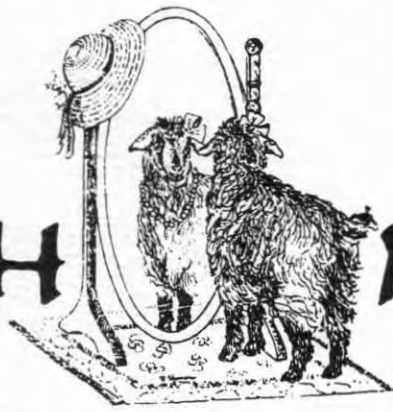


CASH MIRROR



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SEPTEMBER 1992



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CASHMIRROR

CASHMIRROR REFLECTING THE CASHMERE INDUSTRY

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The CASHMIRROR welcomes contributions of articles and photographs. If possible type articles in double spacing on one side of the paper.

No responsibility will be taken for material while in transit or in this office, although it will receive maximum care.

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Why I Don't Kiss My Goats on the Lips

by Miriam Jeswine

Awhile back, someone published a book of humor called *Never Kiss A Goat on the Lips*. That seemed like good advice to me, since I was living where the goats feasted on poison oak and I was always getting it from them. I hadn't thought of the other possibilities, like soremouth. Goats don't seem to get poison oak rash, but they do get soremouth.

Soremouth shows up with little, dry, scabby bumps on the lips and/or nose. Also called orf, contagious pustular dermatitis, or contagious ecthyma (CE), it usually occurs in young animals, often in late summer, fall and winter. It is another disease that can affect humans. So, don't smooch goat lips.

It is quite contagious, and spreads by contact. The organism, *Parapoxvirus*, is very persistent, and may hang around for many years. It can be carried from infected flocks to uninfected ones on equipment, or by animals from infected flocks. Sheep and goats both are susceptible.

Usually, the infection stays on the lips and nose and, though it is ugly and painful, it is not real serious. If it moves inside the mouth, the pain may prevent the animal from eating. Then it is serious. It can get on the udder and cause a doe to refuse to allow the kid to nurse. That is bad news. More bad news is that the scabby areas can grow together and create such a mass that bacterial infections can develop, necessitating antibiotic treatments. CE can also get between the toes and cause lameness. More bad news. Because the causative organism is a virus, there is nothing that can be done for it. Antibiotics work on bacteria, but not viruses. Even so, some people swear that smearing carbolated salve on the area helps healing. I don't know about that, but the salve certainly picks up dirt and makes very grimy faces.

Mostly the infection is ugly, but not real harmful. I did have a kid which got it inside her mouth, and the pain made her refuse to feed. I fed her milk using a tube down her throat, and she recovered and lived a long, productive life. In the process, however, I must have nicked my index finger on a tooth, because I got orf right along the nail. It was a very swollen,

excruciatingly painful raised lump with red streaks clear to my armpit where the lymph glands were swollen. I kept it covered, partly so I wouldn't have to explain it to people, and partly to remind me not to bump it. It lasted several weeks and went away. I have heard horror stories of attempts to remove the lump surgically which spread the infection systemically. I'm glad I just let it run its course, painful though it was. The moral of the story is, protect thyself from thy critters' cruds. We can catch plagues from our goats. That is bad news.

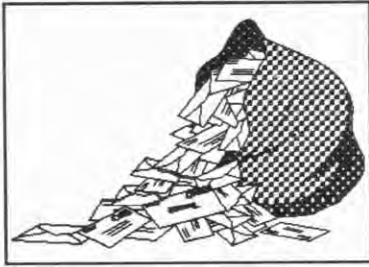
The good news is that the infection doesn't last long, usually one to four weeks, and then the animal is pretty much immune for life. In fact, I have noticed that the kids of does that have had it seem not to get it either, so I wonder (unscientifically) if maybe there is some passive immunity transferred to the kids. I have also

The moral of the story is, protect thyself from thy critters' cruds.

noticed that if soremouth breaks out, the plague infects more animals if they live in crowded quarters, or if there is serious competition for space at the feeders. Again, management can help or hinder animal health.

There are vaccines on the market which seem to work to prevent outbreaks of soremouth, but the bad news is that a newly vaccinated goat can spread soremouth to herd mates. She should be isolated and quarantined for a month after vaccination. This, by the way, is another good reason to quarantine any new goats for a month after their arrival on the farm. I am inclined to think that vaccination is not needed if soremouth is not a prevalent. If soremouth is prevalent, maybe it makes sense to let the animal catch it and be done with it rather than vaccinate every year forever after. This is another matter to talk over with your local veterinarian.

I don't know whether the vaccinations will work with people, so no smooching the goats without first inspecting their faces.



