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Alternative Markets For Cattle Hide Trim

PREFACE

This report has been prepared to help the hide and leather industry improve the competitive position of leather and increase returns to packers for hides.

A companion report entitled, "Economics of Segmenting Cattle Hides," ERS-215, by John W. Thompson and Frederick J. Poats, indicates that it is economically feasible to remove all bellies, heads, and shanks from cattle hides prior to curing. A major question that results from this new trim practice is, "What can packers do with the trimmed portions?" This report is an analysis of alternative ways to market the trimmings from cattle hide, and the returns to packers when marketed the various ways.

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SUMMARY

Returns to packers for cattle hides can be greater when shanks, bellies, and heads are removed prior to curing. New markets for portions trimmed from hides can increase returns. Currently, the tannery market price for cured bellies and heads is about 2 cents a pound. At this price, no share is left to pay the processing and marketing costs of the packer.

An evaluation of alternative markets indicates that fresh hide trimmings have a value of about 2 cents a pound if they are converted into edible collagen, or rendered into feed and oil by a new process.

ALTERNATIVE MARKETS FOR CATTLE HIDE TRIM

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INTRODUCTION

A standard practice in the meat industry is to cut up carcasses according to utility and value of the parts. This same practice is applicable to hides. Currently, hides are marketed in one piece. Yet different areas of a hide, when converted to leather or other usable products, have different utility and value in the marketplace.

Dividing hides into various segments for marketing has interested the industry for years. Recent competition from synthetic materials brings the need for better ways to trim, segment, and market hides. Segmenting a hide reduces marketing costs, improves quality and efficiency of tanning, and divides the hide into homogenous parts to suit different uses.

Shoe manufacturers obtain greatest utility and value from leather of the back and butt areas--the bend segment. The shoulder areas are best used for waistbelt, welting, and some other leather products. Gloves and other soft-leather products are most often made from the belly and shank segments. These latter areas are of low value to a shoemaker who wants leather mainly for the primary parts of a shoe, such as vamps and side uppers.

Current markets for head, belly, and shank segments, as leather, are limited. Market prices do not meet costs for curing, transportation, and brokerage. Therefore, the market potentials of alternative uses are assessed.

