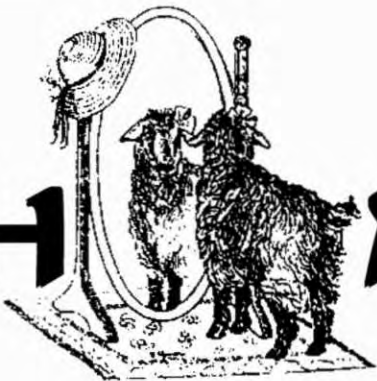


CASHMERE MIRROR



Volume 12, Issue 8

June 2001

The monthly magazine devoted to cashmere goats and their fiber



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The *CashMirror* welcomes contributions of articles and photographs. Submissions may be made by mail, fax or e-mail.

No responsibility will be taken for material while in transit or in this office, although we will certainly be real careful.

Cover photo: Mickey Nielsen
Liberty Farm, Yakima, Washington
"The Food Chain."

New Photography Contest for Readers!

Deadline for Submission: September 1, 2001

Summary of Contest: You send us photographs—any size, black and white, color, digital, we don't care—with a caption, if you want (not required). Tell us in which of the three categories you would like your photograph entered, or you can even let us decide. We'll either judge the contest ourselves or possibly hire/bribe a qualified panel of judges, depending on how ~~lazy~~ busy we are at the end of the contest.

Categories:

Smartest Goat: Your photograph will need to illustrate the superior mental capacity of your goat—which shouldn't be difficult. We all know that our goats are smart, but can we capture this on film?

Cute Kid Contest: This category is like the "Cute Baby Contests" of olden days; we're sure that our goat kids must be at least as cute as human kids. Submit a photo of a cute kid or a whole passel of cute kids.

Other: This is the category for that incredible photo that just doesn't fit in the first two categories. Anything will fit here.

Prizes: Grand Prize (Best of Show) - \$100 shopping spree at Caprine Supply! 1st prize for each category - One year subscription (or subscription extension) to CashMirror, 2nd prize for each category - CashMirror or MGM T-shirt (your choice), 3rd prize for each category - a copy of Linda Fink's new book, More Life in the Goat Lane. We're talking ten prizes up for grabs here! However, we're sure that, regardless of the prizes, you'll want to enter anyway just for the pure glory of winning.

Other Important Info: We'll return your photographs to you unharmed. So drag out those cameras, dust them off, buy some film and follow those goats around! Who knows what you'll manage to capture on film.

Go Forth and Photograph!



Smart Goats?—Compared to what!?



Cute (doe) Kids—Nameless, but cute!—per their owner and photographer Julie Tanguay Hoover, Grass Lake, Michigan.



*Other—A happy goat family—Mom, Dad and the two kids.
Photograph by Julie Tanguay Hoover.*

Refractions

by Paul Johnson

Black Sheep Gathering Trivia

It was the Black Sheep Gathering in Eugene, Oregon, on a dark and stormy day. The woman visiting the NWCA booth insisted that the best cashmere comes from alpacas and llamas, not goats. I just let her blow on, giving up the fight. So, when the next person asked if the best cashmere really comes from the belly or chin, I lost it and replied, "No, the very best grows only on the testicles of the bucks. It is very difficult to harvest, and that's why the cost of truly good cashmere is so high". I know, bite my tongue and just answer correctly. But just once in a while, you can't take it anymore!

The NWCA Board Must Have Been Bored?

At a recent NWCA Board meeting in Northern Washington (Twisp to be exact), we tried to come up with an "official" song for the association. It came at the end of a long day after Moon Mullins' comment that music available at the ranch was generally limited to "Doo wop and dead girls." So we made up our own, and the list grew on our ten hour trek back to Oregon. Fatigue is the only excuse I can think of. Anyway, here are some possibilities for serenading your herd or singing at that odd quiet moment at your goat club:

Selenium Love

Shear Low, Sweet Oster Shears

Teats for Two

If You Got the Money Honey, I've got the Goats

All we are saying...is Give Goats a Chance

Mine Eyes Have Seen the Glory of a 13 Micron Fleece

Oh, Lord, Won't You Buy Me a New Cashmere Goat

Pretty Doeling

Rutting in the Rain

Inagoatadavida

Sound of Cashmere

A Goat Cart Built for Two

Phantom of the Pasture

Brigadoe

Hay for Two

Nannieberry Hill

Frisk Around the Clock

Oh, Give Me a Doe, Just Like the Doe, ...

Hay, Jude, (Take A Bad Fleece, and Make it Better)

Stormy Wether (you just knew this one had to be here)

Shearer on the Roof (If I were a rich man,)

Coppertox... Again

Caprine of my Heart, I Adore You

Flight of the Capra Hircus

Pink Eyes Crying in the Rain

If I had a Hoof Trimmer

The Lonely Buck



And of course, don't forget that old classic:

99 Sets of Hooves to trim,
99 sets of hooves,
Bring a goat down,
Turn her around,
98 sets of hooves left to trim.

(My spellcheck had a real problem with this page, yuk, yuk).

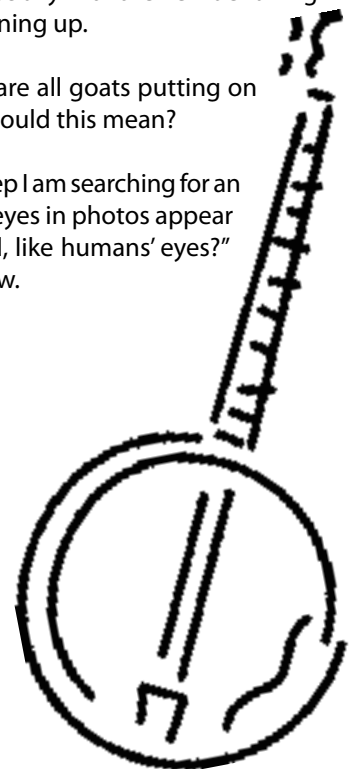
British Politicians and FMD

I find it refreshing that British politicians are no different than those in the U.S.A. Foot and Mouth Disease was supposedly under control, just prior to their elections. Now, it seems, it isn't. New cases are reported daily. The good news is, there have been no reported cases in the cashmere herds in U.K.

While some big names are getting out of cashmere goats, we are finding the market for fiber and goats to be strong. The staff at CashMirror is optimistic! Especially with the new dehairing options that seem to be opening up.

Is it just our weird goats, or are all goats putting on fleece early this year? What could this mean?

One question from Black Sheep I am searching for an answer to is, "Why do goats' eyes in photos appear blue or green, instead of red, like humans' eyes?" Drop me an email if you know.



When Readers Talk...



Paul,

This is in follow-up to our discussion at the Field Day (*NWCA at Goat Knoll, April 7, 2001*—story regarding condition scoring in *April CashMirror*, page 14) regarding condition scoring. Despite a fairly diligent look into the literature on the subject of goat body condition, I can find no reference to the system (1-7) that I learned 25 years ago when raising Nubians in Florida. As a result, I've ditched the old and I'm in the process of learning the system described by Mackenzie (1993) pp. 109-112 and Smith and Sherman (1994) pp. 545-546. I regret any confusion or misdirection that the participants may have picked up as a result.

Mackenzie, David, 1993. *Goat Husbandry*, Fifth Edition, Revised and edited by Ruth Goodwin. Faber and Faber, Inc. New York, NY.

Smith, Mary C. and David M. Sherman, 1994. *Goat Medicine*. Lippincott, Williams and Wilkins. Baltimore. MD.

In an unrelated matter, you might be interested in the attached article and paper regarding when goats were domesticated. The date for talking purposes is 10,000 years ago, in the Fertile Crescent for meat. This is unsurprising, but there is now some solid science behind it.

Hope you and Linda are happy and well.

Pete Rhoads
Placerville, California
May 4, 2001

Cashmere...and its Reward

For over a decade my beautiful wife Diana and I have been raising these cashmere goats. We have met some of our closest friends. We together have experienced so much and learned so much. Our reward has been to help others better understand cashmere and raising these animals.

There are few rewards in this business. Many people consider farming a waste of time. We enjoy what we do and enjoy the people we meet along the trail. Our herd has been as low as 13 and as high as several hundred animals. We have conquered the task of dehairing. We have studied and lectured on cashmere and cashgora and its benefits. Our depth of interest has driven us to understand all we can know about cashmere and its qualities for processing and raising the goats. We both know that there is a time when we will decide to draw-down our herd and do a little less in this area—it's a lot of hard work and we are not getting any younger. This brings me to a point: Just what do I have to show for my hard work? I have many rewards. The first is the people we have met. The second is the education we have been able to provide to others. The third is the love that we have for the breed.

I know that most of our experience in this business is learned. We have made our fair share of mistakes. If the goats were all gone...just what would I have other than some pictures? To us we have two things. We have some garments and some good friends to share stories with. But most of all, we have our bronze that was created by Carol Grende. The piece is so beautiful I could not want for anything else. We want to thank Carol for her hard work for over 2 years to develop this piece to honor the American Cashmere Goat. This IS our reward.

Thanks, Carol for your talent.

Rutfully,
"Goat Kisser"
(Steve Hachenberger)
Castle Crags Ranch
Hamilton, Montana
June 1, 2001

See story about Carol Grende and her bronze creations on page 28, this issue.

**Instructions for Submitting Fleeces
ECA's 2001 Fleece Competition
at The State Fair of Virginia**

Judge: Joe David Ross of Sonora, Texas

Competition groups: Kid fleeces, 2nd and 3rd fleeces (goats born in '98 and '99), 4th - 7th fleece (goats born in '94 through '97), and senior fleeces for goats born in 1993 or before. Age groups will be subdivided by sex and as combed or shorn. Cash prizes will be awarded. Please limit entries to three fleeces per class per farm. Only raw fleeces harvested in the 2000-2001 season are invited.

Fleece packaging: Pack each fleece in a plastic zipper bag if possible. Hefty One-Zip 2-1/2 gallon bags work well for most large fleeces. Do not write on the bags. Insert a 3x5 card in each fleece bag with the following information: your name and address, your social security number (required for receiving premiums), the goat's herd code, name, number, sex, and date of birth. Indicate whether the fleece was combed or shorn. Remember that the goat carries the herd code of the farm where it was born. Insert in each box of fleeces a self-addressed (BIG lettering) 3x5 card which will be used as a mailing label for returning fleeces that are not picked up at the fairgrounds. Fleeces will be returned by U.S. Postal Service, first class mail, unless another mail service is requested.

