

UK COOPERATIVE EXTENSION SERVICE
University of Kentucky – College of Agriculture

LEXINGTON, KY 40546

KSU COOPERATIVE EXTENSION PROGRAMS
Kentucky State University

Making Genetics Work for US!!

Goat Producer's Newsletter

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Goat Improvement Programs Are in Our Future If We Are Willing to Participate

Terry K. Hutchens
Extension Goat Specialist, University of Kentucky

Since implementation in 1987 the US National Sheep Improvement Program (NSIP) has taken advantage of developments in cellular genetic technology. The methods used in the NSIP take advantage of all available performance records along with pedigree information to predict genetic merit for economically important traits such as (1) parasite resistance, (2) kidding ease, (3) milk production, (4) average daily gain and (5) weaning weights. Adoption of a national genetic improvement program by US sheep breeders has lagged behind that of US beef breeders. Similarly, we in the goat industry are often found wishing for EPDs on our bucks; this information would provide valuable long-term herd improvement impact similar to the beef industry.

The reason beef bulls have this type of data and we don't is because hundreds of beef producers across the country have participated and submitted data on important economic factors. Similar adaptations of NSIP were developed first for the Boer Goat Improvement Network and then for the Kiko goats. However, *participation by goat producers is far less than sheep producers and participation by sheep producers are much less than beef producers*. If the small ruminant industry, especially goats, is going to develop into a mature industry that is capable of providing goat meat product to an expanding population of consumers, we must unleash the potential of genomic evaluation; we must increase participation in programs such as the NSIP program so that valuable breeding line selection records are available.

Secondly, Genetic Potentials for Improvement in Many Meat Goat Breeds Are High!

Genetic improvement potential is high for most common meat goat breeds. The greatest genetic improvement potential, that is breeds with a high degree of known heterozygosity ranging from (0.52-0.73) and possessing a high degree of distance between alleles per locus on the genes, has been observed in the Angora, Spanish, Mytonic, Boer and LaMancha goat breeds. The Spanish and Angora breeds have undergone large population-sized reduction but rank highest for genetic diversity. Therefore, these breeds have substantial natural genetic variability which might translate into important economic traits of interest. But to fully utilize genetic diversity at the genomic level or via quantitative methodology, development of substantial production data is imperative to the improvement of the goat breeds.



Spanish genetics determined high in genetic potential.

Kentucky is fortunate in that a data collection program has been initiated by Ken Andries, at Kentucky State University (KSU). This program is one of only a few university based programs in the country specifically for goat producers. For more information contact Ken Andries at KSU.

References: D.F. Waldron, National Sheep Improvement Program's current impact and future potential; Texas AgriLife Research, San Angelo & Sheep and goat genetic resources: Recent finding and potential for future development. H. Blackburn, National Animal Germplasm Program, National Center for Genetic Resources ARS, Ft. Collins, CO.

Does My Dewormer Still Work? Michelle Arnold

Extension Veterinarian, University of Kentucky

Parasites are the most serious problem affecting small ruminants worldwide. The worm that causes the most damage is the barberpole worm (*Haemonchus contortus*), which causes severe blood loss resulting in anemia, loss of appetite, depression, loss of condition, and eventually death. Unfortunately, the treatments we use to control this nematode parasite are turning into major failures due to "resistance" that many worm populations have developed to essentially all types of dewormers. "Resistance" is the term used when we give an animal a dose of dewormer but the worms don't die as we expect. Resistance develops when dewormers are overused, rotated frequently and/or underdosed. This overuse encourages the development of "superworms" that can't be killed by drugs, and this resistance is passed on to all the superworm's offspring. FAMACHA is the system developed in response to the problem of resistance to chemical dewormers in small ruminants (sheep and goats). It is a tremendous tool to identify and treat only the sheep and goats most affected by the blood-sucking barberpole worm. FAMACHA involves the process of inspecting the inner eyelid for a pale or white color (indicating blood loss) and is cheap, quick, easily learned, and rather accurate in determining who needs treatment and who does not. Through this selective treatment process, fewer animals receive the dewormer, which in turn slows development of resistance.

Despite the many advantages FAMACHA has given the sheep and goat industry, there are some problems that may be encountered if relied on completely for all treatment decisions.

Some precautions include:

Only *Haemonchus* can be monitored by this technique. If it is present in low to moderate numbers then FAMACHA will not “alert” the producer of the need to deworm. Other parasites including *Trichostrongylus* (bankrupt worm) and *Teladorsagia* (brown stomach worm) may cause problems, and a program for controlling these and other worms may be needed.

