5-1962

The Use of Annual Pastures with Perennial Pastures

T. W. High

C. S. Hobbs

L. M. Safley

University of Tennessee Agricultural Experiment Station

Bulletin 343
May 1962

The Use of Annual Pastures With Perennial Pastures

For Yearling Slaughter Steer Production

by
T. W. High
C. S. Hobbs
L. M. Safley

THE UNIVERSITY OF TENNESSEE
AGRICULTURAL EXPERIMENT STATION
JOHN A. EWING, DIRECTOR
KNOXVILLE

SUMMARY

A 2-YEAR STUDY COMPARING the production of yearling slaughter steers using orchardgrass-fescue-clover pastures with and without supplemental winter and summer annual pastures, rye-crimson clover and millet, was conducted in 1959-60 and 1960-61.

- Steer daily gains were identical (.86 lb. per head) during the winter for the two systems, and slightly in favor of the perennial-annual combination during the summer (1.27 vs. 1.35 lb. per head), but these differences were not statistically significant ($P > .05$). Grazing days per acre were statistically higher ($P < .05$) for perennial pastures alone during the winter. But grazing days include all days the cattle were on the pasture whether adequate grazing was available or not and includes days hay was fed, so this figure probably has limited use. Grazing days per acre for the summer period and both periods combined were not significantly different ($P > .05$).

- The expense of seeding and the weather problems encountered in the use of annual pastures in combination with perennials would probably limit the use of this system in producing slaughter steers, particularly in view of the fact that the annual pastures did not significantly increase production under the conditions of this experiment.

- The cattle performed similarly when fed a concentrate ration in dry-lot. This feeding period raised the slaughter grade of the cattle from standard to high-good and increased the slaughter value per hundred-weight more than $5.50. In the production of slaughter steers from pasture, this short feeding period is essential to produce the kind of slaughter cattle demanded by Tennessee markets.

- A small amount of fescue used in a pasture seeding mixture (10 lb. orchardgrass, 3 lb. fescue and 2 lb. Ladino clover per acre) resulted in about 62% of the total forage being fescue after four grazing seasons, 27% orchardgrass, and 11% Ladino clover. The first year the proportions were respectively: orchardgrass, 39%; fescue, 21%; and Ladino clover, 30%.

CONTENTS

The Use of Annual Pastures with Perennial Pastures for Yearling Slaughter Steer Production

by

T. W. High, C. S. Hobbs and L. M. Safley*

PASTURE EXPERIMENTS conducted in Tennessee have shown that the use of high quality pastures followed by a short dry-lot finishing period is a very good system for the economical production of yearling slaughter steers in Tennessee. But with this system there are certain periods during the year when there is a shortage of feed from pastures: the winter period from December to March, and the hot, drouthy, mid-summer period.

Supplemental hay and sometimes grain must be fed during the winter for best results. Steers on pasture may lose weight during the dry period of the summer unless extra pasture or supplemental feed is available.

An experiment was conducted at the Highland Rim Experiment Station at Springfield to study the effects of using a small acreage of winter and summer annuals in combination with improved perennial pastures. This system was compared to perennial pastures alone and evaluated in terms of daily gains of steers, beef produced per acre, and costs and returns.

Experimental Procedure

This investigation was conducted over a period of three winters and three summers, from 1958 through 1961. However, this discussion will deal primarily with the latter 2 years, 1959-61, as the first year's work was conducted in a slightly different manner.

Twenty-four acres of land at the Highland Rim Experiment Station was divided into eight plots of 3 acres each. Seven plots were seeded with 10 pounds of orchardgrass, 3 pounds of fescue, and 2 pounds of Ladino clover per acre in the fall of 1957. Each

* Assistant Professor and Professor, Animal Husbandry Department, and Superintendent of the Highland Rim Experiment Station, respectively, at Knoxville and Springfield.

fall during the experiment the eighth plot was sown in Balbo rye and Crimson clover and in the summer was sown with Gahi-1 millet.

The test was begun each year about November 1 and concluded about September 1. The period from the beginning of the test until the spring pasture growth began (usually about April 1) was termed the winter period, and from then until about September 1 the summer period.

