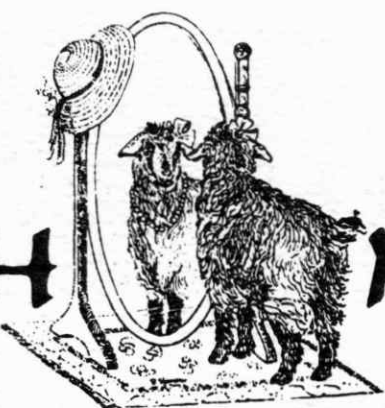
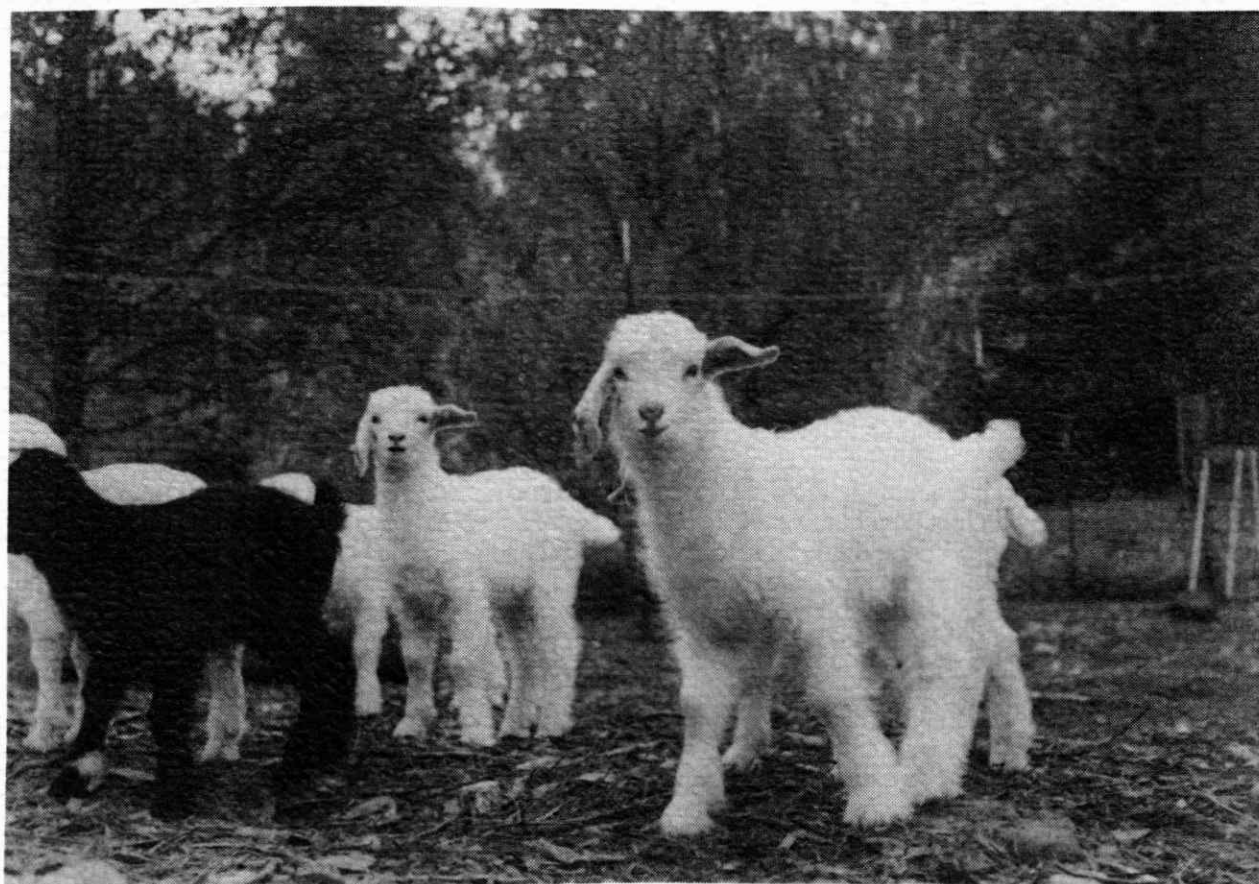




CASH MIRROR

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CASHMIRROR

CASHMIRROR REFLECTING THE CASHMERE INDUSTRY

Published each month by: **THE FARM**, P.O. Box 639, Toledo, Wa. 98591 206-864-4200, Fax: 206-864-4201

On the Cover: Twins galore in the USDA/SBIR embryo transfer program at The Farm in Toledo.

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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.

Table of Contents

Letters	2
Publisher's note	3
Put your buck in the tank	5
Cashmere in the U.K.	7
Calendar	13
Civil rights act	17
Wetlands	18
A.I. at Arboretum	19
Breeders Directory	22
Classified	26



Letters

Dear CashMirror,

A comment about some articles in your March and April issues.

I really appreciate seeing the article by Dr. Swartz, on feed mixes with Rumensin and Ammonium Chloride. Rumensin is the best product to prevent coccidiosis in goats. It has been approved for goats by the USDA at 20g/Ton, and is most efficient or effective at this level. This is the dose, that not only prevents coccidiosis, but promotes increased feed utilization and absorption in the goats intestine. Another plus, is that it is passed through the milk, so not only is the kid protected from birth, its growth potential is enhanced from birth.

I have used Rumensin, a coccidiocide, in my goat ration for years, but was persuaded at one time to try Bovatec (Lasalacid) and at another time to try Deccox (Decoquinat). These drugs were professionally mixed by a local feed mill according to USDA requirements. Deccox and Bovatec are coccidiostats.

In 1986 I was not happy with the

health or growth of my kids on Bovatec, and found coccidia in the fecals. Needless to say I went back to Rumensin in my goat ration. In fall 1988 I was persuaded to try Deccox, being told it was "better than Rumensin," and convinced that the kids would grow out as well or better. In spring 1989, the kid goats did not grow as well, but did not have coccidiosis until about 10 weeks after birth. Then at least 50% had significant numbers and all had some. I talked to the vet and had the feed checked. The feed had adequate dry levels, it just wasn't working anymore. I had to treat with sulfa drugs. There were 3 tons of feed left when I asked my feed mill to put Rumensin in the next load.

The following day, one of my best does was sick. Hove you ever seen Tetanus? Her neck was arched back, her head turned over one shoulder, jaw clenched and legs stiff. She was standing in the hot sun, and when I approached, she couldn't move, much less walk.