Entry fee: Include a check (payable to the Sate Fair of Virginia) for \$1 for each competing fleece.

Mail to: Claudia McClung, 1398 Maidens Road, Maidens, VA 23102

Deadlines: Fleeces must reach Claudia by September 10, 2001. Absolutely no fleeces can be submitted at the fair.

ECA thanks you for participating.

**NORTHWEST CASHMERE ASSOCIATION
FLEECE COMPETION 2001**

Contest to be held August 11, 2001 in conjunction with the 11th Annual Northwest Classic Double Point ALSA Show & Fiber Festival. Location is Evergreen State Fairgrounds, Equestrian Arena, and Monroe, WA.

Judge: Cynthia Heeren, Hokalani Farm, Oregon

Fleeces are to be mailed to:
Doug Maier, Breezy Meadow Cashmere Farm
810 Van Wyck Rd., Bellingham, WA 98226

Fleeces must be received by Doug no later than August 4th!

Package fleeces in plastic bags, ziplock if possible, with a 3x5 card that has your mailing address inside. Also include the herd code and number of the goat, name of goat, if any, sex, date of birth and whether shorn or combed. For return mailing, include another 3x5 card to be used for the mailing label, with all necessary information needed to get you fleece safely back to you! And postage!

The entry fee is \$2 per fleece entered.

Contact Paul Johnson at 503-623-5194
Paul@cashmirror.com
or
Doug Maier, 360-733-6742
fibergoat@earthlink.net

(Yes, I shamelessly copied most of this from ECA— Paul)

Note: Fleeces entered will be promptly mailed back to participants after the event in case you are entering your prize fleece in both the NWCA and the ECA competition.

On-line Metric Converter!

Yocom-McColl has an on-line conversion calculator at:

<http://www.ymccoll.com/convert.html>

Also included is a loan calculator—for planning next winter's hay budget, one supposes.

Hand Spinner's Special!

From Texas A & M University
Special wool fleeces for sale on internet at:

<http://sanangelo.tamu.edu/wmrl/handspin.htm>

MANAGEMENT OF BRUSH GOATS

By P. J. Holst, Agr. Res. Sta. Cowra
New South Wales, Australia

From the USDA Extension Goat Handbook

Management and Housing

Many brush goats may be feral goats which were originally domestic goats that escaped or were released by early settlers. Their number is unknown, but they may represent a natural resource in some areas and play a role in today's agriculture, when managed effectively.

Current interest in brush or bush goats is centered on their browsing behavior and dietary preferences in scrub and weed control. However, this diet alone does not produce sufficient monetary gains from goats; their by-products of meat, skin and fiber are of special economic interest.

Breeding

The "type" of goat upon which to base this kind of "wild" breeding program is not yet understood. Obviously the selection of a specific "type" will be affected by the by-products envisaged and the role of the goat itself.

Feral goat flocks that have evolved over years consist of long and short-haired goats, a mixture of colors and a variety of conformation. Short-haired goats are thought to be better but research suggests that long-haired goats lose less weight under nutritional stress. However, goat deaths in winter indicate that long-haired goats with little down are cold sensitive and less viable. For meat production it is easy to suggest the selection for twin progeny with high yearling weights, regardless of lengths of hair and color.

The improved Boer goat of South Africa is valued in various parts of the world for good meat characteristics and its skin. Boer goat breeders select a white, short-haired animal but evidence is lacking on aspects of skin quality. The following breeds of goats are recognized as having good quality skins: Maradi, small East African Goat, Boer goat, Somali, Black Bengal, Moxoto, Marota, and Sahil. Fiber color appears to be unimportant but the above breeds are short, fine haired goats. An example is the Sahil of Africa which has long-haired and short-haired types. Only the short-haired goats have acceptable skins with no information on the diameter of fiber.

For cashmere (down) goats exist selection criteria. A difficulty is to determine whether the associated coarse fiber should be long or short. This may be dependent on the method of harvesting. Fortunately, it appears that selection for cashmere does not conflict with selection for growth rate.

Products

The products of brush goats are skin, meat and fiber. Skins may be from kids up to six weeks or from older goats. Goat skins are a valuable product in some countries. Processors identify the



OK, so these aren't exactly feral Australian goats making do with what they find in the wild, but they are eating brush! These girls are quick to point out that they do have relatives in Australia.

following problems:

Coarse grain—notably from males with ridge-back hair lines but also in the majority of brush goats and probably associated with broad diameter fibers of low density.

Scars—presumably from fighting, scrub, fences.

Excessive odor— from aged males.

Excessive fat—corium connective tissue "left-over" layers.

Meat may be kid meat, yearling meat or from older cull goats. Goat meat is valued throughout the world. Australia exports live goats to the middle East and Singapore; bone-in and boned carcasses to the Pacific Islands, West Indies, Great Britain, Americas, Japan. The latter two markets are essentially as manufacturing meat, e.g. for pet food. A small quantity of carcasses are exported dehaired with skin on primarily to Hong Kong.

Cashmere can be white, brown, grey or black in color with a price differential in favor of white fiber. Commercial processes are available to separate small amounts of coarse hair from a predominantly cashmere mixture. Combing produces a relatively pure sample but obviously shearing includes coarse hair. There is now an economical, commercial procedure available for separation of mixtures that include much coarse hair.

Shedding of cashmere occurs annually in spring. Combing after shedding has begun, is successful but any delay leads to loss of much of the cashmere. The operation of combing is physically demanding and tedious and its economic utilization will probably depend on mechanization. Traditionally, hand combers have preferred a long guard hair to minimize tangling of the cashmere and to modify its rate of loss.

Continued on next page

Managing Brush Goats**Continued from previous page****Nutrition**

All grazing animals have preferences for some forages and dislikes for others. This determines the order in which forage plants are eaten and influences management decisions. Growth and survival of some plants—those that are readily eaten and those that are never eaten—may be altered over periods of time. This order of preference identifies goats as browsing animals. Preference is always in relation to what kind of plants are available, how much is available, the relative succulence of different kinds and the individual habit of eating. Rarely is the diet made up of one plant species. In weed and scrub control it must be expected that there is a maintenance cost in terms of desirable plants eaten by goats.

Brush goats in a weed or scrub control program should not be expected to receive supplementary feeding. Normal stocking rate management should be such, that the goats enter the winter in good condition. There are two possible exceptions. In a difficult, cold winter it may be necessary to feed hay to ensure survival of the goats. In all areas, there may be periods where phosphorus may have to be provided as a supplement. There have been instances of a form of rickets and slow growth rates under rangeland and browse conditions probably due to an imbalanced P:Ca ratio.

Following is a list of plants and scrubs observed to be eaten by goats. It is not complete and tends to identify problem species. Stage of maturity of plants and scrub influence selection by goats and produce a marked seasonal variation in the composition of their diet. Management has to recognize these factors.

Highly preferred plants and scrubs: Orange bush (*Capparis mitchellii*), supplejack (*Ventilago viminalis*), Kurrajong (*Brachychiton populneum*), grue colane (*Owenia acidula*), emu bush (*Eremophila longifolia*), mature mulga (*Acacia aneura*), rosewood (*Heterodendrum oleifolium*), belah (*Casuarina cristata*), current bush warrior (*Apophyllum anomalum*), white wood (*Atalaya hemiglaucula*), lignum (*Muehlenbeckia cunninghamii*), sucker leaves of boxes, gums and mallees, blackberry (*Rubus* spp.), sweet briar (*Rosa rubiginosa*), lucerne tree (*Chamaecytisus proliferus*), flower lucerne - alfalfa (*Medicago falcata*), turnip weed (*Brassica tournefortii*), rye grass (*Lolium* spp.), pine (*Pinus*, *Picea*, *Abies* spp.), maple (*Acer* spp.), grape (*Vitis* spp.), oak (*Quercus* spp.).

Moderately preferred: Punty bush (*Cassia eremophila*), hop bush (*Dodonaea viscosa attenuata*), young pine (*Callitris* spp.), young mulga (*Acacia aneura*), ironwood (*Acacia excelsa*) and other acacias, yarran (*Acacia homalphylla*), canegrass (*Eragrostis australasica*), some box and gum trees, hawthorn (*Crataegus* spp.), poa tussock (*Poa labillardieri*), serrated tussock (*Nassella trichotoma*).

Eaten occasionally: Budda (*Eremophila mitchellii*), wilga (*Geijera parviflora*), mature poplar box bumble (*E. populnea*), horse nettle (*Solanum carolinense*), common nettle tall (*Urtica dioica*), kangaroo thorn (*Acacia armata*), galvanized burr (*Bassia birchii*).

Readily eaten but dependent on stage of growth-(frequently associated with the flowering stage): Scotch thistle (*Onopordum acanthium*), variegated thistle (*Silybum marianum*), inkweed (*Phytolacca octandra*), nodding thistle (*Carduus nutans*), black thistle (*Cirsium vulgare*), rushes (*Juncus* spp.), sucker regrowth of yellow box (*E. melliodora*), white box (*E. albens*), and red box (*E. polyanthemus*), black wattle (*Acacia mearnsii*), horehound (*Marrubium vulgare*), St. John's Wort (*Hypericum perforatum*), curled dock (*Rumex crispus*), purple top (*Verbena bonariensis*), skelton weed (*Chondrilla juncea*), mustard weed (*Sisymbrium* spp.), patterson's curse (*Echium plantagineum*), barley grass (*Hordeum leporinum*), spear grass (*Stipa* spp.), lucerne -alfalfa (*Medicago sativa*).

Mechanical damage only: Bracken fern (*Pteridium esculentum*).

Isolated plants eaten - (yet to be tested adequately): Sifton bush biddy (*Cassinia arcuata*), mature cotton bush (*Asclepias fruticosa*).

Not eaten or harmful: Slender thistle (*Carduus pycnocephalus*), peppermint (*Mentha* spp.), yew (*Taxus* spp.), rhododendron, solanaceae.

Reproduction

The seasonal breeding activity of brush goat is not unlike Merino sheep with fall being the most favorable period for breeding. Under feral conditions, breeding activity is affected greatly by nutrition and in good seasons it is possible to have two kid crops in one year. The length of estrus cycle averages between 19 and 20 days. The presence of bucks acts as an exteroceptive factor in stimulating the onset of estrus at the beginning of the breeding season.

