercial viability.

As a result, the Kerr Center commenced the first meat goat buck test on July 16, 2007, followed by subsequent tests in following years. (See *The Oklahoma Commercial Meat Goat Forage Performance Test 2007, 2008, 2009, and 2010 Reports* for information.) The success of the early tests led to the regular yearly test schedule.

The 2011 test began on July 11 and ended on September 21, for a test period of 74 days. Bucks were checked in on June 30 and allowed a two-week warm up period before the official start weight was taken on July 11.

Ten producers from seven states entered 40 bucks to compete for top average daily gain and parasite resilience. Breeds represented in the test were Kiko and Genemaster.

Oklahoma Forage-Based Buck Test 2011

Eligibility

Each producer was limited to entering six bucks. Eligible bucks were born between January 1 and March 31, 2011. The live weight at check-in had to exceed 35 lbs., and weaning had to have been completed 30 days prior to the check-in date. A minimum of one deworming and one CDT vaccination four weeks prior to entry, along with trimmed feet, were required. All breeds and crossbreeds were allowed to compete.

Procedures

All producers were required to provide documentation of compliance with their respective states' scrapies regulations. Out of state producers had to provide their state's official interstate health certificates showing compliance with all Oklahoma livestock shipment regulations.

Dr. Ann Wells, the on-site test veterinarian, gave each animal a thorough health examination upon check-in. Each buck then received a de-worming with Levamisole and Valbazen, a CDT booster, and a numbered ear tag for identification. In addition, FAMACHA scoring and fecal egg counts were done for each buck, and feet were trimmed and determined to be free of foot scald/rot.

Forages provided the bulk of the diet, which was supplemented with dried distillers grains (DDG, 0.5 lbs./head/day) and Rumensin. A mineral and vitamin supplement manufactured specifically for goats by Vitamax was provided free choice at all times.

Any buck suspected of disease or illness would be quarantined on forage pending examination by a veterinarian. If deemed safe, the animal would be treated and returned to the test. If it were determined that the individual should not reenter the trial, it would remain in quarantine until alternative arrangements could be made with the producer. No animals were quarantined or disqualified during the 2011 test.

Weighing and parasite examinations were done every 17 days. The parasite exam included FAMACHA scoring of the lower eyelid (see box, p. 9) and sampling for fecal egg counts (FEC). According to the protocol, any bucks scoring 4 or 5 on the FAMACHA scale would be dewormed and disqualified; however, no bucks scored above 3 at any time during the 2011 test.

Position within the test was determined by average daily gain (ADG) and fecal egg count (FEC).

Forages and Supplementation

Although the buck test is not a research trial on forages per se, general observations on forage quality, quantity, and grazing are possible. Test paddock vegetation consists of bermuda, fescue, lespedeza, warm season native grasses, and forbs.

Soil samples taken in the spring of 2011 indicated that additional fertilizer was not needed in order to produce enough forage for the bucks, so fertilizer was not applied to the test paddocks.

Soil calcium was measured at 0.6% in Paddock 2 in July, and 0.7% in Paddock 3 in September, for an average of 0.65%. Soil phosphorus was measured at 0.1% in Paddock 2 in July, and 0.2% in Paddock 3 in September, for an average of 0.15%.

"Legend" Lespedeza was broadcast in the test paddocks at a rate of approximately 20 lbs. per acre.

Supplementation for 2011 consisted of DDG at a rate of 0.50 lbs. per head per day.

The combination of forage and supplementation met the bucks' protein, energy, mineral, and vitamin requirements (see "2011 Forage-Based Buck Test: Feed Analysis," p. 6). The degree to which forage alone could have met nutritional requirements is shown in Figures 1 - 3.