She was even more tetanic when she got excited. The vet, when he arrived, did a brief exam. The symptoms were like those of Tetanus except that she had Polioencephalomalacia. (See *CashMirror March 1992*) The primary difference: Check the eye, an animal with Tetanus will have the netating membrane (second eye lid) close over the eye when you stimulate the eye. Touch the eye lashes, if that second eyelid doesn't close, your goat probably has polio. This is not contagious, but is Thiamine deficiency polio. After

questioning me about the feed, the vet told me that coccidiostats can cause thiamine deficiency polio because of the inhibition of absorption of thiamin in the intestine. Intramuscular injection of thiamine corrects the condition after several days. You will need your vet to supply the thiamine and help with the diagnosis. If you delay treatment for even a short time, the goat may not recover. My goat recovered completely in 3 days.

The ammonium chloride in the feed helps prevent renal calculi. (kidney stones). Bucks can be susceptible because of several contributing factors. Bucks in small pens don't get enough exercise, and are usually on feed grain mixtures containing milo are particularly risky. For some reason, the incidence of renal calculi in goats and sheep is higher in feed rations with milo, although the addition of Ammonium chloride helps to reduce the risk.

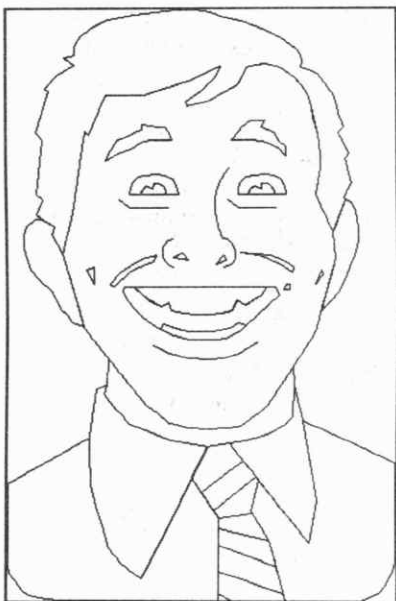
Ammonium Sulfate (21-0-0) can be used if feed is mixed professionally, but is too coarse to be hand mixed. Another causative factor is reduced water intake. Frozen or very cold water in winter, hot water or dirty water in summer. Troughs should be in shade in summer and in the sun in winter, or heated. I like to clean troughs with clorox and a brush. Algae and bacteria in water are not conducive to health. Goats don't like dirty water and they're reluctant to drink it.

Some bucks have a congenitally small urethra and are more susceptible than others. Calcium Phosphorus levels in the feed or mineral supplement must be

balanced for your area! Your ag extension agent should know. an imbalance of these minerals can cause renal calculi. 12lbs/ ton of Ammonium chloride is in my ration, a grain mix, that varies depending on the time of year and state of growth, development or gestation of the goats.

Sincerely,

Coni Ross
CR Ranch, Texas



FROM THE DESK OF THE PUBLISHER

It was a pleasure to receive the response from last month's issue. Thank you John Harris of Nebraska Western Cashmere for requesting other breeders to share their experiences. It took your request to spur our readers into action! As a result, this month we have two very interesting

articles from readers that show their willingness to share - and that's not all - there is more to come in future issues.

My energy is renewed, my faith is restored, I put this issue of CashMirror together with pure joy. Thanks!

Next month look forward to another article from Susan Lea Tooker of Arboretum Farm, John Fitzgerald of Whatawhata, Coni Ross of CR Ranch, Judith Richardson of Cascade Cashmere Company (SBIR results for 1992) and of course our favorite Miriam Jeswine of Glacier Cashmere.

I hope this issue is as thought provoking and interesting as last month's. If it isn't perhaps you may be able to add something. (Phone: 206-864-4200 or Fax:206-864-4201)



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Put Your Buck in the Tank

By Miriam Jeswine, Glacier Cashmere, Oregon

What if you had a buck that, at the age of eight, has a fleece of 16 μ , long, dense, great style, very valuable. What if he passed those traits on to his offspring with great consistency, and all his five and six year old offspring were just like him. That's a buck in a million. What if he died at age five and you discovered how great he was after he died?

Bucks seem to die just as we realize how valuable they are. It takes several years to find out just how good the buck's kids are. First they have to be conceived and born, then they have to grow and live long enough to produce their adult fleeces. By the time a buck's first kid crop has reached that point, he is four or five years old. Since bucks don't seem to live as long as does, on average, you may only have another two or three years left to use him.

What can you do, take out an insurance policy? That would help recoup a financial loss, but you still wouldn't be able to get any more offspring. To do that, you need to put your buck in the tank, the nitrogen tank. Get his semen collected and frozen. There are people all over the U.S. who travel around in the fall, custom collecting goat semen and processing it. They do a good job, and many a breeder has been glad to have the buck in the tank, as good as money in the bank, when something untoward happens. I have semen from bucks who died over ten years ago, and they are still siring kids to this day.

The collection process is rather simple, from your point of view, since the technician is the one who has the skills and equipment. What you have to do is to prepare your buck for the big day, and be prepared to write a check for a modest sum of money. Charges vary, but the last time I had a buck collected, I spent \$112 and got 100 straws of semen! (He was unusually productive; typically you get 20 to 25 straws.)

To prepare yourself and the buck, get him used to being handled. Take him on the end of

Another aspect of conditioning to consider is to be sure that the buck has been used a bit before collection. During the off-season, there isn't much movement of fluids through the reproductive tract, and the first ejaculates will have gunk, cellular debris in it. That gets flushed out when the buck ejaculates the first couple of times of the season. He should be penned with a wether, or other bucks, or does. Since bucks are pretty indiscriminate about who they copulate with, the companionship and activity should pretty well

What if he died at age five and you discovered how great he was after he died?

a rope to inspect the does each day for a week or two. Better yet, take him out to do some real breeding. Pretty soon, he'll get the idea that a leash means a reward. A buck who is skittish and not used to handling may be shy about breeding in the presence of people. Be sure he is getting fed generously before breeding season begins. He should be in great shape, at least a 3 on the Sim scale of goat condition. If you live in a selenium-short area, make sure his selenium intake is adequate because it is an important constituent of sperm cells. A well-nourished buck is far more fertile, with a much higher percentage of good, viable sperm, than is one in poor condition.

take care of that cleansing process.