LETTERS

Dear CashMirror;

I'd like to tell CashMirror readers a true story about some special fellow goat folks in search of this perfect fiber. Some of you know that I have been through a difficult first trimester of pregnancy (I'm glad to say all appears to be well). And as with many of us, one person in the family is the "goat/fiber fanatic"; although my husband enjoys, helps support, builds barns and fences, hauls water when the pipes freeze and feeds our goats when necessary, he has never given a shot wormed or trimmed one. It has been my role - and I was out of commission.

In any case, in the midst of the worst of it, two very special people and fellow cashmere breeders - Joyce Peterson (Oregon Cashmere) and Lisa Zietz (Moonshadow Farm) - showed up one Saturday and, along with my husband, Rob - babysitting our 1 year old, Carl, and Joyce's 7 month old son Ryan in the barn - they proceeded to trim, worm and delouse (awful this year) our entire herd, and to wether the appropriate buck kids for us.

I can't tell you what a

tremendous relief, boost and show of support this felt like to me as I lay in bed. It confirms my belief in what "animal" people in general, and "goat people" in particular can be - we were very grateful.

To add to the general chaos and confusion of my incapacitation a group of Lismore does that I had purchased and was trying to coordinate delivery, was due to arrive in Oregon that month. Fortunately, and thanks to Lydia Ratcliffe (Lismore East) and all the fellow purchasers, Carole Laughlin's husband Larry, and of course again my husband the does and kids arrived safely.

A very special thanks also to Phil Gomez, the wonderful goat shipper of this group who successfully dealt with our young black doe that produced twin black kids, a boy and a girl, enroute to the farm. I hear Phil moved them up behind the seat for special tender loving care. They arrived in great shape. (Photo).

Following my last article in CashMirror on ways to keep your cashmere fiber clean while it's growing, Hugh Hopkins (Forte) sent a note saying "that while he liked the tips, he was concerned about the possible use of cotton or polypropylene sheep coats." Apparently these fibers can contaminate the clip for the large processing units if threads come off and mix with the down. Hugh recommended the coats be made of nylon, which takes dyes and processes. I am not familiar with any source for nylon coats - perhaps other readers may be?

Because I primarily

work with protecting and preserving fiber for handspinning, and comb rather than shear, this type of coat has not been a problem for me. But for those breeders selling their fiber to the large processors this could be a problem. Cotton and polypro sheep coats have been used extensively for handspinning flocks, as the benefits include protecting the fiber from vegetation contamination, U.V. deterioration, and containing it until you can get to combing.

I would love to hear of others' de-lousing/dandruff programs (if successful) - As with many areas, the drought conditions have seemed to intensify this condition. We had particular trouble this year and many of the raw fleeces I was offered to purchase this spring had this problem.

Best wishes,
Susan Stutz
Mountain Lake Farm
Gaston Oregon



Dear CashMirror;

I would like to call your attention to an omission in the fleece placing from the Estes Park Fleece Competition. Airy Knoll Farms (Nebraska) had the **second place adult female Fleece**. We think it is very important for her to get her recognition because she is an F1 from an 8 Mile Ranch (Texas) Spanish doe and our imported buck Bronte'.

Sincerely,
Richard and Harriet Jensen
Airy Knoll Farms, Nebraska.

An impressive F1 from a spanish imported cross is a very important accomplishment for your buck. It also gives credit where credit is due to the Texas feral spanish goat. Congratulations and sorry for the mix-up!

Scourge of Spurge in Nebraska!

The Heartland area does not have the number of handspinners and craft people that some of the other areas have as a possible market for many goats. However, we do have a problem with a plant called leafy spurge that could offer jobs to many cashmere goats. This might add an economic opportunity for heartland farmers because as the Montana Game and Parks people say, "cashmere goats are the scourge of leafy spurge". I think we can all agree that to make cashmere a viable industry we need the fiber market, the meat market, breeding goat market and the

weed control market.

With this in mind, we have been on the road learning about leafy spurge and how we can apply our goats. Our first adventure was a leafy spurge tour in Gosper County Nebraska. We heard it advertized and offered our goat as a possible solution and were immediately asked to do a demonstration. First on the tour was an area sprayed with chemicals; second, the Fish and Wildlife showed an insect release area; and third we were taken to a road ditch exhibit spot where we released our goats. Our goats had never seen leafy spurge, so we had some doubts about the success of our demonstration. But as soon as my F1 doe stepped out and looked things over she went straight for the leafy spurge. She passed the brome grass and other temptations only to feast on the pesky spurge. Dicks' Angora Doe was a little more timid because the clicking cameras and people bothered her, but she still went for the spurge eagerly when tempted. We were so proud of our goats and the viewers were very impressed. (We didn't tell them we didn't have spurge eating pros with us!)

Next Airy Knoll Farm along with the ACGMC rented a booth at the Nebraska Ranch Expo. There were about 40 acres of exhibits and 300 exhibitors. We were in the beef barn along with some very fancy cattle, and then us and our lovely pen of goats. We talked to lots of people, gave out about seven pounds of beef jerky-cut in one inch pieces.