FIGURE 1. AVAILABLE FORAGE

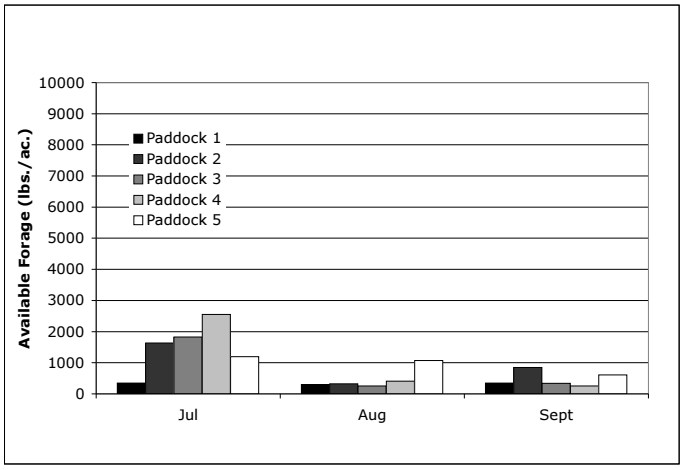


FIGURE 2. CRUDE PROTEIN

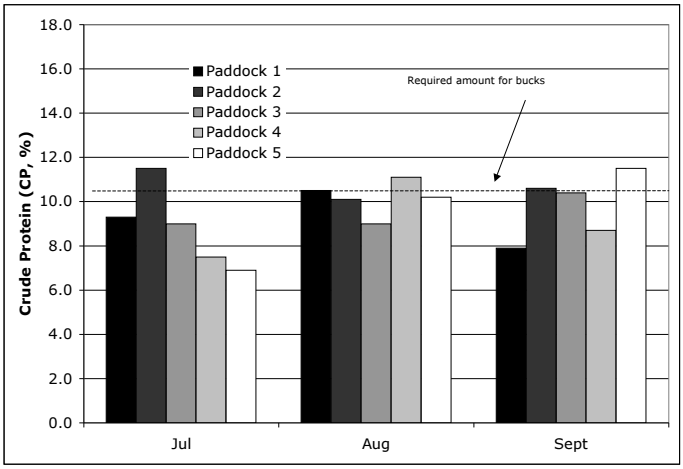
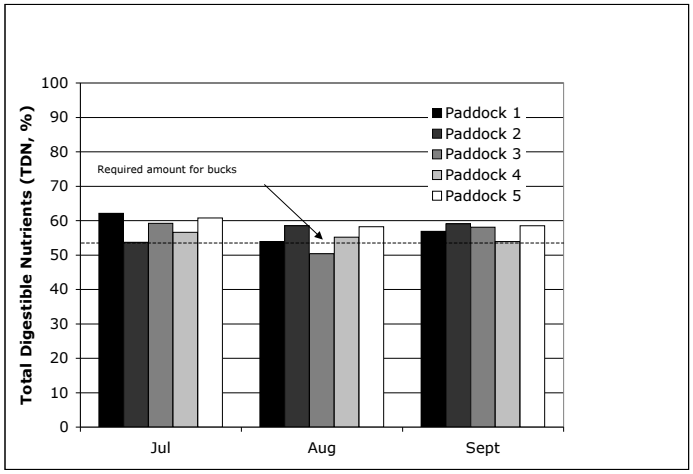


FIGURE 3. TOTAL DIGESTIBLE NUTRIENTS (TDN)



2011 Forage-Based Buck Test: Feed Analysis

Predicted Gain vs. Actual Gains

As a nutritionist, I always want to see if the bucks' actual weight gains reflect what forage they have available.

The average start weight for all goats was 57.6 lbs. We fed 0.5 lb. of custom mix per head per day, and since we fed primarily DDG, we should expect a positive associative effect on forage consumption. (How much is a good question.)

STEP 1.
The NRC requirements for a 66-lb. meat goat gaining 0.33 lb. per day are:

Dry matter intake (DMI) = 3.65% of body weight (BW), or 2.4 lbs.

Total Digestible Nutrients (TDN) = 1.34 lb./day

Crude Protein (CP) = 0.31 lb./day

STEP 2.
Calculate CP and TDN for each feed ingredient

Supplement Intake

0.5 lbs. x 0.90 DM % = 0.45 lb. DM supplied

0.5 lbs. x 0.25 CP % = 0.11 lb. CP supplied

0.5 lbs. x 0.78 TDN% = 0.35 lb. TDN supplied

STEP 3. Forage

66-lb. goat x 3.65% of BW = 2.41 lbs. DM

2.4 - 0.45 lb. supplement = 1.95 lbs forage

STEP 4.

1.95 lbs. x 0.57 TDN% = 1.11

1.95 lbs x 0.096 CP% = 0.19

STEP 5. Crude Protein Total

DDG	0.11
+Forage	0.19
Supplied	0.30

Step 6. TDN Total

DDG	0.35
+Forage	1.11
Supplied	1.46

Thus, forage and supplements during the buck test came close to meeting the bucks' requirements. This conclusion does depend to a degree on the published source of nutritional data consulted.. Actual gains are very close to the math. Based on actual gains, I would use NRC requirements to determine whether most goats are fed at a level to at least meet requirements with the kind of performance observed during the test.

- Brian Freking

Weather

Weather has a strong influence on the health of the bucks and on parasite growth. Warm, wet conditions are the perfect breeding ground for parasites and bacteria. As shown in Figure 4, rainfall throughout the test was below average. A total of 4.83 inches of rain fell during the test - the lowest precipitation yet recorded, by a substantial margin. Temperatures (Figure 5) were also well above average.