You need to provide adequate facilities for the collection, a quiet, well-lit place in the barn where other people, dogs, or other distractions are minimized. If other goats, bucks or does, are penned nearby, but not in the same spot you are collecting, sometimes the buck will be more active. You also need one or more does in heat on collection day. Some bucks, if they are really rasty, will attempt to breed about anything, but it's easier with does in heat.

What happens on the big day? My experience is that Diane, who handles semen for me, arrives in her van, plugs in to electricity, and spends twenty

minutes or so preparing her materials. We get the doe and tie her to a post and then bring the buck. Diane is on her knees beside the doe, artificial vagina poised. The buck sniffs around, makes faces, does buck stuff and then mounts the doe. Just at the crucial moment, Diane slips the artificial vagina over his penis, and he ejaculates. She's caught it!

I take the buck away, and she retires to the van to look at the ejaculate under the microscope to determine how viable the sperm are. If it looks good, she will begin processing it, or if there are more bucks to be collected, she will save that semen and prepare for more collecting. From my point of view, that's all there is to it, but Diane has a lot of work to do yet, and will spend several hours, or more, processing the semen and freezing it.

The next thing is, you need to store the semen correctly. For that you need a specially built tank which holds liquid nitrogen. You can purchase one for yourself, new or used. If you do, consider getting the longest holding period type tank you can. You will have to refill the nitrogen periodically, 30 to 90 days. If the tank ever runs out of nitrogen, the semen thaws, and then you have dead semen. Several people can join together in owning a tank, or sometimes you can rent space in a tank. You want to make sure that whoever you rent from or share a tank with is conscientious about maintaining the tank. Once you have the buck in the tank, you can consider selling the semen. Most processors will handle sales for you for a percent of the price you charge for it. You can also

buy semen from breeders and processors and hold it in your tank for future use. Any gathering of dairy goat breeders features a lot of people buying, selling and trading semen, and Cashmere breeders will soon be doing the same thing. Small transportation nitrogen tanks are available, and a vacuum-type bottle will hold nitrogen and semen for a day or so for transport, as well.

So, now the buck is in the tank. How do you get it from the tank to doe? You can do it yourself with great success. My experience has been about 80 to 85% conception, and the process is not particularly difficult or time consuming. You can learn to do it yourself at a dairy goat AI workshop or seminar. These events are always part of the American Dairy Goat Association annual meeting in the fall. This year it is being held in West Springfield, MA, and in 1993 it will be in Eugene, Oregon. Sometimes workshops occur at other times of the year as well. You can also get a video from Diane Heaney, The Buck Bank, 2344 Butte Falls Highway, Eagle Point, Oregon 97524.

You'll need to invest in some equipment for artificial insemination. Most of the people who do semen collection have the equipment available for sale, and a wealth of knowledge and information as well. Feel free to ask plenty of questions. You'll get good advice.

Now all we need as Cashmere breeders is a system for identifying and promoting the use of superior bucks. That, however, is the subject of another column. For now, think about the benefits of putting your buck

in the tank, and plan to do it this fall.

Goat Semen Collection Services

The Buck Bank, Diane Heaney,
2344 Butte Falls
Highway, Eagle Point,
Oregon 97524, (503)
826-2729

HBF Caprine Services, 1611
Ensor Hollow Road,
Buffalo Valley TN 38548,
(615) 858-2482

All American A.I., Ida Purcella,
Route 1 Box 605,
Coquille OR 97423,
(503) 396-3448

Magnum Semen Works, Wayne
& Carole Rhoten, 2200
Albert Rill Rd.,
Hampstead MD 21074,
(410) 374-2927

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Cashmere - the United Kingdom's New Farming Enterprise

Written by Angus Russel
Macaulay Land Use Research Institute, Scotland

The first steps in cashmere production were taken in the UK in the early 1980's. Following work on the grazing of goats on hill pastures by what is now the Macaulay Land Use Research Institute, the Scottish Cashmere Producers' Association was set up in 1986 to facilitate the development of a Scottish cashmere production industry.

Since then, and with support from a number of bodies including the EC and the Scottish Development Agency, the Association has grown to a membership of about 100. Some 90% of the members are farming cashmere goats, the remainder being associate members, mainly from the textile industry. In this relatively short time there has been a noticeable change in the membership, with many of the small-holders and hobbyists falling by the wayside and being replaced by bona fide farmers - farmers who once regarded goat-keepers with a

mixture of scorn and amusement, but who now take goat husbandry very seriously!

It is estimated that SCPA members farm a total of about 5000 breeding does.

One of the most important services which SCPA offers to its members, and indeed to non-members as well, is its fiber pool. The raw cashmere, which on some farms is harvested by combing and on others by shearing, is collected centrally and graded into 24 classes. It is separated, first, by method of harvesting, the combed fiber having a much higher yield of cashmere than the shorn, and, secondly by color. At this early stage in the growth of the industry only two colors are recognized - white and non-white. This applies to the guard hair as well as the cashmere, and any fleeces with apparently white cashmere but a suggestion of colored guard hair are classed as non-white.

The fiber is then classed according to fiber diameter. This is done subjectively but with frequent recourse to laboratory back-up to check standards. Cashmere with a fiber diameter of less than 16.5 microns is graded as hosiery quality, and the between 16.5 and 18.5 microns as weaving quality. Fiber of more than 18.5 microns is rejected. Each category is then assessed for estimated yield i.e. the relative proportion of cashmere to guard hair, and classed as high, medium or low.

Some fiber is down-graded from hosiery to weaving if it contains double-cuts, or to a lower yield class if it has vegetable or animal contamination.

Total production is still low and at this stage it is quite unrealistic to attempt to market 24 lines of cashmere, some weighing only a few kilograms. To date, the fiber has been bulked into four lots

according to fiber diameter and color. The grading, however, is important in that growers are paid according to the 24 classes, so that those who produce the highest yielding, white, hosiery quality cashmere are duly rewarded and those who produce poorer quality low yielding fiber are penalized.

To finance the grazing operation, SCPA members pay a 5% levy on the value of their fiber; non-members pay 10%. This is good value for money in that the producer receives a not of the class and monetary value of each fleece. This information is invaluable in helping producers identify their superior stock for breeding proposes and decide on whether to purchase a buck which will improve yield or reduce fiber diameter.

