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- Goats Pay for Clearing
- Grand Prairie Rangelands

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TEXAS AGRICULTURAL EXPERIMENT STATION

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Summary

Eleven Grand Prairie ranchmen added an Angora goat enterprise during 1950-55 to control regrowth on recently cleared rangeland and to provide additional income. The added investment averaged \$6,582 per ranch. Of this amount, \$2,809 was used for bulldozing and cabling or chaining pastures, \$1,492 for goat-proof fencing and goat shelter and \$2,281 for purchasing goats.

An average of 359 goats was purchased to utilize browse and was maintained without reducing the original number of cattle.

In 5 years, the goat enterprise had paid for the goats purchased, for the added fencing and shelter needed for goats and for all year-to-year costs incurred. Earnings from goats during this time also covered the cost of clearing 518 acres of rangeland per ranch at an average of \$7.23 per acre.

During this time, the average size of the goat flocks studied increased to 463 head through the addition of kids raised on the ranch.

Acknowledgments

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This study was made possible by the cooperation of the ranchmen who furnished the information reported and analyzed in this bulletin.

Contents

Summary.....	2
Acknowledgments.....	2
Introduction.....	3
Common Noxious Invaders.....	3
Mechanical Control of Noxious Brush.....	3
Goats Used to Control Regrowth.....	4
Cost of Clearing and Starting the Goat Enterprise.....	4
Annual Requirements and Production of Goats.....	5
Year-by-Year Investment Costs.....	6
Expenses and Sales from Goats.....	6
Yearly Expenses Associated with Brush Control.....	7
Rate Goats Paid for Brush Control.....	7
Effect of Brush Control on Carrying Capacity.....	8



Figure 2. Native vegetation on the Grand Prairie in western Bell county. Pastureland in the foreground has been cleared.

Goats Used to Control Regrowth

On 11 of the 15 ranches, bulldozing and cabling were followed by grazing the pastures with Angora goats to feed on the sprouts, Figure 4. Oak sprouts and the regrowth of most other species which come out after bulldozing and cabling of Grand Prairie pastures are eaten readily by goats. Browse from these woody plants furnishes the main forage for goats. By stocking newly cleared areas rather heavily with goats, the regrowth is eaten soon after it appears. This tends to weaken the roots from which sprouting occurs.

All of these ranchmen kept cattle, but none had goats before starting on a brush control program. Goats did not replace cattle; they were added to utilize available browse. Since the goats fed largely on browse, they did not compete greatly with cattle for available grass. On the basis that 6 goats equal one animal unit (or the equivalent of one cow), ranchmen who added goats to utilize browse more than doubled the number of animal units maintained. If pasture arrangements permitted, the usual practice was to con-



Figure 3. Bulldozing is relatively effective in clearing oak and cedar.

centrate goats on newly cleared land and to stock lightly with cattle. This facilitated the control of sprouts and gave grass plants the best chance for regrowth. Improvement in grass production came relatively soon with favorable conditions, but was slow when dry weather prevailed. At the time this study was completed, cooperating ranchmen with goats reported that sprouting and regrowth had been controlled adequately.

The other four cooperators continued to run cattle after bulldozing and cabling, but did not have goats to feed on the sprouts and to assist in the control of regrowth. All bulldozing and cabling on these farms was completed in a 3-year period.

Cost of Clearing and Starting the Goat Enterprise

For the 15 farms studied, approximately 55 percent of the clearing was by bulldozing and 45 percent was by cabling or chaining, Table 1. Bulldozing was on a contract basis and costs ranged from \$5 to \$13 per acre, depending mainly on the density of the brush. The average was \$8.37 per acre bulldozed. Cabling or chaining also was contracted. Costs were uniform in the locality studied and amounted to \$5 per acre. The overall cost of clearing (both bulldozing and chaining or cabling) averaged \$6.85 per acre cleared.

The control of noxious brush growth on the Grand Prairie is an approved conservation practice for which cost-sharing assistance is available through the Agricultural Stabilization and Conservation (ASC). Most of the cooperating ranchmen received some cost-sharing assistance in connection with brush control. This assistance amounted to about 18 percent of the total clearing costs for the 15 ranches studied. Some of the men received assistance for considerably more than this proportion of the clearing.