Estrus could be successfully synchronized during the regular breeding season by the use of intravaginal progestagen pessaries, subcutaneous progestagen implants or with prostaglandin. Sexual maturity is closely related to growth rate with well grown bucks reaching puberty at 6-9 months (4 months even in some cases) and does at 7-8 months (even 5 months). Gestation length is approximately 147 days. Parturition is usually uneventful with dystocia a rare problem.

Slaughter and experimental data indicate that kidding percent in brush goats is usually 150-180. Twins are common but surprisingly, there are few triplets. For the first 3-4 days the kids rarely move from the kidding site but thereafter will rejoin the mob with their dam. Birthweight of kids is approximately 6.5 lbs. Kid losses result from stillbirth, predation and starvation.

Continued on next page

Managing Brush Goats

Continued from previous page

Starvation is usually the result of faulty udders. Abortion does not appear to be a real problem in brush goats except as a result of severe stress. In that event, aborted kids are usually in the third trimester. Abortion can be readily induced artificially using synthetic prostaglandin.

At kidding and for the next four days, the does often "plant" their kids. This appears to be largely dependent on the availability of feed. With ample feed available, the doe remains near her kids—when feed is limited she tends to plant the kids and forages at a distance.

Management

Goats are alert and observant and are easily moved in yards and through gateways. However, they may balk and do not flow as evenly as sheep do when being counted through a gateway. Goats tend to rush more or not go at all.

When being forced in confined areas, such as the approach to a drafting race or drenching in the working race, goats will go down very readily. Although surprisingly little damage results from this packing down, it is best kept to a minimum. Dogs are rarely necessary once goats have been yarded and movement in larger yards with big mobs is best done as quietly as possible. When working in forcing areas or races, trampling can be minimized by having only 12 or 15 animals at a time in the area.

Brush goats are susceptible to the same diseases and parasites that commonly affect sheep (e.g. footrot) with the notable exception of fly strike. Medication is essentially the same with due cognizance of liveweight. Samples of feral goats have been studied for Brucellosis (*melitensis*, *abortus* and *ovis*) but were found to be free of that disease.

Most harvested feral goats are lice infested and the particular lice involved are *Damalinia caprae* and *Linognathus stenopsis*. The most common sheep louse is *Damalinia ovis*. Experiments have been conducted to investigate louse transfer between sheep and goats. Though some transfer did take place under pen conditions, the transferred lice did not survive longer than 12 days and there was no hatching of eggs that may have been laid.

All feral goats should be assumed to be lice infested and dipped immediately on arrival at the property. This has to be followed up with a second dip two weeks later. It is convenient to initially vaccinate also at one of these times.

Working races should have panels inserted to shorten existing sheep race to approximately ten feet. Height should be a minimum of four feet; width not to be greater than 2.5 feet, which will prevent trampling. Working goat yards use funnel and pie-shape designs and depend in size on the number of animals to be handled. Drafting races are shorter and narrower

than sheep races.

Fencelines at five feet height should be clear of obstacles that may facilitate goats jumping the fence e.g. stumps, trees, logs, stags, rocks, banks. The agility of the brush goat poses special problems with fencing. However, in most cases the goat prefers to go under/or through fences rather than over. Two low-strand electric fences are effective.

Horns on brush goats have been assessed as a means of restraint and self protection. They can cause accidents in the working area, inhibit drafting, and scar skins sufficient to reduce quality. Electric calf dehorners or modified soldering irons are used for dehorning. This is not practical in a large flock. Other methods include calf scoop dehorners up to sixteen weeks of age or rubber bands or, if the goats are older, a hacksaw. Polled brush goats are considered undesirable because of the problem of intersexes in polled goats.

To move a mob of goats, it is best to lead the way and have a dog at the rear of the mob. In practice, most goats can be worked as one works sheep.

Disappointing kid survival levels have been associated with the presence of coyotes, wild dogs, foxes, wild pigs and other predators. Where they are a problem, the basic tactic is to kid at the same time as lambing when food for predators is more plentiful and diversified. Control by poisoning or trapping may also be necessary in some circumstances.

Continued on next page

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Managing Brush Goats

Continued from previous page



So many weeds, so little time (before the rest of the herd gets here.)

Wyoming Weed Eaters Make Oregon News

A herd of 350 goats (and their owners Jay and Sarah Harris) have been hired by agencies in Deschutes County and the city of Bend to eat weeds in central Oregon for the summer. It's a tough job, but some goat has to do it. The goal is to give the county's undesirable weeds—tangled bitterroot, knapweed and others—competition for survival, which will ultimately allow native plants to be reestablished in the area. Pre-goat, the landowners killed undesirable weeds every spring when they came up. No native plants move in, and the next spring the old baddies come up yet again. This year, after the rented goats have nibbled out the bad weeds, the land will be reseeded back with good, native weeds. Since the native plants once thrived in the area before competition, it is hoped that once the competition is removed, they can hold their own once again.

The Harris's own and operate Western Weed Eaters of Lusk, Wyoming. They have been privately using their four-footed weed-eaters for 10 years, but in the last 3-1/2 years, they have branched out successfully, working mostly in Colorado and Wyoming.

The Harris's note that their herd of 350 is not nearly enough animals to devour all the weeds on the county's infested 100,000 acres this summer. They hope this year to demonstrate the possibilities.

The grazing goats are under tight control confined by electric fences and sheep dogs.

GOAT MANAGEMENT

Feeding Goats for Improved Milk and Meat Production

By George F. W. Haenlein

Department of Animal and Food Sciences, University of Delaware

INTRODUCTION

Many factors can have major or minor effects on the goal of improving milk and meat production of goats. Computer programs are available (at least for cows) that will solve by least-cost formulation the maximization or the optimization of production. In either case it is important to focus on net return as the ultimate goal. Maximization of production is not guaranteeing maximization of net return. The reason is that the law of diminishing returns governs much of animal production, especially feeding and the relationship to reproduction. It means that for additional units of input, such as feed, there is an ever-decreasing increment of benefits in units of milk and meat dollars or other output, until certain general bases and levels are lifted for a new set of overall conditions. It also means that additional feed will produce additional pounds of milk and meat up to a certain biological limit, but in the meantime may already produce negative income dollars from a certain point on.

FACTORS INFLUENCING PRODUCTION IMPROVEMENT

Other important factors influencing production output and income from goats, besides feeding, are genetic merit, udder quality, health and marketing. Genetic merit comes from: selection of native goats and crossbreeding with improver breeds.

Selection of native goats can be very effective, because of the inherent adaptation to the climate, especially if it is tropical, hot and humid, and the resistance to native diseases, insects and parasites. Selection requires regular record keeping of each herd animal in terms of production traits, milk, composition, meat, growth. In the USA this is done through the Dairy Herd Improvement Association (DHIA) record keeping system, which provides monthly individual data on management efficiency. If it is done on an official, non-biased basis, it provides also regular data for sire proving with a certain degree of reliability, which when published annually allows selection of buck semen and doe ova from proven individuals for superior herd selection by anyone domestically or for import by foreign interests.

Crossbreeding has the advantage of selecting presumably superior genetic producing ability, but adaptation to climate, diseases, insects and parasites is usually a big, often insurmountable or at least very expensive problem, which may only be solved by using for continued breeding crossbred offspring rather than purebred parents. In either case it is necessary to realize that improved feeding is wasted if there is no simultaneous genetic improvement of the basic producing ability, because heritability of milk yield by goats is about 25 percent, heritability of goat milk composition about 50%, and heritability of goat weight gain about 40%.

Heritability values can be used to predict the expected aver-

age progress from selection, assuming that environment, management, feeds and feeding, and climate is not changed between generations. Improvement in milk yield is often the most profitable choice and the predicted progress would be per generation:

heritability X selection differential or

25% X (milk yield of selected sire - milk yield of dam).

For example, if the selection differential from the buck proof is + 400 lb and the milk yield of the doe is 1,500 lb, then the expected average genetic improvement in the performance of the offspring in the next generation would be

$(25\% \times 400 \text{ lb}) + 1,500 \text{ lb} = 1,600 \text{ lb}$

indicating that genetic selection is important, but 75% of milk yield performance progress is due to management, environment, diseases, climate and especially feeds and feeding.

The udder is the most important part among the inherited physical capabilities of the animal in its body parts and constitution (Haenlein, 1981). For centuries, this was one of the principal goals of attention of Swiss goat breeders, to improve the udder quality and conformation, and they accomplished this without parallel, making the Swiss dairy goat breeds the milk production leaders in the world. Today type evaluation is available, called the Linear Appraisal System, which can effectively aid in the selection for and improvement of goat milk production. Other programs like type judging competitions in the field and in goat magazines, county and state shows and fairs for 4-H, FFA and adults, milk-out programs for champion competitions and star milker recognitions on pedigrees all aim towards improvement of the inherited physical capability of the milking animal.

Health is the other important factor for success in goat management. Elevated, slotted floor barns have become popular in humid and hot climates for better health of goats, especially for internal parasite control. Such barns are easily and cheaply constructed, provide cool shade and dry areas for feeding and rest, they keep udders clean and free from contaminations and infections, and they prevent reinfestation from internal parasite eggs in feces, because the goats are resting on the slotted floors away from their feces. Without such basic provisions for optimum health of goats any attempts in feeding improvement

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are wasted.

FEEDING FOR HEALTH

The feeding program needs to aim for more than just higher milk yield or weight gain; it needs to provide the best possible health also through feeding, because this will directly affect readiness and success in reproduction. It has been said often that the goat has been neglected in research and numbers of publications, but this was true only until 30 years ago. Meanwhile there has been a ground swell of efforts recognizing the goat as an important part of agriculture, especially small holder agriculture, and in the production of valuable food for human needs for self-sufficiency, diversification, risk stabilization, natural resource utilization like no other animal, gourmet foods and for people with medical needs like cow milk allergy, digestive malabsorption and cholesterol problems. There have been new research stations and funding for goats, many national and international seminars, symposia and conferences with their voluminous proceedings, nutrient requirement bulletins from the US, British and French national research councils, the USDA Extension Goat Handbook, the monthly international Small Ruminant Research journal besides many new books, videos and trade magazines, and the standard cow research journals, which now also carry articles on dairy and meat goat topics.