In the four years in which the fiber pool has operated the weight of raw cashmere has increased from 51 to 1200 kg, and the weight of dehaired cashmere from 12 to 360 kg. These figures represent increases of 23 and 30 fold respectively. A more realistic measure of the rate of increase in production is the fact that

over the last three years production has more than doubled each year. Clearly this rate of increase cannot continue indefinitely, but it is a good start!

The rate of increase in the weight of cashmere being handled by the fiber pool does not imply an equivalent increase in the number of cashmere goats in the country. It is due rather to the rapid improvement in the weight of cashmere produced per goat. A few years ago many of the goats produced so little fiber that it was not worthwhile combing or shearing them. Now that the per animal production has improved, farmers are harvesting greater quantities from more of their stock.

SCPA also facilitates the growing cashmere production industry in a number of other ways. It holds an annual fleece competition for which it invites judges from the textile industry. This is invaluable as an educational exercise and as a means of communication between those involved in cashmere growing and cashmere processing. It is also a very enjoyable social occasion!

The Association also organizes an annual sale of stock. Again, help is given to the new entrants to cashmere production by experts who score the animals for sale according to their fiber quality, the weight of fiber produced and conformation. These assessments are reflected in the prices realized in the auction ring.

Members also receive a quarterly publication "Scottish Cashmere News" containing technical and topical articles, and have the benefit of advice from part-time goat specialist financed by SCPA. The Association has also been instrumental in establishing, with mohair and dairy goat interests, Goat meat Producers (Scotland) Ltd. to provide an outlet for surplus male kids and does which are not required for further breeding.

The other main body which has played a major role in the establishment of the new industry is Cashmere Breeders Ltd. This group comprises 18 farmer members including the Macaulay Land Use Research Institute which has a special responsibility for CBL's breeding

program. As its name indicates, CBL is involved in breeding superior cashmere goats. Again with support from the EC and SDA, it has imported goats, semen and embryo's from Iceland, Tasmania, New Zealand and Siberia and has crossed these in a structured breeding program with native feral goats. These are hardy animals and have exceptionally fine cashmere - about 14 microns or less in adults - but in only very small quantities.

The breeding program has been carried out on members' farms using the latest technology in artificial insemination, superovulation and embryo transfer to multiply and disseminate the superior stock. The best animals were then brought together in an elite herd, now numbering 385 breeding females, at MLURI's Sourhope Research Station in the Scottish Borders.

In return for contributing their superior individuals to the elite herd, members receive back high-class bucks for use on their own does.

The elite herd is run on Sourhope Research Station

in the Scottish Borders. This is a relatively hard farm and the goats graze hill pastures and are subject to extremes of climate. The kids are born on the hill in April and May and are housed during their first winter from November until late March. Their cashmere is harvest by shearing in February. The adult bucks and does are never indoors and their cashmere is harvested by combing a few weeks before and again immediately after kidding. This system of management probably means that some of the cashmere is lost, but the combing has to fit in with other farming operations, including the lambing of over 200 ewes. Despite this, the average weight of processed yarn produced in 1990- the last date for which detailed figures are available was 107 - g per head. More significant, however, is the fact that the top 10% of the herd yielded 267 a yarn per head. The rate of progress in fiber production with each succeeding generation is such that the herd average can be lifted rapidly to the level of performance of the present top 10%

There is considerable potential for further improvement in the weight of cashmere produced per goat. CBL's breeding program is now at the state where two selection lines have been established. The first will concentrate on maximizing the financial return to the farmer, which in practice means producing cashmere of up to 18.5 microns. The second selection line will aim to increase the weight of cashmere with a maximum fiber diameter of 16.5 microns. There will also be a

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randomly bred control line against which the rate of genetic progress achieved in the two selection lines can be measured.

The aims of these two selection lines highlight a dilemma which needs to be addressed. It is a fact that, on average, quality and quantity do not go together. Generally, those goats which produce the greatest weight of cashmere also have the coarsest fiber, and vice versa. The effect of this, and the magnitude of the price differential between hosiery and weaving qualities of cashmere, is that the financial returns to the farmer are greater from goats producing cashmere which is just under the 18.5 micron upper limit than from goats producing the 15 micron fiber which the textile industry wants the farmer to grow.

Fortunately, the negative genetic correlation between quality and quantity is not perfect. In each generation there are some animals with greater than average weights of cashmere which is of a finer than average diameter. These superior individuals can be

identified in breeding programs based on objective measurement rather than subjective appraisal and a hunch. Given time, and assisted by a greater price differential between hosiery and weaving qualities of cashmere, it may be that goats producing very fine fiber will give as great of greater financial returns than those yielding high quantities of only moderate quality fiber. At that point the textile and farming interest will indeed have a common goal.

In appraising the options of quantity and quality, the embryonic Scottish cashmere industry is very conscious of mistakes made Australasia and is determined that these will not be repeated here. In Australia and New Zealand many cashmere producers, on advice given by both the textile industry and agricultural advisers, sought to increase weight of cashmere by crossing feral goats with Angoras. The consequences to fiber quality were disastrous and these countries now have severe difficulties in finding buyers for their fiber.

Some of these high-

producing but coarse goats found their way into the UK and were sold at very high prices. The people concerned have predictably gone out of business but have left a number of goat owners sadder and wiser from the experience. Fortunately, the potential damage to the cashmere production industry has been contained, and rigorous grading standards in the SCPA cashmere pool will ensure that it does not re-emerge.

Cashmere goats have potential as an economically viable alternative agricultural enterprise in this country. The better goats currently available give a similar financial return to sheep. The significant difference between the sheep and the goats, however, is that the sheep returns contain a subsidy element of up to about 27 pounds per head - which is often more than the profit - while the income from goats is wholly un-subsidized.

It appears virtually certain then, in the not too distant future, at least part of the sheep subsidy will be paid on only a fixed number of ewes per holding. When that happens it will be to

the farmer's advantage to substitute cashmere goats for a least some of his "excess" ewes i.e. those on which he is not receiving support.

Too rapid an expansion of goat numbers could cause problems of supply of suitable stock. Farmers currently with cashmere goats are building up their herds and will not be easily persuaded to sell their best animals, and its not good policy to buy inferior stock. Fortunately, modern technology can enable the top breeders to have "their cake and eat it too" Now they can sell the stock while keeping them. Superovulation and embryo transfer techniques and artificial insemination allow breeders to sell what has come to be known in modern jargon as "genetic material" - meaning frozen embryos and semen - while still retaining the sires and dams from which it came.