We handed out literature and showed fleeces. Kids, the human kind, had pictures taken with the cashmeres. Jan Bauer helped run the booth as our Colorado members could not be with us.

Last week we also attended the International Leafy Spurge Symposium held in Lincoln, NE. Neither Terry Sim nor Russ Nelson could attend so we again represented our Airy Knoll Farms and Cashmere America. It was a very good program and told many people about goats. It seems as though many people do not find goats socially acceptable. However, they are discovering that goats are gppd in some areas for weed control. Also, when farmers see that goats also eat and destroy other weeds and brush, such as the red cedar trees, then they begin to look at them even more favorably.

Editor's note: I might add what a tremendous job our goats in the northwest have done in freeing our farm from heavy blackberry patches and canadian thistle. They have saved us countles hours on the tractor and spraying.

Richard and Harriet Jensen
Airy Knolls Farms, Cozad,
Nebraska

HEARTLAND CASHMERE ASSOCIATION FORMS

On April 25, 1992 a group of CaPrA members met in Fort Collins, Colorado to form a regional growers organization.

The name Heartland Cashmere Association was selected to be more inclusive of the vast area the group has to cover.

Regional membership is from Montana West, Wisconsin and Missouri on the East and Oklahoma on the South. Anyone is invited to join!

The mission of the group is to form a network for dispensing information on the cashmere goat industry to goat raisers or potential goat owners.

The mailing address of the organization is: Heartland Cashmere Association, RR 3 Box 144, Cozad Nebraska 69130

Harriet Jensen is the first chairman of the organization and hopes to make contact with fellow cashmere enthusiasts in the region during the first year

of the organization.

The organization puts out an interesting and informative bimonthly newsletter. Cost of the newsletter and membership is \$10.00 per year.

The organization also sells a fabulous bumper sticker that says "Goats - Natures Best Herbicide" Write the chairman for yours, I won't part with mine!

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8 females and 8 males to sell

The Inside Story

By Dr Kay Orlando, DVM
Reprinted from Pygmy Goat Digest
Spring 1992

While no one expects breeders to be anatomists, it is none the less important that the breeder have a basic understanding of the placement of the internal organs. If one has a working knowledge of how the abdominal organs are situated, then it becomes easier to understand the normal changes that take place during growth and pregnancy; as well as abnormal changes in certain disease processes (i.e., "hardware" disease, or displaced abomasum.) While many of the internal organs of the goat are situated in much the same position as our own, the bulk of the forestomachs of the ruminant distorts their placement somewhat.

The main feature of the abdomen, when viewed from the left side, is the rumen. It extends from the diaphragm (a muscular band which divides the chest and abdomen) to way beyond the last rib, filling most of the left side of the abdomen. The constant churning sounds of the rumen are easily heard without the aid of a stethoscope. These sounds should be constant and vigorous in the normal animal. If the rumen becomes overextended with gas (bloat), it is first noticed on the left side of the goat. Tucked anterior to the rumen, next to the diaphragm, lies the reticulum (second chamber of the forestomach). Pressed up next to the

diaphragm, it is a very small distance from the heart; which lies on the other side of the diaphragm. Sharp objects (such as wire or nails) settle into the reticulum when eaten. As the reticulum contracts, these objects can be pushed through the wall of the reticulum, the diaphragm, and into the sac surrounding the heart. This potentially life threatening condition is called "hardware" disease.

Because of the mass of the rumen, many of the abdominal organs are situated more to the right side. The liver, which filters blood and aids in the digestive process, lies against the diaphragm on the right side. It is situated well ahead of the last rib and cannot be palpated. The abomasum (true stomach) lies on the right side, just beyond the last rib. It empties into the duodenum (beginning of the intestines) high on the right side. Because of the number of important abdominal organs that are situated on the right side, most abdominal surgeries (such as caesarian section) are done on the left side.

The non-gravid uterus and urinary bladder are situated far back in the abdominal cavity. The urinary bladder in the doe lies ventral to (under) the uterus. It empties into the floor of the vagina via the urethra. The kidneys are

located under the backbone, one just ahead of the other. The abdominal wall is lined with a thin clear sheet called the peritoneum. The abdominal viscera is covered with an extension of the peritoneum. Irritation or infection in the abdominal cavity causes an inflammation of the peritoneum called peritonitis. This is a severe and potentially fatal condition, because of the large surface area that can be involved and the rapid absorption of infection or toxins from the peritoneum into the bloodstream.

Figure 1 shows the position of the abdominal organs in the buck, wether, or non-pregnant doe, as viewed from the left and right side.

