Prospects for expanded mohair and cashmere production and processing in the United States of America

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Prospects for Expanded Mohair and Cashmere Production and Processing in The United States of America[1,2]

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ABSTRACT: Mohair from Angora goats has been produced in the United States since the introduction of these animals from Turkey in 1849. Cashmere on Texas meat goats was reported in 1973, but domestic interest in commercial production did not occur until the mid-1980s. Since 1982, the average prices of U.S.-produced mohair and cashmere (de-haired) have ranged from $1.81 to $9.48/kg and approximately $55 to $200/kg, respectively. However, return to producers from mohair has been relatively constant, averaging $10.21/kg, due to the federal incentive program. Because this program is scheduled to terminate with final payment in 1996, the future of mohair profitability is questionable. Prospects for expanded mohair and cashmere production and processing in the United States are influenced by numerous interacting factors and potential constraints. These include the prospect that the goat and textile industries may no longer be profitable in the absence of clear government policies. Although selection may have slightly increased fiber production by Angoras (long term) and domestic meat goats (short term), availability of genetic resources may prove to be a constraint to increased fiber production by cashmere goats and improved meat production by both types of goat. Land resources are plentiful unless new government policies prohibit goats from vast tracts of rangeland and forest because of environmental concerns. Future demand is an unknown, but with increasing world population and affluence, prospects for long-term improved demand for luxury fibers seem good. Competition from foreign cashmere growers is expected, whereas, in the short term, mohair production overseas is declining. However, increased processing of cashmere in its country of origin is expected to result in shortages of raw materials for European and U.S. processors. The amount of scouring, worsted, and woolen equipment in the United States is adequate to accommodate major increases in domestic processing of goat fibers. However, the absence of specific processing knowledge and skills may be constraints. Similarly, the absence of acceptable small-scale dehairing equipment for cashmere will limit cashmere processing on a cottage industry scale. Purely practical considerations such as the effects of predation and cost of fencing could become major constraints to expanding the goat fiber industry. Likewise the success (or lack thereof) of industry promotion of fiber and goat meat could be an overriding factor. To emerge from the uncertainty of erratic raw material prices and to better control profitability, domestic goat-fiber producers are encouraged to consider innovative, cooperative, retained ownership business ventures that will permit them to profit-share up to the retail level.

Key Words: Cashmere, Mohair, Production, Processing

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Introduction

By definition (American Society for Testing and Materials), mohair is the hair of the Angora goat, *Capra* species. “Cashmere down” consists of those fibers in cashmere hair having widths of 30 μm or less, and “cashmere hair” is the fiber produced by a goat (*Capra hircus*) indigenous to Asia and known as the Cashmere goat. A more descriptive definition of cashmere down is provided by the Cashmere and Camel Hair Manufacturers Institute: “cashmere is the fine (dehaired) undercoat fibers produced by a Cashmere goat. The fiber is generally not medullated and has a mean maximum diameter of 18.5 ± .5 μm. The coefficient of variation around the mean should not exceed 24%. There can be no more than 3% (by weight) of coarse cashmere fibers over 30 μm.” Neither of these cashmere definitions includes a description of the form of the crimp that is typical of

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Table 1. United States Angora goat and mohair data, 1955 to 1993[a]

