

Selecting

ANGORA
GOATS

for
Increased Mohair
Kid Production

TEXAS A&M UNIVERSITY
TEXAS AGRICULTURAL EXTENSION SERVICE
J. E. HUTCHISON, DIRECTOR, COLLEGE STATION, TEXAS



SELECTING ANGORA GOATS

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About 3 million Angora goats are sheared annually in Texas. This is about 97 percent of the total U. S. Angora goat population. These goats shear 6.7 pounds of mohair per head annually in two shearings per year. Texas mohair production stands at about 23½ million pounds annually, and adds about \$11½ million to the agricultural income, excluding the incentive payment.

Fleece weights for adult goats average about 3.8 pounds per head and 2.5 pounds per kid per shearing. Some flocks, however, average 5 to 6 pounds per head for adult goats and 3 to 5 pounds per head for kids. This indicates there are high-producing and low-producing goats in Texas flocks.

This information shows results gained by following a good selective breeding program. Since it costs no more to run a high-producing animal than a low-producing one, there should be a desire on the part of ranchmen to improve the production of Angora goat flocks.

for Increased Mohair and Kid Production

JAMES GRAY and JACK L. GROFF*

MAKING SELECTION WORK

A selective breeding program brings about improvement in any breeding flock. The rate of improvement is slower in flocks possessing good uniformity. The greater the variation in fleece weight in a flock, the faster the rate of improvement.

REQUIREMENTS FOR SUCCESS

- Enough Angora goats should be in production each year to enable the owner to cull and sell inferior does. This should be a consistent practice.
- Selection programs need at least 5 or 6 years to produce permanent benefits.
- The individual should have a goal in mind when making the selection. Avoid placing too much emphasis on shape of horns, appearance of face, size of ears or other unimportant characteristics. Income per head is the goal.
- Select bucks carefully to improve the breeding flock. Preference should be given to bucks with good production records. Selections should be made by the owner and not left to the purebred breeder. The purebred breeder usually selects bucks to the best of his ability but unless he is familiar with the flock in question his efforts are wasted. Bucks must be selected as carefully as the does if a selection program is to be beneficial.
- Personnel trained in selecting Angora goats should assist the producer.

OBSTACLES

- Opinions vary regarding the type of lock found in the Angora goat fleece.

*Respectively, animal husbandman, and sheep and goat specialist, Texas Extension Service, Texas A&M University.

- People trained and qualified to select are scarce. These people need the confidence of the producer. A poor job on a first attempt at selection will discourage the producer from further attempts.

- Some producers believe their goats are so poor that the person called in to select will cull all of them. A plan can be adopted where numbers do not have to be greatly reduced and curtail overall ranch operations.

- A breeding program that does not provide enough doe kids for replacement purposes makes it impossible to show rapid progress.

- It is difficult to gather all goats out of some pastures. Some animals that are missed undoubtedly will be inferior.

WHAT SELECTION CANNOT DO

A selection program cannot overcome:

1. The effect of poor bucks.
2. The effect of poor financing or poor management.
3. Improve the flock if the culls are not sold or managed according to plan.
4. Turn a low-producing flock into a high-producing flock within 1 or 2 years. Permanent changes are due to heredity and take time to establish.
5. Overcome the effect of poor nutrition or poor physical condition due to a diseased condition or parasitism. Effects of poor range condition show up more rapidly in the weights and quality of Angora goat fleeces than in those of sheep.

TYPES OF PROGRAMS

Plan a selection program to fit the individual ranch. Consider the number of goats and pastures to avoid interference with normal ranch operations.

Improvement is the greatest in a selection program when a certain percentage of the poorest individuals are sold. Replace culled animals by carefully selecting yearling does. Some ranchmen are not able to follow this plan, especially if they are trying to increase their numbers.

If a ranchman thinks that he cannot dispose of any does, he needs an alternate plan of separating the does into several groups according to their ability to produce. The groups may number two, three or even more, if desirable. Big open-face does with good conformation and high-quality, long-staple fleeces, figure 1, make up the top group. The slightly less desirable does — not as uniform in size, conformation and fleeces — are placed in the second group. The third group consists of the smaller, lighter shearing does. Mark these groups differently so that they can be separated easily through a cutting chute. Plastic ear tags of different colors are helpful for this type of identification.