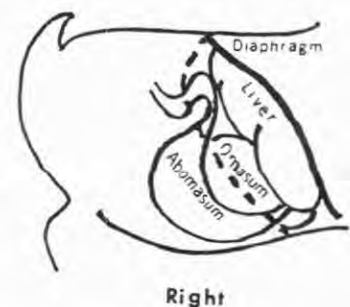


Figure 1 - Side view of mature goat. Dotted line represents the last rib and cartilage.

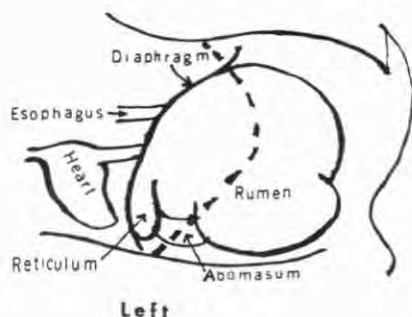


Figure 2 represents the position of abdominal organs in a newborn kid, a non-pregnant doe, and a doe near term pregnancy. These drawings show the position as viewed from the underside of the animal, since the abomasum (true stomach) and uterus are located low in the abdomen.

There is a great deal of change that takes place in the size and position of the abomasum as the goat matures. Born a simple-stomached animal, the kid matures into a functioning ruminant with the development of the large forestomachs. The abomasum - larger than the forestomachs at birth - becomes dwarfed by the size and bulk of these structures in the mature animal.

The enlarged uterus of the pregnant animal distorts the positions of the other abdominal organs, especially the abomasum. The abdominal organs do not shrink in size during pregnancy; so there is increased pressure on the abdominal wall, diaphragm, and abdominal organs to accommodate the bulk of the enlarging uterus. It is easy to understand why some does

become very uncomfortable near the end of the pregnancy, especially if carrying more than twins! The very large uterus puts pressure on the chest as well as the abdomen, due to the pressure exerted on the diaphragm.

A condition that is fairly common in dairy cattle, and poorly documented in goats, is that of left displaced abomasum. The abomasum is shifted from its normal right side position towards the left side. This can happen as a result of the large gravid uterus displacing it; it can also occur when the goat is rolled on its back (either accidentally or intentionally). The abomasum then slips more to the left and gets trapped by other abdominal organs when the goat is righted.

Take a little time to visualize the placement of the abdominal organs. You will be a more knowledgeable breeder, and better able to understand normal and abnormal conditions that occur. You will better understand your veterinarians' explanations of what is occurring with your goats, and you can better assist that veterinarian in treating your animals.

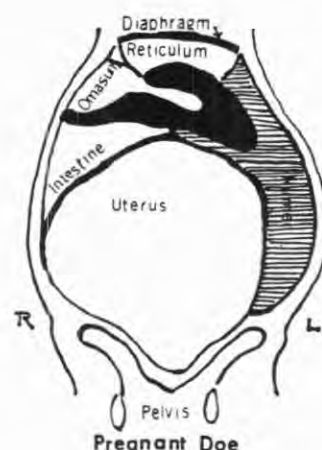
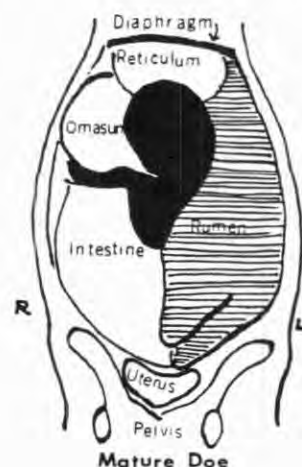
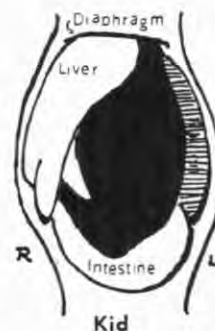


Figure 2 - Ventral view of the abdomen of kid, mature doe, and doe near term. Abomasum is black in all drawings.



Scottish Fleece Competition Results

Reprinted from Scottish Cashmere News, June 1992



Editor's Note: For the first time since I have been in the cashmere business, I have come across a fleece competition that seems to have standards for judging - The Scottish Cashmere Association.

Never, please correct me if I am wrong, in the 4 competitions that have been held in the United States has a class been defined for the breeders. I might add the exception for the age of the animal. It seems to me that when a breeder has knowledge of the standards of judgement prior to entry they can intelligently enter their fleeces for judgement and compete evenly. You have heard the saying "compare apples to apples and oranges to oranges"

Just like the ancient sport of Equestrian dressage each item the Scottish fleece competition judged was on an agreed upon standard of performance - something that is measurable to excellence or marketability. And most important: if no one fleeced measured up in a particular class, then no prize was awarded. PLEASE READ ON - WE CAN LEARN SOMETHING.

Fleece Competition

Entries Doubled

More than seventy members and guests attended the 1992 Fleece Competition and Fiber Day at Perth Agricultural Center on Saturday the 30th of May.