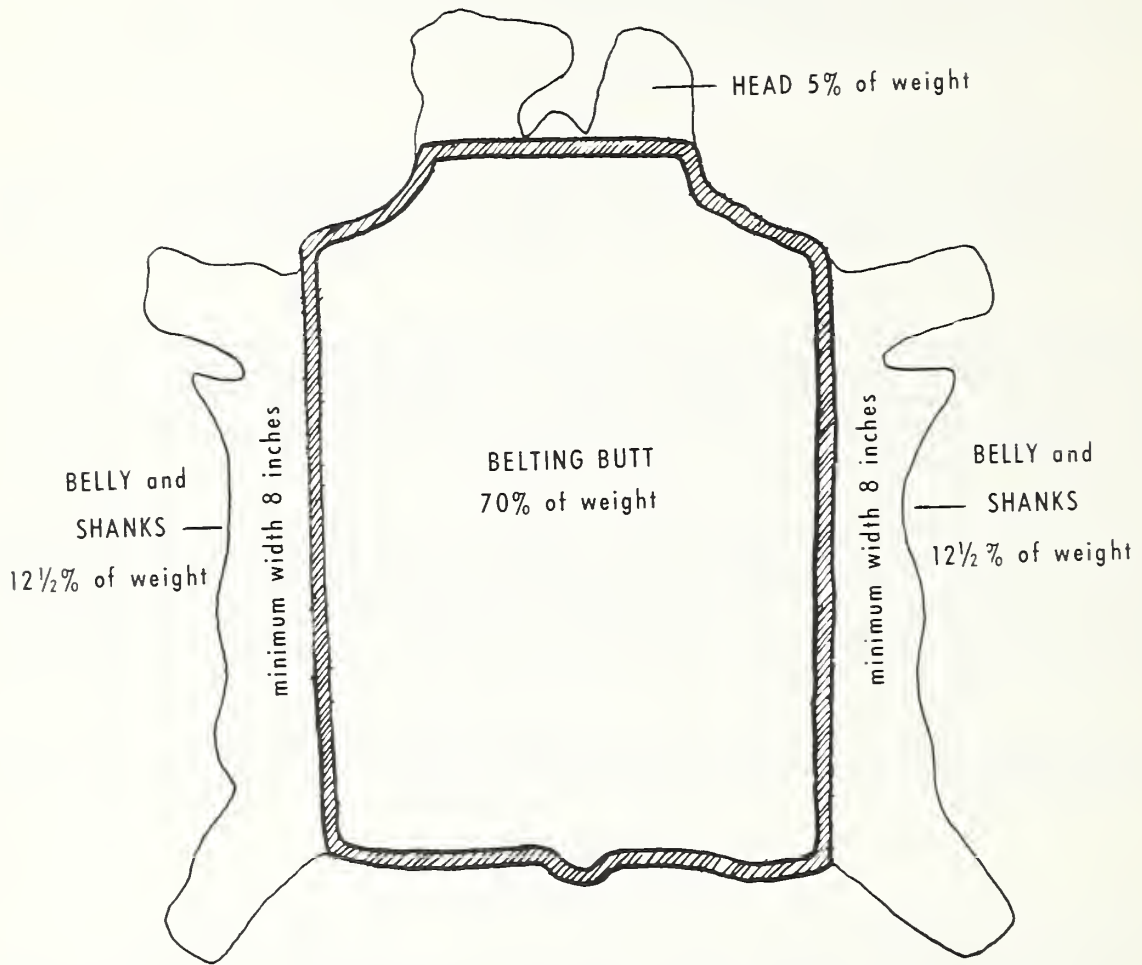
HIDE TRIMMING

The USDA hide trim pattern (fig. 1) takes off 30 percent of the weight of a green or salt-cured hide. It replaces 5 or 6 trimming steps now practiced in processing and marketing cattle hides as leather. If this trim is removed before any processing of a hide occurs, substantially all areas that would be trimmed off later, or that yield leather of low value, are taken away in a single step.

The percentage of a hide that is at present converted to usable leather in shoe-cutting operations is decreased no more than 5 to 8 percent by the new trim.

Current packer- and tannery-trimming practices take off as much as 20 percent of a hide. Shanks and other fringe parts left on a side leather piece are so poor in cutting value that another 4 to 7 percent of a side is wasted in the shoe factory.

Practically all trimming of whole hides occurs in the head, shank, belly, or other fringe areas. From the packinghouse through shoemaker, as much as 25



USDA HIDE TRIM PATTERN

Figure 1

percent of a whole hide may be trimmed away in 5 or 6 steps. A one-time trim at the packinghouse that removes all heads, bellies and shanks would greatly reduce hide-marketing costs.

Supplies of domestic cattle hides now exceed domestic demand for leather by about a third. The fringe areas of a hide are not suitable for shoe-upper leather. Leather made from these areas depresses market prices of bend and shoulder leather.

Studies show that, by adopting the new trim pattern, packers and hide dealers can reduce costs for curing, handling, and transporting hides. Tanners can pay about the same price for a trimmed hide as they now pay for a whole hide. Increases in tannery efficiency and quality of leather offset losses in hide area.

Packers now actually receive no return for bellies and heads left on hides sold to side-leather tanners. The composite price the packer receives for a whole hide "overprices" belly and head areas to the tanner, and at the same time "underprices" the bend area. Market values of segments from the different areas of a hide, reveal these "underpricing and overpricing" differences. Table 1 shows the relationship between current market values of segments of a hide.

Table 1.--Imputed value of bends based on current market values for other portions of a cured, unfleshed hide

Hide segment	Portion of a whole hide	Weight	Market price per pound ^{1/}	Total value per hide
	Percent	Pounds	Cents	Dollars
Two sides.....	100	60	12.0	7.20
Head.....	5	3	1.5	0.045
Belly.....	25	15	2.5	0.375
Double shoulder.....	20	12	11.0	1.21
Bends.....	50	30	^{2/} 18.5	5.57
Total.....	100	60	---	7.20

^{1/} From hide industry sources.

^{2/} Imputed.

Belly- and head- leather prices have been steady at 24 cents a square foot for several years. Tanners operate on costs of about 20 cents per square foot of leather, plus hide-procurement costs. Therefore the 4-cent differential is not a net return to packers and hide dealers for belly and head area. Most hide trimmings which occur in these areas seldom bring more than raw materials for gluestock and gelatin. Therefore, the 4-cent return per square foot from tannery sales of belly- and head-area leathers has to be considered as payment for the curing, transporting, and other marketing of about 2 pounds of green hide.

Packers can reduce marketing costs for hides by taking off heads, bellies, and shanks, and throwing them away. Alternative processes and markets for fresh hide trimmings can further increase their returns.

THE MARKET FOR TRIMMINGS

Analysis of hide marketing and tannery efficiency with the USDA hide trim pattern clearly points out the advantages of a one-time trim by the slaughterer.

