(AGR)
Pasture

ECONOMICS OF CONTINUOUS VS. SHORT DURATION GRAZING

Three situations involving the use of hay/pasture in short duration grazing were investigated to see what the economic impact of converting from continuous to short duration grazing was. Two of these farms are in Franklin County and some costs (including fencing) were subsidized by Challenge Grants. However, since this is unusually, the costs paid by the Challenge Grants were treated in this economic analysis as though the farmers paid them. The third situation involved a dairy farmer milking jerseys in Kennebec County.

Looking at the economics as the farmers did, the results varied significantly. One farmer lost money, one made a moderate amount while the third improved his income significantly. The net values per cow were $-11, $44, and $89.

Benefits to be attained from adopting short duration grazing could include both reduced feed costs and improved production from better quality pasture (feed) available with it. The farmer who achieved the next value of $89 per cow had both significantly reduced feed costs and improved production (both total production and butterfat content). Each of these benefits by themselves offset what he considered to be his additional costs, those related to maintaining fertility. However, the benefits from increased production were double those from decreased feed expenses.

Of course, it is possible that production and/or butterfat could be adversely affected although indications so far are that this should not be a frequent problem. If it does occur the loss should be accounted for in the worksheet for determining the economics of converting from continuous to short duration grazing. However, it is still possible that benefits from reduced feed costs may more than offset this loss and the expenses of changing to short duration grazing.

The farmer who lost money did so because he could exhibit only a modest savings in feed costs. He was not able to estimate an improvement in milk production with short duration grazing as he is rebuilding his herd and could not discern what improvements in production were due to the change in grazing. Also, he did not have enough paddocks to use short duration grazing efficiently. It is probable that short duration grazing will be economical for him in the future with sufficient paddocks and improvements in production.

The other Franklin County farmer had modest decreased feed costs but a significant improvement in production.

Several situations in other states reported much better economics than any of these in Maine.

For example one farmer who milks about 60 cows in upstate New York reports a decrease in hay cost of $3,780 and increased production that added $3,412 to his income; for a total benefit of $7,192. (He also avoided having to pay $1,200 to rent a grazing area about 20 miles away after he converted to short duration grazing). The annual equivalent of his fencing costs would be approximately $543 and he has an annual fertilizer expense of $372. Costs, therefore, total $915. Net benefits would be $7,192 - $915 = $6,277. Net benefits per cow would be $6,277 divided by 60 = $105.

The owners of another upstate New York dairy farm with 30 jersey milkers on it created 17 or 1-1/2 acre paddocks on a hillside and instituted short duration grazing. The owners estimate that they have saved about 35 bales a day for 150 days annually. If the hay is estimated to have a value of $1.50 per bale and costs of short duration grazing are estimated to be 30% of the gross (based on another study) then the owners would net about $5,500 annually from reduced hay purchases alone.

Another dairy in northern New York State was in dire straits before it changed to short duration grazing. Milk production had dropped to 20 pounds per cow per day and the owners were considering bankruptcy. Now, after installing 11 paddocks of 1.5 acres each, milk production is up over 30% and is still climbing; hay savings are over $4,500 bales annually, and additional savings have been realized by not having to rely on expensive to produce and time consuming corn silage.

In some cases apparently the only additional cost incurred to adopt short duration grazing is for the temporary fencing to create the paddocks. Its cost (which usually is not too great) can be amortized over an estimated life of 7 years and thereby converted to an average annual cost. Even if perimeter fencing needs to be installed, its much greater cost can also be offset by significant feed savings and/or production improvements. Perimeter fencing, of course, would have a much longer life than temporary fencing. In this study perimeter fencing was amortized over 30 years.

Short duration grazing, although not a new concept, is growing in popularity in Maine where the Voisin Rational Grazing System which emphasizes adequate regrowth periods is being adopted. Studies done so far on the economics of short duration grazing indicate that converting from continuous grazing to it will usually have good to sometimes great economic advantages.