A lot was packed into a short space of time. The fleeces entered for the fiber competition and judged the previous day by John Hinchliffe of Z. Hinchliffe and Sons Ltd, David Mallin of W. Fein & Sons Ltd and Allan Anderson of Grampian Yarns were critically examined and the results discussed and debated.

Sandy Forbes gave demonstrations of shearing goats in the standing position while John Pittams showed how to shear goats in the sheep-shearing style of turning them over.

Tony Waterhouse ran a very successful fiber grading competition in which entrants had to grade eight fleeces according to color, yield and fiber quality.

The three judges of the fleece competition and Angus Russel were kept busy in a fiber clinic to which members brought fleeces and samples for comment and discussion and in which the relative merits and faults of the competition entries were analyzed and debated.

A total of 94 fleeces were entered for the six classes of the competition - almost double the number offered last year. Places in each class were decided on the basis of points awarded for fiber diameter (30), fiber length (25), color (15), style (10) and estimated down weight (20). The prize winners were:

Best hosiery kid fleece (29 entries). Johnstons of Elgin Rosebowl - 1st Angus Jacobesen, 2nd John Burt, 3rd Fraser Burnett.

Best weaving doe fleece (18 entries) Rosehill Quaich - 1st John Burt, 2nd Mary Ballantine, 3rd Norman and Margaret Waler.

Best Weaving buck fleece (11 entries). Walker Quaich - 1st May Ballantine, 2nd Judy Allison, 3rd S.A.C. Kirkton.

Best quality fleece (10 entries). SCPA Quaich - 1st Flora Stuart, 2nd Pat Thorne, 3rd Pat Thorne.

No prizes were awarded in either the Best hosiery doe fleece (17 entries) or Best hosiery buck fleece (9 entries)

The awards were presented to the winners by SCPA Chairman, Dr. Pat Torrie who also presented a cashmere scarf, donated by Lochcarron, to Anne Kerr who won the fiber grading competition.

Following the presentation of awards the judges commented on this year's competition. David Mallin outlined the requirements sought by the **UK Cashmere manufacturing industry - a maximum fiber diameter of 16.5 microns for hosiery quality and 18.5 microns for weaving quality and a minimum length of 30mm.** He told members that some fleeces had been rejected because of what he called "non-cashmere tendencies" - the presence of very long, lustrous and silky fibers and also of "intermediate fibers" which are coarser than cashmere but finer than guard hair and which cannot be removed in the dehairing process. He warned producers not to make the same mistakes as had been made in Australia.

John Hinchliffe spoke of the importance of objective measurement and stressed the need for breeders to obtain and act on test results. As a buyer of substantial quantities of cashmere, he indicated that he would like to be able to make purchases from assured sources and to know that contracts would be honored and not upset by political and military unrest. He also wanted to be able to buy on the basis of objective measurements of diameter, length and color. He added that he believed that price differentials for quality would widen and that in the future it would pay breeders to concentrate on quality rather than quantity.

Alan Anderson, who has been involved with all the fleece completions to date, told

members that the judging had been carried out to a very high standard. He was in no doubt that the quality of the entries had improved over the years and that the weights of cashmere per fleece were substantially better than last year. He considered that a high proportion of the fleeces were now of a commercial quality and quantity.

The judges' decision not to award prizes in either the doe or buck hosiery classes was because they considered these entries were not of a standard which the cashmere fiber trade would purchase. This was due, at least in part, to the difficulty which entrants had in making subjective assessments of what constituted hosiery quality. (In previous years entries had been put into hosiery and weaving qualities by experts.) This is something which will improve as producers gain experience, and some already have their "eye in" as evidenced by the results of the fiber grading competition.

Some entrants were probably choosing fleeces for the competition on the basis of weight rather than quality. Quite a number of fleeces and samples brought to the fiber clinic for an opinion were better than many of the entries and would have won prizes in the hosiery class.

The success of the event was due to a lot hard work by many people and special thanks are due to Moira Gallagher, Hilary Redden, Shiobhan Scanlon, Molly Guild, Francis Taylor and Charlie Armstrong for a lot

of 'behind the scenes' work, as well as to Tony Waterhouse and Alison McPake for doing umpteen different jobs at one time.

Council also particularly grateful to the judges and all those who supported the event by entering fleeces, put on the shearing demonstrations and participated in the fiber clinic and the grading competition. And congratulations to all the prize winners!

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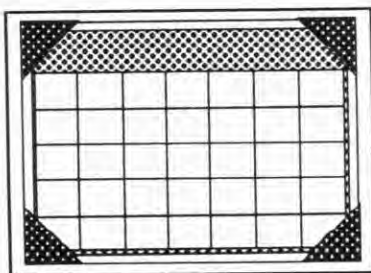
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CALENDAR

September 5 and 6, Two day
Angora Goat School,
Milwaukee, Wisconsin. Susan
Waterman, Odyssey Farm W
1554 Mortensen Road.
Brooklyn, WI 53521. 608-455-
2901.