Each treatment included 12 acres and 12 steers, as follows:

1. Four replicates of perennial pasture with three test steers per plot.
2. Three replicates of perennial pasture and one of annual with four test steers per perennial plot.

Weanling Hereford steer calves averaging 450 to 530 pounds

Figure 1. Steers like these were used as test-grazing animals.

in weight were used as test cattle. These calves were obtained from experiment station herds. The calves were allotted to the various plots on the basis of weight, grade, and source.

The pastures were scored at 2-week intervals throughout the test, with consideration being given to stage of growth, color, condition, estimated percent of forage available from each species, and carrying capacity. A copy of the pasture rating sheet is presented in the appendix for reference. An over-all grade reflecting the above conditions was assigned to each pasture.

At the time the pastures were scored, extra cattle were added or removed from the perennial pastures as needed to control the height of the forage. Whenever the annual pastures would support grazing, equal numbers of the test steers from each of three perennial plots in treatment 2 were moved to the annual plots as needed (3,6,9, or 12 steers). If more cattle were needed to make full use of the annual pasture after all 12 of the test steers were being used, extra cattle were brought in.

The test cattle were weighed on two consecutive days at the beginning and end and at 28-day intervals during the test to determine daily gains. Grazing days per acre were determined from the days grazed by the test cattle and extra cattle.

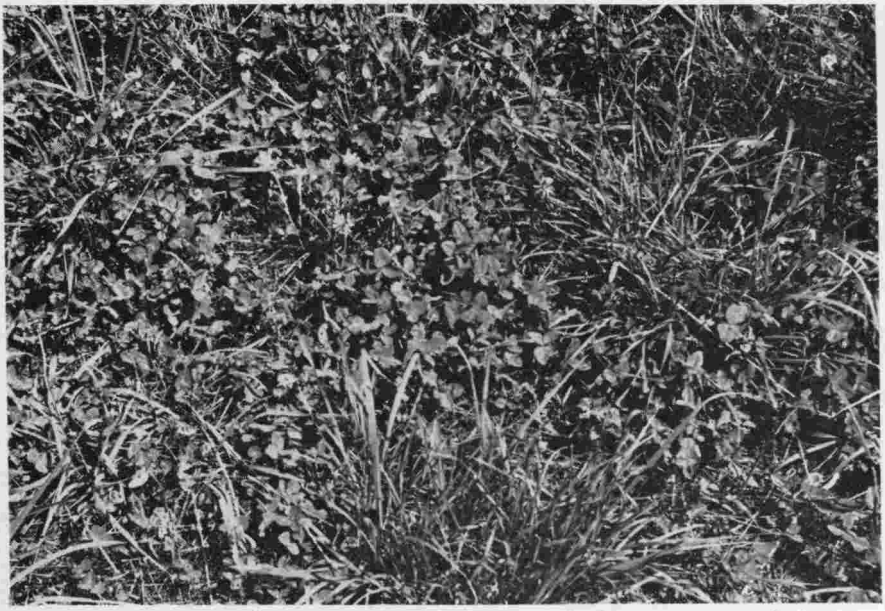

Figure 2. Perennial pastures should contain a high proportion of clover to grass—such as this one does—for high daily gains with grazing steers.

Beef gains per acre were calculated from daily gains of test cattle and total grazing days. The test cattle were graded at the beginning of the test, at the end of the winter period, and at the end of the summer period. Also, they were appraised by a cattle buyer at these times so that a financial evaluation could be made. All feed costs and returns are on the basis of the total carrying capacity of the pastures, not just the test steers alone.

During the winter all cattle received good quality alfalfa-grass hay free choice whenever pasture conditions made extra feed necessary. Salt, dicalcium phosphate and fresh water were available at all times.

The perennial pastures were clipped to a height of 4 inches when necessary to remove seed heads, weeds, and excess forage not grazed. Perennial pastures received one maintenance application of 100 pounds of superphosphate and 75 pounds of muriate of potash per acre during the first year of the experiment. The rye-crimson clover pastures were topdressed with 100 pounds of ammonium nitrate per acre in March. No nitrogen was applied to the perennial pastures after seeding.