Year[b]	No. of goats, thousands	Annual clip, kg/goat	Annual production, m kg	Avg. market price rec'd by producers, $/kg	Mohair incentive rate, %	Total realized price, $/kg
1955	2,914	2.6	7.67	1.81	0	1.81
1956	3,085	2.7	8.26	1.85	0	1.85
1957	3,183	2.7	8.66	1.85	0	1.85
1958	3,355	2.8	9.43	1.59	0	1.59
1959	3,667	3.0	10.98	2.12	0	2.12
1960	3,828	2.9	11.11	1.98	0	1.98
1961	3,940	3.0	11.97	1.90	0	1.90
1962	4,185	2.9	12.34	1.57	3.6	1.62
1963	4,265	3.1	13.15	1.94	0	1.94
1964	4,500	3.0	13.47	2.07	0	2.07
1965	4,765	3.1	14.70	1.46	9.9	1.60
1966	4,625	2.9	13.43	1.19	42.1	1.69
1967	4,045	3.0	12.29	.90	86.8	1.69
1968	3,881	3.0	11.79	.99	71.2	1.70
1969	3,105	3.0	9.43	1.43	18.9	1.70
1970	2,833	3.0	8.48	.86	105.1	1.76
1971	2,191	3.1	6.76	.66	166.4	1.76
1972	1,522	3.0	4.63	1.79	0	1.79
1973	1,450	3.1	4.50	4.12	0	4.12
1974	1,175	3.2	3.81	3.02	0	3.02
1975	1,215	3.2	3.90	4.08	0	4.08
1976	1,100	3.3	3.67	6.57	0	6.57
1977	1,215	3.0	3.63	6.33	0	6.33
1978	1,188	3.1	3.67	10.12	0	10.12
1979	1,275	3.3	4.22	11.24	0	11.24
1980	1,240	3.2	3.99	7.72	0	7.72
1981	1,270	3.6	4.58	7.72	6.2	8.19
1982	1,330	3.4	4.54	5.62	56.0	8.77
1983	1,360	3.5	4.81	8.93	14.2	10.20
1984	1,450	3.5	5.08	9.48	20.2	11.39
1985	1,730	3.5	6.03	7.61	28.4	9.77
1986	1,950	3.7	7.26	5.53	96.4	10.87
1987	2,000	3.7	7.35	5.80	88.2	10.91
1988	2,321	3.4	7.86	4.17	148.1	10.34
1989	2,467	3.2	7.83	3.48	190.4	10.12
1990	2,174	3.4	7.39	2.05	387.3	9.99
1991	2,252	3.3	7.39	2.82	247.3	9.81
1992	2,254	3.1	7.07	1.90	436.0	10.16
1993	2,145	3.1	6.73	1.81	477.8	10.45
Average	2,524	3.2	7.79	3.80	69.2	5.55
SD	1,155	.3	3.27	2.91	121.5	3.92
Minimum	1,100	2.6	3.63	.66	0	1.59
Maximum	4,765	3.7	14.70	11.24	477.8	11.39

[a]Sources: Mohair Council of America, February, 1994; ASCS Commodity Fact Sheet, August, 1992; Texas Historic Livestock Statistics, 1867 to 1990.
[b]1955 to 1970: production in seven states: TX (97 to 98% of the total), AZ, NM, MO, CA, OR, and UT. 1971 to 1987: TX production only. 1988 to 1993: production in TX, AZ, NM, MI, and OK.

cashmere. Cashmere crimp is irregular and of relatively small magnitude and frequency. It does not lie in two dimensions but rather changes directions at irregular intervals along the length of individual fibers. This type of crimp must be present for a fiber to be categorized as cashmere. Lack of such crimp (or character) can result in classification as cashgora, a less valuable category of animal fiber.

Mohair from Angora goats has been produced in the United States since the introduction of these animals from Turkey in 1849 (Shelton, 1993). Cashmere production by Texas meat goats was recognized more than 20 yr ago (Gallagher and Shelton, 1973), but domestic interest in commercial production did not occur until the mid-1980s. Both types of goat fiber are commodities whose market prices are dictated by supply and demand, the latter being heavily influenced by the vagaries of fashion. Over the past 15 yr, the average annual prices of U.S.-produced mohair have ranged from $1.81 to $11.24/kg (Table 1). Current prices for grease mohair range from $4.74 to 4.85/kg for adult, $5.07 to 5.51/kg for yearling, and

Table 2. World production of mohair, 1984 to 1993 (million kg, greasy)[a]