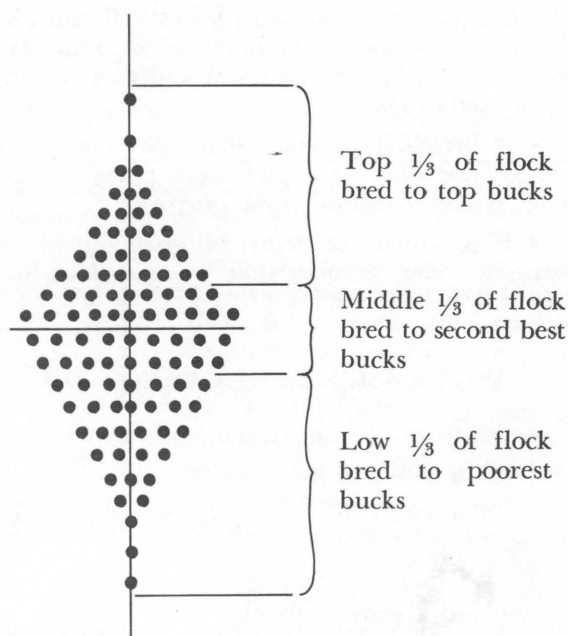


Fig. 1. This figure represents the profile or population distribution of a flock of Angora goats. This distribution shows 50 percent of the flock above average in production and 50 percent below the average with a few high producers and a few low producers.

Divide the bucks into groups in the same manner as the does and put the best bucks with the best does, the second best bucks with the second best does and the poorest bucks with the poorest does. This system of mating increases the possibilities for offspring that are still higher producing individuals, figure 2.

Stratification of the flock may be done in several ways — from production records, grease fleece

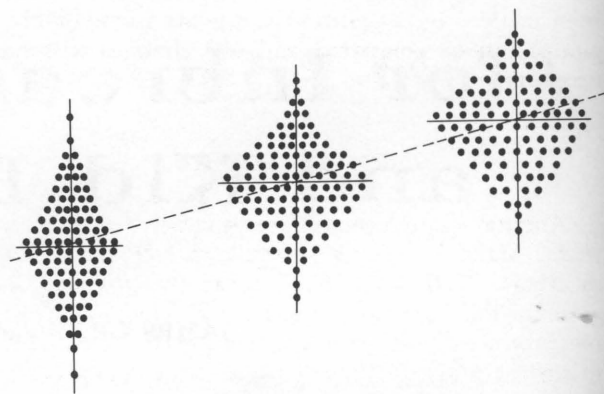


Fig. 2. A selective breeding program should tend to flatten out the profile of the flock and trend of the average production should be upward. The flattening out of the profile is due to more uniformity of animals within the flock and fewer extremes.

weights or by visual appraisal. Production records are the most accurate since they take reproduction and fleece records into consideration. Fleece weights and quality would be the second choice because they give some accurate measurements of mohair production. Visual selection is the third choice in stratification of the flock but is still very useful. Much improvement can be made in many flocks by stratifying the flock and breeding the best bucks with the best does, the second best bucks to the second best does and so on. This system makes the most efficient use of the bucks and insures the best bucks being mated to the best does.

Select the largest number of replacement doe kids from the top group of does with the balance of the replacement doe kids coming from the second best group. Sell poorest doe kids from the second group and all of the doe kids from the third group.

Whenever a ranchman thinks the quality of the doe kids will improve his flock he can keep a larger percentage and sell some of the poorer quality, older ones. In this way, he gradually eliminates the lower quality does and raises the entire flock's quality.

EQUIPMENT NEEDED

Little equipment is needed for a selection program. Adequate corrals are required to confine and crowd the goats. Construct a selection chute with panels. For the best results this chute should be 3 to 4 feet wide and as long as desired. Arrange it so that goats can be partitioned in small groups rather than pile up and perhaps suffocate.

A permanent selection chute with a narrow chute and cutting gate on one end facilitates the

separation of the goats after the selections have been made. By separating the goats immediately, groups can be compared and few changes will be necessary.

WHEN TO SELECT

Angora goats usually are sheared twice each year. Make selections before the fall or spring shearings. Fall is preferred because credit can be given to the does that raised a kid. Does that do not produce a kid grow heavier fleeces. Consider this when making the selections.

Accurate stratification of a flock can be made 2 to 3 months after shearing. This gives the animal adequate time to grow from 2 to 3 inches of mohair.