This type of approach will have an important role to play in maintaining quality during the period of expansion in home grown cashmere. If quality can be safeguarded then cashmere production in the UK will have an assured future.

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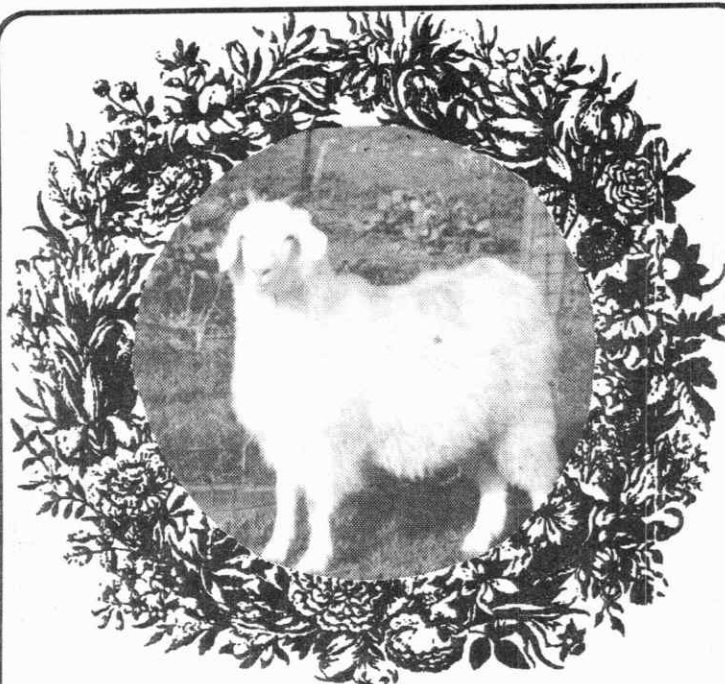


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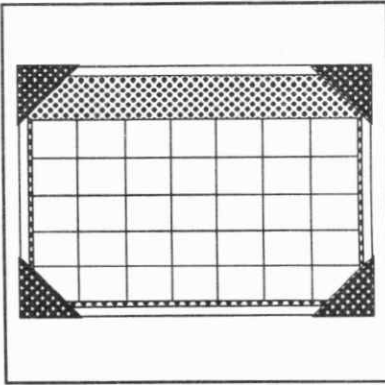
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June 13-14 Lost Art Festival and Fiber Workshop, Watkins Mill, Lawson, Mo. Contact Helen Swartz, State Sheep, Goat and Small Livestock Specialist, (314) 681-5533.

June 17 - July 5th, 1992 - Southern California Exposition. Jimmy Durante Blvd. Del Mar, Ca. For more information contact: Office 619-755-1161, Ext 353.

August: Northwest Fair held in Lynden Washington. Contact

Linda Pardon 206-724-5371

August 5-8, 1992 Fiberfest 92-Kalamazoo, MI - Angora Goat, Wool Sheep, Llama, Angora Rabbit, Kalamazoo Fairgrounds, Kalamazoo, MI. Contact: Lyn Briel (616) 765-3047.

September 7, 1992: Whatawhata Fiber workshop, The Farm, Toledo, Wa. 206-864-4200

October - Texas State Fair, Dallas, Texas.

November - CaPrA Conference - San Angelo.



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Coccidia in Goats

By Dr. Helen Swartz
Goat and Sheep Specialist
University of Missouri

Coccidia are tiny internal parasites (*Eimeria* spp) that live in the cells of the goats intestines. The tiny oocyst containing the infective stages are passed in the feces and are picked up by other goats through contaminated feed and water. The number of parasites that invade the intestinal tract determine the severity of disease that results in the condition called coccidiosis. Kids are quite vulnerable to coccidia, no doubt, because their immune system is not well developed when they are exposed at a very young age.

Symptoms: Coccidia are considered internal parasites but are resistant and nonresponsive to dewormers used for internal parasites in goats. Therefore, deworming your goats with common dewormers such as Tramisol will not get rid of the coccidia. Practically all goats tolerate a low level of coccidia with no adverse effects. A high level of coccidia, especially in kids, damages the intestinal lining resulting in improper or reduced absorption of nutrients and may show extreme weight loss. Kids that are heavily parasitized with coccidia will probably never attain their genetic adult size and weight due to the reduction in nutrient transfer in the gut that may result in "stunting". Once the gut is damaged by the coccidia, it requires weeks for the gut to heal and during that time,

the gut is unable to properly transfer nutrients from the gut to the blood stream that under normal conditions would result in healthy gains. The damage can also result in bloody and dark diarrhea, causing dehydration and death. In some cases very little diarrhea has been observed. Stress from changes in weather or sudden changes in feeding (especially at weaning), will often result in a severe coccidia outbreak.

Causes: Coccidiosis is generally seen in intensified goat management operations but is often observed in goats browsing with their dams in heavy browsing areas as well as overgrazed forage systems. Goats in intensive operations, which is true of many dairy goat operations, and meat and angora-cashmere operations in the winter-time, may be managed profitably by practicing proper sanitation and allowing sufficient space allotment for does and kids. If coccidia are suspect in the herd, collect some fresh fecal samples and take them to your veterinarian for analysis or call for advice.

Treatment: Outbreaks of coccidiosis are usually treated with sulfa drugs and amprolium (Corid). These drugs must be prescribed by your veterinarian. Water must be provided that is clean and palatable to keep down stones when using sulfa drugs. The treatment for outbreak of the disease should not be confused with the drugs used for control. Bovatec (lasalocid) can be used as a control as well as Decoquinate (Deccox), and monensin (Rumensin). Consult with your veterinarian for use of

these drugs. Monensin must be used carefully as a small amount given over the accepted levels can result in toxicity but may be one of the better control drugs. Your veterinarian can prescribe drugs that are not approved for use in goats as a control for coccidia infestation, if you have a good client/patient relationship. These control drugs are recommended for prevention, not as a treatment in an outbreak.

Lasalocid and monensin have been used to slightly improve feed efficiency in other ruminants and may do the same in goats.

Goats, and more especially kids, may be infected with coccidia that could be confused with internal parasites. Contact your local veterinarian if your goats have symptoms of coccidia that may cause weight loss or sudden death. Amprolium may be put in water for does in individual water pails at kidding time when does may have a post-parturient (after kidding) raise in internal parasites. This will free-up the feces of infected ova.