Therefore, the questions for market research resolution are: "What are alternative markets for hide trim?" and "Which of the alternatives are best?"

Currently, there are 5 alternative markets for hide trimmings (table 2). Some of these markets already exist. Rendering hide trimmings by a new process or using them to make edible collagen, are opportunities that can be developed.

Rendering for feed and oil.--Several processes for rendering fresh hide trimmings were evaluated. In all but 2, hair is a problem. Large rendering facilities can and normally do process animal byproducts with hair on them. Dilution of hair throughout the product is the principal means for staying within tolerances for hair in the feed material. Rendering of hide trimmings can be accomplished in a new process that is designed to dispose of hair. 1/ In this process, digestion of hair is said to be feasible. Fleshings and trimmings of hides are given a 2-stage digestion with phosphoric acid and heat. Outflow from each stage is screened and materials that will not pass through a fine screen are cycled back into a digester. 2/ Fat and protein-emulsion for feed are separated by gravity in a baffled settling tank. If a dry-feed product is wanted, a vacuum-pan and a drum dryer for the protein-emulsion product are necessary.

Currently, the protein emulsion is sold in liquid form to dairies and beef-cattle feeder lots. The price (dry-solids basis) is about double the price of cottonseed and other vegetable protein concentrates sold in the area.

Economics of the process, as reported by the developers, are attractive for tannery, beamhouse, hide dealer, and meat packer considerations. Capital investment in equipment for 1 ton per hour input is about \$20,000, exclusive of a vacuum pan and a dryer. Process costs, including chemicals, labor, steam, power, and amortization range from \$5 to \$8 per ton of finished product. A net return from fleshings and trimmings of \$42 to \$45 a ton can be realized. This is substantially greater than the \$7.50 per ton currently received by many tanners for fleshings and trimmings.

Feed and fat markets are much larger than fleshings and trimmings of hides can supply. A large part of the oil in fleshings already goes into markets for inedible fat. If all hide trim were rendered and added to supplies of animal-byproduct feed, the increase would be less than 1 percent. This market outlet puts a price "floor" of 1.85 cents a pound, greenweight basis, on hides at the packinghouse, whereas a "loss" of about 2 cents a pound occurs when bellies, heads, and shanks are marketed on the hide.

Market for edible collagen.--A firm, not previously associated with the hide and leather industry, 3/ has devised a process for using the corium layer from hides to make reconstituted collagen structures for edible meat casings.

1/ The Custer Process, owned by Cal-Tan Research Corp., Napa, Calif. This is a patented process, described in U.S. Patent No. 3,000,742, Sept. 1961. (Mention of commercial firms does not constitute an endorsement by the U.S. Department of Agriculture over other firms not mentioned.)

2/ Hair that is collected from the second stage fine-mesh screening can be recycled for complete digestion or salvaged for sale, according to the process inventors.

3/ Devro Division, Johnson and Johnson, Inc. Somerville, N. J. (Mention of commercial firms does not constitute an endorsement by the U.S. Department of Agriculture over other firms not mentioned.)

Table 2.--Approximate returns to packers with USDA hide trim--in 5 different markets

Market	Product marketed	Processing cost per pound <u>1/</u>	Current market value per pound	Imputed return to packer	
				Per pound of fresh hide <u>2/</u>	Per hide <u>3/</u>
		Cents	Cents	Cents	Cents
Rendered.....	Feed and oil	<u>4/</u> 1.40	3.25	1.85	+46
Edible collagen.....	Washed and chilled fresh bellies only	<u>5/</u> 3.00	5.00	2.00	<u>6/</u> +40
Gelatin and glue.....	Salt-cured trimmings	<u>7/</u> 3.00	0.35	-2.65	-66
Throw away.....	Fresh trimmings	<u>8/</u> 1.00	0.0	-1.00	-25
Leather.....	As part of salt-cured hide <u>9/</u>	<u>10/</u> 2.00	0.0	-2.00	-50

1/ Includes processing and market costs of the packer only.

2/ The residual value after processing and marketing costs are deducted.

3/ Estimated weight of trim removed from a 75-pound-average hide by the USDA trim pattern is 25 pounds.

4/ .4 cent for rendering-facility operations and 1 cent for trimming.

5/ 1 cent for trimming; 2 cents for washing, chilling, and packaging.

6/ Allowance made for only 20 pounds of fresh belly material per hide. Head pieces are not expected to be used in edible collagen products.