Fleeces of Angora goats are affected by the quantity and quality of feed. Fleeces produced by goats grazed on dry range with little green feed may be poorly developed, fine in fiber, lightweight and lacking in natural oil. Fleeces produced by goats having access to good, green feed probably are well grown, heavier in weight, coarser in fiber and contain more natural oil. This is demonstrated by developing kid goats on small grain pasture. Their fleeces often are quite coarse and heavy.

It is difficult to make accurate selections on kid goats before their first shearing because of differences in age. It is advisable to eliminate the undesirable kids before the first shearing. Another selection can be made before the second shearing when all animals have had an equal chance to develop and produce mohair.

POINTERS IN SELECTION

Currently the market is emphasizing quality mohair and most of the income from Angora goats is from mohair. When too much emphasis is placed on selecting for quality mohair, goats are apt to lose size and thriftiness. On the other hand, the large, open faced, rugged goats are better able to shift for themselves and produce kids and mohair. These larger, more rugged animals do produce a coarser type of mohair. This puts goat selection and mohair marketing in direct competition. There is a need for developing a large, rugged animal with the ability to produce quality mohair.

Size

Size is important to the Angora goat because large animals are stronger and able to withstand

more cold following shearing. The bigger animals have more area for producing mohair and usually produce heavier fleeces.

Size is controlled largely by the quantity and quality of feed available during the period of growth. Place young goats on good range to get greater development and mohair production.

Body Conformation

Good body conformation is desirable because many Angora goats, especially wethers, are sold for meat. Animals with good conformation are more desirable meat animals.

Select does with wide, deep bodies, full heart-girths, good spring of ribs and wide loin. Straight strong legs with adequate bone size are highly desirable.

Openness of Face

Openness of face is especially desirable in many sections because needlegrass and burs get caught in the face hair and may work into the eyes. Open-faced goats do not have as much of a problem in this respect.

Does with open faces usually develop to a larger size and are better breeders and producers of mohair and kids.

Open-faced wethers are more popular with buyers.

MOHAIR QUALITIES

Sheepy Fleece

Angora goats with fleeces more like those of sheep are described as "sheepy fleeced." This is

LEFT, KEEP; RIGHT, CULL. The doe on the left shows desirable mohair covering, good quality and good conformation. The doe on the right shows short staple, kempy back, light belly covering and poor conformation.





GOOD-QUALITY GOATS. Note the complete covering of mohair, good size and desirable conformation of these goats. Does such as these produce desirable replacement doe kids.

a highly undesirable type of mohair because the fleece is short in staple length and lightweight. This characteristic is highly heritable and these animals should be culled.

Quantity

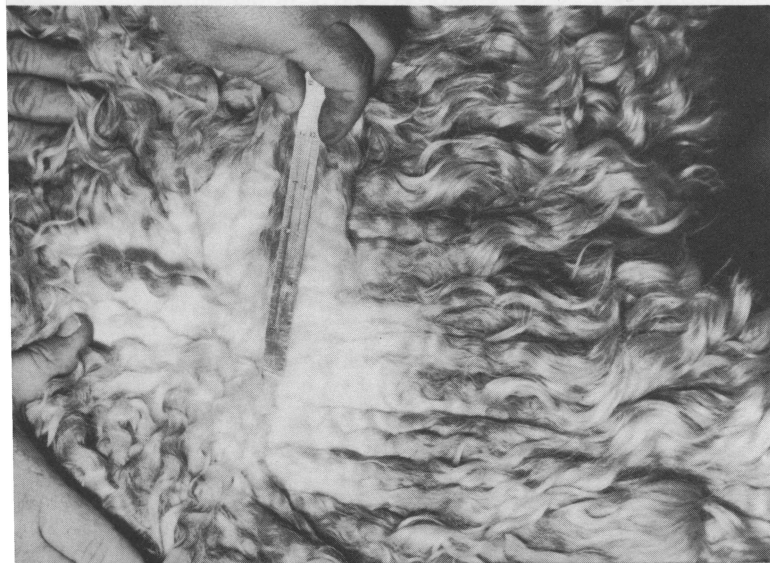
Certain fleece characteristics influence fleece weight, others influence fleece quality and a few influence both fleece weight and quality.

Mohair fleece weight depends upon length, density, completeness of covering and size of the animal.