Before goats were added, fences consisted of three or four barbed wires which were adequate for cattle. It was necessary to add net wire to keep goats at home. The barbed wires already in use were placed above the net wire to provide an all-purpose fence. On ranches where goats were added, an average of 4.4 miles of fence per ranch was goat-proofed. The average cost of this added improvement was \$1,192.

Most of the ranchmen had sufficient shed space to care for the goats in case of bad weather soon after shearing. Some shed space was added for goats in a few instances. The average added cost of goat shelter was \$300 per ranch.

Some of the ranchmen purchased only nanny goats (does) at an average of \$7.12 per head; others bought only mutton goats (wethers) at \$5.85 per head. The most common practice was to buy some of both. About 40 percent of the goats purchased were nannies.

The total added investment for clearing, for fence and shelter necessary to keep goats, and for goats purchased averaged \$6,582 per ranch,

Table 1. For the four who did not add goats, the total investment associated with brush control was for clearing which averaged \$1,405.

Cattle ate limited amounts of tender browse, but did not keep sprouts and regrowth under control. Before the end of the study, regrowth was a serious problem on the four ranches without goats.

The remainder of this report concerns the 11 ranches where a goat enterprise was added shortly after bulldozing or cabling and chaining.

Annual Requirements and Production of Goats

Goats were on pastures that provided sufficient browse throughout most of the year. Consequently, there was little need for feed supplements. Most of the goats were fed each year, but the feeding period was relatively short. Most of the feeding was in the winter or immediately after shearing. As a rule, a large proportion of the feed went to the nannies and the amount fed tended to increase during drouth years.

During the 6 years of the study, each goat was fed an average of 5 pounds of cottonseed cake (or cubes) and 5 pounds of hay annually, Table 2. Hay was homegrown. The common practice was to feed both hay and cottonseed cake on the ground rather than in troughs.

Goats were sheared in the fall and in the spring. Shearing was done on a contract basis. The usual price was 30 cents per goat sheared.

Grown mohair and kid hair were sacked separately. Each sack held about 200 pounds of mohair and the cost of the sack averaged approximately \$1.25.

A commercial drench was used to control internal parasites. Some goats were drenched once a year, but two drenchings a year were more com-



Figure 4. Grand Prairie ranchmen have found Angora goats an effective and profitable way to control regrowth on recently cleared pastures.

mon. The material for drenching cost 3 to 6 cents per goat each time the flock was drenched.

Extra help usually was hired to help with drenching; generally this labor was the only day labor hired with the goat enterprise.

Some of the flocks sheared more mohair per goat than others, but on the whole, mature goats sheared an average of 7.25 pounds of mohair annually; the fall clip for spring kids averaged 1.8 pounds per head.

As a rule, kids were dropped in the open pasture and only limited attention was given the nannies at kidding time. Kid crops ranged from 40 to 80 percent. Throughout the study, only about 50 percent of the nannies raised a kid each year to weaning age. However, one cooperater who gave his nannies careful attention consistently raised an 80 percent kid crop.

Practically all of the kids raised were kept for replacements or to increase the size of the

TABLE 1. SUMMARY OF THE INVESTMENT COSTS FOR CLEARING LAND AND FOR A GOAT ENTERPRISE ON GRAND PRAIRIE RANCHES

Item	Native pastures cleared of brush and trees			
	Followed with goats		Not followed with goats	
	Amount	Cost, dollars	Amount	Cost, dollars
Farms and ranches studied, number		11		4
Total native pasture per ranch, acres		676		366
Pastureland cleared, total acres		535		264
Cleared the first year, acres		112		79
Years to complete clearing, number		6		3
Clearing cost				
Acres bulldozed	385	3,122	59	594
Acres cabled or chained	150	750	205	1,025
Total clearing cost	535	3,872	264	1,619
Total cost per acre cleared		7.23		6.13
Clearing costs paid by government		1,063		214
Clearing costs paid by ranchman		2,809		1,405
Improvements added to handle goats				
Fence goat-proofed, miles	4.4	1,192		
Goats shelter		300		
Total improvements per ranch		1,492		
Cost of goats purchased				
Nannies, number	143	1,018		
Muttons, number	216	1,263		
Total cost of goats, number	359	2,281		
Total added investment for clearing		6,582		1,405