Year	South Africa[b]	United States	Turkey	Argentina	Australia	New Zealand	Total
1984	8.21	5.08	3.63	1.22	.50	.04	18.68
1985	9.16	6.03	3.49	1.13	.54	.09	20.44
1986	10.43	7.26	3.40	1.22	.59	.09	22.99
1987	12.47	7.35	2.99	1.18	.95	.18	25.12
1988	12.70	7.86	2.72	1.13	1.00	.45	25.86
1989	12.02	7.83	1.81	1.00	.91	.45	24.03
1990	8.62	7.39	1.81	.91	.68	.45	19.86
1991	7.98	7.39	1.18	.59	.59	.32	18.05
1992	7.08	7.07	1.00	.50	.50	.32	16.48
1993	6.00	6.73	.91	.32	.23	.23	14.43

[a]Source: Mohair Council of America, February, 1994, and ASCS, Commodity Fact Sheet, August, 1992.
[b]Includes mohair from Lesotho.

$7.72 to 9.48/kg for kid (USDA, 1994). Since 1987, the price of domestically produced cashmere has ranged from approximately $55 to $200/kg (T. Sim, personal communication). However, the return to producers from mohair over the past 16 yr has been relatively constant, averaging $10.00/kg, due to the contribution of the federal incentive program. Because this program is now being phased out and is due to terminate with (partial) payments in 1996, future profitability of mohair production is questionable. The question of future profitability is difficult to answer because production costs vary so much, even within Texas. A recent survey of Texas mohair producers indicated that an average price of $5.50/kg (greasy) represents "break-even" whereas $8.80 to $9.90 would be required "to make a living." South Africa is currently the world's second largest producer of mohair (Table 2) and a major competitor in this market. Because labor and production costs are lower in South Africa than Texas, the Texas "break-even" price and even current prices, which represent a sudden upsurge compared with the previous 5-yr prices, would provide South African growers with a good profit margin. Consequently, some domestic producers feel strongly that a new federally sponsored program for mohair (and wool) should be adopted until such time as production costs overseas approach those in the United States. The probability of obtaining such a program is considered to be low, despite the efforts of the two major producer associations, the Mohair Council of America and the American Sheep Industry Association. Current production levels of mohair and cashmere in the United States are 6.73 million kg and 566 kg (Tables 1 and 3, respectively); mohair production declined slightly and cashmere increased in 1993. Unfortunately, statistics for domestically produced cashmere have not been compiled on a formal basis by government or private agencies, and consequently, cashmere production data are not as readily available as mohair data. Similarly, most overseas countries tend not to keep accurate records of their cashmere production. Thus, the data in Tables 3 and 4 were gleaned from speeches or direct communication with the referenced knowledgeable sources. Table 4 shows clearly that China is the world's largest producer of cashmere. Because uncertainty surrounds the true origin of much of the world's cashmere, some of the estimates are given by region (e.g., Russia-Pakistan-India-Turkey) rather than country. Australia, New Zealand, and the United States are all relative newcomers to the cashmere production industry. Data for the earlier 2 yr in Table 3 probably represent underestimates of the actual production. In 1989 and 1990, Forté Cashmere Company purchased the vast majority of the domestic cashmere clip. In 1993, approximately 60% of shorn cashmere fleeces were consigned to the American Cashmere Goat Marketing Cooperative (Cashmere America). However, in all 3 yr, unknown numbers of fleeces were sold to other buyers. Imports of raw cashmere into the United States are monitored by the Cashmere and Camel Hair Manufacturers Institute and are summarized in Table 5. This table serves to illustrate the great volatility of the cashmere market. In 1991, imports decreased by 80% compared with the previous year. However, customs value of the cashmere was greater in 1991 than in 1990. Similar data apparently are available for manufactured cashmere textiles, but these data are difficult to access and are not presented here.

Table 3. United States cashmere production[a]

Item	1989	1990	1993
Dehaired cashmere, kg	31.3	138.3	566.5
Fleeces	743	2,807	10,000
Producers	40	82	300
Dehaired cashmere/fleece (g/fleece)	42.1	49.3	56.7

[a]Sources: 1989, 1990 data: H. Hopkins, 1990; 1993 data: T. Sim, personal communication.