Kids/lambs and late pregnant/early lactation does and ewes are not as capable of dealing with parasites because their immune systems are not developed (young animals) or not functioning properly (due to the stress of lambing/kidding). These animals may rapidly deteriorate and die due to Haemonchus and therefore require special attention.

Animals must be monitored regularly especially during peak worm season. Producers can easily overlook the need to FAMACHA score at least every two to three weeks and sometimes weekly if it is warm and wet weather. If heavy infection with Haemonchus occurs over a short (one to two week) period of time, animals may lose a lot of blood even before eggs begin to show in a fecal sample submitted to a lab for examination.

With FAMACHA, we allow animals to become mildly anemic before treatment. Therefore it is absolutely necessary to select a drug that is still effective against the worms on your farm as you risk losing animals with continued blood loss if your dewormer is ineffective.

To design an appropriate parasite control plan, it is important to know what species and concentration of worms are present and what chemical is best to kill them. Many producers are familiar with a “fecal egg count” (FEC), which gives you the number of parasite eggs per gram of feces (denoted as “epg”). This is a good estimate of parasite load with the one drawback: Strongyle type eggs (*Haemonchus*, *Ostertagia*, *Teladorsagia* and *Trichostrongylus*) all look essentially the same under the microscope and can’t be counted separately. Another test called “coproculture” in which the eggs are hatched and the infective larvae are harvested and counted can be used to differentiate the Strongyle eggs.

To evaluate chemical dewormers, two tests are available to determine drug resistance: FECRT and DrenchRite®. To conduct a fecal egg count reduction test (FECRT), at least six to ten animals are weighed and dewormed with the dewormer you wish to test. Fecal samples are collected twice: first at the time of deworming and the second seven to ten days later. Fecal samples should also be collected and analyzed simultaneously from a group of untreated animals. To be considered effective, a dewormer should reduce the fecal egg count (FEC) by 90 to 95 percent. If it reduces egg counts by 60 percent or less, that dewormer is considered useless.

The DrenchRite® Larval Development Assay performed at the University of Georgia College of Veterinary Medicine is a test that evaluates resistance to benzimidazole (e.g. Valbazen, Panacur, Safeguard), levamisole (e.g. Totalon, Levasol, Prohibit), and avermectin/milbemycin (Ivomec, Cydectin) from a single pooled fecal sample from 10 or more animals. The size of the

sample that is needed to perform the test depends on the number of eggs in the feces (EPG). If FECs are high (>1000 EPG), a lemon-sized clump (50-60 grams) of feces is needed. If FEC are unknown or < 500 EPG, an orange-sized clump (120 grams) of feces is required. If *Haemonchus contortus* (barberpole worm) is your primary concern and you are using the FAMACHA® system, only select feces from animals scored as 3, 4, or 5 since animals scored as 1 or 2 usually have low egg counts. Detailed packing, shipping and submission instructions are provided by the laboratory (phone: 706-542-0742). Once the sample arrives at the lab, the technician isolates 50,000 eggs then places 75 to 100 eggs into each of 96 wells for testing. The eggs are allowed to hatch into larvae and different dewormers of varying concentrations are placed in each of the wells. The concentration of the dewormer required to block further development of the larvae is related to the effectiveness of the drug. The hatched larvae are also individually identified under the microscope so you will know precisely which worms are present on your farm in your goats or sheep. It is recommended that this test be conducted every two to three years to monitor resistance and worm populations. Of course any laboratory test that is this labor intensive comes at a price—the current cost as of Dec. 2010 is \$450 for the assay. However, when one considers the value of the information obtained and spreads the cost over a two to three year period, it quickly becomes economically feasible.

In order to monitor your parasite situation and optimize dewormer use, it is important to

know what worm species and how many are present and the most suitable drug to treat and destroy them. Determining the level of drug resistance in your herd is an integral part of an overall parasite control plan. Consider performing a FECRT or the DrenchRite Assay especially if your FAMACHA scores are consistently creeping higher and response to your dewormer of choice is decreasing. Most important, work with your local veterinarian to devise a plan specifically tailored to fit your needs.