Results and Discussion

The data were summarized by the winter, summer, and combined winter and summer grazing periods, the dry-lot finishing period and the combination of all periods. The averages for these periods during 1959-61 are found in tables 1 through 3 and tables 6 and 7. The data for the individual years are presented in the appendices. During the first year's work on this project, 1958-59, the grazing was conducted in a slightly different manner. Therefore these data are not included in this report except for a mention of the amount of grazing furnished by the annual pastures during this year.

Winter Grazing Period

These data are summarized in Table 1. Average daily gains for steers on both treatments were identical, 0.86 pound per head per day. There was a significant difference ($P < .05$) in the performance of the steers between the 2 years, with daily gains being 1.02 and 1.06 pounds per head daily in 1959-60 and 0.68 and 0.66 pound per head daily in 1960-61, for treatments 1 and 2, respectively.

There was no apparent explanation for this difference, particularly since 1960-61 seemed to be a milder winter. The hays fed during the two winters appeared to be of similar quality, but

no chemical analyses of the hays were made. Actually, the gains in 1959-60 are a bit higher than would be expected under this type

Table 1. Winter Grazing Period—Average of 2 Years, 1959-60, 1960-61.

	Perennial pasture	Perennial + annual pasture
No. of steers	12	12
No. of days	147	147
Av. wt. and gain per head, lb.:		
Initial wt.	488	490
Final wt.	614	617
Total gain	126	127
Daily gain (test steers)	0.86	0.86
Hay consumed per head, lb.	1060	1024
Hay cost per head	$18.56	$17.93
Av. animal grades:		
Initial type	H.G. +	H.G. +
Final type	H.G.	H.G. +
Inital condition	L.G.	L.G.
Final condition	L. Std. +	L. Std. +
Grazing days per acre, days	160	152
Calculated beef gain per acre, lb.	140	133

of wintering program. Although the differences in grazing days per acre were small, 160 vs. 152 for permanent pasture alone and permanent and temporary pasture combined, respectively, they were significant ($P < .05$). However, as was mentioned previously, hay was fed free-choice during winter because on some days the ground was covered with snow and grazing was short. The grazing days per acre includes these days as well as those when forage was available.

Each year the rye-crimson clover pasture was seeded in September. The amount of grazing furnished by this pasture differed with the years. In 1958-59 some grazing was provided from October 22 to April 22, in 1959-60 from December 16 to May 4, and in 1960-61 only from November 8 to December 20 and March 14 to May 9. So it would appear that growing conditions and seasons greatly affect the amount of grazing obtained from this type of temporary pasture. There was no significant difference in the amount of hay consumed during the winter by the steers on the two treatments.

Summer Grazing Period

Data for this period are found in Table 2. Average daily gains

Table 2. Summer Grazing Period—Average of 2 Years, 1960-61.

	Perennial pasture	Perennial + annual pasture
No. of steers	12	12
No. of days	158	158
Av. wt. and gain per head, lb.:		
Initial wt.	614	617
Final wt.	814	831
Total gain	200	214
Daily gain (test steers)	1.27	1.35
Av. animal grades:		
Initial condition	L. Std. +	L. Std. +
Final condition	Std. +	Std. +
Grazing days per acre, days	210	202
Calculated beef gain per acre, lb.	262	274

of the steers on the two treatments during this period were slightly in favor of the cattle on treatment 2 (perennial and annual pasture), but the difference was not significant ($P > .05$). Steers on treatment 1 gained 1.27 pounds per head per day compared to 1.35 pounds per head per day for the steers on treatment 2. Grazing days per acre also were very similar for the two treatments, 210 and 202, for treatments 1 and 2, respectively, and these differences were not significant ($P > .05$). Beef gains per acre were not significantly different.

The winter annual pasture, rye-crimson clover, provided some grazing in the early summer period. This pasture was usually plowed up in May or early June and the millet was sown as soon as possible. However, in 1961 an unusually wet spell delayed planting until the last of June. The millet pasture had produced enough forage for grazing by June 17 in 1959, by June 29 in 1960, and by July 18, in 1961, and it provided enough forage for continuous grazing by a few steers until the cattle were removed for finishing.