FIGURE 4. MONTHLY RAINFALL

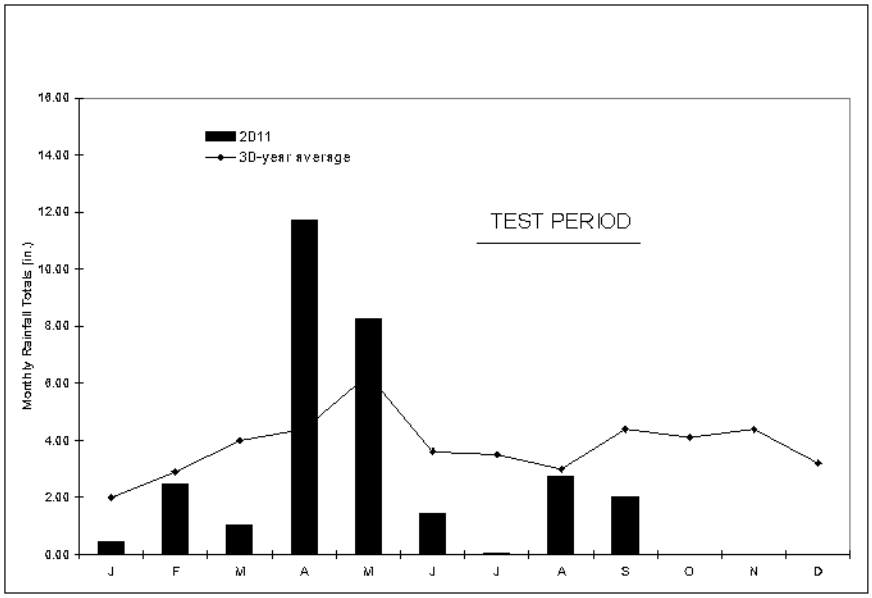
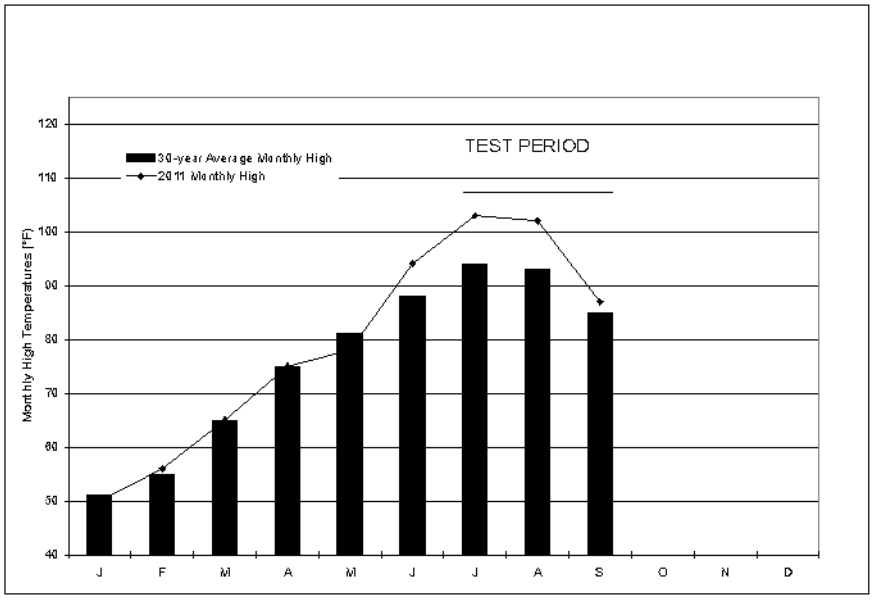
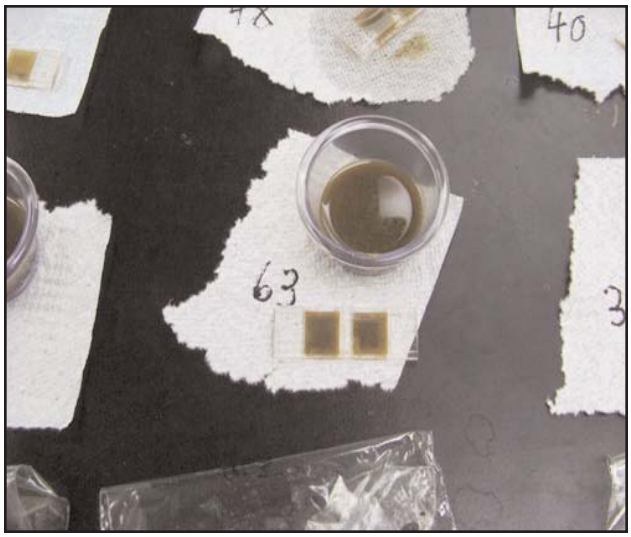