Precautions: Overuse or improper use of these drugs can cause side effects in your goats. Consult with your veterinarian concerning the recommended use of these drugs. Ask for the label directions and be aware of the possible side effects such as "stones" when inadequate water is given with the use of sulfa or a vitamin B inhibition with overuse of amprolium. Proper use of drugs when necessary can result in health animals but overuse can result in undesirable side effects.

Understanding Fiber Measurement

By John Fitzgerald
Whatawhata Fiber Testing Center,
New Zealand

I am honored to have been invited to present a fiber demonstration/workshop on September 7, 1992 at The Farm, Toledo, Wa. The event is organized and sponsored by the Northwest Cashmere Growers Co-operative.

In preparation for the coming event I will present in the next few issues of CashMirror some food for thought on objective fiber measurement information and some tips on use and interpretation.

Subsequent articles will cover:

- * Fiber diameter measurement and the distribution histogram.
- * Test report statistics and what they mean to the producer.
- * How we monitor the measurement of your fiber.
- * Applying test measurements to your selection/management programme.
- * Objective measurement and Genetics.

By way of introduction, I shall repeat a message that I presented in February 1990 in a booklet prepared for a New Zealand fiber classing course.

"Objective measurement of fiber

traits is a precise science. The techniques employed are designed to accurately measure a large population (i.e. the fleece) while using a sample from the population. This is simply because it is not possible to measure every fiber. The natural variation that occurs within the fleece means that the result obtained from a sample is subject to error. However, by definition, objective measurement employs techniques that allow the error to be measured, controlled and ultimately reduced. If these principles are not heeded then the result obtained from objective measurement is of little value at all. These are the ultimate responsibilities of a laboratory providing objective measurement.

However, the methods and principles of objective measurement are not confined to a laboratory. Several objective measurement techniques are used on the farm where standards and calibration are just as important. These include fleece weighing and on-farm microscope assessment of fiber diameter or medullation/kemp. Furthermore, any subjective or eye-assessment of a trait can be more valuable than an objective measurement if the latter is inappropriate or inaccurate.

Once a result is obtained, it is just as important that it is interpreted correctly. A result obtained using methods that fulfill all the above criteria which

is subsequently used and/or applied inappropriately is again of little value. A clear objective for fiber testing is required. Use of experienced classers to determine the level of testing required and aid in deciding the criteria for testing will ultimately increase the benefits from the results."

Objective fiber measurement is a valuable selection tool, and it is important that its benefits and limitations are fully appreciated.

Limitations arise when the information is used inappropriately, used out of context, or is simply misinterpreted. I shall cover these issues in future articles.

**Deadline
For
CashMirror**

June 13, 1992

Civil rights act applies to farmers

By Libby Whitley

Reprinted from Farm Bureau News, Joan Waldo, Editor

Farmers may not be aware that anti-discrimination laws affect them as employers. When the Civil Rights Act of 1991 was signed into law in November of last year, probably neither the president nor American farmers fully understood how the new law would force farmers to change their employment practices. The price for non-compliance is expensive lawsuits.

Until 1990, the only categories protected under U.S. civil rights laws were race, religion, gender and age. In the past two years handicap and nationality were added to the list. It is illegal to discriminate against an individual because he or she was born in a foreign country, looks foreign or is handicapped.

The penalties for violation of civil rights laws have increased. In the past, individuals who successfully challenged their employers on workplace discrimination were entitled only to job reinstatement, back pay and benefits. Now, the stakes are higher. Under the 1991 Civil Rights Act, each plaintiff can seek up to \$300,000 in damages, plus attorney fees and court costs.

Employer obligations

The Americans With Disabilities Act (ADA) prohibits employers

from discriminating against anyone with a physical or mental handicap, addiction or disabling illness. The employer has two obligations under the bill: first, in providing facilities to the general public, and second, in making hiring decisions. Farmers must comply with both the public accommodations, which went into effect in January, and employment requirements, which will become effective July 26.

If a farmer's operation includes a retail or wholesale facility, such as a roadside market, retail sales/"you-pick" or wholesale packing shed, he is covered by the "public accommodations" provision of the ADA. Under this, he must make sure that the operation is handicapped-accessible or show that it would be an undue hardship to accommodate disabled persons in the operation.

Farmers affected

The new law leaves it up to the courts to define "undue hardship." Factors include the cost of making accommodations, the farm's financial resources, number of persons to be employed and the effect on the overall operation.

Lawsuits forcing farmers to make their "you-pick" fields and orchards handicapped-accessible are possible, as are suits over changing sales facilities in packing sheds or roadside markets.

The ADA's employment provisions will affect employers of 25 or more workers. In 1994, they will apply to all who employ 15 or more. Under these provisions, the farm or ranch

employer must make sure that a wide range of employment activities, including job application procedures, hiring and firing, promotions, compensation and training opportunities do not discriminate on the basis of handicap. Employers must accommodate the handicapped unless to do so would impose "undue hardship."

Analyze work force needs.

It will be very important for farm employers to analyze their work force needs and be able to answer and defend issues such as their hiring practices, including the criteria used to recruit and evaluate potential employees and how job descriptions are written and advertised.

If a job applicant appears to be handicapped, the farmer may not inquire about the disability directly. Instead, he would need to outline the essential job-related functions and ask whether the applicant may perform these according to the job criteria.

For instance, if a person in a wheelchair applied to pick apples, the farmer could not say, "I'm sorry, but I cannot hire you because you are in a wheelchair," or "No, I can see you're handicapped," or "You couldn't pick apples from the wheelchair." Instead, the farmer should outline the mandatory basic job skills needed, such as the ability to pick up, handle and climb ladders easily, and harvest a certain number of bushels per hour. He then should ask the applicant if he can perform those functions.

Farmers need to thoroughly

analyze their operations, productivity requirements and labor needs to comply with the new law. Non-compliance will be costly in time and money.

Court curbs EPA's wetlands regulatory authority

The 7th Circuit Court of Appeals in Chicago has issued a ruling that curbs the federal government's authority to regulate wetlands.

The court ruled last week that the U.S. Environmental Protection Agency overstepped its authority when it fined a home builder for filling a depression in a 48-acre cornfield near Chicago. It questioned the validity of a standard that EPA uses when asserting regulatory power over isolated wetlands.

The ruling is significant because it draws a "clear and rational line as to what waters are regulated under the federal Clean Water Act," according to American Farm Bureau Federation assistant counsel Rick Krause. It is also the first case that speaks to the "over reaching" regulation by federal agencies, and it more clearly defines waters that are permissible to regulate.

