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Improving the Quality of Wool

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Sheep were one of the first animals to be domesticated about 8,000 years ago. In this one animal was found all the basic needs of life at that time, food, clothing, and shelter. The hunter, herder, or more probably his wife, learned to spin and weave the fleece of sheep into cloth or fabric, first with the fingers and later with a spindle and loom. Wool garments were worn in Babylon (which means "the land of wool") as early as 4,000 B.C., and archeologists have found evidence to indicate that trade in wool had begun.

Today wool is a world product. It moves freely in the commerce of the world because it does not require expensive storage and handling. Freight charges for wool are comparatively low in proportion to its value, and wool can be moved long distances before it is significantly devalued by freight charges. Because wool mills can purchase wool grown in different areas of the world, more competition is placed on U.S. sheep producers to offer a quality wool product. The quality of the wool purchased by a wool mill is influenced by many factors, some of which can be controlled or influenced by the sheep producer and the sheep shearer.

Wool growers and sheep shearsers will improve the profitability of their wool crop by understanding when to shear, identifying specific wool contaminants, and noting considerations for shearing time. In addition, the wool incentive program provides sheep producers who improve the quantity and quality of their wool a higher profit.

When to Shear

There are several factors that must be considered before a decision can be made as to the best time of the year to shear. Obviously, one shearing time, or season, is not best for all sheep operations. Several factors should be considered before deciding when to shear:

1. the season, or time of year, your ewe will give birth,
2. the general climatic conditions in your area at different times of the year,
3. availability of sheep shearsers and needed labor at shearing, and
4. availability of barns or sheds to protect freshly shorn sheep.

Most sheep are shorn only once a year, but some are shorn twice a year. Total yearly wool production may be increased 10 to 30 percent by shearing more than once per year; but in general, the value of the wool is less because the length of the wool fibers is shorter. The increase in wool production from increasing shearing frequency is due almost entirely to an increase in feed intake after shearing. The increased feed intake is due largely to the cooling of the body after removal of the fleece. Therefore, the percent increase in total yearly wool production from shearing two or more times per year varies greatly, depending on when the sheep are shorn and the daily environmental temperatures around the time of shearing as well as the available feed. It is unlikely that the increase in wool production from medium wool breeds of sheep shorn two or more times per year could offset the additional shearing costs and other expenses incurred. Since the length of the wool fiber is one of the factors determining the value and usage of the fleece, most producers shear once per year and find that to be best.

Having considered the above factors, the growers find the most logical time for shearing is one to three months before the lambing season. There are advantages and disadvantages for considering shearing before lambing.

Advantages

Wool from sheep shorn before lambing may have a higher value because the fleece is likely to contain less contaminants which can occur from the birthing process and from manure around the lambing pens. In addition, the stress at lambing may cause a "tender" area in the wool fibers of some sheep. The tender area would break during wool processing leaving two shorter less desirable fibers. Another advantage is that more sheep can fit into a given barn space and shorn ewes take up less feed bunk space. Shorn ewes require 10 to 20 percent less space than do sheep in full fleece. Moreover, shorn ewes will bring less moisture into the barn because the fleece acts much like a sponge collecting moisture. Additional moisture in the barn increases bedding needs and can increase the incidence of respiratory disease for both the ewe and newborn offspring. Ewes in short fleece will seek a more protected, warmer place to give birth—so few, if any, lambs would be born outside. Also, if sheep are shorn before lambing, new born lambs can more easily...
find a teat to nurse if the ewe is in short fleece. And if problems exist with the udder, they may be more readily identified.

**Disadvantages**

If lambing occurs during the winter or early spring, then some protection from the environment is essential for short-fleeched ewes. A heated barn may not be essential, but one that is dry and free from drafts is important. A small portion of the barn may be heated for newborn lambs during extremely cold weather. In addition, care must be taken when shearing the pregnant ewe, especially if shorn during the last four weeks of pregnancy. Handling the pregnant ewe too roughly can cause an abortion.

Additional feed is required to maintain body condition if shorn during cold weather. Freshly shorn sheep will require additional feed if environmental temperatures are below 55°F, and feed for maintenance may increase as much as 78 percent following winter shearing. Sheep in poor or thin condition should not be shorn during cold weather.

**Wool Contaminants**

Wool growth is a continuous process, but it is not uniform throughout the year. The rate of wool growth is related to nutrition, environmental temperature, and day length. While these factors may be difficult, expensive, and/or impossible to control, many other factors that influence the value of the fleece can be controlled through proper management. Contaminants of several types can influence the value of wool. For the most part, sheep producers can influence the amount and type of contaminant getting into the fleece because there are some fairly common contaminants found in wool. Any kind of burr, seed, chaff, grass, straw, manure, or other vegetable matter found in grease wool is considered a contaminant. Bedding the barn with fresh straw just before shearing is a very common way for straw to get in the wool clip.