Table 4. Estimated world cashmere down production in 1994[a]

Country or region	Down production, thousand kg
China	1,700
Iran-Afghanistan	650
Outer Mongolia	700
Russia-Pakistan-India-Turkey	300
Australia	5
New Zealand	7
United States	.6

[a]Source: personal communication, J. Coleman.

In 1993, the largest customer for United States mohair was the United Kingdom (Table 6). Mohair processing is an established industry in that and several other European countries. Typically, mohair is scoured and converted into top in Europe; varying proportions of the top, depending on the year, are then exported to, for example, Far Eastern countries, where top is converted into yarn and subsequently textiles.

Previously, Shelton (1990) listed several factors that are militating against sustained growth of the goat industry in the United States. These included lack of markets for the products, prejudicial attitudes against goats (by producers and consumers), inability to generate numbers rapidly, lack of tools to prevent predation, and high fencing costs. These and other interacting factors are still influencing goat-fiber production in the United States. Some of the factors are identified and discussed in this article, with a view to assisting the industry in its efforts to expand domestic mohair and cashmere production and processing.

Genetic Factors

The Angora goat was selected for many years for increased fiber production with minimal kemp content. In the general population of Angora goats, fleece weights have changed little since 1960 (Table 1). Although male Angora goats completing the Texas Agricultural Experiment Station Angora Goat Performance Test have shown significant increases in body size, mohair production over the past 10 yr has barely changed (Table 7). It is doubtful that substantial increases in mohair production are possible or even desirable for animals that must ultimately maintain themselves under rugged range conditions. A question exists concerning the adaptability of high-producing goats to range conditions. Today's Angora goats seem to give top priority (or second, after maintenance) to fiber production, even aborting their offspring under stressful conditions such as when nutrition is inadequate or when predators are in the vicinity. Compared with other types of goat under the same range conditions, the percentage of kids raised by Angoras is low (in Texas, 40 to 50%; B. F. Craddock, personal communication). Glimp (1995) concluded that opportunities exist in the United States for increasing meat production from goats that could be sold at prices that would make production profitable. This opportunity for goat meat is apparently due to the desire for a low-fat meat and the traditional ethnic consumer populations expanding at a faster rate than goat numbers in North America. As goat meat becomes an increasingly important commodity, the carcass quality and reproductive ability of the Angora goat under range conditions must be addressed. Ideally, improvements would be achieved without loss of mohair production and fiber quality. Circumventing a loss in production may be impractical, but there is no reason why quality should not be maintained or even improved in the selection process.

Much has been achieved with the domestic cashmere-producing goats in a relatively short time. Progress in selection from Spanish and dairy goats to Cashmere goats was accelerated through use of imported cashmere-producing goats from New Zealand and Australia, which themselves had benefitted from 10 or more years of selection from a feral population. With the present population of cashmere-producing goats, the potential for increasing cashmere production per animal and improving fiber quality (e.g., by lowering average fiber diameter and increasing length) is limited without a national genetic evaluation program. Use of such breeds as the Chinese Liaoning, the does of which produce an average of 520 g and a maximum of 1,050 g of cashmere per year (Ying, 1990), would seem most desirable if Chinese

Table 5. United States imports of dehaired cashmere,[a] 1989 to 1993[b,c]

	Year				
Item	1989	1990	1991	1992	1993
Weight (clean yield 1,000 kg)	1,569	1,528	294	210	642
Customs value (1,000 $)	11,002	5,273	5,717	3,780	9,101

[a]Not carded or combed; not processed beyond degreased or carbonized condition.
[b]Source: Cashmere and Camel Hair Manufacturers Institute, 1994.
[c]Exporting countries: Belgium, Russia, Afghanistan, China, New Zealand, Netherlands, Australia, Mongolia, and Bulgaria.