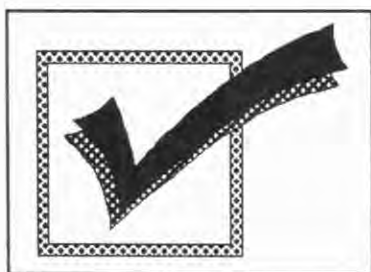
September 5, 1992: Wisconsin
Wool Festival, Madison
Wisconsin.

September 6 and 7, 1992:
Whatawhata Fiber Seminar and
meeting of the Northwest
Growers Co-operative, The
Farm, Toledo, Wa. 206-864-
4200

October 2-25 - Texas State
Fair, P.O. Box 150009, Dallas
Texas 75315. 214-421-8723

October 22-24- CaPrA
Conference - San Angelo. San
Angelo, Texas

December 11, 1992 Texas
Cashmere Association show
and sale, Kerrville, Texas.



Important Addresses

CaPrA
Kris McGuire-President
Cashmere Producers of
America
P.O. Box 91106
Austin, Texas 78709-1106
1-800-367-4628
Membership: \$50.00
Newsletter: \$25.00

Cashmere America
American Cashmere Goat
Marketing Co-operative, Inc.
Box 1104, Castle Rock, Co
80104
Phone: 303-877-7801
Fax: 303-776-8758
Membership: \$25.00
Newsletter: \$5.00

Heartland Cashmere
Association,
Harriet Jensen - Chairman
RR 3 Box 144
Cozad Nebraska 69130
Membership: 10.00
Newsletter

Northwest Cashmere
Association
Miriam Jeswine - President
143 Barrel Springs Road
Bellingham, Wa 98226
Membership: \$50.00
Newsletter: Free

Eastern Cashmere Association
Tia Rosengarten - Treasurer
Rosengarten Mountain Pond
Farm
Box 37, 3 Obed Moore Road
Western, Vermont 05161
Membership: \$10.00
Newsletter: free

Texas Cashmere Association
Victoria Sansom
P.O. Box 91106
Austin, Texas 78709-1106

Scottish Cashmere Association,
LTD
8 Polton Bank Terrace
Lasswade, Midlothian EH18
1JL
Scotland Tel/fax: 031 654 1305

Australian Cashmere Growers
Association
30 Cann Street, Guildford,
N.S.W. 2161
Fax (02) 632 5975
Membership: Unknown
Newsletter: Unknown

Buck Services

The Buck Bank, Diane Heaney
2344 Butte Falls
Highway, Eagle Point
Oregon 97524
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HBF Caprine Services,
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Buffalo Valley, TN 38548
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410-374-2927

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Southern Reproductive Services
Doug Gilbert
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Weslaco, Texas 78596
512-969-0344

Understanding Fiber Measurement

By John Fitzgerald
Whatawhata Fiber Testing

General Principals

The major quantitative fleece traits for cashmere; mean fiber diameter of down and down yield, are measured using fiber samples. The value of the fiber sample is then used to predict the value of the total fleece or what in statistical terms is called the fiber population.

If we would look at the fiber diameter population, we would find that it has a continuous distribution which can be described by its mean value (population mean) and a measure of dispersion called variance. The extent of the dispersion, or conversely the homogeneity of the fiber population, will determine how appropriately a given sampling method will predict the fiber population value. Down yield, as a derivative of fiber production parameters can be considered in the same way.

The measurement system used at this laboratory employs a random sampling method and is considered part of the measurement process. When random fiber samples are drawn from the fiber population, the mean sample results are also dispersed around the population mean, a variance of sample means. If we can obtain a good estimate of this variance we can determine how repeatable the sample measurements will be,

and therefore, the precision of the test method. An important assumption in this statistical analysis and therefore an important prerequisite for determining precision limits is that the test method remains consistent. If the test method is changed then so will the precision probably change.

A test method can be precise but at the same time be inaccurate. Accuracy is monitored in this type of testing procedure by calibrating the method results against nominal standard values. Standard samples can be provided by international accreditation authorities for fiber diameter measurement. These are homogeneous samples which have been prepared so as to achieve an expected good reproducibility between testing laboratories. Accuracy of down yield measurement is also assessed by testing to a standard specification, but the methods are not as sophisticated as those used for fiber diameter. It does include the concept of interlab trials, but is influenced by the level of

operator expertise and processor feedback.

I shall now discuss the background to the statistical methods and the way they are used to monitor the testing methods.