EPA had claimed authority based on the potential of the site, which covers eight-tenths of an acre, to serve as a landing spot for migratory birds.

In its ruling, the court found that some wetlands may fall outside

of federal control if they are "isolated" or sites not directly associated with a river or lake.

The ruling rejected arguments that an interstate commerce standard could be used by the EPA when asserting regulatory power over "isolated" wetlands, simply because they may be used by migratory birds as a stopover on the way to their winter habitat.

Judge Daniel Manion, who wrote the opinion, said that in order for an isolated wetland to receive federal EPA protection under the commerce clause, humans must use it in some way.

"Not only is there no evidence that interstate travelers come to the 'wetland' to watch or photograph birds, there is no evidence that migratory birds of any feather ever used (the site)," the ruling said. "The birds do not engage in commerce."

Krause said this ruling affirms the original intent of the Clean Water Act, which covers navigable waters of the U.S. and "is not contrary to what other courts have said." He explained that a 1985 Supreme Court ruling decided that wetlands adjacent to navigable waters also are covered under the Clean Water Act, so a federal agency could assert jurisdiction over them. But that ruling "said nothing to indicate isolated wetlands are covered under the Clean Water Act."

This case involved "nothing more than a self contained hole with water - an isolated wetland," Krause said. "It is an example of water that should not be subject to federal regulation."

The Chicago area case began in the mid-1980's when the Builder, Hoffman Homes, was developing a subdivision and filled the disputed "wetland." The company was unaware that the site was a wetland until the U.S. Army Corps of Engineers notified the firm.

The Corps asked Hoffman Homes to apply for an "after the fact" permit to fill the land but the EPA objected and filed a complaint against the company in 1988, fining it for destroying a wetland without a permit. It was one of the first cases in which a company was affected by EPA's new regulatory powers under the amended Clean Water Act.

Hoffman contested the fine and the case eventually went before an EPA chief administrative law judge, who doubled the penalty and ordered the company to pay fines totaling \$100,000. Hoffman appealed one of the findings.

If EPA decides to appeal the 7th Circuit ruling, it would have to go before the U.S. Supreme Court.

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Artificial Insemination at Arboretum Farm

By Susan Lea Tooker, Arboretum Farm, California

Our experience using artificial insemination with cashmere goats began in 1990. Like other U.S. breeders, we wanted to dramatically improve each generation of our herd by taking advantage of superior bucks not otherwise available to us because of price or location. It just made sense, and we knew that the goat dairy industry in this country had successfully relied on artificial insemination (A.I.) for similar reasons. While we didn't know anyone who was successfully using AI on cashmere goats, it seemed that we could use available resources from the dairy goat industry and the sheep industry, supplemented with studies, products and information available from Australia and New Zealand where AI on cashmere goats is or was commonly practiced.

We learned that AI can be done cervically or laproscopically, with the laproscopic AI being more invasive in that the doe's uterus is accessed surgically. We also learned that AI can be done by studying and charting the natural cycles of the doe, or by synchronizing all does through synthetic hormones. In 1990, we decided to do the AI cervically, relying on the natural cycle of the doe. We set out to gather all of the studies we could find on the subject, and we found the most qualified cervical AI team then available.

Because we had a couple of years of mostly buck progeny, we started with a population of eight does for our cervical AI program in 1990. The does had all kidded twice before, and were of good temperament. Starting in September 1990, we calendared each doe over a 62 day period, closely observing every aspect of each doe's heat cycle. Of particular interest was the cycle duration and the length of what is called "active heat". Some does would come in and out of heat in a few hours and some does would stand at the fence for the buck, tail-wagging and receptive to the buck's attentions for more than a day. One doe was a "silent breeder", in that her heat cycle was very difficult to learn. Some does come back into heat in less than 21 days, and some came back in more than 21 days. Some does, especially those with kinship relations, were somewhat synchronized in that they would come into heat within a few days of each other.

By the end of the 62 day period, we had calendared each doe for at least two to three heat cycles. We then coordinated with our cervical AI team for dates to begin the AI. On the agreed upon dates the AI technician camped out at the doe's paddock, checking the does throughout the night, using the information collected to time the optimum

moment for AI. Only one of the eight does was processed at night by the AI technician. The other seven were processed during the daytime.

Now, we need to talk about the key ingredient, **semen**. All of the semen we have purchased had been processed in Australia or New Zealand and shipped to the United States. We learned that any time semen is extracted and "extended", then cooled by liquid nitrogen, handled by various parties involved in the shipping, and ultimately taken out of the liquid nitrogen and warmed up for implanting, the semen is going to lose some of its vitality or motility. If the semen loses enough of its motility, the semen will not be successful in weathering the rigors of impregnation. Because of the many steps and handling that semen goes through before its final use, it is prone to damage.

We found that the semen from Australia was generally priced at about \$100 a straw (with some distributors giving a price break for purchases of 5 or more straws), and that Australians were putting up the semen in 1/4 cc straws. We learned that the U.S. goat dairy industry commonly put up semen in 1/2 cc straws. This difference we have learned was due to the fact that the Australians were relying on laproscopic AI while the dairy

breeders were relying on cervical AI. With laproscopic AI, the semen is placed directly into the horns of the doe's uterus. The Australians reasoned that the 1/4cc straws (half the quantity of the 1/2 cc straw) contained sufficient quantities of semen to fertilize the egg because the semen didn't have to go as far or swim as strongly to reach and penetrate the egg.

Unfortunately, imported cashmere semen (1/4 cc straws) was being sold in this country in 1990 without any disclosures that it should not be used for cervical AI. The problem is that most of the people selling imported

information about the bucks from the semen distributor. We even tried to get the information directly from Australia without lick.

What we learned from working with the people who collect semen from our bucks, Ida and Andy Purcella of Oregon, is that the trick to putting up viable semen is in the "extender" itself, the proprietary "miracle" substance that keeps the semen in its most alive state so that when it is thawed, warmed and ready to be use in AI after having been cooled and transported, it works as well as if the buck itself was present.