Table 6. United States mohair exports, 1993 (1,000 kg, clean)[a]

Country	Total	% of Total
Belgium	13.6	.5
Taiwan	30.4	1.0
China	62.1	2.1
France	15.9	.5
India	323.4	10.7
Italy	82.6	2.7
Mexico	20.4	.7
South Africa	246.3	8.2
Spain	8.6	.3
Turkey	10.9	.4
United Kingdom	2,193.6	72.9
Total	3,007.8	100.0

[a]Source: USDA, AMS, Market News 6/30/94.

and U.S. government restrictions were lifted to permit exportation and importation, respectively. Because it seems unlikely that either government's regulations will change in the near future, it seems more realistic to expect use of the Boer goat to improve the cashmere goat carcass now that the Boers are available in the United States and particularly because some cashmere production has been reported on Boer goats (Couchman, 1988). In fact, the current interest in Boer goats and goat-meat production in general is regarded as a very positive factor that will ultimately contribute to increasing the size of the cashmere producing industry in the United States.

Environmental Factors

Despite the existence of nucleus mohair production enterprises in such diverse locations as the United Kingdom, Canada, and New Zealand, the fact remains that most commercial Angora goat operations in the world exist on relatively dry rangeland having hot summers but (usually) tolerably cold, dry winters. It is hard to imagine that producers who must house goats through long, damp, cold winters feeding harvested feeds and battling disease could produce a product that would be financially competitive with that grown in a southwestern U.S. rangeland operation, unless certain factors change. For example, if Angoras are provided with intensive management, adequate sustenance and the necessary genetics, it is conceivable that kid crops could approach 200% and thus make for a profitable operation. Conversely, if further encroachment by predators on traditional sheep and goat rangelands is permitted, it is doubtful that a profitable goat industry can continue to exist in Texas and the southwestern United States.

Conventional wisdom was that high-quality cashmere could be produced only at high altitudes and in cold climates. Research and the development of new industries in Scotland, Australia, New Zealand, and the United States have shown that cashmere can be produced under very diverse climatic conditions. Nevertheless, in most areas of the United States, climatic dangers exist, particularly at shearing time. Ideally, cashmere goats should be shorn just before the fiber begins to shed, that is, in January or February in the northern hemisphere. At that time, the cold climate is stressful to the animals. Field observations indicate fewer abortions and deaths due to cold stress occur among cashmere and meat goats than among Angora goats. In the short term, cashmere goats should be protected indoors during adverse weather immediately after shearing, just as Angoras must be. Over the long term, cashmere goats might be selected for longer down growth periods or shedding times later in the year or both, because much variability in the onset of shedding exists in the cashmere-bearing goat population.

Table 7. Average values for a selection of traits measured on the Texas Angora Goat Performance Test[a]

Year	n	Final body wt, kg	Clean fleece wt, kg	Average fiber diameter, μm	Med content, %	Kemp content, %
1981	112	54.3	4.64	41.6	—	—
1982	190	54.9	5.08	38.1	—	—
1983	278	59.7	5.22	41.9	—	—
1984	377	59.0	5.41	40.6	—	—
1985	432	58.0	5.00	35.7	—	.5
1986	381	62.5	5.49	41.2	1.3	.4
1987	143	50.1	4.17	41.7	1.7	.4
1988	306	60.8	5.49	41.0	3.3	.5
1989[b]	247	61.1	4.99	38.7	2.4	.4
1990	293	60.6	4.99	40.3	3.1	.3
1991	255	61.0	4.99	40.1	2.3	.3
1992	252	64.9	5.26	39.1	2.2	.4
1993	212	64.1	5.31	38.6	2.4	.4

[a]Sources: 1981 to 1988 (Lupton et al., 1990), 1989 to 1993 (Texas Agricultural Experiment Station, unpublished data).
[b]On ranch test.

Teh (1990) noted that 460 million acres of rangeland, forest, and marginal pastures are available in the United States and could benefit from goat grazing and subsequently reduced competition from shrubs and weeds. Add to this the millions of acres of land containing crop residue, and it becomes obvious that the land resource, if kept available for livestock use, is not a constraint to increasing goat-fiber production. Protection of certain endangered species (plant, insect, fish, bird, or other animal) on the Edwards Plateau in western Texas could have dire consequences for the 2 million strong resident goat industry. Similarly, increased lease costs on federal land could easily undermine the profitability of emerging cashmere and meat goat operations in western and northern states.