TABLE 2. SUMMARY OF PRODUCTION AND REQUIREMENTS FOR GOATS ON GRAND PRAIRIE RANCHES, 1950-55

Item	Goats used to control regrowth after clearing			
	Amount per goat	Amount used	Amount purchased	Cost, dollars
Ranches studied, number		11		
Goats, 1 year or older per ranch, number		398		
Annual production from goats				
Grown hair per goat, pounds	7.25			
Kid hair, fall clip per kid, pounds	1.80			
Nannies raising kids, percent	49			
Annual requirements				
Supplemental feed				
Cottonseed cake, pounds	5	2,000	2,000	80
Hay, pounds	5	2,000		
Labor with goats, hours	.4	149	16	12
Contract shearing—twice a year at 30 cents per goat sheared, dollars	.60			251
Mohair sacks, number		14		19
Drench for internal parasites, dollars	.07			27

flocks. Most of the goats sold were the older and less productive animals.

Death losses reported were high, ranging from 8 to 13 percent annually. This did not include kids lost prior to weaning. Few losses were from disease. Some goats got caught in the net wire fence and died, and occasionally they got caught in brush and were not found in time. A large part of the death losses was caused by dogs.

Year-by-Year Investment Costs

Information obtained for each year of the study concerned the progress and cost of the clearing program, the extent and cost of the im-

provements added in connection with goats and the expenses and sales for the goat enterprise. These data are summarized in Tables 3 and 4.

After subtracting the assistance provided by ASC, the cost of clearing averaged \$603 per ranch the first year, Table 3. Clearing was an expense that continued throughout the study.

Three-fourths of the improvements (fencing and shelter) associated with the new goat enterprise were made the first year of the program when improvements averaged \$1,141 per ranch. Eighty percent of the goats purchased were added the first year. The average total added investment the first year for land clearing, improvements and goats amounted to \$3,477 per ranch. During the second and third years, the additional investment for these items averaged \$821 and \$957, respectively. During the remainder of the study, the investment was increased on the average between \$400 and \$500 per ranch each year. This was for land clearing entirely.

Expenses and Sales from Goats

Ranchmen paid the current feed costs for cottonseed cake, Table 4. The hay fed was home-grown and hay costs were based on the market value f.o.b. the ranch. Feed expenses did not vary greatly from 1 year to another. The average annual feed cost per goat was 20 to 30 cents.

Shearing was the largest single item of annual expense. The cost for shearing and for mohair sacks varied with the number of goats sheared.

During drouth years, goats were not drenched as often as during more seasonable years. During this study, the average annual cost of materials for drenching was 5 to 9 cents per goat. In most instances, some labor was hired to help with the drenching.

The operator's labor was not a cash cost, but was included among these expenses. This labor charge was \$1 per hour.

The useful life of the fencing and shelter added for the goat enterprise was estimated to be

TABLE 3. SUMMARY OF THE ADDED INVESTMENT, COSTS FOR PASTURE CLEARING AND THE GOAT ENTERPRISE, 1950-55

	1950		1951		1952		1953		1954		1955	
	Amount	Cost, dollars	Amount	Cost, dollars	Amount	Cost, dollars	Amount	Cost, dollars	Amount	Cost, dollars	Amount	Cost, dollars
Ranches studied, 11												
Cost per ranch for land clearing												
Land bulldozed, acres	76	657	77	626	75	575	51	377	43	319	63	568
Land cabled or chained, acres	36	180	22	110	32	160	26	130	27	135	7	35
Total land cleared per ranch, acres	112	837	99	736	107	735	77	507	70	454	70	603
Conservation payment received		234		200		207		164		112		146
Clearing cost paid by ranchman		603		536		528		343		342		457
Improvements added to handle goats												
Fence goat-proofed per ranch, miles	3.2	841	.5	171	.7	180						
Goat shelter, per ranch		300										
Total improvements for goats		1141		171		180						
Goats purchased per ranch												
Nannies, number	107	726			18	166			18	126		
Muttons, number	183	1007	13	114	11	83	9	59				
Total goats purchased	290	1733	13	114	29	249	9	59	18	126		
Total added investment		3477		821		957		402		468		457