FIGURE 5. MONTHLY HIGH TEMPERATURES



Internal Parasites

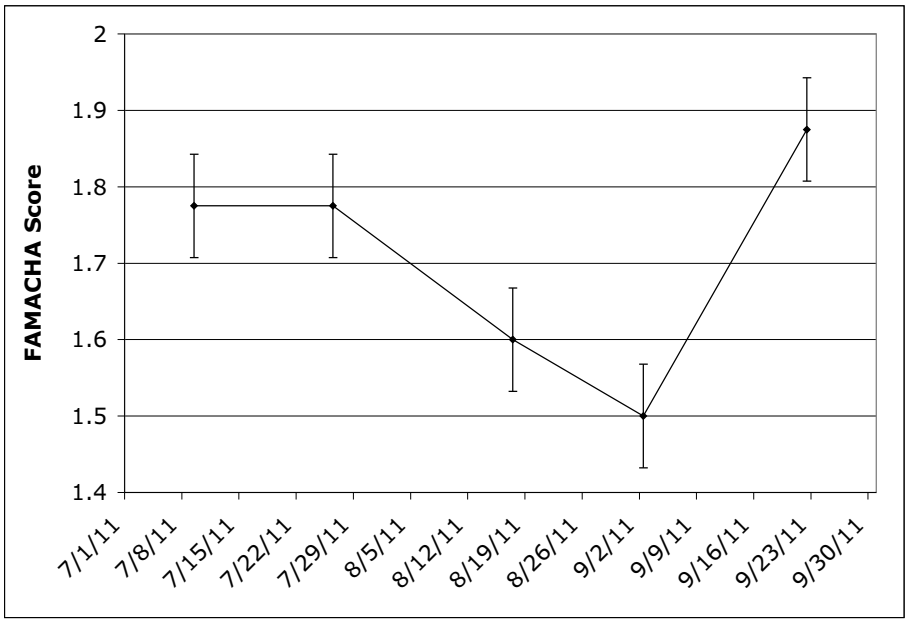
One of the main goals of the buck test is to examine parasite resistance and tolerance, particularly the role that genetics might play in resistance to *Haemonchus contortus* (barber pole worm). The barber pole worm is a blood-sucking parasite that pierces the lining of the abomasum, causing blood plasma and protein loss (Schoenian, 2006; see box p.9). Common symptoms are anemia and swelling of the fluids under the jaw (bottle jaw). If barber pole worm is left untreated, death frequently occurs.



Anthelmintics or dewormers are commonly used to control barber pole worm, but it has shown a great propensity to develop drug resistance - due, most likely, to overuse of these materials.

During the test, FAMACHA scoring and fecal egg counts (FECs) were used to estimate parasite load. The FAMACHA scoring tool assesses the level of anemia the goat is suffering due to the barber pole worm. If an individual scored low (1-3), it was not wormed. If an animal received a score of 4 or 5, it would be wormed. This did not occur during the 2011 test (Figure 6).

FIGURE 6. FAMACHA SCORES



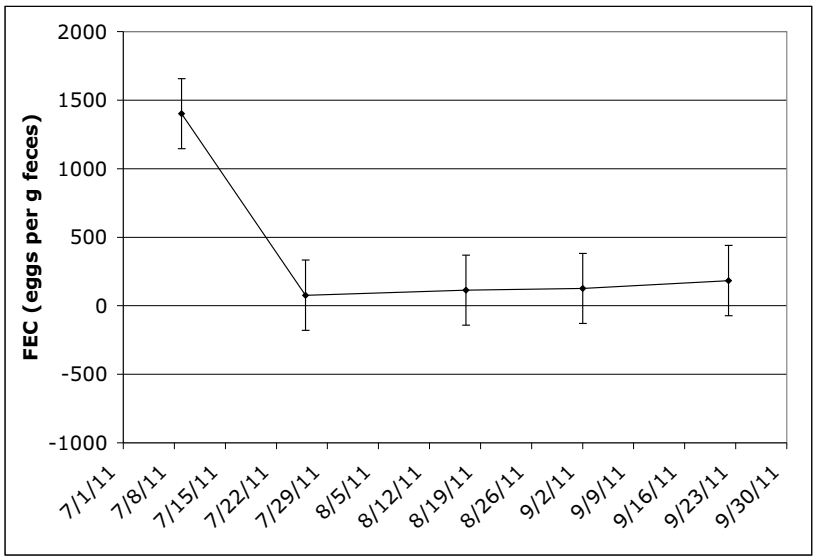
Fecal egg counts were analyzed at every examination to help determine levels of infection. This also allowed assessment of paddock contamination from the shedding of worm eggs. A McMaster counting slide was used for counting "Strongyle-type" eggs *(Haemonchus, Ostertagia, and Trichostrongylus).*

Observed levels of parasite loading during the 2011 test fell below all previous tests.

Fecal egg counts continued to be below average for all bucks. The highest final FEC was 850, and no buck scored over 1,300 eggs per gram of feces at any point after check-in. The lowest average FEC was a four-way tie, with an average fecal count throughout the test of zero.

Hot, dry weather conditions prevailed, and there was limited growth of forage cover to shade parasites. No instances of loss, illness, or deworming/disqualification occurred during the entire 74-day run of the test.