FIBER (in the diet)

A major concern in feeding for better health is the problem of enterotoxemia or overeating disease (Haenlein, 1982). Many goat managers vaccinate against it successfully, to prevent the associated toxin produced by *Clostridium perfringens*. Actually, enterotoxemia is caused primarily by acidosis in the rumen due to faulty feeding. At any age, symptoms of diarrhea, depression, incoordination, digestive upsets, coma and death are observed after excessive feeding of kids or mature goats, when sudden changes of feeds occur, when goats are hungry and had free access to palatable, readily fermentable feeds, when goats are fed too little calcium supplement and when too little roughage with too short fiber is fed. The best prevention for nursing kids is to have frequent feeding or nursing immediately starting after birth, so that kids are never hungry. Large meals, once a day and of little variety should be avoided. Goats are by nature browsers and like to select various feeds. High levels of grain feeding relative to roughage in the ration (> 60%), especially in early lactation lead to rumen acidosis, followed by inappetence and indigestion. Feeding buffers like sodium bicarbonate and magnesium oxide and stemmy hay will help alleviate the early symptoms and prevent enterotoxemia. Other effective feeds are sunflower seeds, cottonseed, oats, dry brewers grain.

Fiber is a feeding requirement unique to ruminants, because:

1. It maintains a beneficial rumen flora, that produces mainly acetate, the important energy source for all ruminants, rather than propionate from starch fermentation; and

2. It causes extensive regurgitation for rumination and plentiful salivation for rumen buffering, rather than fast passage through the rumen and incomplete digestion.

Fiber is rarely stated in nutrient requirement tables, but from dairy cattle research it is recognized, that at least 17 percent of the daily dry matter intake is needed. However, it makes a difference whether this fiber is shorter than 1 inch or longer. Effective fiber needs length to stimulate chewing and rumination. Feeds and diets, which cause significantly less chewing are potential problems leading to acidosis and enterotoxemia. When less frequent chewing is observed and before other more serious symptoms occur, a drop in milk fat content of 1 to 2 percentage units will be noted in a few days, the so-called low fat syndrome. Feeding of buffers should immediately commence, besides a re-examination of the ration formulation. Some feeds like sunflower and cotton seed, which are very high in fiber content, also have high fat and protein contents, so they are ideal for maintaining the high energy and protein supply needed for early lactation high milking goats, besides providing the extra protective fiber content to avoid low fat syndrome, acidosis and enterotoxemia (Haenlein, 1982).

VITAMINS

Feeding ruminants and their rumen microflora correctly should result in sufficient amounts of rumen synthesized B vitamins (Haenlein, 1981). However, any change and upset in feed intake may reduce the amounts significantly.

Niacin is a water-soluble B vitamin functioning as coenzyme in energy metabolism and is needed by high performing dairy animals, especially in early lactation when ketosis or acetonemia may be a problem. Some supplementation has been beneficial, especially when there is much corn in the ration, since corn is low in the amino acid precursor for niacin, and niacin deficiency may develop.

Thiamine deficiency may occur after heavy grain feeding or if certain feeds with antithiamine activity are ingested. Blindness can result and thiamine supplementation may be needed.

Pyridoxine is another B vitamin synthesized in the rumen and is required for biosynthesis of fatty acids, transport of amino acids and minerals. Upset rumen metabolism can lead to deficiency in pyridoxine synthesis and symptoms of anemia in the dairy goat. Not all anemia in goats is necessarily due only to internal parasites, but not much research into vitamin requirements and metabolism of goats has been done in recent years.

There are other feeding related disorders in goats, which are preventable (Naylor and Ralston, 1991). When goats are becoming fat at the end of lactation, they risk getting acetonemia, pregnancy toxemia or ketosis problems at or soon after kidding. Bearing triplets or quadruplets can aggravate the condition triggered by hypoglycemia. Prevention of undue weight gain

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in the dry period is often easier than treatment and correction when symptoms of dullness, depression, acetone odor in the breath, recumbency occur, which can lead to death. Gradually increasing feeding of 1 to 1.5 lb of concentrates 3 to 4 weeks prior to kidding is usually a best practice. Calcium deficiency soon after kidding in the form of milk fever or parturient paresis is not frequent in dairy goats as it is in certain breeds of cows. A reduction of calcium supplementation and replacement of alfalfa hay with grass hay during the dry period can prevent the problem.

MINERALS

Several minerals besides calcium require particular attention in proper goat feeding: phosphorus, magnesium, selenium, iron, copper (Haenlein, 1992).

Urinary calculi or urolithiasis in male goats are due to nutritional imbalance, especially on high grain feeding with too much phosphorus in relation to calcium and potassium, and more in confinement management than on pasture. Calcium to phosphorus ratio should be 2:1, but grass hay feeding is preferred to alfalfa. Increasing salt in the ration to 4 to 5 percent promotes higher water intake and diuresis. Acidifying the urine with 2 percent addition of ammonium chloride or potassium chloride to the ration also helps (NRC, 1981).

Selenium deficiency can be suspected in areas with deficient soils, when goats have various reproduction problems, early embryonic death, repeat estrus, retained placenta after kidding, metritis, weak newborn kids. Intramuscular injection with a selenium - vitamin E preparation one month before kidding can prevent symptoms, but addition of 0.2 ppm selenium to the ration provides a more constant protection. Selenium status in goats can be tested best in milk or blood besides hair samples.

Iron stores are minimal in newborn kids in contrast to calves. Therefore anemia can be a problem that can be treated with an iron dextran injection or with iron supplementation to the ration.

Magnesium deficiency and grass tetany can occur in early spring grazing on lush pasture, which may be high in potassium, especially cereal grain pastures. Intravenous injection with a calcium - magnesium preparation may be needed to prevent death, but prevention is best by hay feeding prior to turning out to pasture and time-limited grazing of this kind of pasture. A magnesium mineral mix feeding, e.g., 15 percent magnesium oxide in the ration, is also helpful (Naylor and Ralston, 1991).

Zinc is an element that needs to be supplied continuously, since it is not stored in the body. Blood, milk or hair samples are useless in assessing zinc status of an animal; only rib contents are good indicators. Legumes contain more than grasses, but contents decrease with increasing maturity. Zinc supplementation and treatment helps reduce and cure mastitis, stimulates

male reproduction, wound healing, prevents parakeratosis and lameness from foot fissures. Recommended levels are 10-50 mg/kg dry matter daily feed intake.

Copper is needed by goats at the level usually provided in dairy cattle or horse rations, in contrast to sheep, which are sensitive to such levels and will develop toxicities. Leaves and certain browse contain more copper than stems of forages, but this will decrease with maturity. Copper deficiencies can be prevented by adding 0.5 percent copper sulfate to the mineral mixture.

ENERGY

Energy is the nutrient most frequently deficient in goat management, not only of high yielding milkers. Abortions can occur, especially during the time of 90 to 110 days of pregnancy, when undernutrition stresses goats, due to hypoglycemia. Insufficient energy supplies will reduce weight gain and milk yield, but also change the fatty acid composition in the milk fat to less medium chain fatty acids, which are the most desirable fatty acids for human nutrition (Haenlein, 1995). Increasing the energy density of the ration is often necessary as the volume of feed intake is limited, especially in early lactation. Adding fat to the grain ration is increasing energy density effectively as long as it does not interfere with the normal rumen flora. Rumen unavailable or protected fat has been effective at 5 percent supplementation, increasing milk yield, milk fat and protein contents, however, the kind of fat makes a difference in results. Calcium salts of fatty acids are insoluble at normal rumen pH, and reach the abomasum unchanged, where they then can be digested (Morand-Fehr, 1991). Another means of increasing energy density of the ration is by pelleting, which improves gains and milk yield by increasing feed intake, but often reduces milk fat content, if effective fiber length is insufficient in the ration.

PROTEIN

Protein is the more expensive nutrient in feeding and therefore often limiting maximum productivity. Industry by-products often are less expensive sources besides the traditional major supplies of oilmeals. However, as forages have higher fiber and lower protein contents with increasing maturity, the least expensive sources of protein are usually forages, alfalfa, clovers, well fertilized grasses, harvested at prebloom or immature stages. Protein supplies to the rumen in the form of degradable protein are necessary for optimum growth of rumen bacteria, but they require energy at the same time, without which some proteins will be wasted into ammonia in the rumen. A minimum of 7 percent crude protein in the diet dry matter is required for normal rumen function, and forage intake will be decreased at lower protein levels. The supply of some rumen protected protein has been effective in increasing milk yield. Excess protein feeding is not only wasting money but is stressing the goat by increasing her blood urea levels, increasing urine excretion and interfering with efficient reproduction. Protein deficiencies will reduce feed intake, rumen function and retard

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fetal development.

NON-PROTEIN NITROGEN

Non-protein nitrogen, such as urea, can be utilized by goats very well, as long as it does not exceed one third of the total nitrogen in the daily diet or 3 percent of the grain ration. A gradual adaptation of at least three weeks is required. Urea may be a cheaper means of providing some of the required nitrogen to goats, but it must not interfere with maximum feed intake. The nitrogen content of feed grade urea is 42-45 percent in contrast to feed protein with 16 percent. Good urea use in the rumen depends on rations with at least 75 percent TDN and the availability of sufficient starch and sugars like molasses to convert the urea nitrogen into microbial protein, and when the ration protein content is below 12 percent. The addition of alfalfa meal, extra vitamin A and salt helps urea utilization. Feeding of urease containing feeds like raw beans, legume seeds, wild mustard must be avoided. A common thumb rule is that 6 lb corn plus 1 lb urea equal 7 lb soybean oilmeal nutritionally, but the economics of that relationship have to be calculated to be positive (Ensminger et al. 1990). Aside from grain mixtures, urea is effectively used as a liquid molasses-urea lick or as urea salt block.

FLUSHING

Flushing is an effective practice of temporarily increased energy and protein supplies in sheep feeding to stimulate estrus in ewes and synchronize pregnancies. This has not been studied much in goats, but practical experience has shown that the principle works in goats as well, making out-of-season estrus, kidding and milk production possible, in addition to increasing litter size.

Practical feeding of goats can be grouped into three types:

1. Free grazing and no supplementary feeding,
2. Limited grazing and supplementary feeding,
3. Confinement feeding with no grazing.

Effects and expectations in meat and milk production obviously differ with these types of feeding under extensive or intensive management. Proper rations must then be calculated differently, depending on the degree of nutrient supply expected from the amount of grazing provided.

GRAZING MANAGEMENT

Under free grazing providing no other sources of nutrients, the grazing strategy must aim towards finding the best pasture in each season without excessive travel and with a stocking rate, that is compatible with good renewal of the vegetation and the best sustainability of forages and browse. The presence of a goatherder will assure this and improve productivity over un-supervised grazing. Nevertheless the nutrient composition varies tremendously from season to season and despite the selectivity of grazing goats, the daily supply often falls short

of nutrient requirements of production and at times even of maintenance, so that the goats actually lose milk production, weight and potentially health (Ramirez et al., 1991; Papachristou and Nastis, 1996).

