ASC-127
PRODUCING AND MARKETING HIGH QUALITY WOOL
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Wool is an important commodity on sheep farms and ranches. Producing of high quality wool and achieving the associated financial benefits should be every sheep producer's goal. To realize this potential, one must be familiar with the primary factors affecting wool value.

Wool Fiber Diameter

Wool is sorted at warehouses or other concentration points into grades based on the diameter of the fiber, which has a significant effect on the wool's ultimate use. Finer wool (smaller diameter) is used in fine woolen cloth, while the coarser wools (larger diameter) are used in carpets.

Wool Grading Systems

The grading system used for many years began in colonial America and is called the "blood system." Wool from Merino sheep was termed "fine" wool. When the coarse wooled colonial sheep were crossed with the Merino, the wool from these sheep was called "1/2 blood" (1/2 Merino). Wool from sheep carrying 3/4 coarse wool breeding and 1/4 Merino was termed "1/4 blood." The "blood system" was later used to designate relative fineness or fiber diameter. However, this system could not be refined enough to describe wool from newer breeds of sheep or wool from different sections of the same sheep's body.

Because a more refined grading system was needed, the "counts system" was developed. These grades are set by governmental and private agencies according to the thickness or diameter of the average wool fiber in the fleece. Counts, which range from 80s to 36s, are an estimate of the number of hanks of single strand yarn spun from one pound of clean wool. A hank is 560 yards long. Therefore, a fleece grading 50s would yield 28,000 yards (or 15.9 miles) of single strand yarn per pound of clean wool.

Further refinement of the grading system has produced the micron system, which uses direct microscopic measurements of a sample of wool fibers to describe fiber diameter in microns. A micron is 1/25,400 of an inch. Fiber diameter ranges from less than 17 microns to more than 40.20. Table 1 compares the blood, counts and micron systems.

Accurate grading allows for more orderly marketing of wool since all segments of the industry deal in the same terms. The producer has little influence over the grade of wool he produces when most breeding stock is purchased, and the most commonly used "commercial ewes" produce 3/8 or 56s, 58s fleeces. However, grade influences sale price when the producer's wool is sold on a graded basis since the demand (and the price) for various grades does vary.

Wool Fiber Length

The length of the wool fiber (staple) influences its grade since length affects its use in the industry. The longer wools (combing) can be readily combed and processed into filler yarn and cloth. French combing is the term applied to medium length wools. The shorter length wools are termed "clothing." Graders usually measure average fleece fiber length by grasping a sample of wool between the thumb and fore finger and pulling the fibers over the thumb toward the second knuckle. Actual length of the wool falling into the 3 grades (combing, French combing, clothing) varies because as fiber diameter

increases, the length of the fiber needed for combing increases. The term "staple," as used in the wool trade, refers to the longer length wools within a grade.

Managing your sheep markedly affects fiber length. Sheep sheared more than once/year produce shorter wools than those sheared annually. Sheep shearers who do not remove all the wool from an area on a sheep's body in one pass and must make "second cuts" reduce fiber length. These are only two examples of how the producer influences fiber length and the fleece's value.

Many producers shear twice each year. Shearing before lambing offers several advantages -- less space required for feeding and housing, less moisture in the barn area, more response of the nursing ewe to changes in temperature and more sanitary conditions for the lamb at birth and for the nursing lamb.

The disadvantages include increased' nutritional requirements and a need for housing in inclement weather. Each producer must weigh these advantages and disadvantages against the increased shearing cost and reduced wool price even though "stress breaks" due to lambing are at the end of the wool fiber and the shorter fleeces are usually cleaner.