Length

Length of staple is important to the quality and quantity of mohair produced but not as important as in wool. A good Angora goat should produce mohair at the rate of 1 inch per month or two 6-inch staple clips in 12 months. The mohair buyer expects the average 6-month clip of mohair to have a 6-inch staple.

GOOD STAPLE LENGTH. Angora goats should produce mohair at the rate of 1 inch per month or a 6-inch staple for each of the two yearly shearings. Staple length adds weight to the mohair fleece.



POOR-QUALITY GOATS. Note the poor covering of mohair on the bellies and necks; poor body conformation. Goats such as these should be culled from the flock as soon as possible.

Staple length is the most important factor contributing to the weight of fleece. Mohair does not carry a length grade as in wool.

Density

Density is the closeness with which the mohair fiber grows on a given area of the body surface. Often it is expressed as the number of fibers per unit of area. This characteristic is difficult to measure with any degree of accuracy.

A common way to determine density is to part the fleece and observe the amount of skin area exposed. The more skin area exposed, the less density the goat possesses.

Another method of determining density is to grasp a handful of mohair on the side of the goat and lift the fleece. The fuller the handful and heavier the weight of the fleece, the greater the density.

Some people prefer to note the resistance of the fleece to opening and use this as a guide in measuring density.

These methods are the only practical ways for estimating density by the producer. Several methods of evaluating density are more accurate but they are too slow and too technical for a rapid selection method.

There are several conditions that may cause errors in judging density when one of the rapid selection methods is used:

1. Short-stapled fleeces appear more dense than long staple fleeces of a similar quality.
2. Excessive oil, either natural or artificially added, may cause the fleeces to appear more dense than they actually are.

3. A harsh, wiry fleece may appear more dense than a softer, finer fleece.
4. Mohair fleeces tend to cot or mat together. This may create the illusion of density.

Completeness of Covering

The Angora goat should have a uniform covering of mohair over the entire body except for the face. Mohair covering on the head should come down even with the eyes and fall in locks, rather than sticking out straight and stiff from the forehead.

Some Angora goats tend to have a light covering of mohair under the jaws or on the throat. A full, dense covering of mohair up to the chin is desirable.

Often the goat that is light on the throat also has a light covering of mohair on the belly. Covering on the belly should be the same as on other parts of the body.

In practical selection, it is a waste of time to look for the covering on the throat and belly if the animal does not have a good fleece on the rest of his body.

POOR BELLY COVERING. To shear heavy fleeces, Angora goats must have a good covering of high-quality mohair on the bellies. Goats such as this should be culled.



Size of the Animal

The practical Angora goat producer prefers a large goat, not only because it is more hardy and can endure more hardship, but because the larger goat produces a heavier fleece than a small goat. It has never been determined what size Angora goat is the most efficient producer of mohair. It easily may be the animal of medium size.

Quality

Quality of the mohair fleece is influenced by fineness, staple length, soundness and purity.

Fineness

Fineness of the mohair fleece varies greatly with the quantity and quality of the feed, age of the animal and its inherited ability to produce fine mohair.

Goats having access to high-quality green feed produce heavier fleeces with coarser fiber than similar goats grazed on dry feed or poor range. The variation in fineness of fiber is influenced more easily by quantity and quality of feed in mohair than in wool.

The fleece of the Angora goat increases in coarseness up to about 8 years of age. When the general thriftiness of the goat begins to decline, the fleece becomes slightly finer again. The first and second fleeces should be included in the kid grades and later fleeces should be graded in the adult grades. It is possible, however, for kid goats on high-quality feed, such as small grain grazing, to produce mohair low enough in grade to be included in the adult grades.

The ability to produce fine-quality mohair is inheritable. Through selection it is possible to develop a flock of goats that produce fine-quality mohair throughout its lifetime. Some producers select for quality mohair and sell their clips on a graded basis.

Soundness

Angora goats are more susceptible to shedding their fleece than sheep. This fault can be eliminated from a flock by culling animals that shed. A "break" or tender spot in the mohair fleece is rare. Fevering usually causes this problem.



POOR NECK COVERING. Poor covering on the underside of the neck indicates poor mohair production in Angora goats. These animals should be culled from the flock.

Purity

Animals showing any colored fibers should be culled from the flock. There is a tendency for red kids to appear in flocks of Angora goats. Mark these kids for culling.

Occasionally a "blue" or gray kid will be born. These animals also should be eliminated.