Combined Winter and Summer Grazing Periods

In a year-round grazing program the entire grazing season holds considerably more significance for the producer than either the winter or summer period alone. Breaking the grazing season down into winter and summer does help to explain the final outcome of the total grazing season. Data for both periods combined are summarized in Table 3. Average daily gains for the entire season were 1.07 and 1.12 pounds per head daily for the steers on perennial pasture alone and perennial plus annual pasture, respectively. This difference was not significant ($P > .05$). Grazing days

Table 3. Combined Winter and Summer Grazing Periods—Average of 2 Years, 1959-61.

	Perennial pasture	Perennial & Annual pasture
No. of steers	12	12
No. of days	305	305
Av. wt. and gain per head, lb.:		
Initial wt.	488	490
Final wt.	814	831
Total gain	326	341
Daily gain (test steers)	1.07	1.12
Av. animal grades and appraisals:		
Initial type	H.G. +	H.G. +
Initial feeder value per cwt.	$27.58	$27.58
Initial condition	L.G.	L.G.
Final condition	Std. +	Std. +
Final slaughter value per cwt.	$18.67	$18.79
Final feeder value per cwt.	$21.75	$21.75
Grazing days per acre	371	354
Calculated beef gain per acre	402	407
Pasture cost per head	$12.18	$24.60
Hay cost per head	$18.55	$17.92
Total feed cost per head	$30.73	$42.52
Feed cost per cwt. gain	$ 9.43	$12.47
Financial returns above initial value of steers and feed costs:		
Per head—slaughter value	$—13.35	$—21.52
Per acre—slaughter value	$—16.29	$—24.96
Per head—feeder value	$ 11.72	$ 3.08
Per acre—feeder value	$ 14.30	$ 3.57

per acre produced by the two treatments, 371 and 354, although slightly in favor of treatment 1, were not significantly different. The calculated beef gains per acre were also very similar, 402 and 407 pounds and were not statistically different ($P > .05$).

Observations on the Use of Annual Pastures

During the course of this investigation certain problems arose involving the use of annual pastures, and weather was one of the more important. Dry conditions in the fall and wet conditions in the spring affected the planting of the annual pastures each year. Where annual pastures are used as part of the pasture system. this is a problem that must be faced twice yearly. When perennial pastures are once established this factor is relatively unimportant.

The annual pastures were disappointing in their ability to supply additional grazing during the critical periods. Extreme weather

conditions which decreased the supply of forage from perennial pastures also adversely affected the annuals, thus limiting their effectiveness in supplying supplemental grazing.

Since steer performance was very similar for the two systems in this investigation, the expense of seeding annual pastures would usually limit their use in a steer production program similar to that followed in this study. Costs per acre for these pastures, including seed, fertilizer, and machinery costs, were $30 to $40 per seeding.

Species Composition of Pastures

Table 4 gives the average estimated percentage composition of the perennial pastures for the four summers since their establishment, the latter two of which were included in this study. The proportion of fescue increased steadily until in 1961 it was esti-

Table 4. Average Estimated Composition of Perennial Pastures for First Four Summer Grazing Seasons, 1958 through 1961.

Year	Orchardgrass	Fescue	Ladino clover	Weeds
1958	39	21	30	10
1959	39	28	31	2
1960	42	39	19	0
1961	27	62	11	0

mated to comprise an average of over 60% of the total forage available in all perennial pastures. Individually the pastures contained as little as 40% to as much as 80% fescue. There was more fescue and less clover present after 4 years than desired with this seeding mixture of 10 pounds of orchardgrass, 3 pounds of fescue, and 2 pounds Ladino clover; however, a more desirable balance of the pasture species was present than existed in other experiments when equal amounts of fescue and orchardgrass seed were used.

Table 5 shows the average pasture composition by 28-day periods during the summer and corresponding steer performance.