Variance Components

Using a statistical method called Analysis of Variance (ANOVA) we can quantify the variance associated with a prescribed method. We can also determine the influence of each step in the measurement procedure on the total variance. Each step is therefore a source of variation and the associated variance is quantified by a variance component. The only limitation to measuring a variance component is when the process is 'destructive' ie the step cannot be repeated. Looking at the steps involved, firstly for fiber diameter measurement. We have a fleece subsample component, a down minicore sample component, and the fiber diameter measurement on the down minicore sample.

		Down Yield %	Down Diameter (Micron)
Between-sample	σ_{ss}^2	6.49	0.017
Between-Minicore	σ_{mc}^2		0.021

Because the fiber diameter measurement cannot be repeated unless we take another minicore sample, its variance is incorporated in the minicore variance component. For down yield, the two components; fleece subsample and dehairing process can not be separated either.

The measured variance components are as follows:

These are the base values that define the variability of our testing procedure for down diameter and yield. How are they used to monitor the precision of the test method?

Confidence Limits

Based on the estimates of the components of variance, the level of precision can be changed by varying the sampling/measurement schedule. First the standard error is calculated for the given variance components.

Based on the estimates of the components of variance, the level of precision can be changed by varying the sampling/measurement schedule. First the standard error is calculated for the given variance components.

Where n_{ss} is the number of subsamples and n_{mc} is the number of minicore subsamples. The current test procedure is based on one subsample per fleece and one minicore sample (or fiber diameter measurement) and therefore the standard errors of the mean for down yield and down diameter are 2.55% microns and 0.19 micron percentage yield respectively. As you can see, the standard error of the mean can be reduced if more samples are measured ie n is increased. For example, if the average of five yield measurements (5 subsamples, $n_{ss} = 5$) and five fiber diameter measurements carried out on the combined down (5 minicore subsamples, $n_{mc} = 5$) then the respective standard errors become 1.14% and 0.09 micron.

We then use the standard error of the sample mean to predict with a given level of confidence that it represents the population mean, by employing the student's t distribution. The 95% confidence interval of the mean for the current testing procedure is described as:

(iii) 95% confidence interval of the mean for fiber diameter = $\pm 1.96 \times 0.19 = \pm 0.38$ micron

(iv) 95% confidence interval of the mean for down yield = $\pm 1.96 \times 2.55 = \pm 4.99\%$ units

Where 1.96 is a constant derived from the student's distribution.

The given % confidence intervals denote that statistically the true/ population mean will, on 95% of the occasions that the measurement is repeated, lie within ± 0.38 microns of the given fiber diameter measurement and within $\pm 4.99\%$ units of the down yield.

Application of Confidence intervals

1. The precision of the test result can be increased by increasing the number of measurements per fleece. This of course has a cost and must be weighed up against the added value. A preliminary analysis of the effect of testing precision on selection pressure indicates that an insignificant gain would be achieved by increasing the precision of the current test. However, it is important that a testhouse always strives for maximum precision. By applying the

$$(i) \text{ Standard Error of the mean For down fiber diameter } = \sqrt{\frac{0.017}{n_{ss}} + \frac{0.021}{n_{mc}}}$$

$$(ii) \text{ Standard Error of the mean for down yield } = \sqrt{\frac{6.49}{n_{ss}}}$$

same principles, a greater level of precision is achieved for bale testing.

2. The confidence interval can also be used to monitor the day-to-day laboratory operation. Indirectly they are used to determine whether repeat samples measurements are comparable. This procedure is built into the laboratory quality control program. Randomly instigated repeat measurements are carefully documented and action taken if discrepancies arise.

Determining Accuracy

On face value, accuracy seems a fairly simple concept to address in any measurement system, either the result is correct or it is not. One laboratory, for instance, cannot consistently provide a finer fiber diameter result for a given set of samples than another laboratory and then both claim to be providing an accurate result. Accuracy implies that a predetermined standard has been established against which the unknown value is compared. Direct assessment of accuracy therefore will incorporate those aspects that are addressed in the determination of repeatability of measurement. Indirectly, however, we can assess the accuracy of measurement procedure by processing samples known to have considerably lower variation and which have been assigned a nominal true value.

Standard Samples for Fiber Diameter Measurement

Fiber diameter measurement systems can be calibrated using standard samples provided by international accreditation authorities. Testhouse can participate in interlab round trials whereby a number of blind samples are periodically measured using a prescribed test method. The results achieved allow the testhouse to determine whether there is a bias in their results against the average result of all testhouses participating. The fiber diameter measurement system at Whatawhata is calibrated against wool samples provided by the International Wool Test Organization, Interwoolabs scheme. Our ability to measure the fiber diameter of 'blind' samples when calibrated to a sound internationally endorsed method is our yardstick for accuracy.

The calibration procedure must however be constantly validated, that is the accuracy of the calibration must be cross-checked by measuring standard samples that were not used in the calibration. Wool, cashmere and mohair validation samples are used, for this purpose.