TABLE 4. SUMMARY OF ANNUAL EXPENSES FOR GOATS AND BRUSH CONTROL, AND ANNUAL SALES RESULTING FROM THE GOAT ENTERPRISE, 1950-55

	1950		1951		1952		1953		1954		1955	
Ranches studied, number	11		11		11		11		11		11	
Goats per ranch, number ¹	290		357		397		438		463		443	
	Amt.	Cost, dollars	Amt.	Cost, dollars	Amt.	Cost, dollars	Amt.	Cost, dollars	Amt.	Cost, dollars	Amt.	Cost, dollars
Annual expense per ranch												
Goat feed												
Cottonseed cake, pounds	1935	49	1918	48	2038	92	1973	89	2364	85	1973	69
Hay, pounds	2000	25	1982	25	1864	28	1655	25	2727	41	2336	35
Shearing and mohair sacks		145		239		291		316		319		312
Parasite control, materials		25		31		30		31		26		20
Labor with goats												
Hired, hours		11		12		14		13		15		7
Operator's time, hours	100	100	119	119	132	132	150	150	160	160	150	150
Fence and shelter maintenance		46		52		60		60		60		60
Depreciation of fence and shelter		57		66		75		75		75		75
Interest on added investment ²		104		129		158		170		184		197
Hand clearing, hired ³		14		18		20		15		18		13
Grass seed		51		30		18		12				
Total annual expenses		627		769		918		956		983		938
	Amt.	Value	Amt.	Value	Amt.	Value	Amt.	Value	Amt.	Value	Amt.	Value
Annual sales												
Mohair, pounds	1513	1074	2382	2620	2618	2382	2740	2274	2636	1792	2465	1923
Goats, number			14	27	23	80	64	206	87	261	73	229
Total annual sales		1074		2647		2462		2480		2053		2152

¹Goats over 6 months old at beginning of year.

²Interest charge based on a depreciated value.

³After cabling and bulldozing.

20 years, and depreciation was calculated on this basis. The annual maintenance and repairs for these items were calculated at 4 percent of the original cost. Interest was charged at 6 percent annually.

The usual practice was to sell the mohair clip to a local buyer. The prices obtained were in line with those paid at other markets at the time the sale was made. In 1950, the first year of the study, the price received for the mohair averaged better than 70 cents per pound. The following year the average price received was about \$1.10 per pound. Prices were lower in succeeding years, with the average price received in 1954 dropping below 70 cents per pound.

After the initial year, which included only a single clip for most of the goats, the annual gross sales from the goat enterprise varied from \$2,050 to \$2,650.

These sales provided a sizable margin over annual costs which could serve to repay the added investment.

Yearly Expenses Associated with Brush Control

Some handwork was necessary each year to destroy small trees and shrubs which were not broken off or uprooted by cabling or chaining or by bulldozing. Most of this work was hired.

Not all farmers seeded grasses after clearing the brush. Those who planted grass seed covered only part of the acreage cleared. Included among the grasses seeded were buffalograss, little bluestem, gramagrasses, K. R. bluestem and

mixtures recommended by the Soil Conservation Service.

Good results were obtained from seedings made when moisture was favorable. Moisture was deficient during most of the study, and the results from grass seeding were disappointing, particularly during the last half of the study.

Rate Goats Paid for Brush Control

Table 5 indicates how rapidly the goat enterprise paid for itself and also paid the cost of clearing and controlling the regrowth of brush on Grand Prairie pastures.