FIGURE 7. FECAL EGG COUNTS



IN BRIEF:
The FAMACHA Test

The FAMACHA system was developed in South Africa in response to the emergence of drug resistant worms. The system utilizes an anemia guide to evaluate the eyelid color of a sheep/goat to determine the severity of parasite infection (as evidenced by anemia) and the need for deworming.

A bright red color indicates that the animal has few or no worms or that the animal has the capacity to tolerate its worm load. An almost white eyelid color is a warning sign of very bad anemia; the worms present in the animals gut are in such numbers they are draining the animal of blood. If left untreated, the animal will soon die.

The FAMACHA chart contains five eye scores (1-5), which have been correlated with packed cell volumes (percentage of blood made up of red blood cells, also called hematocrit). Animals in categories 1 or 2 (red or red-pink) do not require treatment whereas animals in categories 4 and 5 (pink-white and white) do.

Animals in category 3 may or may not require treatment depending upon other factors. Mature animals in category 3 (pink color) probably do not require treatment, whereas lambs or kids should be treated. The frequency of examination depends upon the season and weather pattern, with more frequent examination usually necessary in July, August, and September, the peak worm season.

- Susan Schoenian, "Sheep 201. A Beginner's Guide to Raising Sheep."
www.sheep101.info/201/index.html

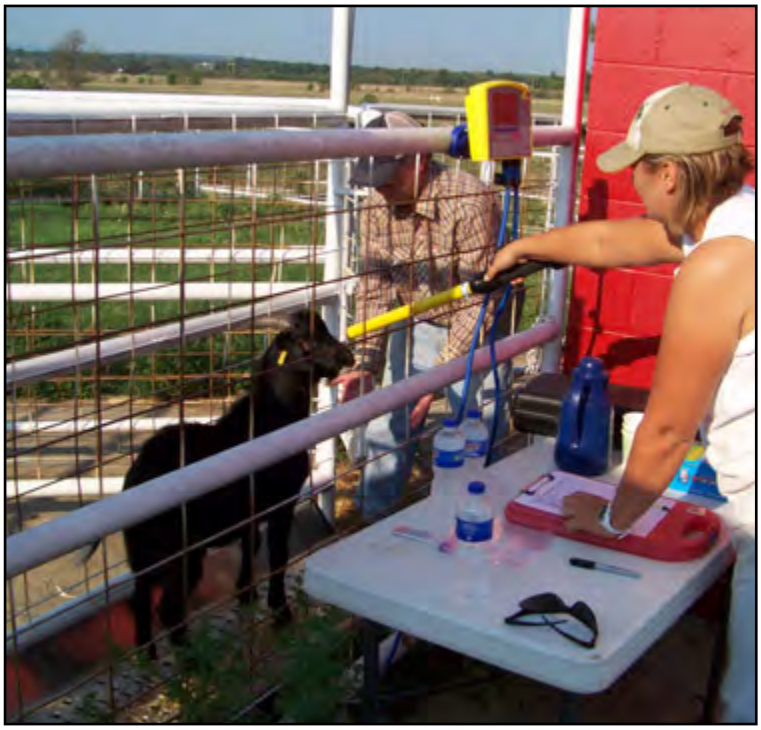
Health

The health of the bucks in the 2011 test was exceptionally good. Only fourss cases of sore mouth were treated, all at the beginning of the test. No case required more than one treatment.

None of the common ailments encountered in previous tests were observed in 2011. No bucks were treated for pneumonia, foot scald, or internal parasites.

Halfway through the test, the bucks were treated for external parasites - namely, horn flies and midges. Treatment consisted of two ounces of pure cedar oil mixed in 48 ounces of regular vegetable oil, applied as needed using a pump sprayer along the back and around the horns.