Poorly designed hay and grain feeders especially those that allow hay and/or grain to fall on the heads and backs of sheep can increase the vegetable matter content of the wool. Pastures contaminated with weeds containing burrs can very readily attach to the fleece and lower its value. Some vegetable matter can be physically removed at the farm, warehouse, or wool mill, but some loss is inevitable. Wool heavily contaminated with vegetable matter may be carbonized to remove the foreign material. This is an added expense because it decreases the value of the wool.

Polypropylene twine used to tie hay or straw bales can contaminate the fleece and greatly reduce its value. It only takes a very small piece of plastic twine to ruin a large piece of wool fabric. The plastic twine is very difficult to remove during the normal milling processes and is only recognized after the wool fabric is run through an ironing or heat process at which time the plastic melts. Baling wire or sisal twine is recommended for baling hay or straw for sheep.

Branding sheep for identification with a paint that is not scorable (will not wash out) is a major source of contamination. It is difficult to remove the paint from wool; and during the scouring process, the paint may bleed and stain all the wool in the scouring vat. It is best to avoid branding sheep with any kind of paint; but if necessary, use only newly developed scorable branding paints. Apply the approved paint brand on the top of the back so the area can be easily clipped from the sheep when they run through a chute prior to shearing. At present, some wool mills offer premiums for paint-free wools. In some cases, they may refuse to buy paint-contaminated fleece.

**Shearing Preparation**

It is important for both the sheep owner and the shearer to plan ahead for the scheduled shearing date. Advanced planning can make shearing go much smoother and easier for the sheep, the shearer, and those helping with shearing. A cleaner, better-prepared wool crop will harvest at a higher value if the owner prepares in advance.

1. Sheep should be penned in a clean dry area the night before shearing. It is important for the sheep to be dry at shearing (less than 12 percent moisture) because a wet fleece will rot in the wool bag and shearing wounds on a wet sheep are more likely to become infected.

2. If possible, the sheep should not have feed or water 12 hours before shearing. This should reduce wool stains from urine and feces; and by doing this, the sheep are easier to handle.

3. The shearing area should be clean and have adequate lighting. A wood or canvas flooring is preferred in the shearing area with each shearer needing about 8 square feet of floor space for shearing.

4. A small holding area for 6 to 12 head of sheep for each shearer immediately adjacent to the shearing area is recommended so the shearer does not have to move each sheep a long distance. The floor in the holding area should be kept clean so that dirt, straw, or other material is not dragged onto the shearing floor.

5. A wool bagging stand(s) should be available to pack the fleeces in a wool bag. A well-packed wool bag is much easier to handle and takes less space for wool storage. Each wool bag should contain 15 to 30 fleeces and have a total weight of about 150 to 300 pounds.

6. The owner should provide labor for sweeping the shearing floor, tying fleeces, and bagging the wool. Adequate labor should also be available to handle and move sheep to the shearing floor. The owner may rely on the shearing crew to provide the labor, but this must be agreed upon in advance.

7. Wool bags and paper twine for tying fleeces may be provided by the shearer or the sheep owner. In either case, advanced planning and communication between the two parties is necessary.

8. A wound dressing should be close by in case a shearing wound needs attention.
The sheep shearer should make ready or provide the following in advance of the scheduled shearing date:

1. Make certain all shearing equipment is in top running order. If possible, it is wise to take at least one (complete) extra set of shearing equipment. In the event of a breakdown, this would save time at the shearing barn.

2. Sharpen all combs and cutters and make certain you have the right comb and cutter for the type of sheep you will be shearing.

3. Make certain that you and other members in your shearing crew are properly trained in shearing sheep. A person properly trained is able to shear a sheep with minimal stress to the sheep, a minimum number of second cuts in the fleece, few if any skin cuts on the sheep, and with a minimal amount of effort. The most-used shearing method is commonly referred to as the Australian method, and it is the method taught by most experienced sheep shearsers.

4. Check with the owner(s) so you know what they plan to supply in the way of labor, wool bags, wool twine, and/or any other supplies.

5. Keep the owner informed as to any changes in your schedule.

At Shearing

1. Separate and shear all white-faced sheep first. Black fibers reduce the value of the wool. Shear separately those sheep with wool growths of 12 months, 6 months, or a lamb.

2. During cold weather, its best to shear in a warm barn and place several sheep closely together in a holding pen so their body heat causes them to sweat or perspire. This is done just before shearing to moisten the fiber and soften the yolk and make it easier to cut the wool.