Evaluation of Crude Glycerin as a Feed Energy on Performance and Carcass Characteristics of Growing Meat Goats

Terry K. Hutchens

Extension Goat Specialist, University of Kentucky

Today's high feed costs, especially corn prices, have forced many goat producers to seek alternative energy sources such as soybean hulls and to some extent distiller's dried grains and corn gluten feed. We have done a considerable amount of work with these commodities in Kentucky. A new product is being seen on the market these days called "crude glycerin". Crude glycerin is a byproduct of the biodiesel production and is becoming increasingly available in the US and has a potential to partially replace high-starch commodities such as corn and other grains. Research has shown that glycerin is converted to propionate in the rumen and acts as a precursor for liver glucose syntheses. Glycerin is a clear, colorless, odorless, viscous liquid with a sweet taste. A saleable grade of crude glycerin is generally at least 80 percent glycerin with less than 1 percent methanol in it.

A recent study conducted at Tuskegee University, Tuskegee AL and Utah State University at Logan UT conducted a study to determine

the effect of feeding varying levels of crude glycerin as an inclusion to a kid growing ration. The inclusion of glycerin was used as an energy source and would at least partially replace corn or other grains in the diet. The study looked at feed intake, growth performance, feed efficiency, and carcass characteristics in meat goat kids.

Materials and Methods

Twenty-four Boer crossbred intact male goats averaging 53 lbs of body weight were randomly assigned to one of four experimental diets containing 30 percent bermudagrass hay plus 70 percent concentrate mix with 0, 5, 10, and 15 percent crude glycerin in the diet on a as-is basis. The goats were fed once per day and water was provided at all times. The goats were weighed every two weeks and at the end of an eighty-four day feeding period the goats were harvested and carcass characteristics were determined.

Results and Discussion

As a result, *feed intake, average daily gain, gain to feed ration and carcass characteristics* were analyzed as a completely randomized design. No difference was observed regarding the four variables mentioned above. These results suggest that crude glycerin can be a viable feedstuff for meat goats and can be included up to 15 percent of the concentrate ration without compromising dry matter intake, growth performance and carcass quality. Assuming that the midpoint weight for these goats would be 67 lbs and assuming that the goats are consuming 4 percent of body weight daily, each goat would consume a total of 2.68 lb of feed daily. An estimated 0.88 lb of hay would be consumed each day

plus 1.80 lb of concentrate each day containing only 0.27 lb of crude glycerin. Recent studies on poultry and swine indicate that crude glycerin has similar energy content as corn and soybean meal but only 40 to 45 percent of the energy noted in animal fats or vegetable oils. **Note:** *that if you are interested in trying crude glycerin, the purchased produce must be no less than 80 percent crude glycerin.*

Resource: K.B. Tuoho et al., Evaluation of crude glycerin on performance and carcass characteristics of growing meat goats. Tuskegee University, Tuskegee, AL; Utah State Univ.,

Proven Goat Feed Rations Using Byproduct Feeds

The following byproduct based rations have been formulated and evaluated on Kentucky farms.

23-53-17

23%-Distiller's Dried Grains with Solids (DDGS)
53%-Soybean Hulls (SBH)
17%-Cracked Corn (CC)
4%-Mineral

30-30-40

30%-DDGS
30%-SBH
40%-Whole Corn (WC)
Free Choice Min & Hay

20-40-40

20%-DDGS
40%-SBH
40%-WC
Free Choice Min & Hay

30%-Grass Hay

38%-SBH
9%-Soybean Meal 48% (SBM-48)
8%-WC
1%-Cotton Seed Hulls (CSH)
2%-Limestone
1%-Corn Syrup
1%-Mineral Pac

30%- Grass Hay 10%-DDGS 17%-SBH 8%- SBM48 28%-WC 1%-CSH 4%- Limestone 1%-Corn Syrup 1%- Mineral Pac	30%- Grass Hay 26%-DDGS 41%-SBH 0%- SBM48 0%-WC 1%-CSH 0%- Limestone 1%-Corn Syrup 1%- Mineral Pac
30%- Grass Hay 15%-DDGS 32%-SBH 3%- SBM48 13%-WC 1%-CSH 4%- Limestone 1%-Corn Syrup 1%- Mineral Pac	33%-WC 37%-Corn Gluten Feed (CGF) 26%-SBH 3%-SBM 1%-Limestone
24%-DDGS 70%-SBH 2%-CSH 2%-Limestone 1%-Corn Syrup	30%-CGF 60%-SBH 5%-Molasses 2%-Ammonium chloride 3%-Mineral Pac

All these rations have a TDN value above 70% and a protein content ranging from 14-16%. The addition of Ammonium Chloride fed at 2% of the concentrate ration is recommended when feeding bucks and wethers.

The primary feed source should be forage or pasture based while using concentrates to make up the nutritional difference between the needs, for late term pregnancy, lactation, growing kids and doelings.