Other environmental factors include concern about agricultural use of anthelmintics, insecticides, and herbicides. The first two classes of chemicals are necessary to control internal and external parasites. Goat production would be marginal at best if the "green movement" and desire for "organic" products advance to the point where goat producers are not permitted to treat their goats with these products. Conversely, the current trend to minimize use of herbicides is very positive for goat (and sheep) production because goats prefer to consume browse and forbs (Taylor, 1992). This attribute of goats is currently being used to control leafy spurge on northern rangelands where this plant is avoided by cattle and inhibits grass growth (Stoneberg, 1989).

For financial, political, and environmental reasons, there has been a recent trend for decreasing mohair production in South Africa and the United States (Table 2). This trend has occurred several times over the years, only to be reversed when demand for mohair improved. At such times, producers attempt to re-build their flocks as rapidly as possible to take advantage of the improved market conditions. Typically, environmental and genetic factors combine to severely restrict optimum increases in goat numbers. Consequently, some producers have used non-Angora goats in an attempt to accelerate their rebuilding efforts. Animals resulting from two or three back crosses to Angora produce fibers that are similar in appearance to mohair but contain excessive amounts of kemp (Shelton et al., 1987). Excessive medullation persists through numerous generations. This type of product is very damaging to the high-quality, luxury image of mohair.

Demand

Demand for luxury fibers is somewhat cyclical. However, predicting a specific point in time when demand and price will be high is virtually impossible. Nevertheless, demand can be influenced. The major objective of the Mohair Council of America and the International Mohair Association is to promote and expand the use of mohair. Cashmere Producers of America serves a similar role for domestically produced cashmere, whereas an organization known as the Cashmere and Camel Hair Manufacturers Institute commits a major portion of its efforts to policing the authenticity of cashmere labels on domestically produced and imported fabrics. Although cashmere use has been limited to relatively few "classical" products, hundreds of uses have been identified for mohair (Hunter, 1993). The associations and other individuals who actively promote natural fibers should be encouraged and supported financially by all in the goat-fiber business. Without promotion, these goat industries would probably decline.

The prejudicial attitude against goats and goat meat that is present in some areas of the United States also needs to be addressed. Further educational efforts are required to inform the public of the advantages of goat grazing, fibers, meat, milk, and leather. The associations are serving and should continue to serve a major role in this context.

Government Policies

Government policies regarding the U.S. sheep and goat industries (and many other areas of agriculture) were summarized recently by Texas Representative Layton Black, who observed that various government entities are involved in either "killing, burying, or reviving" these industries. Certainly, producers are receiving very mixed signals from the federal government. Many believe that the United States should not be selling agricultural raw materials to anyone. When other nations need bread, sell them bread, not wheat. When they need suits of mohair, sell them clothes, not raw mohair or top. Alternatively, manufactured textiles might be traded for cars or electronics in order to close the balance of trade. Advisors to the last three administrations have offered such advice (Villet, 1993). Nevertheless, this policy has not been adopted by any recent administration. On the contrary, the philosophy has been to buy or trade manufactured products from any country that can produce them at a lower cost than the United States, irrespective of quality (in many textile instances), local labor laws, and exploitation. This policy has resulted in a severe downsizing of the United States textile industry, a trend that is expected to continue following the implementation of the General Agreement on Tariffs and Trade. During the same period, a preoccupation with efficient mass production in the United States had displaced many traditional skills and practices necessary to produce high quality mohair and cashmere textiles. Today, although lost from many establishments, the expertise is still available in several

specialized mills around the country. Unfortunately, many of these mills are operating on very narrow profit margins. One of the major cashmere dehairers in the United States recently announced that it has become a major importer of Chinese-produced cashmere sweaters. This seems to add to the demise of domestic knitters, who can rely only on styling and quality to provide a competitive edge because it is virtually impossible to compete on a price basis.