Kemp is a chalky white fiber found in the fleeces of poorly bred goats. These fibers are undesirable to manufacturers and should be eliminated through a strict selective breeding program.

SPANISH CROSS. Crosses of Spanish and Angora goats should be culled because they are poor shearers, with much kemp in the fleeces and detract from the quality of the mohair clip.



RECORDS TO MEASURE PROGRESS

Records necessary to measure progress include average fleece weight for spring and fall clips for both kids and does and percentage of kid crop. They are usually sold by the head, but weight is helpful in developing a top flock.

Registered breeders should keep more accurate and complete records than commercial producers. Individual records on does and bucks are useful in building up the registered flock. Some registered breeders include comments on the type of lock produced at each shearing and find that the type of lock may change from one shearing to the next.

Following are some suggested forms for commercial and registered flocks.

RESULTS OF SELECTIVE BREEDING

Producers are always interested in the results of production practices. The final question always comes back to the amount of profit such a practice will show.

In a stratification program started in Eastland County the following results were obtained on a fairly large commercial Angora goat operation.

Total Yearly Mohair Production

	First year	Second year	Third year
Group 1	10.73 lb.	11.50 lb.	11.42 lb.
Group 2	8.37 lb.	8.66 lb.	9.11 lb.

Group 3 goats were generally so poor in quality and production that they were sold and incomplete figures on production were the result.

It is interesting to note that after the first two years of selective breeding 1,322 goats produced 153 more pounds of mohair than 1,763 goats at the beginning of the program.

Translating this into dollars and cents and using a price of 50 cents per pound for adult mohair the goats were producing about 35 cents per head more after 2 years of selective breeding.

Good results are not limited to large commercial operations.

The following results from a small registered flock were obtained in a Lampasas County demonstration.

	DOES		KIDS	
	Average yearly fleece weight	Fall shearing	Spring shearing	Percent kid crop
First year	8.50 lb.	3.00 lb.	5.00 lb.	108%
Second year	9.00 lb.	2.50 lb.	6.00 lb.	102%
Third year	11.00 lb.	2.75 lb.	6.50 lb.	112%
Fourth year	12.00 lb.	3.00 lb.	7.75 lb.	110%
Fifth year	14.30 lb.	3.75 lb.	7.75 lb.	112%
Sixth year	14.75 lb.	3.25 lb.	7.00 lb.	127%
Seventh year	15.00 lb.	2.75 lb.	8.25 lb.	141%
Eighth year	13.60 lb.	3.00 lb.	6.75 lb.	126%

These figures demonstrate what a selective breeding program combined with good flock management can accomplish in a few years. The increased fleece weights were accomplished with no sacrifice of quality.

The especially high kid crop is the result of selective breeding and good flock management.

Using a constant figure of 50 cents per pound for adult mohair the increased fleece weights represent an increase of \$1.55 per head for the 8 years.

PRODUCTION TESTING

When Angora goat flocks reach extremely high production it is necessary to keep more complete records and use production-tested sires to obtain still higher production.

A stud flock of 50 does was selected to produce bucks for a commercial flock. Individual records of the spring and fall fleece weights were kept. The combined weights of the two fleeces ranged from 9.9 pounds to 16.3 pounds with an average of 13.2 pounds for the flock. Each doe raised one or more kids in addition to producing heavy fleeces.

Fleece and body weight records of the buck kids should be kept. By weighing the bucks at each shearing three fleece and body weights are obtained before the bucks are old enough for service. In this way the largest and heaviest producing bucks are selected.

With the establishment of hereditary characters for high production it is possible to continue improvement through this system. Many of the lower producing bucks from this flock will be sufficient to improve on the average commercial flock.

INDIVIDUAL RECORD FOR BUCKS

Animal's number	Year	Length of staple		Weight of fleece		Shorn body weight		Remarks
		Spring	Fall	Spring	Fall	Spring	Fall	

INDIVIDUAL RECORD FOR REGISTERED DOES

Animal's number	Year	Length of staple		Weight of fleece		Shorn body weight		Remarks
		Spring	Fall	Spring	Fall	Spring	Fall	

COMMERCIAL FLOCK RECORD

Description	Number of head		Total pounds of mohair		Average fleece weight		Percentage kid crop	Remarks
	Spring	Fall	Spring	Fall	Spring	Fall		
Top does								
Middle does								
Bottom does								
Kids								
Bucks								



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