Farm Family Living Expenses Drop in 2010
Jennifer Rogers, University of Kentucky

For the first time in over 11 years, the average family living expense for farm families supplying data to the Kentucky Farm Business Management (KFBM) Program has

dropped. Table 1 shows average family living expense and corresponding net farm income and non-farm income from 1998 to 2010. In 2010, family living expense dropped to \$68,499 from \$77,708 in 2009. A decrease was also seen in net farm income and non-farm income.

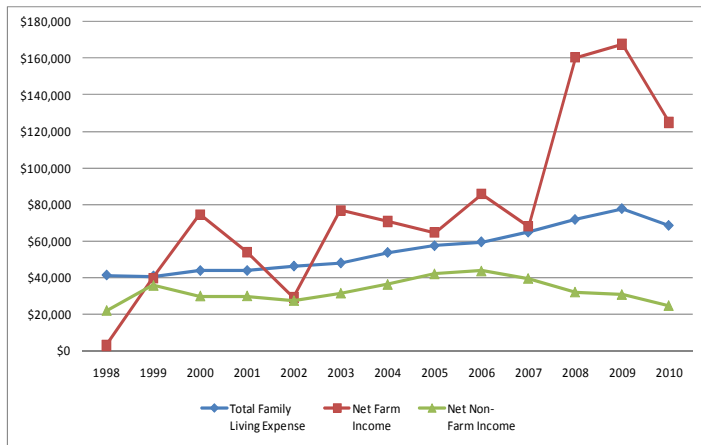
Table 1. Family Living Expense, Net Farm Income, Net Non-Farm Income, 1998-2010.

	Total Family Living Expense	Net Farm Income	Net Non-Farm Income
1998	\$41,309	\$2,758	\$21,796
1999	\$40,742	\$39,710	\$35,649
2000	\$43,728	\$74,529	\$29,840
2001	\$43,774	\$54,008	\$29,857
2002	\$46,176	\$28,989	\$27,289
2003	\$47,925	\$76,774	\$31,380
2004	\$53,674	\$70,785	\$36,213
2005	\$57,336	\$64,594	\$42,068
2006	\$59,504	\$85,642	\$43,641
2007	\$64,784	\$67,939	\$39,535
2008	\$71,742	\$160,390	\$31,993
2009	\$77,708	\$167,577	\$30,648
2010	\$68,499	\$124,834	\$24,520

Thus far, the Kentucky farming community has been sheltered from the ailing US economic conditions. A drought in 2010 caused statewide yield reductions. While rising commodity prices benefitted grain farms from feeling the full brunt of these decreased yields, livestock producers felt the impact in both loss of pasture and rising feed costs. This situation resulted in a 26 percent decrease in net farm income among the farm families studied.

The reduction in non-farm income could have a more significant impact on the average Kentucky farm than the farms represented here. The majority of Kentucky farms are dependent upon non-farm income for their livelihood. The KFBM program primarily services large

Figure 1. Family Living Expense, Net Farm Income, Net Non-Farm Income, 1998-2010.



commercial farms across the state that are less dependent on non-farm income. However, the impact of a 44 percent reduction in non-farm income from a high of \$43,641 in 2006 to \$24,520 in 2010 has to be felt within the family.

From a management perspective, it is important to keep family living expenses within the financial means of the farm family operation. Combined net farm and net non-farm income decreased 25 percent from \$198,225 in 2009 to \$149,354 in 2010. Family living expenses dropped only 12 percent. Were excess funds available in 2010 to fund family living expenses? If incomes continue to decrease, it will become a necessity for family living expenses to drop proportionately to keep the farm operation out of financial turmoil.

Goat Conference
Kentucky State University
 August 9-11

Kentucky State University is hosting a state-wide Goat Conference starting on Tuesday, August 9th through Thursday, August 12. The conference will be held at the new Center for Sustainability of Farms and Families on the KSU Research Farm located on Miles Road in Franklin Co.

The program is not complete at this time but will cover the following topic outline including but not limited to breed selection, business records,

and management tools for sheep and goat producers, forage production and browse utilization/pasture improvement projects. Furthermore, there will be a goat production session for new goat farmers and a youth training session on preparing the goat for the show and handling the goat in the show ring.

The cost for registration is \$25 for adults, and youth (under 18 years of age) must be accompanied by an adult. The registration covers the cost of the hotel rooms for the first 100 to register as double occupancy and six meals during the conference. To register contact Mrs. Jessica Houston at 502-597-5905.