Limited grazing will be a normal consequence by goats when fed supplementary grain. The strategy could be based on the amount of daily milk produced at the rate of 2.5 lb milk per 1 lb grain or more depending on the price of grain to the price of milk ratio. An example calculation would be, if the milk price is \$12/100 lb, the grain price \$200/t and the cost of feeding is 50 percent of total milk production costs:

2.5 lb milk @ \$0.30 (12.-/100x2.5) = \$0.10 grain cost (200.-/2000)X 2, = \$0.30 - 0.20, leaving \$0.10 for other production expenses and profit.

A superior feeding strategy would be based on body condition scoring. Low scoring goats (1 - 2.5) receive grain supplementation at < 2.5 lb grain :1 lb milk ratio, while the higher scoring goats (3.0 - 5.0) are fed at a feed:milk ratio of 3:1. This will correct production loss due to undernutrition and it will prevent problems of fat goats (Santucci et al., 1991). Body condition scoring has been successfully developed for dairy cattle, but applies equally well to dairy goats even in the absence of published suitable picture guides. Body condition score is the visible end result of appropriate or insufficient feeding in relation to production. Out-of-target-range scoring goats will produce less milk and a lower meat price. Reproductive efficiency is significantly reduced by out-of-target-range body condition scores. Also disease frequency is increased.

CONFINEMENT FEEDING

Confinement feeding abrogates any nutrient supply from pasture, although for better health of udder, feet, vitamin D supply from the sun and control of internal parasites some outdoor yards should be provided. The entire nutrient supply must be calculated from composition and requirement tables. Software programs for dairy and beef cattle are available, which have some scaled-down provision on bodyweight. More appropriate would be goat specific programs based on the current NRC (1981) and up-dated tables. The University of Wisconsin developed a program, which has not seen widespread use, partly because in the USA no silage is fed to goats as it is the major feed for cows on many farms.

The concept of free choice feeding without rationing to individual goats has been tried successfully (Haenlein, 1978). Over a 2-year period 5 Saanen, weighing 133 - 205 lb, produced in 2 lactations from 2,033 - 4,554 lb milk with 3.0 - 3.3 percent fat. Their free choice intake of mixed hay per year ranged from 393 - 459 lb, their grain ration 1,688 - 1,692 lb per year, besides green chop grass, fodder beets and dry beet pulp. The composition of the grain ration was 21 percent crude protein and 10 percent crude fiber. Daily intake between high and low milkers varied

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from 1 to 8 lb grain; highest daily milk production was 17.8 lb. Production cost analysis in the 2nd year between the highest producer with 4,554 lb milk showed \$293.50 for total feed costs vs. \$272.19 for the lowest producer with 3,321 lb milk, or \$6.44/100 lb milk for the high producer vs. \$8.20/100 lb milk for the low producer.

Total mixed ration (TMR) is another approach to free choice feeding, which is very popular in dairy cattle feeding, except that with dairy cattle the major component is silage, mostly corn silage, which is generally not used nor available for goats. Grass silage is fed in Norway routinely and successfully to dairy goats. For many years I have used for my Saanen goats a total mixed ration free choice successfully, and they milked heavy—above 10 lb per day—even bred out-of-season, kidded twice the year, never had any over-eating disease nor were they vaccinated against enterotoxemia, and had no internal parasite problems despite my not worming them.

A total mixed pelleted ration has been my TMR for years and it is commercially available as a horse “maintenance” ration, designed for horses, that are neither pregnant nor nursing nor working more than 1 day per week. Thus this ration is supposed to feed horses correctly without letting them get fat. The major composition was 12 percent protein and 26 percent fiber. The high fiber content prevented over-eating by my goats. This pelleted ration was provided to the goats in gravity-flow self-feeders and I have seen it being adopted by the Texas Goat Experiment Station at Prairie View, where turkey big round self-feeders are used for the goats. In addition to this pelleted ration

I always provided mixed hay free choice and the goats usually ate less than under conventional feeding, but they preferred stems to get enough fiber. For very high milkers I would feed an extra quarter to half pound of straight soybean oilmeal or sunflower seed at milking time.

Individual feeding is the alternative to group feeding and free choice offer of feeds. It is more labor intensive, may save some wasted feed and may better feed according to body condition. It has not been demonstrated whether feeding success in production or profit from the operation is better than in group feeding. Individual feeding requires individual stalls or temporary tie-ups or feeding at milking time or computerized feed dispenser stalls. In any case it also requires detailed calculations of fitting rations according to individual requirements and prevailing feed ingredient prices.

Calculating a ration requires 7 steps (Haenlein, 1995):

1. Determine body weight to calculate maintenance requirements of energy, protein, fiber, calcium and phosphorus from tables;
2. Determine milk yield and fat content per day plus a challenge factor in early lactation of 10 percent for calculation of production requirements of energy, protein, fiber, calcium, phosphorus from tables;
3. Add the two requirement categories for each of the 5 nutrients on a dry-matter basis;
4. Determine the composition of your eaten hay (minus the refusals) for the 5 nutrients from tables or actual lab analysis.

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September 22, 2001 – NWCA Presents:

A seminar by Christopher J. Lupton, Ph.D.

Professor, Department of Animal Science, Texas A&M University

Chris Lupton is Project Leader for animal fiber research conducted at the Research and Extension Center in San Angelo. He is a member of the Animal Nutrition Section in the Department of Animal Science and of the Graduate Faculty of Texas A&M University, Angelo State University and Texas Tech University. He earned his bachelor's degree and doctorate at the University of Leeds, England, in the field of textile chemistry.

Dr. Lupton plans and conducts a research program dealing with wool, mohair and cashmere that provides information as an aid in improving fiber production, quality, value and marketing. Because the Wool and Mohair Research Laboratory in San Angelo has unique capabilities for evaluating animal fibers, his research addresses areas of high national priority and involves cooperation with USDA and scientists from universities across the United States.

Dr. Lupton will be speaking at the Oregon Flock and Fiber event in September for NWCA. This seminar will focus on fiber analysis (cashmere) as well as the recently concluded Latitude Study, where cashmere and angora goats were divided into three test herds, in Montana, south Texas, and Alaska. The three year project was designed to study the effects of climate differences on fiber growth. The seminar is offered free to NWCA members, \$10 for nonmembers. Mark the date on the calendar—Saturday, September 22nd, 6:30pm - 8:30 pm, basement of Main Pavilion, Clackamas County Fairgrounds, Canby, Oregon.

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ses;

5. Determine the daily actual hay intake by your goat in question and multiply this with the nutrient composition on a dry-matter basis;

6. Subtract the results of step (5) from the total of step (3), giving you the nutrient deficit, which must be provided by a grain supplement on a dry matter basis;

7. Determine composition and price of various alternative commercial or farm-grown grain supplements and multiply with the most probable intake level to arrive at the nutrient deficit total, remembering that ration calculations and feeds offered can not exceed the normal level of daily dry matter intake by goats between 3 to 5 percent of body weight. If goats are found to eat less than 3 percent of body weight on a dry-matter basis, they are either starving or their feed is not palatable to them.

PALATABILITY

In addition to including the volume capacity of a goat's rumen when calculating rations (expressed in the 3 to 5 percent/body weight intake range), one must also consider palatability of the ration and the goat's preference for variety and selection of feeds. Actually voluntary intake is more important than correct nutrient composition. Unless feed intake is maximized, production improvement in the short and long run is not secured. In a study with weaned kids in India, the addition of green chop forage to the usual browse pasture improved daily gains from 19 to 42 g/day, but the additional supplementation with a grain ration resulted in daily gains of 108 g (Devendra, 1987).

FEEDING STRATEGIES

Feeding strategies under the confinement system can include green chop, agricultural and industrial by-products besides commercial grain rations. This will provide variety, increase intake, lower feed costs, stimulate milk production, but may increase labor costs. Lopping of tree leaves, crop residues from the canning industry like pea and bean vines, fruit pulp, fresh brewers grain, fresh distillers grain, cotton seed, rice, maize, sugarcane by-products, and straw treatment with ammonia or urea have been successfully used in many tropical countries for goat production improvement.

There are many feeding guides now available based on the NRC or similar official foreign tables of requirements and composition (NRC, 1981; Ensminger et al., 1990; Morand-Fehr, 1991; Haenlein, 1995; Peacock, 1996). In combination with regular body condition scoring of growing and milking goats, these tables should be adjusted up or down to provide the right supply of nutrients under the circumstances with enough challenge for improved production and growth, or with enough restriction to prevent overconditioning and health risks. If all this is well accomplished then it is time to negotiate the right price for milk, yogurt, cheese and meat from the goats, to proceed with aggressive marketing and promotion to reap

the rewards for all this work and to assure that this farm will continue in business for years to come.

REFERENCES

- Devendra, C., 1987. Small ruminant production systems in South and Southeast Asia. Proceed. Workshop Bogor, Indonesia, IDRC, Ottawa, Canada, Publ., 256e, 414 pp.
- Ensminger, M.E., Oldfield, J.E. and Heinemann, W.W., 1990. Feeds and Nutrition, 2nd ed., Ensminger Publ. Co., Clovis, CA, 1544 pp.
- Haenlein, G.F.W., 1978. Dairy goats do well on free-choice feeding. *Hoard's Dairyman* 123:1194.
- Haenlein, G.F.W., 1981. Feeding dairy goats to maximize production. *Dairy Goat J.* 61(11):958.
- Haenlein, G.F.W., 1982. Feeding sunflowers can prevent enterotoxemia. *Feedstuffs*, Aug. 2, 23.
- Haenlein, G.F.W., 1992. Advances in the nutrition of macro- and micro-elements in goats. *Proceedings Vth Intern. Conference on Goats*, New Delhi, India, ICAR Publ., III:933.
- Haenlein, G.F.W., 1995. Topics of profitable feeding and milking of dairy goats. *A.S. & A.B. Dairy Ext. Bull.* 110, 118 pp.
- Morand-Fehr, P., 1991. Goat Nutrition. Pudoc Wageningen Publ., Netherlands, EAAP Bull. 46, 308 pp.
- Naylor, J.M. and Ralston, S.L., 1991. Large Animal Clinical Nutrition. Mosby Year Book, St. Louis, 576 pp.
- NRC, 1981. Nutrient Requirements of Goats: Angora, Dairy, and Meat Goats in Temperate and Tropical Countries. National Research Council, National Academy Press, Washington, D.C., Bull. 15, 91 pp.
- Papachristou, T.G. and Nassis, A.S., 1996. Influence of deciduous broadleaved woody species in goat nutrition during the dry season in northern Greece. *Small Rumin. Res.* 20:15.
- Peacock, C., 1996. Improving Goat Production in the Tropics. Oxfam/Farm Africa Publ., Oxford, U.K., 386 pp.
- Ramirez, R.G., Loyo, A., Mora, R., Sanchez, E.M. and Chaire, A., 1991. Forage intake and nutrition of range goats in a shrubland in northeastern Mexico. *J. Animal Sci.* 69:879.
- Santucci, P.M., Branca, A., Napoleone, M., Bouche, R., Aumont, G., Poisot, F. and Alexandre, G., 1991. Body condition scoring of goats in extensive conditions. In: *Goat Nutrition*, P. Morand-Fehr, ed., Pudoc Wageningen Publ., EAAP Publ. 46:240.