3. After the fleece is shorn, separate the tags, leg wool, and stained pieces from the fleece. The fleece is ready to be rolled and tied.

4. Rolling and tying the fleece may or may not be required by the wool buyer, so prior information from potential wool buyers is important for making this decision. Lambs wool or fleeces with short staple length are not tied. A fleece that is well tied can be more easily handled at the wool warehouse or wherever the wool is being classified. To roll and tie the fleece, put the fleece cut side down on the floor, fold in each of the sides to meet the center, fold in the neck about as far as the shoulders. Then, starting at the brich end, roll the fleece toward the neck, with the finest and best wool on the outside of the bundle. Only paper-wool twine should be used for tying the fleece. The wool twine should be placed around the fleece and then crossed so the fleece is divided into approximately four equal portions by the twine. The twine should be pulled firmly but not excessively tight.

5. Skirting fleeces before rolling and tying may be profitable for some sheep producers. Floor skirting can be accomplished very easily without slowing down the shearing process. Fleeces that are floor skirted have the belly, head, and leg wool removed and bagged separately from the remaining portion of the fleece.

6. Proper bagging of wool is important. Ideally, a new wool bag should be used each shearing season; and if a second-hand wool bag is used, make sure it is clean both inside and outside. Pack the different kinds of wool such as ram, ewe, lamb, black face, and whiteface and tag separately. Mark each bag so as to identify its contents.

7. Store bagged wool in a clean, dry area free from dust, dirt, feed, or other elements that may ruin or contaminate the wool.

National Wool Act

The National Wool Act was established by Congress in 1954 to protect U.S. wool growers from subsidized imports and to encourage the improvement of the quality and quantity of their wool crop. The National Wool Act is a part of the Omnibus Farm Bill under the auspices of the USDA. The Act allows monies collected from tariffs on certain categories of raw wool and wool fabrics to be distributed to sheep producers through an incentive payment program. Money collected from wool tariffs goes to the U.S. General Treasury and 70 percent of monies collected each year is available for the incentive program. The incentive, or support level, is established by the Secretary of Agriculture each calendar year. The incentive payment is setup in such a manner that those receiving a high price from the wool buyer for their high quality wool also receive a proportionately higher payment from the incentive program. Payments are also made on each hundredweight of unshorn lamb sold. Sheep producers who wish to participate in the program must provide the following information to their local Agricultural Stabilization and Conservation Service (ASCS) County Office.

A sales slip for shorn wool should contain:

1. the month of shearing,
2. the month of sale,
3. the number of head shorn,
4. the total pounds of wool sold,
5. the net proceeds from the wool sale,
6. the sales slip must show the buyer's original signature.

A sales slip for unshorn lambs should contain:

1. the total liveweight of the unshorn lambs,
2. the number of unshorn lambs sold,
3. the sales slip should state that the sheep are unshorn lambs,
4. the sales slip must show the buyer's original signature.

The National Wool Act also provides a referendum for sheep producers. If passed, monies are deducted from payments on shorn wool (4 cents per pound) and unshorn lambs (20 cents per hundred weight) by the ASCS office. This money is sent to the American Sheep Producers Council (ASPC) for promotion and advertising programs for wool and lamb.

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<tr>
<th>Glossary of Wool Terms</th>
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<tr>
<td><strong>Britch wool:</strong> Wool from the thigh and twist region of the sheep, usually the coarsest, poorest quality wool.</td>
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<td><strong>Carbonizing:</strong> The act of treating wool with chemicals, usually acids, to destroy and remove burrs and other foreign materials without too serious damage to the wool.</td>
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<tr>
<td><strong>Classing or grading:</strong> Classification of fleeces according to fineness, staple length, character, purity, and yield.</td>
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<tr>
<td><strong>Grease wool:</strong> Wool in its natural condition as it comes from the sheep.</td>
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<td><strong>Scouring wool:</strong> A process of washing or cleaning wool of grease, soil, and suint by washing in a water-soap-alkali solution.</td>
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<td><strong>Second cuts:</strong> Short lengths of wool resulting from cutting wool fibers twice under careless shearing.</td>
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<td><strong>Skirting:</strong> A fleece from which the edges have been removed as well as heavily stained or inferior parts.</td>
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<td><strong>Staple length:</strong> The length of the wool fiber without stretching the crimp out of the individual fiber.</td>
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<td><strong>Tags:</strong> Large locks of wool clotted with dung and dirt usually from around the dock area.</td>
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<td><strong>Tender:</strong> Wool that is weak at one or more places on the fiber.</td>
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<tr>
<td><strong>Yolk:</strong> The natural grease and suint covering on the wool fibers of the unscoured fleece.</td>
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