Opening program August 9 – Center for Sustainable Farms and Families.

1 to 1:30 pm Registration

Welcome 1:30 pm

Dr. Kimberly Holms, KSU

Dr. Palmer, ANR director UK

Purpose of the Program

Dr. Andries, Animal Science Specialist KSU

2:00 to 3:55 – On-Farm Performance Testing and Production Records – Ken Andries

4:00 to 4:15 - Break

4:15 to 4:55 – Tools and Equipment for the Goat Producer – Ken Andries

5:00 to 6:00 – Selecting Breeding Stock – Ken Andries, Terry Hutchens, Terry Gipson

6:00 to 7:30 – Supper

7:30 to 8:30 – Evening speaker – Information on Marketing to chefs -

Day 2: August 10

7:00 to 8:00 - Breakfast

8:00 to 8:30 – Travel to KSU Farm (bus provided)

Track A

8:30 to 10:00 - Business records for Small Producers – Marion Simon

10:00 to 10:15 - Break

10:15 to Noon - continue with Business Records

Noon to 1:15 Lunch at KSU

1:15 to 2:10 - Browsing and grazing behavior of goats and how to use it to your advantage – Terry Gipson

2:15 to 3:10 - Using goats to control invasive browse, a field experience – Terry Hutchens

3:15 to 3:30 – Break

3:30 to 4:25 - Alternative Forages for sheep and goats – Ken Andries

4:30 to 5:25 - Nutritional considerations for small ruminants – Terry Hutchens

5:30 to 6:00 - Forage Quality: Importance to your Farm – Ken Andries

Track B

- 8:30 to 10:00 - Introduction to the goat Tool Kit – Dianne Hellwig.
- 10:00 to 10:15 - Break
- 10:15 to Noon - Continue Tool Kit
- Noon to 1:15 - Lunch at KSU
- 1:15 to 2:10 - Beginning Business records and Planning – Marion Simon
- 2:15 to 3:15 - Forage for sheep and goat production – Ken Andries
- 3:15 to 3:30 - Break
- 3:30 to 6:00 - Selection, fitting, and showing sheep and goats – Kevin Kidwell and others.

Both Groups

- 6:00 to 7:30 - supper
- 7:30 to 8:30 - Evening speaker – NRCS Speaker

Day 3:

- 7:00 to 8:00 Breakfast
- 8:00 to 9:00 - checkout of rooms and travel to KSU research farm
- 9:00 to 9:55 – Essentials to a successful small ruminant enterprise.
- 10:00 to 10:55 - Electric Fencing options and issues/ demonstration - Jeremy McGill
- 11:00 to 11:55 – Panel discussion and review/evaluation of program.
- Noon to 1:20 - lunch
- Adjourn



PLAN NOW: Fall grazing of forage type turnips provides an ideal high quality forage for flushing and breeding does. Turnips should be planted in mid to late August for fall and early winter grazing.

Terry Hutchens

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Artificial Insemination of Goat Clinics

Artificial Insemination of Goat Clinics: Each A.I. Clinic is conducted on Saturday, with the morning session focusing on reproductive physiology of the doe (slides), estrous synchronization methods, equipment needs and formularization with actual A.I. equipment. Following lunch, the actual hands on portion, breeding of the does will begin. There is no charge for the clinic however each doe must be synchronized by following a specific protocol that will be made available to you by the Extension agent prior to the clinic. The cost for synchronization is ~\$20 per doe. I will have Boer semen on hand, if other semen is desired it must be supplied by the student. The clinics will start at 9 A.M. and conclude by 3:00 – 3:30 P.M. Numbers should be limited to 5 to 10 people. One doe per person is ideal. Each student will leave knowing the basics of artificially breeding the goat female.

Current A.I. Clinic Schedules:

Saturday, September 3, 9:00 A.M.-3:00 P.M. EST, Slatewoods Farm, Winchester KY, Contact: Kathy Jones, slatewoods@inthehills.com, Terry Hutchens, thutchen@uky.edu

Saturday, October 1, 9:00 A.M.-3:00 P.M. EST, Scott Co. Extension Office, 1130 Cincinnati Rd, Georgetown, KY 40324, Contact: Michelle Simon, Michelle.Simon@uky.edu , Terry Hutchens, thutchen@uky.edu

Saturday, October 15, 9:00 A.M.-3:00 P.M. EST, Trimble Co., 412 Leesport Rd, Milton KY 40045 Contact: Sonia McElroy, McElroyakers@hughes.net , thutchen@uky.edu



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