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Note: There are eight fascinating tables which we did not print with this article due to lack of space. If you want them, you can get them from the internet at:
<http://ag.udel.edu/extension/goatmgt/gm-02.htm>

Or, if you do not have internet access and want them, contact us and we'll send them to you.

List of Fascinating Tables:

- Table 1. Management efficiency from DHIA data of 120 goat herds in the NE-USA.
- Table 2. Nutrient composition of some seeds for goats (%DM)
- Table 3. Nutrient intake by free range goats in Mexico.
- Table 4. Factors affecting feed intake by goats.
- Table 5. Effect of nutrition on lactation milk yield in dairy goats in India.
- Table 6. Improvement potential in indigenous adult Malaysian goats as a result of improved nutritional management.
- Table 7. Effect of feeding urea-ammonia treated rice straw on weight gain of young Indonesian goats.
- Table 8. Body condition scoring of goats.

Tables: You just gotta love 'em!

Effects of Federal Tax Policy On Agriculture

By Ron Durst and James Monke
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This article is the summary and abstract sections of a 50-page report (Agricultural Economic Report No. 800) released by the USDA in April 2001. The complete report is available on the internet at:

<http://www.ers.usda.gov/publications/aer800/>

Abstract

This report analyzes the effects of the current Federal tax code on farming and evaluates tax proposals to assist beginning farmers. Investment, management, and production decisions in agriculture continue to be influenced by Federal tax laws. Farmers continue to benefit from both Federal income and estate tax policies targeted to agriculture. These provisions exert upward pressure on farmland values and help support ongoing trends that increase the number of very small and large farms. However, the influence of the current tax structure with lower marginal tax rates and a broader income base is less than in earlier decades and may be small relative to government farm programs. Tax proposals to assist beginning farmers would likely increase the availability of land for lease or purchase, but would do little to make land more affordable.

Summary

Changes to the Federal income tax structure over the last two decades have resulted in a broader tax base and lower marginal income tax rates with fewer opportunities to shelter income through exclusions, deductions, and credits. Despite large increases in the amount of property that can be transferred free of tax, Federal estate and gift taxes are of continuing concern to the farm community. Social security and self-employment taxes, however, impose a much greater burden and play a greater role in investment and management decisions due to sharp increases in their tax rates and the amount of income subject to such taxes.

In 1998, the U.S. Department of Agriculture's (USDA) National Commission on Small Farms recommended that USDA evaluate the effects of the tax code on farming and of various proposed changes to such Federal policies to aid beginning farmers. This report is the result of that evaluation.

The authors adopted the farm typology developed by USDA's Economic Research Service (ERS) to differentiate several types of small farms—farms with sales under \$250,000, as defined by the Commission. The Internal Revenue Service (IRS) provided special data tabulations using the ERS typology for the study of the effects of the Federal income and social security taxes. Estimates of estate tax burdens and effects were based on USDA farm surveys.

The most important Federal taxes for farmers are the income tax, the self-employment tax, and the estate and gift tax. The current tax system provides favorable treatment to farmers, both through general tax provisions available to all taxpayers and from provisions specifically targeted to farmers. Large farms with high farm income and very small farms with high levels of off-farm income benefit most from many of these provisions. While the Federal income tax has become more progressive through the expanded earned income tax credit and new higher marginal tax brackets, overall progressivity continues to be reduced by social security taxes.

Tax policies create financial incentives to engage in tax-favored activities. In farming, tax policies reinforce other factors such as technological change and economies of size that have contributed to an increasing number of large farms. Tax benefits generally accrue to those with higher incomes—farm or nonfarm. Although very small farms do not generate enough farm income to support a family, most small farms benefit from farm losses for tax purposes because these losses reduce taxes on nonfarm income.

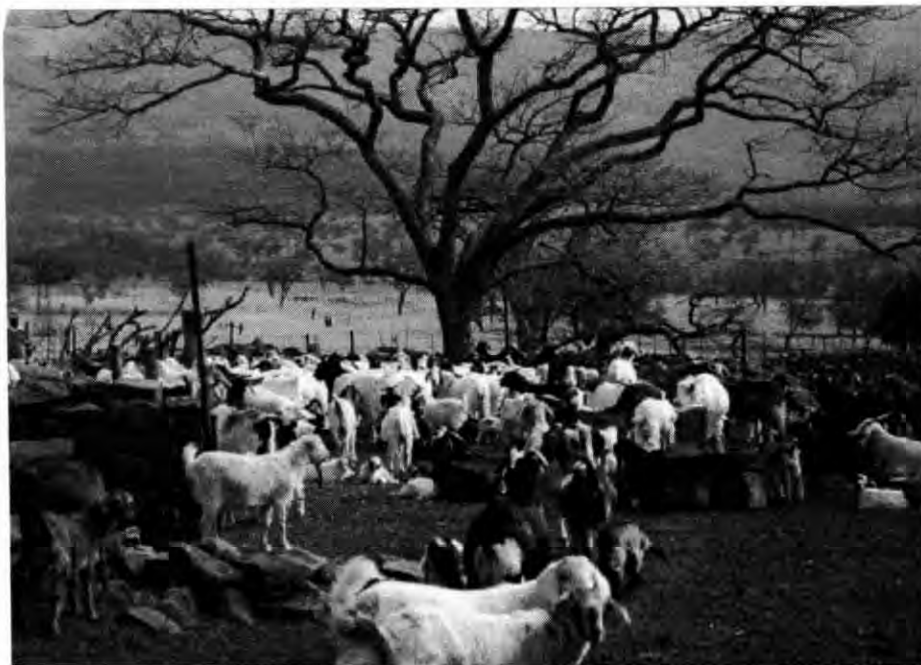
At the same time, many full-time farmers do not generate enough taxable income, either farm or nonfarm, to fully utilize available tax benefits. Estate tax rules encourage farmers to hold land until death and allow most farm estates—except for the very largest—to be transferred free of tax. Across the farming sector, Federal tax policies affect farmland prices, the cost of capital relative to labor, farm size and organizational structure, farm management practices, and product supply and prices.

The most significant effects of current Federal income, estate, and social security tax policies include the following:

- Exert upward pressure on farmland prices through preferential treatment of capital gains and estate taxes that increase the demand for and reduce the supply of land on the market.
- Support pre-existing trends in the increasing share of very small and very large farms.
- Large, profitable farms benefit from tax preferences and deductions.
- Small, lifestyle (hobby) farms use farm losses for tax purposes to offset non-farm income.
- Help established farmers or nonfarm investors outbid beginning farmers for land.
- Contribute to greater farm output and lower commodity prices resulting from more intensive use of resources.
- Favor capital investment over labor.
- Encourage environmentally friendly land use because of targeted tax incentives for conservation and land preservation activities and reduced tax benefits for harmful practices.

A SURVEY OF CASHMERE PRODUCTION FROM INDIGENOUS GOATS IN KWAZULU-NATAL

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Introduction

KwaZulu-Natal, with 13.2 % of the national goat population, ranks third after the Eastern Cape (48.9 %) and Northern Province (13.8 %), in terms of goat numbers (Directorate: Agricultural Statistics, 1999). In August 1995, KwaZulu-Natal had 113,198 goats in commercial areas, mainly Boer goats, and 710,493, approximately 85 %, in the less developed areas, the majority of these being of the indigenous type ("Zulu" goats). Goats in less developed areas fulfil multiple roles that can hardly be equaled by other ruminant species and this valuable resource should be explored. Despite their apparent importance to agriculture, in less developed areas in particular, there is a lack of basic information regarding the potential performance of goats. There is an awakening of interest in the role of goats in rural development in KwaZulu-Natal.

Goats are generally kept for their meat, milk, skins, for controlling bush encroachment and in developing areas, mainly for ceremonial purposes. There is, however, a potential for obtaining additional income ("adding value") by making use of the fine, soft undercoat (cashmere) produced by some breeds. Worldwide there are many goat breeds which possess the ability to produce a fleece consisting of two distinct fibre populations of which the South African Boer goat and Savannah goat and other indigenous goats are good examples.

What is cashmere?

Cashmere is the fine (4 to 30 micron), soft unmedullated undercoat. This component is retained after removing (dehairing) the coarse outer coat or guard hair component (31 to 200 micron) from a combed sample. Combing is car-

ried out with the goat standing up. The combing is done in a downward direction following the pattern of the hair. Colour ranges from white to brown. Good quality cashmere is white in colour and has a maximum fibre diameter of 18.5 micron (Braun, 1996) and a minimum length of 4 cm (Braun, 1999 - personal communication).

Goats that produce cashmere possess the inherent ability to respond to changing day length and climatic conditions causing an active fibre growth and fibre shedding period. Cashmere-producing goats grow fibre between the longest and the shortest day after which it is shed (Sumner & Bigham, 1993). Down grows actively from December to June for protection against the cold winters and the fibre is shed during spring (July to September).

Overcoming the challenges to goat production includes addressing the lack of baseline information, such as the potential for cashmere production in KwaZulu-Natal and the possible income to be generated. The objectives of the study were firstly to determine the quality and quantity of cashmere produced by goats in KwaZulu-Natal and secondly to determine the possible income to be generated from this fibre by communal and commercial goat farmers.