Dry-Lot Feeding Period

The cattle were removed from pasture and fed a finishing ration for about 96 days. Steers from Treatment 1 perennial pasture alone gained 2.46 pounds per head per day compared with 2.59 pounds per head per day for steers from the perennial-annual pas-

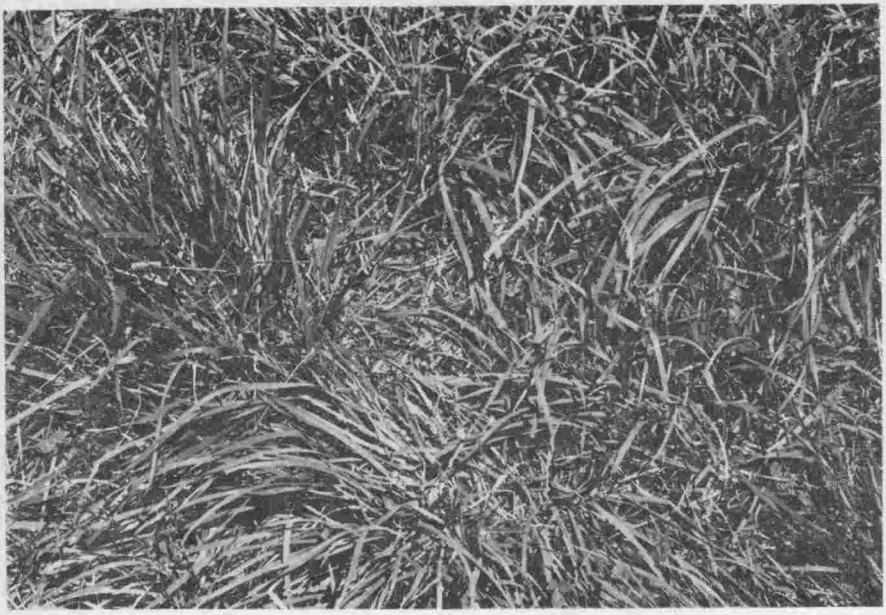

Figure 3. Perennial pastures such as this one provide ample forage, but need more clover for best cattle gains.

ture combination. This feeding period raised the live slaughter grade of these cattle from standard to high-good. The cattle were fed a ration of ground ear corn, cottonseed meal, and mixed grass-

Table 5. Pasture Composition, Average Daily Gains, Grazing Days Per Acre and Beef Gain Per Acre for 28-Day Periods During Summer— 2 Summers, 1960-61—Average Dates Included, March 26 to August 13.

Period	Pasture Composition — Orchard.	Fescue	Clover	Steers per acre annual pasture	Av. daily gain	Grazing days per acre	Beef gain per acre
	%	%	%	No.	Lb.	Days	Lb.
	Treatment 1 — perennial pasture only						
1	34	52	14		2.16	37	80
2	35	47	18		1.41	40	58
3	34	48	18		1.28	40	54
4	32	52	16		1.02	35	35
5	31	53	16		.86	33	28
	Treatment 2 — perennial — annual pasture combination						
1	31	53	16	1.9	1.95	40	76
2	38	43	19	.2	1.54	36	56
3	36	44	20	0	1.50	32	50
4	36	48	16	1.6	1.10	37	43
5	34	52	14	1.2	1.12	33	36

legume hay. Feed costs per hundredweight gain averaged about $17.50 for all cattle on feed.

This final concentrate feeding period is probably the phase of slaughter steer production with a pasture system that is most often neglected by the producer. Cattle that are sold at the end of the pasture season are not usually finished sufficiently for the Tennessee market. Many cattle feeders recognize the value of this kind of cattle for a short feeding period, as is evidenced by the difference in slaughter value and feeder value at the end of the grazing season. The cattle in this test returned about $40 per head above feed costs and initial feeder value, for 96 days of feeding. The ration fed in this experiment is a simple one that any farmer can feed and expect to increase his profits from steers raised on grass.

The average slaughter grade of the steers at the ends of the summer on the two systems was practically identical, about average standard, and so there was very little difference in the final slaughter value per hundredweight of the steers. There was a considerable negative margin encountered between the purchase price and the final slaughter value of the cattle. If the cattle had been sold at this price there would have been a loss of $13.35 per head on treatment 1 and $21.52 on treatment 2. However, some years the value of this kind of cattle as feeders is higher than slaughter value, as was the case in 1959-61.

As can be seen in Table 3, where the annual pasture was used, the cost of pasture was considerably higher than for the perennial pasture alone. The original cost of $53.20 per acre for establishing the perennial pastures was distributed over a period of 4 years for the purpose of this evaluation. The costs of seeding the perennial and annual pastures were calculated from seed and fertilizer used and from an hourly fixed cost for each piece of machinery used as outlined in Table E in the appendix.