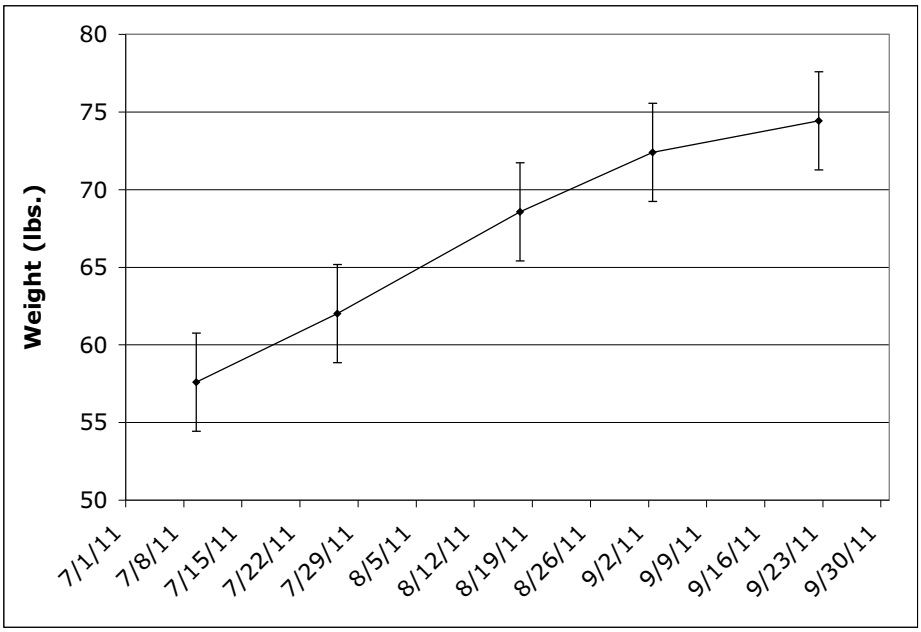
Average Daily Gain



Weights were taken five times, on July 9, July 26, August 17, September 2, and September 20-21. The last weight was an average of September 20 and 21 to account for fill (the feed and water in the digestive tract of an animal consumed before weighing).

The highest average ADG was a three-way tie, with an average throughout the test of 0.36 lbs. per day. Overall, bucks averaged an ADG of 0.23 lbs. per day, and the lowest ADG was 0.07 lbs./day.

FIGURE 8. WEIGHT GAIN



Loin Eye Area

The loin eye is one of the highest-priced cuts from a meat animal. The larger the area of this cut, the higher the percentage of retail product from the animal will be. LEA is also a moderately heritable trait (roughly 50% heritable).

Ultrasound measurement of LEA thus allows meat goat producers to measure a heritable and commercially valuable carcass trait without taking the animal to slaughter. This information, along with performance measures, can inform breeding decisions to produce better commercial meat goat lines.

Average loin eye area in the 2011 test was 21.6 cm^2.

Source: Cole, K.V. 2005. Improving Carcass Merit with Ultrasound Scanning. Maryland Sheep and Goat Producer 4(4): 3-5.

Scrotal Circumference

Scrotal circumference (SC) is an indicator of the buck's ability to produce sperm and is related to the age at which the buck itself, as well as his daughters and sons, attain puberty. SC is measured at the widest part of the scrotum in millimeters or centimeters. A mature buck should have a scrotal circumference of 25 cm or greater, depending upon breed size. If it is less, the buck is considered a questionable breeder. Additionally, the testicles should have tone, about the consistency of a flexed biceps muscle.

Average scrotal circumference in the 2011 test was 24.8 cm.

Results

Results for the test are listed in Table 1 on page 13. Information in the table includes the consigner's last name, test identification number for the buck, total start weight and total end weight in pounds, average daily gain ((end weight - start weight) ÷ 74 days on test), total and average fecal egg count, average loin eye area (LEA), and scrotal circumference (SC).

Changes Made for the 2011 Test

- In 2011, the test was shortened from 102 to 74 days. This was due to the observation that, when the test continued into October, bucks began to enter rut, and some bucks who had displayed strong weight gains up to that point dropped back. Since the goal of the test is to identify the bucks that best gain weight on pasture, without penalizing aggressive breeding behavior, the decision was made to shorten the test period and avoid the onset of rut as a confounding factor.

- Scrotal circumference was measured for the first time in the 2011 test. SC is an indicator of the buck's ability to produce sperm and is related to the age at which the buck itself, as well as his daughters and sons, attain puberty.

