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TN - ECONOMICS AND COST RETURN - 3

MONETARY EVALUATION OF RANGE IMPROVEMENT

A monetary evaluation of range improvement is difficult to measure unless the increased pounds of beef produced is separated into (1) the increase due to the accelerated rate of animal gain, from (2) the increase due to added carrying capacity of the improved forage. The accelerated rate of gain is worth the selling price of the animal while the returns of additional carrying capacity must have the cost of the extra animals subtracted from it. At going prices, the former has a net value of approximately 40 cents per pound and the latter from 5 to 15 cents.

This technical note deals with ways to separate the values of the additional pounds of beef into the above two categories. Research data and discussions with ranchers indicate a significant increase in the rate of gain of livestock per AUM as the carrying capacity of rangeland improves. Indications are that a well managed range, capable of producing one AUM per acre, yields approximately 60 pounds of beef but a range capable of producing only one AUM per seventeen acres, yields very little if any red meat. A graph showing the estimated pounds of beef gained in relationship to the forage quality of the AUM grazed is included in this technical note.

To evaluate the benefits of good range management resulting in increased carrying capacities, the following inventories and calculations are required:

1. Make a range site and condition class survey of the grazing unit.

2. Determine the present capacity in AUM's for each range site and condition class surveyed in the unit.

3. Calculate the total present carrying capacity of all range sites and conditions by adding together all the totals in (2) above.

4. Estimate the potential carrying capacity of each range site under proper grazing management with needed treatment applied.

5. Calculate the total potential carrying capacity by adding together all the totals developed in (4) above.

6. Use the attached graph and repeat steps (2) through (5) to determine the estimated pounds of beef produced for both the present and potential conditions.

7. Determine the total increase in both AUM carrying capacity and estimated pounds of beef.

8. Determine the percentage increase in carrying capacity by dividing the total increase in AUMs by the present actual AUMs used.

9. Multiply the answer determined in step (8) by the present pounds of beef produced to determine the linear effects of increasing the AUM carrying capacity of the range.

10. Determine the increased pounds of beef resulting from improving the quality of the grazable AUM by subtracting the linear affects (step 9) from the total estimated increase in pounds of beef.

11. Multiply the answer in step 9 by an assumed linear value of 5 to 15 cents per pound of gain. (This assumes the rancher is receiving a 5 to 15 cent return per pound of beef produced over his variable cost of production at his present management level.)

12. Multiply the answer in step 10 by the normalized market value of beef, which is approximately 40 cents per pound. (This is the result of increasing the rate of gain per day of the animals grazed over and above what he is presently experiencing.

13. Add the answers in steps 11 and 12 together to determine the estimated monetary effects to pay for the needed improvements.

COMPUTATION EXAMPLE

Given a Loamy 12-16" Range Site of 600 acres of range in the following condition: 200 acres poor, 200 acres fair, 100 acres good and 100 acres excellent - which is far from water.

Acres	Range Condition	Acres Per AUM	AUMs	AUMs Used	Pounds of Beef Per AUM	Pounds of Beef
Present Situation:						
200	Poor	15	13	13	12	156
200	Fair	8	25	25	36	900
100	Good	4	25	25	50	1,250
100	Excellent	2	50	2	57	114
				65		2,420

With reseeding the poor condition range, cross fencing and water development (where needed); the range potential is estimated to be: 100 acres of good to excellent, 200 acres poor to excellent, 100 acres excellent, and 200 acres of fair would be improved to good.

Acres	Range Condition	Acres Per AUM	AUMs	AUMs Used	Pounds of Beef Per AUM	Pounds of Beef
200	Good	4	50	50	50	2,500
400	Excellent	2	200	200	57	11,400
				250		13,900

Step 7	Increase	185	11,480

Step 8   185 ÷ 65 = 285%

Step 9   2.85 x 2,420# = 6,897# (Linear effect)

Step 10   11,480# - 6,897# = 4,533# (Improved quality and management effects)

Step 11   6,897# x 5 cents per pound =   345

Step 12   4,533# x 40 cents per pound =   1,833

Step 13   Total   2,178

POUNDS OF BEEF GAIN

0 10 20 30 40 50 60

BEEF GAIN IN RELATIONSHIP TO THE QUALITY OF FORAGE

EXAMPLE: Given a range site condition class
producing one AUM per 10 acres; pro-
duces an estimated 29 pounds of beef.

ACRES PER AUM

1.0   3   5   7   9   11   13   15   17

AUMS PER ACRE

1.0   0.33   0.20   0.14   0.11   0.09   0.077   0.067   0.059