Foreign government policies must also be considered. European governments are actively encouraging agricultural diversification. Angora and cashmere goat enterprises have been introduced into most European countries. As previously mentioned, the Chinese government has encouraged more processing and manufacturing of cashmere textiles for export. Tibet is offering an area of 400,000 km^2 for foreign investors to develop pasture land for cashmere production, breeding, and farming. In this particular region, a fragile grazing system and lack of nutrients in winter have limited expansion in the past. All these countries and many others are competing with the United States for limited markets. On a positive note, from the United States' perspective, government policies in New Zealand and Australia do not seem to be promoting further expansion of goat-fiber production. Nevertheless, these two countries with their technical expertise and abundance of natural resources may represent the most serious competition if and when mohair, cashmere, and cashgora prices increase substantially and stabilize at higher levels.

Goat Fiber Processing Capability

There is only one mill currently manufacturing mohair top in the United States. The Texas International Mohair factory has the capacity to manufacture approximately 1.36 million kg of top a year, representing approximately 30% of domestic production (grease basis). At least two other major wool processing companies have the machinery capability but probably not the knowledge or, currently, the desire to process mohair. Equipment is currently available such that theoretically the whole of the U.S. mohair clip could easily be processed in this country. However, most of this equipment is currently processing synthetic fibers, wool, and their blends. Two domestic textile companies have cashmere dehairing capabilities. Many domestic spinning mills have the expertise and hardware necessary to manufacture mohair and cashmere yarns. Similarly, numerous mills are capable of manufacturing high-quality knitwear and woven products from cashmere and mohair. The current bottlenecks for increased fiber processing seem to be topmaking for mohair and small-scale dehairing for cashmere. The United States seems to have adequate scouring capability. Because the only mohair processing company is obviously unwilling to share its expertise with potential competitors, various communities, including my own, the city of San Angelo in Texas, have investigated the possibility of having another major overseas topmaker relocate to Texas. To date, local incentives and perceived benefits to the manufacturer have not persuaded a major topmaker to permanently relocate his manufacturing in our part of the world. Nevertheless, a prominent British topmaker owns mohair warehouses in Texas, and the possibility exists that increased manufacturing will one day become a reality in western Texas.

Although dehairing of cashmere is limited to two textile companies in the United States, large-scale dehairing equipment is manufactured overseas and is available for sale (e.g., William Tatham, Ltd., Rochdale, U.K.). However, such full-scale machines are very expensive. Villet (1993) pointed out that most new jobs in the United States are generated by small rather than large businesses. In the context of increased cashmere processing, it is apparent that many small groups are interested in processing relatively small quantities of cashmere if an acceptable small-scale dehairing machine were available. Such groups would be primarily interested in the very small domestic cashmere clip. Once established, this "cottage industry" would help provide impetus and a ready market for increased domestic cashmere production.

In 1992, the U.S. worsted and woolen textile sectors produced 22.3 and 39.0 thousand metric tons, respectively, of wool and wool-rich yarns (International Wool Textile Organisation, 1993). Much of this equipment could be adjusted to process mohair and cashmere if this adjustment proved to be more lucrative. In these sectors, at least, availability of equipment would not pose a constraint on increased goat fiber processing.

Retained Ownership by Producers

Many permutations exist for a producer to retain ownership of his cashmere and mohair as it progresses through manufacturing to retail. For mohair, at least one grower-entrepreneur (J. Cahill, Sonora, TX) has retained ownership of his own product through the manufacturing stages and up to retail. At least one cooperative organization has retained ownership of mohair and sold top. A cashmere cooperative is attempting to sell dehaired cashmere, yarn, and products. Neither the entrepreneur nor the cooperative organizations owns any processing equipment. They simply commission textile companies to process their fibers. Theoretically, value is added to the fiber at every processing stage. The further down the chain the producer can control his product, the greater the return he can expect. However, if a substantial price

reduction in the raw material occurs during the manufacturing stages, the person owning the processed fiber is likely to lose money. This is just one of the many risk elements involved in retaining ownership. Typically, the profit margin in textiles is greatest for the retailer. He takes the ultimate risk (and, therefore, the greatest profit) of customers not purchasing his product.