TABLE 1. 2011 COMMERCIAL MEAT GOAT FORAGE PERFORMANCE TEST RESULTS

	Consigner	Test ID	Breed	Start Weight (lbs.)	End Weight (lbs.)	ADG 74 d (lbs./d)	Final FEC (eggs/g)	Average FEC (eggs/g)	LEA (cm2)	Scrotal Circumference (cm)
1	Pinneo	940	Kiko	56	83	0.36	0	0	9.1	24
2	Pinneo	953	Kiko	61	87.5	0.36	850	212.5	8.4	27
3	Sinclair	947	Kiko	52	78.5	0.36	0	175	8.2	28
4	Pinneo	938	Kiko	57	83	0.35	150	62.5	9.2	29
5	Gullion	929	Kiko	49	74	0.34	600	237.5	7.8	24
6	Gullion	936	Kiko	78	102.5	0.33	0	0	9.9	24
7	Sparks	939	Kiko	55	77.5	0.30	50	137.5	10.0	24
8	Zink	945	Kiko	59	81	0.30	200	50	8.1	25
9	Sparks	959	Kiko	59	80	0.28	700	512.5	10.2	29
10	Johnson	942	Kiko	57	77.5	0.28	100	50	9.3	25
11	Johnson	931	Kiko	53	72.5	0.26	200	87.5	9.1	21
12	Sparks	961	Kiko	54	73.5	0.26	100	112.5	8.9	24
13	Zink	946	Kiko	51	70	0.26	100	112.5	6.5	24
14	Johnson	927	Kiko	57	75	0.24	600	500	9.7	27
15	Pinneo	950	Kiko	47	65	0.24	200	66.7	6.9	28
16	Hesterman	944	Kiko	61	79	0.24	0	100	9.3	26
17	Barnes	952	Kiko	45	62.5	0.24	700	300	7.5	23
18	Hesterman	965	Kiko	57	74.5	0.24	250	125	9.6	25
19	Pinneo	954	Kiko	54	71.5	0.24	100	87.5	9.7	25
20	Barnes	930	Kiko	49	66	0.23	550	162.5	6.0	23
21	Hesterman	926	Kiko	60	77	0.23	0	50	8.3	24
22	Pinneo	958	Kiko	57	74	0.23	0	50	7.4	26
23	Penn	957	Genemaster	73	89	0.22	0	0	9.5	25
24	Sinclair	962	Kiko	41	57	0.22	0	37.5	8.1	22
25	Barnes	933	Kiko	53	68	0.20	150	50	8.4	27
26	Sinclair	963	Kiko	40	55	0.20	150	612.5	5.9	22
27	Hesterman	964	Kiko	61	75.5	0.20	100	37.5	7.7	26
28	Gullion	928	Kiko	77	90.5	0.18	200	100	9.2	24
29	Barnes	956	Kiko	52	65.5	0.18	100	75	9.0	20
30	Sparks	937	Kiko	51	64.5	0.18	50	12.5	8.2	23
31	Johnson	934	Kiko	57	70	0.18	300	275	6.2	22
32	Pinneo	941	Kiko	63	76	0.18	0	12.5	7.2	26
33	Sparks	960	Kiko	52	63.5	0.16	100	137.5	8.9	25
34	Hesterman	935	Kiko	68	79	0.15	100	62.5	7.8	27
35	Penn	949	Kiko	71	82	0.15	100	37.5	9.0	26
36	Zink	955	Kiko	58	69	0.15	0	0	8.5	23
37	Hesterman	943	Kiko	69	79	0.14	350	125	9.0	27
38	Johnson	951	Kiko	65	72	0.09	100	150	8.6	25
39	Perkins	948	Kiko	57	63.5	0.09	50	62.5	8.2	24
40	Penn	932	Genemaster	68	73	0.07	50	25	9.8	24

2011 Meat Goat Forage Buck Test Results

Forty goat bucks from ten farms in seven different states competed in the 2011 test. Overall, the bucks gained an average of 0.23 pounds per day of the test.

Grand Champion - ADG (three-way tie)
Breed: Kiko
ADG: 0.36 lb.
Owner: Wes Pinneo
B Bar W Kikos, Kincaid, Kansas

Breed: Kiko
ADG: 0.36 lb.
Owner: Wes Pinneo
B Bar W Kikos, Kincaid, Kansas

Breed: Kiko
ADG: 0.36 lb.
Owner: Mary Kay Sinclair
Kikogal Ranch, Coffeen, Illinois

Reserve Grand Champion -ADG
Breed: Kiko
ADG: 0.35 lb.
Owner: Wes Pinneo
B Bar W Kikos, Kincaid, Kansas

Grand Champion - FEC (four-way tie)
Breed: Kiko
Ending FEC: 0
Owner: Jill Zink
Zink Berry Farm, Morgantown, Indiana

Breed: Kiko
Ending FEC: 0
Owner: Jean Gullion
MJ Ironwater Acres, Moody, Missouri

Breed: Genemaster
Ending FEC: 0
Owner: Randy Penn
Penn Acres,
Riverton, Kansas

Breed: Kiko
Ending FEC: 0
Owner: Wes Pinneo
B Bar W Kikos
Kincaid, Kansas

Reserve Grand Champion - FEC (two-way tie)

Breed: Kiko
Ending FEC: 12.5
Owner: Linda Sparks
Goat Hill Kikos,
Porum, Oklahoma

Breed: Kiko
Ending FEC: 12.5
Owner: Wes Pinneo
B Bar W Kikos, Kincaid, Kansas

Top Herdsman - ADG

Wes Pinneo
B Bar W Kikos, Kincaid, Kansas
ADG: 0.36 lb.

Reserve Top Herdsman - ADG (two-way tie)
Linda Sparks
Goat Hill Kikos, Porum, Oklahoma
ADG: 0.28 lb.

Jean Gullion
MJ Ironwater Acres, Moody, Missouri
ADG: 0.28 lb.