Table 6. Summary of Dry-Lot Feeding Period—Average of 2 Years, 1960 anl 1961.

	Perennial pasture	Perennial & annual pasture
No. of days	96	96
Av. wt. and gain per head, lb.:		
Initial wt.	814	831
Final wt.	1050	1080
Total gain	236	249
Daily gain	2.46	2.59
Av. animal grades and values:		
Initial slaughter grade	Std.	Std.
Final slaughter grade	H.G.	H.G.
Federal carcass grade	G	G
Initial slaughter value per cwt.	$18.67	$18.79
Initial feeder value per cwt.	$21.75	$21.75
Final value per cwt.	$24.48	$24.65
Av. daily ration per head, lb.:		
Ground ear corn	17.5	17.3
Cottonseed meal	2.5	2.5
Hay	4.5	4.4
Total	24.5	24.2
Feed cost per cwt. gain[a]	$18.12	$16.99
Total feed cost per head	$42.77	$42.30
Return per head over initial slaughter value and feed costs	$62.29	$67.78
Return per head over initial feeder value and feed costs	$37.22	$43.18

[a] Feed prices used were: Corn, $1.20/bu.; Cottonseed meal, $3.15/cwt.; Hay, $30/ton.

Table 7. Results for Entire Test Period—Winter, Summer, Dry-Lot, Average of 2 Years.

	Perennial	Perennial & annual
No. of days	412	412
Av. wt. and gain per head, lb.:		
Initial wt.	488	490
Final wt.	1050	1080
Total gain	562	590
Daily gain	1.36	1.43
Av. animal grades and values		
Initial type grade	H.G. +	H.G. +
Initial condition	L.G.	L.G.
Final slaughter grade	H.G.	H.G.
Initial value per cwt.	$27.58	$27.58
Final value per cwt.	$24.48	$24.65
Feed cost per head—hay, grain and pasture	$73.50	$84.82
Feed cost per cwt. gain	$13.08	$14.38
Initial value per head	$134.59	$135.14
Final value per head	$257.04	$266.22
Return per head over initial and feed costs	$48.94	$46.26

Appendix A

Winter Grazing Periods, Individual Years, 1959-60 and 1960-61.

	Perennial Pasture		Perennial-Annual	
	1959-60	1960-61	1959-60	1960-61
Av. wt. and gain per head lb.:				
Initial wt.	457	520	457	522
Final wt.	614	615	620	614
Total gain	157	95	163	92
Daily gain (test steers)	1.02	.68	1.06	.66
Hay consumed per head lb.:	1172	948	1157	891
Hay cost per head	$20.51	$16.59	$20.25	$15.59
Av. animal grades:				
Initial type	L. Ch. —	H.G. +	H.G. +	H.G. +
Initial condition	L.G.	L.G.	L.G.	L.G.
Final condition	Std. +	L. Std. +	Std. +	L. Std. +
Grazing days per acre	164	157	155	150
Calculated beef gain per acre, lb.	170	112	166	101

Appendix B

Summer Grazing Periods, Individual Years, 1959-60 and 1960-61.

	Perennial Pasture		Perennial-Annual	
	1959-60	1960-61	1959-60	1960-61
Av. wt. and gain per head, lb.:				
Initial wt.	614	615	620	614
Final wt.	813	816	834	830
Total gain	199	201	214	216
Daily gain (test steers)	1.30	1.23	1.39	1.33
Final slaughter grade	Std. +	Std. —	Std. +	Std. —
Grazing days per acre	211	210	213	194
Calculated beef gain per acre, lb.	264	259	287	262

Appendix C

Entire Grazing Season, Individual Years, 1959-60 and 1960-61.