Another approach producers are considering is to form a cooperative and purchase equipment to do the processing. This approach has been successful in one instance in the cotton industry (American Cotton Growers Denim Plant, Littlefield, TX); however, such an approach requires substantial capital and again incurs risk. When producers become processors, they concurrently become competitors to the firms that have been or still are purchasing their raw product. If demand for finished products can be expanded and supply of raw materials can be increased, this would not necessarily present a problem. But where raw material supply or product demand remains constant, the competition between producer-processor organizations and traditional buyer and processors can cause serious problems for both parties. The cotton mill was successful in Littlefield, Texas, for several reasons but primarily because the organizers established a guaranteed market for all the first-quality denim fabric that was produced. Such guarantees are rare in the textile industry. It is unlikely that a purchaser with the stature of Levi Strauss could be identified for mohair or cashmere products.

An alternative method producers may consider in their endeavor to generate more income from mohair and cashmere would be to buy shares and invest in existing mohair and cashmere processing companies. Presumably, if enough shares were purchased, producers could use their influence in persuading an established company to relocate. This would seem to be a very desirable situation in that such a company would bring with it the necessary expertise, machinery, and customers for its product.

All the retained ownership concepts have the potential for improving profitability for cashmere and mohair producers. However, they each involve various levels of risk. Such risk taking is probably going to be necessary to expand mohair and cashmere processing in the United States. Because manufacturers do not seem to be willing to take on further risk at this time, it becomes likely that the impetus must be provided by the producers.

Marketing

This section may seem not to follow in a logical sequence. It was purposefully left until last because it is an area that could affect expansion of the goat industry in the short term rather than the long term. The marketing of domestic cashmere seems to be quite adequate at present. Growers have at least two options, to sell direct to "cottage industries" or to offer their product through a national cooperative. In the latter case, options are retained on selling raw material vs adding value. The cooperative organization and the Cashmere Producers of America Association have both emphasized correct shearing and acceptable packaging techniques, and the infant cashmere industry seems to be off to a good start, having learned valuable lessons from its counterparts in Australia and New Zealand.

Mohair marketing is more complex. In Texas, mohair producers can choose to market their fibers through any one of 27 independent warehouses or to sell directly to mill buyers, fiber traders, or even entrepreneurs. Despite the facts that the Mohair Council of America has provided training in mohair preparation and that the Texas Sheep and Goat Raisers' Association has specific classing recommendations for mohair, most producers still market their mohair without attempting to add value either at the ranch or in the warehouse. Rather than removing stained portions and classing the rest of the fiber into uniform matchings, producers choose to market their mohair in the so-called "original bag" manner because, in their experience, it has not paid to do otherwise. It is true that ranch preparation and classing have not always paid the producer (Pfeiffer et al., 1990). Nevertheless, I recommend that producers conduct ranch preparation followed by warehouse inspection and classing, but I recognize that this will not always help individual producers until the majority of mohair is offered for sale in this form. This recommendation is made after observing South African and Texas mohair prices for the past 10 yr. Invariably, prices paid for South African mohair have been higher than those paid for equivalent Texas hair. The major difference between the two clips is the degree of preparation. In future, it is likely that uniform preparation and marketing standards will be adopted by the various selling firms in an attempt to simplify and streamline this part of the industry. Ideally, large, uniform, fully characterized (with objective measurements) matchings will be offered. In wool marketing, providing objective fiber measurements at the time of sale increases prices paid (Lupton et al., 1993). There is every reason to believe that offering measurements of clean yield, average fiber diameter and distribution, staple length and distribution, and medullated fiber content would enhance the value of mohair to potential buyers.

Implications

Goals for the goat fiber industry should be to identify and subsequently verify unique superior characteristics of mohair and cashmere produced in

the United States. Luster of mohair and softness of cashmere are two potential candidates. In the absence of federal price support programs, growth and profitability in the goat fiber business are directly influenced not only by production costs and market prices but also by the quantity and quality of production. It will be necessary for producers to assume more risk in their attempts to increase profitability by using improved genetics, management, marketing, promotion, and value-adding strategies.

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