Top Herdsman - FEC (two-way tie)
Randy Penn, Penn Acres, Riverton, Kansas
Ending FEC: 20.8

Wes Pinneo
B Bar W Kikos,
Kincaid, Kansas
Ending FEC: 20.8

Reserve Top Herdsman - FEC
Shane Hesterman
Deep South Kikos,
Brooklyn, Mississippi
Ending FEC: 50

Appendix A: Rules, Regulations and Protocol

2011 Oklahoma Commercial Meat Goat Forage Performance Test
Kerr Center for Sustainable Agriculture, Inc.
in partnership with
Oklahoma Cooperative Extension Service

Objective:

To identify individual bucks as well as their sires and dams that carry genetics expressing economically important traits in commercial meat goat production. Additionally, this test will allow breeders to compare genetics within their herd to make better management decisions as to herd lines that will produce profitable progeny for future herds. This test will also provide valuable information for all goat producers and the public.

Dates:

Check-in: June 30, 2011 (Monday) 1pm-5pm

Warm-up: July 1, 2011- July 10, 2011

Test Period: July 11, 2011- September 21, 2011

Field Day & Awards: September 24, 2011

Entry Requirements:

a) A producer group will consist of 1 or more bucks (maximum of 6) that were born between January 1, 2011 and March 31, 2011. All breeds and crossbreds are accepted.

b) To be considered for the Herdsman Award you must have a group of 3 or more bucks.

c) Producers must provide Birth Date and Weaning Date to verify.

d) Bucks must weigh a minimum of 35lbs at check-in.

e) Bucks must be weaned 30 days prior to entry, had a minimum of 1 de-worming and 1 CDT vaccination 4 weeks prior to entry, and have their feet trimmed. No exceptions.

f) Bucks must be tagged with a scrapie tag from their state of origin. No exceptions.

g) All out of state bucks must be accompanied by an official inter-state health certificate and in compliance with all Oklahoma shipment requirements. For information: Oklahoma Department of Agriculture, Food & Forestry, and (405) 522-6142.

h) Entry fee of $120 per buck will be required to secure a position within the test. The entry fee will cover feed supplementation, medication, wormer, routine veterinarian services and other test costs.

i) Producers will be responsible for all vet fees incurred in the case of treatment for serious injury, disease or necropsy (in the case of death).

Test Protocol:

a) Bucks will be given a thorough examination by a veterinarian at check-in. Goats showing signs of sore mouth, CL, foot rot or other communicable disease will not be allowed to enter the test.

b) Bucks will receive a CDT vaccine, worming, fecal test, FAMACHA score and an ear tag with test ID at the time of check-in.

c) Bucks will be wormed with two or three different classes of wormer at the time of check-in. A second fecal egg count will be conducted 10 days after check-in.

d) Bucks that do not show a 90% reduction in their egg count after the initial worming will not be allowed to enter the test.

e) Bucks that display symptoms of disease or illness during the test will be held in quarantine (on forage) until it is determined by the Test Manager or the Test Veterinarian that they may re-enter the general population or must leave the test.

f) Low performing bucks may need to be removed from the test. This decision will be made by the Test Manager in consultation with the producer.

g) Every effort will be made to accommodate the producer if a buck must leave the test.

h) In the case of death, a full necropsy will be performed by the On-Site Veterinarian at the expense of the owner.

i) Sufficient forage will be provided for the bucks to perform up to their genetic potential. A feed supplement containing protein, vitamins, minerals and other additive ingredients will be provided as needed to maximize the utilization of forage.

j) Bucks that score a 4 or 5 on the FAMACHA scale during the test will be de-wormed and disqualified.

k) All decisions made by the Test Manager, Test Veterinarian and On-Site Veterinarian will be final.

l) Weights, FAMACHA Scores and fecal egg counts will be taken every 17 days with the results posted within 3 days on www.kerrcenter.com.

m) Ultra sounding for loin eye area will be provided by Reproductive Enterprises Inc.

Results:

a) Buck ranking within the test will be classified by Average Daily Gain and Fecal Egg Count.

b) To compete for Grand Champion Herdsman, each producer must enter 3 or more bucks. This award will be determined by the average of the top 3 bucks for each producer in Average Daily Gain and Fecal Egg Count.

Educational Information

a) A summary sheet containing all data collected for the bucks will be supplied to each producer. A test summary with forage, weather and other important information will also be distributed.

b) A Field Day will be held at the test site on September 24, 2011 to view the bucks, tour the forage test and discuss performance on forage for the meat goat industry.

c) All test data and results will be made public.

Technical Advisory Committee

Test Agronomist- Chris Rice, OCES Southeast District Agronomist

Test Nutritionist- Brian Freking, Le Flore County Extension Educator

Test Staff

Test Veterinarian- Ann Wells, D.V.M., Kerr Center Director of Educational Programs

Test Manager- Mary Penick, Kerr Center Livestock Manager

Test Herdsman- Andy Makovy, Kerr Center Livestock Herdsman

Test Assistant- Erin Campbell-Craven, Kerr Center Program Assistant