	Perennial	Pasture	Perennial & Annual	
	1959-60	1960-61	1959-60	1960-61
Av. wt. and gain per head. lb.:				
Initial wt.	457	520	457	522
Final wt.	813	816	834	830
Total gain	356	296	377	308
Daily gain (test steers)	1.16	0.98	1.23	1.02
Av. animal grades and appraisals:				
Initial type	L. Ch. —	H.G. +	H.G. +	H.G. +
Initial feeder value per cwt.	$30.16	$25.00	$30.16	$25.00
Initial condition	L.G.	L.G.	L.G.	L.G.
Final condition	Std. +	Std. —	Std. +	Std. —
Final slaughter value per cwt.	$18.38	$18.96	$18.08	$19.33
Final feeder value per cwt.	$21.50	$22.00	$21.50	$22.00
Grazing days per acre	375	367	368	343
Calculated beef gain per acre, lb.	434	371	453	363
Pasture cost per head	$13.36	$10.99	$25.05	$24.14
Hay cost per head	$20.51	$16.59	$20.25	$15.59
Total feed cost per head	$33.87	$27.58	$45.35	$39.73
Financial returns above initial and feed costs:				
Per head—slaughter value	$—22.27	$— 2.87	$—32.34	$— 9.79
Per acre—slaughter value	$—27.17	$— 3.47	$—38.81	$—11.06
Per head—feeder value	$3.09	$21.94	$— 4.12	$12.37
Per acre—feeder value	$3.77	$26.55	$— 4.94	$13.98

Appendix D

Dry-Lot Feeding Period, Individual Years, 1960 and 1961.

	Perennial Pasture		Perennial & Annual	
	1960	1961	1960	1961
Days on feed	85	107	85	107
Av. wt. and gain per head, lb.				
Initial wt.	813	816	834	830
Final wt.	1042	1058	1059	1101
Total gain	229	242	225	271
Daily gain	2.69	2.26	2.66	2.53
Av. animal grades and values:				
Initial slaughter grade	Std. +	Std. —	Std. +	Std. —
Final slaughter grade	L. Ch.	G. —	L. Ch.	G.
Federal carcass grade	H.G. —	G. —	G. +	G.
Initial slaughter value per cwt.	$18.38	$18.96	$18.08	$19.33
Initial feeder value per cwt.	$21.50	$22.00	$21.50	$22.00
Final value per cwt.	$25.50	$23.46	$25.50	$23.88
Av. daily ration per head, lb.:				
Ground ear corn	18.7	16.3	18.3	16.3
Cottonseed meal	2.6	2.3	2.6	2.3
Hay	5.8	3.2	5.6	3.2
Total	27.1	21.8	26.4	21.8
Feed cost per cwt. gain[a]	$18.55	$17.94	$18.37	$16.02
Total feed cost per head	$42.49	$43.41	$41.33	$43.41
Return per head above initial slaughter value and feed costs	$73.79	$50.08	$77.93	$59.07
Return per head above initial feeder value and feed costs	$48.42	$25.28	$49.40	$36.91

[a] Feed prices used were: Corn, $1.20/bu.; Cottonseed meal, $3.15/cwt.; Hay, $30/ton.

Appendix E

Per-Acre Costs for Establishing Pastures

A. Hourly Machinery Rates:

Tractors	
John Deere 430	$ 1.95
John Deere 620	2.49
I.H. 100	1.40
Other Equipment	
Rotary mower	.60
Bog disk	.55
Disk harrow and drag	.68
Cultipacker	.40
Grain drill	1.00
2 disk plow	.60

B. Costs for Rye-Crimson Clover Pastures

Land Preparation:	
Tractors	$ 7.50
Other Equipment	2.21
	$ 9.71
Seed:	
3 bu. Balbo Rye	$ 7.50
20 lbs. Crimson clover	4.20
	$11.70
Fertilizer:	
300 lb. 15-15-15	$11.57
100 lb. Ammonium nit.	4.00
	$15.57
Total	$36.98

C. Costs for Millet Pastures

Land Preparation:	
Tractors	$11.11
Other Equipment	2.70
	$13.81
Seed:	
20 lb. Gahi-1 millet	$4.00
Fertilizer:	
330 lb. 15-15-15	$12.73
100 lb. ammonium nitrate	4.00
	$16.73
Total	$34.54

D. Costs for Perennial Pastures

Land Preparation:	
Tractors	$12.19
Other Equipment	2.79
	$14.98
Seed:	
3.3 lb. tall fescue	$0.66
11.3 lb. orchardgrass	3.16
1.9 lb. Ladino clover	0.95
	$4.77
Fertilizer:	
1000 lb. 3-12-12	$24.00
Lime	9.45
	$33.45
Total	$53.20