We also called several dozen universities and breeders throughout the States and polled them on their success or lack of success with A.I.. Over and over, we heard of disaster after disaster. We wondered why these experiences had not been communicated by these people to the cashmere community at large, especially through our industry publications.

semen in this country have never themselves been successful in doing AI on cashmere goats. We believe that people selling imported semen should have laboratories in this country check random straws of the semen for motility, and that there should be some guarantee that the semen is still viable. One U.S. breeder was able to get Australian vets to process semen in the 1/2 cc straws, and this breeder has more recently had a small amount of success with cervical AI using these 1/2 cc straws. A related problem concerning semen is the difficulty of getting adequate pedigree or fleece

The trick in cervical AI, assuming viable semen, is timing. Since the semen is placed slightly beyond the cervix into the uterus, the state of the doe's cervical mucous is extremely important. Optimally, there would be a lot of mucous present at the time the semen is shot through the cervix. The presence of a lot of mucous is synonymous with the existence of "active heat" behavior. Thus, the more strongly the doe is in heat, the better the timing for the AI. Not only is there more mucous, but the cervix is naturally more receptive and open for seminal fluids. We spent a lot of time

examining mucous, and the AI technician uses a small light to guide her placement efforts. Cervical AI is meant to replicate the very best conditions and circumstances of natural breeding.

However, best efforts and proper timing with cervical AI are for naught if the semen used isn't good semen. No matter how careful we were, nothing we could do would make up for poor sperm motility or an inadequate supply of semen. The 1990 cervical AI project was completely unsuccessful. We had decided to use only one buck's semen, although it had been drawn in Australian quarantine under two different vets and at two different dates. Our AI technician looked at the semen under a microscope, and felt dissatisfied with the semen, although there was some motility.

We learned that even if the sperm are not all lifeless, there must be enough life to last long enough and with enough vigor to complete fertilization! We lost all of the money spent on the semen and the cost of the AI team. We lost three months of breeding time, and our does (later bred to a live buck) gave birth in June 1991, making it a rather late season.

Since the does cycled back, we knew fairly early that the AI was unsuccessful. When a doe cycles back after being given synthetic hormones, it is less of a certainty that the doe is ovulating. Since we were using a natural method, it was clear to us that our AI program had failed. We didn't give up on the idea of cervical AI, but since we wanted to use Australian or New Zealand processed semen (1/4 cc straws), we decided that we

would have to laproscopic AI. At that time, we believed that even slightly limp semen could be successful if placed nearer to the target. We also called several dozen universities and breeders throughout the States and polled them on their success or lack of success with AI. Over and over, we heard of disaster after disaster. We wondered why these experiences had not been communicated by these people to the cashmere community at large, especially through our industry publications. Because of the lack of information, it was not possible to determine the leading cause of failure with AI. For the few people who were successful, it was also not possible to determine why they had success.

For 1991, we chose some New Zealand processed semen. The buck we chose had a price of \$55. per 1/4 cc straw. Some of the New Zealand semen being imported by this distributor sold for as little as \$35 per 1/4 cc straw. We also used some of the semen from the same buck used in the 1990 season, and we purchased semen from another Australian buck where the semen came in 1/2 cc straws. We then sought a capable laproscopic AI team. We obtained the leading laproscopic AI technician for the University of California at Davis. This person had abundant experience doing AI on sheep, and had some field work in Australia with goat breeders. In 1991, we planned to AI nine does. Again, these were does who had kidded at least once.

Because laproscopic AI is surgery, we decided to use the sponges and PMSG shots to synchronize all of the does. Obviously it made sense to do

the surgery all at one time. One of the considerations was the importance of having control over thawing of the semen and the speedy insertion of the semen into the horns of the uterus of the recipient doe. We used sponges that our AI technician brought back from Australia. He obtained them from Australian vets who are currently using this type of sponge. The length of time the sponges were inserted was an interesting controversy. People advised any where from 16 to 20 days. The sponges were inserted for 18 days, and none were lost or expelled.

Before the sponge process began, we made no changes and created no disturbances about or around any of the does. We do run our does in paddocks near the paddock which houses all of the bucks. We were concerned about a "buck effect" in that the presence of bucks, it has been theorized, might cause spontaneous abortion in the recipient does. However, we realized that even when we breed by using a buck on a doe in "active heat", returning both to their original pens after a brief mating, we have not had any "buck effect". Since our 1990 and 1991 misfortunes with AI, if we ever do AI again, we would consider doing AI without the presence of any bucks near the recipient does.

The rest of the protocol included giving PMSG shots (1/2 cc) on the 17th day of the sponges, and pulling the sponges on the 18th day. The surgery took place 48 hours after the sponges were pulled. The doe is basically hung upside down on a sling. Incisions are made a certain distance from the teats,

and a sharp instrument makes a puncture wound into the uterus from both incisions. The laproscopic device is inserted into one of the holes and the semen gun into the other. Using the laproscopic device, the semen is placed into each horn of the uterus. We actually saw ovum emerging from one does ovaries. The experience is graphic, and certainly heartrending. The instruments are pulled out and the incision closed using a staple.

The first doe to receive the laproscopic AI actually conceived and bore our only AI offspring. The other eight does did not take, and were serviced by a backup buck three weeks later. Because about half of the does came into a strong, strong heat over the next few days following the surgery, we wondered whether the timing was off on some part of the protocol. I wrote to breeders in Australia asking them for more specific information on their laproscopic AI protocol, but have never received any replies. The UC Davis AI technician is about to return to Australia, and he plans to do more research with cashmere goat vets while there.

For all the money spent trying to make the AI experiment work, we could have bought two very nice bucks. However, we believe that AI will become a common practice among cashmere breeders, and certain persons will emerge with real expertise in this area. What is now needed is for breeders and others with experience in this area to share their experiences and information. Perhaps letters to the editor of CashMirror would be helpful.



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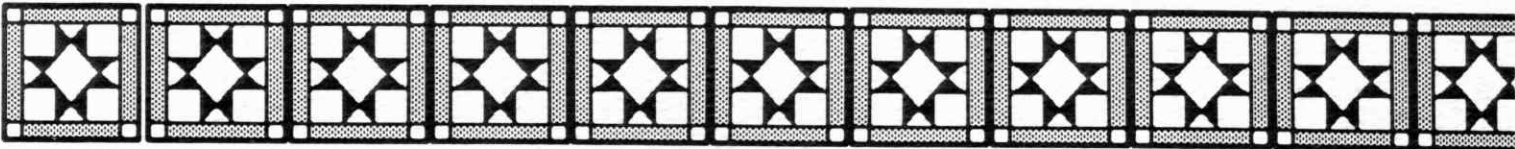
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