Accuracy of Down Yield Measurement

More work is required to provide a similar standard sample against which dehairing performance is to be achieved. The Australian Wool Testing Authority has investigated the preparation of known blends of down and guard hair which could then be defined as industry standards. Currently, in comparison with fiber

diameter measurement, a limited degree of interlaboratory comparison has been carried out. This information obtained, however, has been of great value in establishing a sound testing procedure.

Conclusion

This has been a scant overview of the methods used to control the variables that influence the accuracy and precision of a test result. Whilst I have tried to describe these two important concepts separately, it is clear that they are inextricably linked. The measurement procedure is all about measuring and controlling variability. Note however, that this variability will not account for grossly outlying values. Critically appraise your results, seek further advice and retest if necessary.

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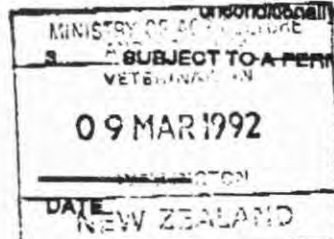
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Control of the Biting Louse on Sheep and Goats

By Dr. Helen Schwartz
Lincoln University

Biting lice feed on skin debris and wool yolk on goats and sheep. This causes intense irritation as they attempt to relieve the itching by rubbing, biting and wool-pulling. The fleeces then look ragged and the value of the wool is reduced.

Bagley and Deer of Utah State University compared 3 products for efficacy against the biting louse (*Bovicola ovis*). Pour-on Fenthion (20% SPOTTON), Ivermectin (1% IVOMEC) and fenvalerate (1% Ectrin), a synthetic pyrethroid that is approved for use in sheep, for both ked and lice control, were used to treat long-fleeced sheep in mid-winter. A preliminary lice count was made on infested sheep.

Ectrin was very effective in both the rapid reduction and continued control of lice. Spotton has no beneficial effect and Ivomec decreased the number of lice slightly but the reduction was not significant. The lack of effect of Spotton and Ivomec was probably due to their systemic action of absorption into the bloodstream affecting pests following ingestion of blood. The biting louse does not suck blood and escapes the major effect of these two products. Ectrin kills the lice when it comes in contact with the chemical.

Treatment after spring shearing is recommended with Ectrin when fewer lice and eggs

are present on the sheep. Ectrin should be mixed according to label directions; one quart per 12 1/2 gallons of water plus 5 ounces of household dish soap as a wetting agent. The mixture (0.2%) should be applied at a rate of 1/2 ounce per 25 pounds of body weight or 3 ounces for 150 pound goat. Fill a syringe and apply to the skin at 10 ml. per site at 9 locations down the midline of the back.

Dermatitis in Dairy Goats

Seasonal dermatitis of a suspected nutritional origin was confirmed following a study by McDowell et al (1991), of Gainesville, Florida. Skin problems appeared in the spring during late gestation and peak lactation when pastures were very poor and browse marginal to absent. The skin problem was described as patchy to complete lateral truncal alopecia (absence of hair) with mild to moderate scaling.

The concept of the skin lesions being a zinc-related condition was confirmed with a favorable response to supplementation of zinc in the diet. Underwood reported skin abnormalities caused by deficiencies in copper and selenium.

Inconsistent mineral supplementation in dairy goat herds may be associated with dermatitis. These factors demonstrate the need for supplementation for a complete mineral mixture in high producing dairy goat herds at times of poor forage growth and quality. This mineral mixture should contain calcium,

phosphorus, copper, zinc, cobalt and selenium.

Reference: McDowell, L.R., B.J. Gordon, R.C. Merkel, V. Fadok, M.S. Wilkinson and G.A. Kunle. 1991. Mineral status comparisons in goats in Florida with emphasis on zinc deficiency. *Small Ruminant Res.* 5:327-335.

Caution of Ivermectin on Sheep Dogs

Ivermectin is a broad-spectrum antiparasitic drug with selective action against internal parasites and some external parasites in cattle, swine, horses and sheep. Ivermectin acts against a neurotransmitter (gamma-aminobutyric acid, GABA) found in high level in parasites (Walter et al., 1989). In farm animals, the doses recommended by veterinarians supposedly do not penetrate the blood-brain barrier of farm animals.

However, in the Collie dog, Ivermectin has been identified in the brain tissue. Two cases of dogs other than Collies have been reported (Ketring, 1989) in a female mixed breed dog and a female Cocker Spaniel following an overdose of Ivermectin. Both dogs were reported blind. The blindness was reversed with treatment of prednisolone and dexamethasone. Other signs of toxicity in dogs were successfully treated with the GABA antagonist picrotoxin (0.4 mg/kg.)

Sheep dog owners should use caution in the use of ivermectin as a dewormer on sheep-working and guardian dogs and should consult with the local veterinarian in the use of dewormers.



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