Approximately 50 percent of the total cost (\$6,582—Table 1) for clearing the land and adding the goat enterprise occurred the first year. Since most of the goats were not purchased until after the spring shearing that year, there usually was only one clip to sell. Even so, mohair sales paid all annual expenses and provided an average of \$350 per ranch that could be credited to the overall investment.

Mohair prices the second year, 1951, were good. Mohair sales were sufficient to pay current operating costs and to provide nearly half the total invested in the program during the first 2 years. The average value of goats on hand at the end of the second year was almost equal to the remainder of all costs incurred at the time.

After 3 years, the total combined investment for land clearing and goats averaged \$5,255 per ranch. Goat and mohair sales paid operating costs and provided an average of \$3,867 per ranch toward investment repayment.

TABLE 5. YEAR-TO-YEAR BALANCE OF PASTURE CLEARING COSTS PLUS COSTS FOR GOAT ENTERPRISE COMPARED WITH MOHAIR AND GOAT SALES

Ranches studied, 11	1950	1951	1952	1953	1954	1955
	Dollars					
Total added investment per year	3477	821	957	402	468	457
Added annual expense	627	769	918	956	983	938
Total added expenditure per year	4104	1590	1875	1358	1451	1395
Annual sales, goats and mohair	1074	2647	2462	2480	2053	2152
Amount sales exceed annual expenditures		1057	587	1122	602	757
Amount annual expenditures exceed sales	3030					
End of year balance ¹						
Total costs over total sales	3030	1973	1386	264		
Total sales over total costs					338	1095
Value of goats at end of year	1653	1818	2137	2407	2579	2406

¹Cumulative costs for clearing land plus all cost of keeping goats compared with cumulative goat enterprise sales.

Net earnings from the goat enterprise almost "caught-up with" total accumulated costs during the fourth year. At that time, the goat inventory averaged an additional credit of \$2,400 per ranch. Before the end of the fifth year, total sales from the goat enterprise were more than enough, on the average, to pay accumulated operating costs and to repay the total investment in the goat enterprise and in land clearing.

The pasture clearing program was completed during the sixth year. Mohair sales were considerably more than clearing and other costs for that year.

Effect of Brush Control on Carrying Capacity

No increase in carrying capacity for cattle was observed immediately after bulldozing and cabling. Usually there was less grass on the



Figure 5. With favorable conditions, Grand Prairie pastures have produced good grazing the first year following the clearing of noxious brush and trees. Live oak and cedar were bulldozed during February 1955 on this pasture in western Bell county. Grass seedlings were made by hand soon after bulldozing. Grazing was deferred until after September 16, 1955, when this picture was taken.

Photograph courtesy of Soil Conservation Service.

land the first year after bulldozing than before. This was less likely to occur after chaining or cabling.

Because of year-to-year differences in numbers and weights of animals and in systems of grazing, a group analysis was made of changes in cattle numbers before and after clearing.

During the first and second year of the clearing program, ranchmen kept about the same number of cattle as they had previously, even though 1951 was a very dry year. By the third year of the program, many of the men were keeping a few more head and there were even greater increases the fourth year. However, this trend was interrupted by drouth the fifth year.

The experience on ranch "A" seems typical of the other ranches studied. Ranch "A" consisted of approximately 600 acres of rangeland of which 100 acres were bulldozed in 1950. An additional 255 acres were cleared during the next 3 years. A herd of 30 cows had been maintained several years before 1950. Ranchman "A" kept 10 extra heifer calves in 1953 to increase the herd to 40 head since the increased grass production seemed to justify the increased stocking.

However, 1954 was extremely dry, and late in the summer the herd was reduced to 30 head. Without the improvement resulting from the control of undesirable plants, it is doubtful that even this number would have been carried. Cattle numbers on ranch "A" were not increased during the remainder of the study because of continued below-average rainfall.

Because of the drouth, most of the cooperators were not keeping any more cattle at the end of the study than they had before the land was cleared. Ranchmen expressed the opinion that without the improvements resulting from the control of trees and brush, a reduction in cattle numbers would have been necessary. Although it was impossible to measure range improvement in this study, indications are that considerable improvement resulted from the control of undesirable plant species.