7/ 1 cent for trimming, 1 cent for cure, and 1 cent for shrinkages.

8/ 1 cent for trimming, assume renderer pickups at no cost.

9/ Marketing a whole hide to a beamhouse, where trim is done after liming and dehairing, is a special consideration discussed later.

10/ 1 cent for trimming, 1 cent for cure.

The new sausage-casing product made from hide trimmings is competitive with various natural casings. It offers advantages in sausage stuffing and sausage meat formulation; it improves uniformity in weight of sausages. Market developments in the future could bring this casing into use in frankfurters, and in other processed meat and cheese products.

If this product were to replace natural casings, the need for raw material would equal the belly and shank portions of more than 5,000 cattle hides per week. As other markets are developed, total needs for hide raw materials could grow much larger.

As an offering price estimate for raw material, 5 cents a pound, f.o.b. packer, for washed and "edible-source" certified fresh bellies has been used. Cost estimates for cutting off, washing, chilling, and packaging fresh bellies have been made by meat packers. At these prices and costs, packers can have an estimated net return of 40 cents per hide for the belly segments. This is 6 cents per hide less than the estimated net return by rendering, but it is also 90 cents per hide better than they now get for salt-cured hides from the side-upper leather tanner.

Through a consideration of packinghouse procedures and handling and sanitation regulations, a procedure has been devised to get an "edible-source" label applied to cattle hide trim taken off by meat packers. Packers who have continuous inspection by government meat inspectors can request this service for hide trim.

Packers who supply hide materials for making edible collagen are required to remove the belly segments from a hide before it leaves the killing room or the area under the sanitation supervision of the meat inspector. Each piece must be tagged with a carcass number in order that it can be discarded if the carcass is not approved for edible use.

Thorough washing, chilling or freezing, and sanitary packaging are other steps fresh belly segments must go through. Equipment and processes used must meet the sanitation requirements of the meat inspector.

Bellies taken off and handled in this way can be acceptable as "edible-source" materials for the manufacture of reconstituted collagen. Since the collagen foods are not classed as meats, but as manufactured food products, they are under the authority of the Pure Food and Drug Act. The meat inspection services can make it possible for cattle-hide trimmings to meet the raw material standards required by the Food and Drug Administration.

Market for gelatin, glue, and other industrial products.--Marketing hide trimmings and fleshings for gelatin is a longtime practice in the industry. Hide glues compete with bone glues, and both compete with synthetics. If hide-glue raw materials (which are only at present 35 cents a hundred pounds) cost nothing, glue markets would not grow much, if at all. Oil from fleshings sold as a byproduct is the key to income for gluemakers and gelatin makers.

Gelatinmakers and gluemakers can use a wide variety of raw materials from meat packers, hide dealers, and tanners. Prices paid range downward from \$120 per ton for some frozen pigskins to practically nothing for blue chrome leather scraps. Yield of gelatin byproducts and cost of processing are the factors that govern prices paid for raw materials. Oversupply of most raw materials allows buyers to be choosy.

The market growth potential of gelatin does not encourage more raw material to look to that for a market. Since World War II, gelatin imports have been able to absorb the domestic market growth as a result of their lower prices. Cattle hide trim and fleshings need to be diverted to outlets other than gelatin and glue. Tanners, beamhouses, and packinghouses cannot make more than "salvagemoney" for fleshings and trimmings at 35 cents per hundred pounds. Rendering the same materials for feed and fat can offer net returns up to \$45 per ton.

Other industrial or manufactured products from hide trim, such as reconstituted leather, are "wait-and-see" situations. Bellies, shanks, heads, etc., are attractive for collagen users because they are the least expensive parts. Unless unknown physical factors prevent their use, reconstituted leather and other inedible collagen products would be made from belly and head trimmings as an economic choice of raw materials.

"Edible-label" cattle hide materials have not been available before. This change in product and market opportunity has caused an interest in many new products because of the low price, availability, and prospective large volume of raw material. Edible gelatin-making is not considered to be a potential use. since a price of 5 cents a pound, f.o.b. packinghouse, is not attractive.

Throw-away.--"Throw-away" means removing shanks, bellies, and heads as near the skinning operation as feasible and getting rid of them. A packer need not handle, cure, and transport the trimmings unless he has a sale for them.

Two situations in hide marketing could make throw-away the economic choice:

(a) Country butchers, renderers of fallen animals, small packers, and butcher-slaughterers should consider income improvement from small numbers of mixed-quality hides by throw-away.