Table 1.--Wool Characteristics of Certain Sheep Breeds[a]

Breed	Fleece Weight	Spinning Count	Average Fiber Diameter (microns)	PercentYield
Rambouillet	9-14	64-70	23-19	45-55
Targhee	9-14	60-64	25-21	45-55
Columbia	9-14	50-60	30-23	45-55
Dorset	5-8	46-56	33-27	50-65
Hampshire	5-8	46-58	33-25	50-60
Suffolk	4-8	46-56	33-26	50-60
Southdown	5-8	58-60	29-24	40-55
Suffolk-Rambouillet	9-12	56-58	25-27	50-60

[a]*SID, Sheep Production Handbook, Third Edition, 1988. Please consult this source for more information.*

Fleece Uniformity

The more uniform a fleece is, the more valuable it is, so uniformity in fiber diameter and length is essential. When a fleece varies greatly in grade and length, you may need divide it, which requires extra labor and reduces its value. If variability is too great, the entire fleece is graded as the lowest grade present in one part.

Choose breeding stock with uniform fleeces. Avoid sheep with unusually coarse wool on the legs and other parts of the body.

Table 2. --Staple Length Requirements and Yield Estimates[a]

Blood Spinning Count	**Fine 64/70s**	**1/2 Blood 60/62s**	**3/8 Blood 56/58s**	**1/4 Blood 50/54s**	**Low 1/4 Blood 46/48s**
Class[1]					
Staple, in.	>2¾¾	>3	>3¼¼	>3½½	>4
French combing, in.	1¼¼ to 2¾¾	1¼¼ to 3	2¼¼ to 3¼¼		
Clothing, in.	<<1¼¼	<<1½½	<<2¼¼	<<3½½	<<4
Yield, %					
Average	45	50	55	58	60
Range	30-60	35-65	40-70	43-73	46-75

[a]*SID, Sheep Production Handbook, Third Edition, 1988.*
[1]*Unstretched lengths.*

Yield

Yield, the amount of clean wool produced from raw (or grease) wool in the scouring process, is expressed as a percentage. For example, 100 lb of raw wool produces 55 lb of scoured wool. This wool would yield 55%. Yield may vary from 35 to 60%, and can normally be expected to increase as fiber diameter increases (see Tables 1 and 2).

The sheep itself provides the factor most affecting yield, through the amount of yolk in its fleece. Yolk is the natural grease and suint covering on the wool fibers of the unscoured fleece and is excreted from glands in the sheep's skin. It lubricates the fiber and prevents entanglement and injury as the wool fiber grows. Lanolin and other products are produced from it.

Yolk is usually more abundant in finer wool. It gives the wool a light to dark yellow color, hence the name "yolk." Grease or yolk content is normally estimated as the fleece is lifted onto the grading table. Fleeces with small amounts of yolk are bulky compared to their weight and bounce when tossed onto the grading table. Greasy fleeces (yolky) are heavy in proportion to their volume and may be greasy to the touch.

The producer can affect yolk content (and yield) in two areas, selection and management. Selection against greasy, low yielding fleeces in breeding stock has been shown to markedly increase yield, often with little sacrifice in total fleece weight. Sheep which produce low yielding fleece often appear dark as the fleece grows. When examined closely, the fleece shows a great deal of yellow and may feel gummy. Subjecting long-wooled sheep to heat stress often results in "sweaty," lower yielding fleeces because the sebaceous glands have excess secretion. Many producers favor this practice because the resulting fleeces are heavier and often shear more easily. However, excess stress at shearing time (April-May) reduces milk production in lactating ewes. Confining sheep in a barn to keep them dry for shearing is probably adequate to prevent dry, hard-to-shear fleeces and does not reduce yield as does excess "sweating."

Color

Scoured wool's normal color is white. This type of wool can be widely used in the industry because it can be dyed to manufacturers' specifications. Fleeces which do not scour out white are more limited in their use and usually less valuable. When off-color fibers (any color other than white) appear in normal scoured wool, the value of all the wool is reduced to the value of the off-color fibers unless physical separation is possible.
Copper sulfate (a common footbath) and phenothiazine (mixed with feed, salt and/or minerals to help control internal parasites) can result in stained fleeces. Copper sulfate permanently stains the wool a characteristic green color. Phenothiazine as a feed additive stains the wool green and residues of the material in the urine and feces stains the wool red.
Selection against off-colored fleeces in sheep and separation of off-colored wool (or fleeces) from the wool clip are the best steps a producer can take to eliminate this problem.