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CASHMIRROR

Cashmere—KwaZulu-Natal

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Materials and Methods

The Farming Systems Research Section, Extension staff, and other researchers of the KwaZuluNatal Department of Agriculture and Environmental Affairs, in cooperation with Mr Albie Braun from the CSIR, Division of Textile Technology in Port Elizabeth, embarked upon a project to determine the quality and quantity of cashmere produced by goats in KwaZulu-Natal. During 1997 and 1998 goats with visual evidence of possessing cashmere were combed at the following sites (number of goats combed in brackets): Pongola (16), Wasbank (21), Bartlow Combine (6), Kranskop (18), Estcourt (42), Colenso (15), Cedara (6), Mpophomeni (4), Impendle (35), Bergville (8) and the Kokstad area (17). 87 % of the goats combed during the two seasons were "Zulu" goats. Goats combed were from communal smallscale farmers, commercial farmers, a stud and research stations. Goats possessing cashmere were combed at 2-weekly intervals from mid-July onwards until no more sample was obtained. The combing of goats was terminated towards the end of September. At each combing session goats were combed until all the loose down fibres were combed out. If an insufficient quantity of fibres was obtained from the first couple of strokes it was assumed that the goat was not yet shedding, and it was left until the next visit. After each combing the material obtained was weighed to measure raw yield per combing. Material from individual animals was kept separate and marked according to the age and sex of the goat. At the end of the combing period total production per goat was measured. The combed material was sent to the Textile Division (TEXTEC) of the CSIR in Port Elizabeth for micron and clean yield analysis.

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Cashmere colour ranges from white to brown.



Fleece consists of two distinct fibre populations—fine and coarse.



Combed sample. Soft unmedullated undercoat (cashmere) and the coarse outer coat or guard hair.



Combing is done in a downward direction following pattern of the hair.

Cashmere—KwaZulu-Natal

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Regression analysis (Genstat 5, 1998, Lawes Agricultural Trust) was used to describe the effect of (1) mean sunshine hours for June and December, (2) annual rainfall, (3) minimum temperature and (4) maximum temperatures for June and December in the areas where goats were combed on cashmere yield (y) and fibre diameter (y). The climate information was supplied by the Natural Resource Section of the KwaZulu-Natal Department of Agriculture and Environmental Affairs (Table 1).

Results and Discussion

The number of goats combed, mean sample weight combed/goat, fibre diameter and clean yield of goats combed at the different sites are summarized in Table 2. Goats combed in the Bergville area (Obonjaneni community) and in the Impendle area tended to produce more cashmere than the goats combed in the other areas. The mean fibre diameter of the samples was finer than the 18.5 micron required for the fibre to qualify as cashmere (Braun, 1996). The down (cashmere) fibre diameter tested between 12.79 and 18.79 micron, with an average diameter of 15.76 micron.

The variation in annual cashmere yields obtained from goats combed during 1997 and 1998 (n = 188) is summarized in Table 3, next page. Results indicate that goats in KwaZulu-Natal show a huge variation in annual cashmere produc-

Table 1 The mean December and June temperatures, mean sunshine hours and mean rainfall for the areas where goats were combed.

Area	Mean temperatures (°C)		Mean sunshine (hours)	Mean rainfall (mm)
	December	June		
Pongola	25.4	17.1	7.6	588
Bartlow	23.7	16.1	7.1	661
Kranskop	19.5	11.8	6.6	836
Wasbank	20.8	11.2	7.2	778
Colenso	20.7	11.1	7.4	708
Estcourt	19.5	10.5	7.2	714
Bergville	20.2	9.7	6.5	971
Impendle	18.8	11	6.7	967
Mpopomeni	19.1	11.4	6.9	838
Kokstad	18.1	10.4	7.1	751

Table 2 Number of goats combed per site, mean weight of material combed per goat, fibre diameter and clean yield of combed samples from goats combed during 1997 & 1998.

Area	Parameters			
	Number of samples analysed (goats combed)	Average weight combed/goat (gram)	Fibre diameter (micron)	% Clean yield
Pongola (Zulu goats)	7	7.12 ∓ 4.27	15.2 ∓ 0.846	76.3 ∓ 7.32
Bartlow Combine (Zulu goats)	6	3.9 ∓ 2.45	14.7 ∓ 0.23	83.0 ∓ 8.19
Wasbank (Zulu goats)	19	6.29 ∓ 6.42	15.5 ∓ 1.39	69.9 ∓ 12.56
Obonjaneni (Zulu goats)	8	19.8 ∓ 11.67	15.9 ∓ 0.63	68.3 ∓ 8.23
Colenso (Zulu goats)	14	9.1 ∓ 5.59	15.3 ∓ 1.35	81.9 ∓ 10.93
Kranskop (Boer goats)	19	5.0 ∓ 4.72	15.8 ∓ 1.4	69.7 ∓ 14.64
Estcourt (Zulu goats)	33	8.04 ∓ 11.24	15.3 ∓ 1.54	68.9 ∓ 12.9
Estcourt (Boer goats)	5	10.2 ∓ 3.48	16.4 ∓ 1.34	74.4 ∓ 6.72
Cedara (Saanen x Zulu)	13	3.55 ∓ 7.11	14.9 ∓ 3.06	60
Mpopomeni (Zulu goats)	4	12.98 ∓ 8.7	15.2 ∓ 1.22	81.7 ∓ 8.6
Impendle (Zulu goats)	32	29.29 ∓ 17.85	16.1 ∓ 1.39	74.9 ∓ 9.88
Kokstad (Zulu goats)	16	6.77 ∓ 10.26	16.1 ∓ 10.26	74.2 ∓ 9.73

tion. Cashmere yields varied from 0.04 to 70.65 g/goat. The current survey show that 68 % of goats combed produced less than 10 g per season. Results obtained by Braun (1998) showed that Boer- and Savannah goats produced an average down weight of approximately 25 g/goat and traditional

goats an average of approximately 12 g/goat, with a coefficient of variation as high as 55%, indicating a considerable variation in down weight within breeds as was found in the current investigation.

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Cashmere—KwaZulu-Natal

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The variation in yield indicates a good genetic pool for future improvement through selection (Braun, 1998). Goats which are good cashmere producers generally exhibit an obviously wooly neck and such goats could be used as future breeding stock. The high genetic correlation (0.65 to 0.92) between down length and down weight (Sumner & Bigham, 1993) means that farmers can utilise down length as an indirect estimate of down weight. This will reduce the fleece testing costs associated with dehaireing the fleece to estimate down yield. Down length could easily be measured on the animal prior to harvesting.

The selection for down weight in cashmere-producing goats will also result in an increase in both down length and down diameter and some reduction in live weight (Sumner & Bigham, 1993). The live weight and diameter responses are both undesirable. A reduction in live weight may lead to reduced fertility, and an increase in diameter will result in animals producing down outside the accepted cashmere diameter limit of 18.5 μ (Sumner & Bigham, 1993). According to Sumner & Bigham (1993) the principle non-genetic factors affecting fleece and fibre characteristics in both sheep and goats are age, nutrition, physiological status, disease and shearing regime. Norton (1998) also found patterns of cashmere growth to be affected by age,

sex, pregnancy and lactation, as well as photo-period. All the goats in this survey were in grazing systems. During summer months the goats in the communal systems rely entirely on veld grazing. Some graze within the residential areas while others are taken further away to graze communal land and mountain slopes. The nutritive value of veld in sourveld areas drops from March onwards limiting animal performance over the winter period. According to Norton (1984) cashmere production appears relatively insensitive to the level of nutrition under grazing conditions although guard hair production may be responsive. There is no effect of increasing protein or energy intake

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Table 3 Variation in cashmere yields exhibited by goats in KwaZulu-Natal combed in 1997 and 1998.

Weight (g)	Number of goats combed	% of goats combed	Average weight (g)
# 10	128	68	3.86 ∇ 3.02
11 - 20	26	14	14.89 ∇ 2.65
21 - 30	14	7	25.15 ∇ 2.88
31 - 40	9	5	34.10 ∇ 2.71
$\geq$ 41 g	11	6	51.97 ∇ 9.14

Table 4 Fibre characteristics of cashmere produced by goats in different farming systems in KwaZulu-Natal.

	Farming System					
	Small-scale Communal (Zulu goats)	Commercial (Zulu goats)	Stud (Boer goats)	Commercial (Boer goats)	Research station: Cedara (Saanen x Zulu goats)	Research station: Bartlow (Zulu goats)
n	99	24	5	17	10	6
Micron:0	15.7	15.5	16.4	15.8	14.7	14.7
SD	1.39	1.28	1.34	1.40	1.26	0.23
Unscoured (g):						
0	15.8	9.5	10.2	5.0	5.9	3.9
SD	16.36	8.23	3.48	4.71	8.99	2.45
% Down yield:						
0	72.7	77.0	74.4	69.7	60.0	83.0
SD	10.71	14.09	6.72	11.64	18.28	8.19
¹ Cashmere (g)						
0	11.3	6.6	7.6	3.6	4.38	3.1
SD	11.53	5.74	3.01	3.46	7.12	2.14
¹ Scoured weight x % down yield						

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on cashmere growth or fibre diameter of goats who are at maintenance level or are actively growing (Norton, 1984). Cashmere production is however depressed when goats lose weight for a significant period during the period of cashmere growth (Norton, 1998). Cashmere growth in does is maximised when kidding and lactation fall outside the growth period, when does are gaining weight and when they are harvested twice during the growth phase (Norton,

1998). Environmental factors such as location and winter temperatures seem to play an important role in the initiation and development of secondary follicles (Smuts, 1997).

The fleece characteristics of KwaZulu-Natal goats in different farming systems are summarized in Table 4, previous page. The cashmere from goats combed on Cedara and Bartlow Combine showed exceptionally fine fibre diameter. The mean percentage of down yield in the combed samples varied between 60 and 83 % with high standard deviations. Indigenous goats combed in small-scale communal systems showed the highest yields of cashmere, but with a higher standard deviation compared to goats in the other systems. The boer goats in the commercial system showed on average the lowest cashmere yields. It is clear from the data that enough variation exists in all the fleece characteristics to allow for the identification of genetically superior animals to be used in breeding programmes to increase the quality and quantity of cashmere.

Table 5 The relationships between cashmere yield (mass) (y) and the mean sunshine hours, mean rainfall and mean temperature for June and December.

Cashmere yield	Equation	n	r ²	P	S _{y,x}
y =	135.5 - 17.75 x sunshine hours	134	0.31	0.001	8.51
y =	-30.25 + 0.05031 x rainfall	134	0.362	0.001	8.18
y =	27.9 - 0.968 x Dec temperature	134	0.049	0.261	5.49
y =	19.70 - 0.970 x Jun temperature	134	0.079	0.220	5.40

Table 6 The relationships between fibre diameter (y) and mean rainfall and December mean temperature (x).