Several market factors introduced by the new USDA hide trim pattern in the processing of salt-cured hides are applicable to this type of operation. These are:

- (1) Weight of hides to cure is reduced one-third.
- (2) Salt costs are lowered. Most small firms use dry salt pack curing, a method that requires more salt than brine curing.
- (3) Labor and handling costs per hide are reduced.
- (4) The need for skilled trimming is reduced.
- (5) Variability among the hides can be reduced, allowing small-volume curing firms to produce more uniform hide selections. The USDA hide trim pattern can make a "spread" hide yield the same percentage of heavy, thick leather as regular steer hide. Removal of all the thin-skinned belly segment prior to tanning brings about this improvement.

(b) Low prices for hides can make a strong case for the whole cattle hide industry to consider trim disposal at the hide source.

Hide market evaluations and leather-tannery efficiency studies make it clear that in each of these 2 situations hides with bellies, heads, and shanks removed are equal to or better than hides sold untrimmed.

Tanning.--Bellies (including shanks) and head segments of hides are currently marketed for leather in 1 of 3 ways. (1) They are left on the hides and remain a part of the sides as finished leather. As previously shown, the economic disadvantage in tanning and shoe manufacturing justify removing these segments. (2) Bellies and heads go with the hides through beaming (hair removal) and then they are cut off and sold to belly-leather tanners. This is a growing practice among sole-leather tanners. (3) Belly and head portions are removed from hides after curing. Very few domestic tanners desire to purchase bellies or head segments of cured hides because of the difficulty of removing the hair from small pieces. Currently, there is an export market for bellies with the hair on. This market's price (2 to 3 cents per pound) allows no return to the packer for green-hide material because salt, transportation, and brokerage charges are greater than 2 cents per pound of cured hide.

Belly portions, as segments taken off after beaming, bating, and pickling, have a market price of about 5 cents a pound. The advent of beamhouses as a separate hide-marketing function could change the current market price situation.

BEAMHOUSES

Packers, slaughterers, and hide dealers who are neither able to render their trim nor sell it for edible collagen, may find the belly-leather market their best alternative. Several innovations in the industry make this valid to consider. The most significant of these are: (1) Recent introduction of beamhouses at the packing-house level, (2) a higher value for bellies of an 8-inch minimum width (USDA hide trim pattern) and (3) elimination of salt-curing, thus lowering processing costs and improving leather quality.

Most domestic belly tanners do not have beamhouses. It is necessary to remove the hair at a beamhouse before belly segments are cut off and sold to belly-leather tanners. Bellies segmented according to the USDA pattern command a premium price because of the greater area in a belly piece. In current belly-trimming practices, mostly applied to hides marketed to sole-leather tanners, pieces often do not yield more than 40 square feet per dozen half-belly segments.

Premiums are paid for bundles of belly leather that exceed this minimum footage. The new belly segments will yield bundles that can exceed 54 square feet per dozen half bellies.

Marketing fresh hides directly to a beamhouse offers 2 important advantages:
(1) The cost of salt-curing, at more than 1 cent per pound of hides, is eliminated.
(2) Quality of belly leather, where salt stains are a special problem, is improved.

A beamhouse operation that is able to receive fresh, untrimmed hides could become a new alternative means for producing a change in belly-segment marketing. With the new size of the belly segment from the USDA trim pattern and new processing conditions, belly tanners can pay 55 to 60 cents for each dehaired and pickled belly segment. At 30 cents per belly for the beamhouse operating costs, hide suppliers could gross 25 to 30 cents per belly or 50 to 60 cents per hide. A cost allowance of 2 cents a pound for trim, freight, and brokerage on 20 pounds of belly still leaves a net return to the packer of 10 to 20 cents per hide. This can be 35 to 40 cents per hide better than throwing trim away, and 60 to 65 cents per hide better than leaving belly portions on a salt-cured hide sold to side-upper leather tanners (table 1).

Belly leather is noted for its clarity and freedom from defects in the grain surface and for its unique fiber-layering structure. At lower prices per square foot, belly leather may find many markets where bend and shoulder segments of cattle hides cannot compete. Belly leather, however, has no place on the outer side of shoe uppers and soles. The trade does not feel that large-scale diversion of belly and head leather to make outside parts of shoes is in the best interests of the leather industry.

Capital investment in a beaming operation with a capacity of 500 hides a day is estimated by industry sources to be between \$150,000 and \$250,000. This is near the investment required for fleshing and agitated-brine-curing operations. Perhaps the greatest problem to be confronted in the development of beamhouses will be the lack of skilled technologists. Success in beamhouse operations requires capable technologists and marketing knowledge.



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