Foreign Material
Foreign material in fleeces reduces their value. Examples are heavy tags (manure and sweat locks), seeds, unscourable paints and greases, excess water, thistles and burrs. Removing these items requires extra processing. For example, acids must be used to remove burrs from wool. When foreign material can not be readily removed, the wool must be discarded.
Excess water (the result of shearing damp or wet sheep) not only reduces yield but may permanently damage the wool from mold or mildew.
Reduce foreign material in fleeces by:
•Shearing only dry sheep.
•Separating heavy tags into separate bags.
•Bedding with "clean" straw or bedding free of excess seeds or chaff.
•Using hay racks and grain troughs which do not let fleeces get contaminated.
•Checking pastures for burrs, thistles and other weeds and destroying them before they go to seed.
•Using only scourable paints and chalks -- read the label.
•Removing sources of contamination like greasy machinery.
•Using only paper twine to tie fleeces. Sisal or plastic fragments in scoured wool render it useless for the spinning and weaving industry.

Polypropylene is a serious wool contaminant. Small pieces of this material (commonly used in hay baling twine) get tangled in the wool fibers and cannot be readily removed by chemical or physical means. When found in the finished fabric, the polypropylene must be removed by hand. The heat of the finishing process melts the small polypropylene fibers and ruins the fabric. Sources of contamination include short pieces of twine dropped from the baler, hay ground in the grinders, pelleted feeds and contaminated bedding. Much of the contamination is in the belly wool, so skirting the fleece to remove this short wool helps control the problem.

Soundness
Soundness refers to freedom from weak areas in the wool fiber which reduce milling qualifies. As a small bundle of wool fibers are stretched slightly and plucked (much like a guitar is plucked), the fibers should stretch slightly and spring back to their natural length. If the wool fibers break under such examination, the fleece is of less value since the resulting yarn or cloth breaks or tears easily.
Breaks in the wool fiber are normally the result of stress on the sheep which produces it. A common

example is a ewe which runs a fever during lambing and later sheds her wool. Apparently, periods of extreme stress interrupt normal wool growth. When growth resumes and the "break" is pushed above skin level, the fleece may be shed; or, if the break is not complete, the result is a weak fiber, which is easily broken.

The basic goal of all good livestock managers is to reduce stress and increase production. Attaining this goal improve the wool clip's quality. Stress is not confined to short periods of high body temperature. Exposure to high external temperatures, starvation or lack of water, and long hard drives are only a few other examples of stress situations.

The Wool Market Report

Public and private market news services report wool prices weekly. Market reports normally include: Location, Amount, Grade, Price (grease or clean) and Point of Delivery.

To relate farm prices for wool to such reports you need to:

•Allow for delivery and processing -A Boston price must include the cost of assembling, grading and transporting the wool to a Boston warehouse.

•Allow for size of consignment -- carloads or truckloads of wool can be processed more efficiently and cheaper per unit than a consignment of only 700 lb.

•Allow for length differences -- prices quoted are usually for staple (combing) wools. If your wool is shorter, it is less valuable.

•Allow for yield -- if a grease price is not quoted, yield must be estimated to arrive at an estimated "grease" price of the producer's wool.

Example

Quotation: Boston, carload, 56s, clean price $1.80 delivered

	Quotation	**Producer Estimate**
Location:	Boston	Lexington
Cost of Delivery & Processing	0	$ .7/lb
Clean price	$1.80	grease price
	Clean price	$1.80
	Yield	50%
	Grease price	.90
	Less delivery and processing	-.07
	Estimated Farm "Value"	$ .83/1b

The National Wool Act

The National Wool Act of 1954, as amended, provides for incentive payments to wool producers to encourage the production of high quality wool. Funds are made available in the amount required to bring the national average price for shorn wool up to the announced incentive price. Therefore, in years

when the national average exceeds the support level no incentive is paid.
Here is an example of how a typical poor, good and excellent producer will fare given the following market information:

National incentive level, year X: $1.25
National shorn wool price, year X: $1.00
Incentive percentage 25%