Cashmere yield	Equation	n	r ²	P	S _{y,x}
y =	14.194 + 0.001980 x rainfall	134	0.027	0.027	1.30
y =	19.45 - 0.1845 x Dec temperature	134	0.053	0.004	1.29

The length of the fibres was not measured. According to the CSIR (A Braun, personal communication, 1999), the fibres of combed samples in South Africa are too short for a successful dehairing process and also influence the quality of cashmere products negatively.

Regression analysis

The regression equation describing the relationship between fibre diameter (x) and cashmere yield (mass) (y) was: $y = -13.6 + 1.470x$ ($S_{yx} = 10.1$; $r^2 = 2.9$; $P = 0.027$; $n = 134$). Although the percentage of variance accounted for is very low, the relationship shows that an increase in fibre diameter will increase the cashmere yield, as was found by Sumner & Bigham (1993). Bigham et al. (1993) found phenotypic and genotypic correlations between down weight and fibre diameter in New Zealand Cashmere goats yearlings to be 0.50 ± 0.03 and 0.81 ± 0.08 respectively, presenting an unfavorable relationship when selecting for heavier fleeces but finer down.

The regression equation describing

the relationship between cashmere yield (y) and the mean sunshine hours (x), mean rainfall (x) and mean temperature for June (x) and December (x) are summarised in Table 5.

Analysis showed that cashmere yields decrease significantly with higher sunshine hours and with higher rainfall. Temperature, in this study, played no significant role in cashmere yield, but there is an indication that goats in areas with high temperatures produce less cashmere.

The regression equations describing the relationship between fibre diameter (y) and the mean rainfall (x) and December mean temperature (x) are summarized in Table 6.

Although significant relationships were found the percentage of variance accounted for is too small to read anything into these relationships.

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Possible income to be generated from cashmere

TEXTEC, CSIR in Port Elizabeth currently pays R 105/kg for white cashmere with fibre diameter below 16.5 micron. (*Editor's hint: 100 Rand = US\$12.44, kg=2.2 lbs.*) At this price goat owners in KwaZulu-Natal would earn an average amount of R 1.17 per goat for cashmere harvested over a season, based on the annual cashmere yields given in Table 3.

For a 50 goat flock, the annual income from cashmere would be approximately R 60. In Impendle, the average flock size was found to be 13, resulting in a potential annual cashmere income of approximately R 15.21 per farmer. This is not a positive scenario for a future cashmere industry, especially when the potential industry relies on the cashmere produced by approximately 710,500 goats in the less developed areas of KwaZulu-Natal.

A woman's jersey uses 400 to 500 grams of cashmere (down) fibre. Results from the survey show that cashmere from approximately 60 goats is required for one jersey. The farmer (goat owner) will receive only R 70 for this quantity of cashmere, while in the main centres of South Africa, the finished product will retail at between R 750 and R1000.

Conclusion

A large global market exists for the finer and higher quality textile fibres and therefore it is imperative for South Africa to utilise the potential of the indigenous goats to the fullest (Braun, 1998). The fibre diameter and clean yield results of the study indicate that goats in KwaZulu-Natal produce good quality cashmere but whether the quantity of down warrants harvesting is questionable.

The amount of cashmere needed to justify combing is debatable. If the goats are handled daily and kraaled, it would be fairly simple for small-scale farmers to comb them. Results showed, however, that in order to establish a cashmere industry in KwaZulu-Natal, higher yields will have to be obtained (neither the down fibre weights nor the fibre lengths are commercially acceptable). Data show that enough variation exists within the goat population in the Province to be able to improve yields through a goat selection and breeding programme. The negative correlation found between down weight and live weight needs to be taken into consideration. At present, goat owners require an infrastructure and an easily accessible market to be in place for their cashmere in order to stimulate any interest in this product.

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References

- Braun, A.**, 1996. Cashmere. CSIR, Division of Textile Technology. Pamphlet.
- Braun, A.**, 1998. The potential utilization of South African indigenous goats for cashmere production. Research and Training strategies for goat production systems in South Africa. Proceedings of a Workshop held on 22 - 26 November 1998 at Kings Lodge, Hogsback, Eastern Cape. Eds. E. C. Webb, P. B. Cronje & E. F. Donkin.
- Norton, B. W.**, 1984. Nutrition of the goat. A review. In: J.W. Copland (Editor). Goat production and research in the tropics. A.C.I.R. Proceedings (7), 75 - 81.
- Norton, B. W.**, 1998. Biological constraints and opportunities for the production of meat, milk and fibre from Australian cashmere goats. Research and Training strategies for goat production systems in South Africa. Proceedings of a Workshop held on 22 - 26 November 1998 at Kings Lodge, Hogsback, Eastern Cape. Eds. E. C. Webb, P. B. Cronje & E. F. Donkin.
- Smuts, M.**, 1997. Current work at the ARC, Irene: Among others, nutrition Physiology of goats. Cedara Report N/A/98/5. Goat Production. A compilation of papers presented at a Goat Day held by the KwaZulu-Natal Department of Agriculture, Cedara. 26 November 1997. Ed. Brigid Letty.
- Sumner, R.M.W. & Bigham, M.L.**, 1993. Biology of fibre growth and possible genetic and non-genetic means of influencing fibre growth in sheep and goats - review. Livestock Production Science, 33:1 - 29.

Photographs provided by J F de Villiers



"Zulu" goat combed in the Impendle area.

Calendar of Events

July 24 - 26, 2001 (Last issue dates listed were incorrect)

Goat Producers Gathering, YO Ranch Resort Hotel, San Antonio, Texas. Organized by the Texas Agricultural Extension Service. Presentations, demonstrations, trade show, concurrent session on basic management procedures, Cabrito Cuisine cook camps, live animal evaluation, goat showmanship, update on goat meat industry, health management and predator control. More information: Dr Rick Machen 830-278-9151, email: r-machen@tamu.edu

August 11-12, 2001

NWCA Fleece competition (11th), Llama Show and Fiber Arts Show, Evergreen State Fairgrounds, Monroe, WA. Featuring sheep, goats, llamas, alpacas and rabbits. Animals and fleece for sale, fiber judging, classes, seminars, demonstrations, gift and craft vendors. Info: Sandi Cash, ALSA Show Chair 360-659-9551, casharosa@mindspring.com, Pat Skelton, Fiber Chair 360-445-5262 hbskeltn@gte.net. More information about NWCA fleece competition, contact NWCA.

September 22 - 23, 2001

Oregon Flock & Fiber Festival, Clackamas County Fairgrounds, Canby, Oregon. Workshops, classes, animal shows, animal exhibits, vendor booths, contests, lamb and cabrito cookoff. Your one-stop shopping center for the fiber enthusiast. *Cashmere goat show - 10 AM, Saturday, 9/23.* <http://www.flockandfiberfestival.com>

October 2-3, 2001

ECA Fleece Competition (2nd) and Goat Show (3rd) at the State Fair of Virginia, State Fairgrounds, Richmond, Virginia. Judge, Joe David Ross, Texas.

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Boer goats in a commercial system, KwaZulu-Natal, South Africa.



"Zulu" goats in a communal small-scale system, KwaZulu-Natal, South Africa.

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Myrna Coombs
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Onoway, Alberta, Canada
Internet listing of these breeders and a link to their email addresses and homepages, if they have one, can be found on the net at:

<http://www.cashmirror.com/breeders.htm>



"Cold North Wind"

A Bronze Cashmere Goat

Story and photos by Steve Hachenberger

Noted Montana sculptor, C. A. Grende has been working on goats. Her recent sculpture, "Cold North Wind" depicts a stately cashmere buck, standing on a rock outcrop where the wind is brisk and the snow blows in drifts at his feet.

Casting bronze is a long process. First the artist sculpts the subject, usually in clay. This clay form becomes the pattern from which a mold is made. A type of rubber is applied to the clay pattern pieces and backed up with a casting plaster shell. This is the most important part of the process as the mold allows you to make waxes in the same image as the pattern. The waxes are then tooled and vented to direct the flow of the bronze. A shell is formed around each piece, in layers. A type of liquid glass and silica sand are used for the shell. These go through a drying period between layers. When each piece is cured it is placed in an oven and fired to melt and burn out the wax.

While the shells are still hot, they are removed from the ovens and placed in a bed of sand to hold them firmly. The bronze is then poured into the shells at near 2,200 degrees. When the bronze is cool, the shell is removed and the raw bronze is revealed. Then comes the process of tooling, welding and assembling each piece.

Next, the bronze is colored. Hours are spent heating and applying the patina. The completed statue here (belonging to Steve Hachenberger) has a patina of ivory whites with traditional bronze color on the horns. The horns have been treated with a ferric wash to give them natural tones of warm color. The finished patina on the bronze is waxed to protect it.

The completed sculpture is mounted onto a base to which is added an engraved brass plaque.

Top: Artist at work with the clay model.

Middle: Bronze getting its coats of color.

At left: Carol Ann Grende and her completed masterpiece.



Ali, from Kurdistan And the Maraze Goat

In the January and February issues of CashMirror, we wrote of Ali, a post-graduate student at the University of Salahaddin-Arbil in Kurdistan-Iraq. He was seeking information and contacts about cashmere goats. He and Paul have become internet "pen pals." Their exchanges are brief, due to language difficulties and Ali's limited internet time at the university.

We recently received a packet of fascinating photographs from him. Ali's photograph is above and his description of the remaining pictures are brief—such as "male" for the photograph at right. Anyway, we are thrilled to get them and to be able to pass them along to you. Sorry your copies are not in color.



Kurdistan—an area of Iraq.



At right is a "flock of goats" per Ali. From the looks of the rocky soil, we doubt hoof trimming is an issue, however, Paul intends to ask him this question in his next correspondence. These goats have not yet been shorn/combed.



Photographs by Ali H. Hamad

More Photographs from Kurdistan



“Method of shearing”. Fleece is being combed from the goat with the comb pictured at lower right. The date on the photograph reads March 24, 2001.



“Goats after shearing.”

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“Comb (by hand)”

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...Mickey

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Barry Norton, 1998.

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...George F. W. Haenlein, University of Delaware

"Why is it called tourist season if we can't shoot at them?"

...George Carlin

The Deadlines:

Articles, photographs, advertising and other information submitted must be received by the 25th of the month prior to magazine issue date.

If you need assistance designing or laying out a display ad, or fine-tuning an article, earlier is appreciated.



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