4M/9-62)

Appendix F

UNIVERSITY OF TENNESSEE
AGRICULTURAL EXPERIMENT STATION
ANIMAL HUSBANDRY - VETERINARY SCIENCE DEPARTMENT

Pasture Report

Station_____ Project_____ Date of Period_____

Lot No.	No.	SUB PERIOD 1 Date	SUB PERIOD 1 No. Days	SUB PERIOD 2 Date	SUB PERIOD 2 No. Days
		Days on Regular Pasture	Days on Buffer Pasture	Days on Regular Pasture	Days on Buffer Pacture
Regular Animals					
Extra Animals					

SPECIES IN PASTURE

Common Name	% Total Stand	Height	Stage of Growth
			Young - Pre-bloom - Bloom - Seed-Dormant
			Young - Pre-bloom - Bloom - Seed-Dormant
			Young - Pre-bloom - Bloom - Seed-Dormant
			Young - Pre-bloom - Bloom - Seed-Dormant
			Young - Pre-bloom - Bloom - Seed-Dormant
			Young - Pre-bloom - Bloom - Seed-Dormant

GENERAL CONSIDERATIONS

1. Condition of Pasture: Prime - Washy - Succulent - Dry - Tough - Dead
2. Color: Very Green - Green - Brown - Drab
3. Carrying Capacity: Excess - Sufficient - Short - Insufficient
4. Thickness of Sod: Very Dense - Dense - Moderate - Thin
5. Footing: Firm - Soft - Very Soft
6. Grade: Excellent - Very Good - Good - Fair - Poor - Very Poor

WEATHER AND MOISTURE CONDITIONS

Date	Temperature Max.	Temperature Min.	Snow Inches	Rain Inches	Soil Moisture	Water Added

THE UNIVERSITY OF TENNESSEE AGRICULTURAL EXPERIMENT STATION KNOXVILLE, TENNESSEE

Agricultural Committee Board of Trustees

ANDREW D. HOLT, *President*
CLYDE M. YORK, *Chairman*
BEN DOUGLASS, HARRY W. LAUGHLIN, WASSELL RANDOLPH
W. F. MOSS, *Commissioner of Agriculture*

Station Officers

ADMINISTRATION

ANDREW D. HOLT, President
WEBSTER PENDERGRASS, Dean of Agriculture
J. A. EWING, Director
ERIC WINTERS, Associate Director
FLORENCE L. MACLEOD, Assistant Director, Home Economics Research
J. L. ANDERSON, Budget Officer

DEPARTMENT HEADS

T. J. WHATLEY, Agricultural Economics and Rural Sociology
J. J. McDOW, Agricultural Engineering
L. F. SEATZ, Agronomy
C. S. HOBBS, Animal Husbandry-Veterinary Science
J. T. MILES, Dairy
M. R. JOHNSTON, Food Technology
B. S. PICKETT, Horticulture
R. L. HAMILTON, Information
K. L. HERTEL, Physics
J. O. ANDES, Plant Pathology
O. E. GOFF, Poultry

University of Tennessee Agricultural Research Units

Main Station, J. N. ODOM, General Superintendent of Farms, Knoxville
University of Tennessee-Atomic Energy Commission Agricultural Research Laboratory, Oak Ridge, N. S. HALL, Laboratory Director

BRANCH STATIONS

Dairy Experiment Station, Lewisburg, J. R. OWEN, Superintendent
Highland Rim Experiment Station, Springfield, L. M. SAFLEY, Superintendent
Middle Tennessee Experiment Station, Spring Hill, E. J. CHAPMAN, Superintendent
Plateau Experiment Station, Crossville, J. A. ODOM, Superintendent
Tobacco Experiment Station, Greeneville, J. H. FELTS, Superintendent
West Tennessee Experiment Station, Jackson, B. P. HAZLEWOOD, Superintendent

FIELD STATIONS

Ames Plantation, Grand Junction
Cumberland Plateau Forestry Field Station, Wartburg
Friendship Forestry Field Station, Chattanooga
Highland Rim Forestry Field Station, Tullahoma