	Poor Producer	**Good Producer**	**Excellent Producer**
Production	1,000 lb	1,000 lb	1,000 lb
Total wool receipts	$750	$1,000	$1,350
Avg price/lb	0.75	1.00	1.35
	Poor Producer	**Good Producer**	**Excellent Producer**
Incentive payment	$750 x 0.25	$1,000 x 0.25	$1,350 x 0.25
	$187.50	$250	$337.50

As the example shows, the program rewards the producer selling a superior wool clip (at a higher price) more than it rewards an average or poor producer.
The National Wool Act also provides for payments on unshorn lambs based on 4 lb of wool/100 lb of lamb marketed. The incentive is based on the absolute amount necessary to bring the average wool price up to the incentive level. In the example, the subsidy on unshorn lambs would be 4 x $.25 = $1/100 lb of unshorn lamb.
Producers should check with their local ASCS office about the status of the program as well as deadlines and procedures for filing for payment. Legislation in 1993 resulted in discontinuing the Wool Act effective December 31, 1995.

Shearing Tips
•Contact a shearer early in the season. Use a shearer who is gentle with sheep and does not cut the sheep or "second cut" the fleece.
•Shear only when the sheep are dry and free of mud or manure. Restrict feed and water immediately before shearing. Bedding the barn at this time may result in more contamination of fleeces than not bedding it.
•Provide a clean, dry shearing surface with adequate light and a source of electricity.
•Provide necessary labor to catch sheep and tie the wool if necessary.
•Keep the fleece in one piece when removing heavy tags, manure locks, stained wool, etc. Bag this "reject wool" separately.
•Roll the fleece flesh side out and tie securely, but not tightly, with paper twine only.
•Store fleeces in wool bags in a clean, dry area free of dust, dirt, rodents and birds. Do not store wool in plastic (garbage bags) or paper bags.

Skirting The Fleece[a]

The following describes how you skirt a fleece.
As applied to wool fleeces, the term skirting implies the practice of separating all inferior portions from the bulk of the fleece at shearing. This would normally involve but not be limited to removal of head, lower leg and belly wool together with urine- and blood-stained, fecal-contaminated fibers and skin pieces. The products of skirting are termed skirted wool and skirts. All skirts do not have equal value and should be packaged separately for technical and economic reasons.
Wool from the top of the head, jaw and cheeks tends to be short and sometimes heavily contaminated with plant material. Belly wool is usually lower yielding and may be finer or coarser than the bulk of the fleece. It also tends to contain more vegetable and colored fiber contamination than the bulk of the fleece. Lower leg wool is short and tends to be composed predominantly of medullated hair fibers.
The least valuable of the skirts, stained fibers and tags, are composed of soiled fibers, scouring of which results in a relatively low yield of stained and colored fibers that have limited utility. Since the term "skirting" generally implies removal of all wool that does not match the bulk of the fleece, short wool, matted pieces, paint, skin pieces, areas of the fleece heavily contaminated with plant parts and especially colored wool (stained and pigmented) all fall into the skirts category.
The most critical aspect of skirting wool is the amount actually removed. Crutching (or tagging) will normally account for between 5 to 10% of the total fleece weight. Belly wool and other skirts from fine-wool fleeces have been reported to compose a further 8 to 20%. Economics dictate that skirts (not including crutchings) should constitute no more than 10% of the overall fleece weight, irrespective of the particular method of skirting that is used.

Marketing Wool
Marketing wool is the completion of a 12-month production program. Several markets exist for wool. The country buyer (often the shearer) offers the convenience of immediate disposal of the wool and rapid settlement. Local delivery points are also a consideration. Both these methods of sale are often based on average quality wool. Little or no premium may be paid for a high quality wool clip. Cooperative selling of wool often increases receipts due to increased buyer competition for larger lots of wool. Premiums are usually paid based on individual grading of each fleece. Discounts are made for short, contaminated or low-quality wools.

[a]*The whole section on skirting a fleece is from SID, Sheep Production Handbook, Third Edition, 1988.*