Besides lower feed costs and improved production it was also mentioned that short duration grazing may lead to lower breeding costs (less tries per conception) and to lower veterinary expenses. Also, it was pointed out that short duration grazing, by allowing the animals to harvest the forage, freed farmers from much of the time consuming chores involved with growing and harvesting forage. This allowed them to spend “more time on the cows” leading to better livestock management.

Short Duration vs. Continuous Grazing – 1985

Summary

Farm No.	Increase/Decrease Per Cow$	Comments
1. Franklin Co., ME	- $11	Modest feed savings only; no increase in cash crop or milk production estimated. Use of more paddocks Expected to improve Benefits. Rebuilding herd May achieve increased Production in future.
2. Franklin Co., ME	$44	Some increase in cash crop but mostly significant improvement in milk production. No feed savings.
3. Kennebec Co., ME	$89	Second year in rotational grazing. Both increase in milk production and decrease in grain and hay fed.
4. New York	$105	Significant decrease in hay cost and significant increase in production.
5. New York	$150+	From savings in hay costs alone on a jersey dairy farm.

Comparison of Short Duration vs. Continuous Grazing

Item	Short Duration	Continuous
Benefit	Decreased Feed Costs Possible Improved Production Possible Improved Butterfat	High Feed Costs Generally Poor Production
Cost	New Fencing – Possibly Perimeter Fence Definitely Temporary (Interior) Fence 2. Water 3. Maintain Fertility? 4. Spread Manure	Fencing – perimeter only
Livestock Water	Must transport from source to paddock	Frequently livestock drink from stream – no cost
Water Quality	No effect	Frequently pollutes
Land	Provides more TDN and dry matter per acre. Quality of forage usually improved. With short duration grazing it is possible to double the production per acre of continuous grazing.	Large pasture where livestock are just “turned out” provides less TDN and dry matter per acre.
Machinery	Less needed (No Silage? Haylage?)	More needed (Make Silage? Haylage?)
Energy	Less needed	More needed
Labor	Needed for moving temporary fence but much less for raising forages	No fences to move but much time needed for raising forages.
Storage	Less needed	More needed for storage of forages (barns, silos)
Management	More needed (when to move fence? Number paddocks? Regrowth period?	Less needed – “Turn out, turn in”
Time for Management	More available for marketing, purchasing etc. as less cropping, machinery repairs, etc.	Less available as much time spent on crops, machinery repairs etc.
Livestock	Better livestock management as farmer observes health, condition when moving them and farmer has more time as less or no forages grown and harvested.	Less observation in large pastures. Farmer has less time for livestock as is growing and harvesting forages.

WORKSHEET FOR ESTIMATING THE NET BENEFITS OF CONVERTING FROM CONTINUOUS TO SHORT DURATION GRAZING

I. Increased Gross Income – Annually

A. Decreased Feed Purchases

1. Hay

_____bales at $_____per bale = $_____

2. Grain:

_____pounds at $_____per pound = $_____
Total Savings = $_____

B. Improved (Decreased?) Production

1.

1. _____additional (less?) cwt. of milk

at $_____pr cwt. = $_____

2. _____additional (lowered?)

butterfat % x $_____butterfat differential

per .1% x _____cwt. milk produced = $_____

Total Improved (Decreased) Production = $_____

Total Increased Gross Income (A+B) = $_____
Or
(A-B)

II. Increased Costs – Annually

A. Fence

2. 1. Perimeter

$_____x _____(amortization factor for
_____% for 30 years) = $_____

3. 2. Temporary

$_____ x _____(amortization factor
for _____% for 30 years) = $_____

4. 3. Labor (to move temporary fence)

_____times at _____hours

per time = _____hours

at $_____per hour = $_____

Total Fence Cost (1+2+3) = $_____

5. B. Establishment Cost for Pasture

$_____ x _____(amortization factor for _____% for 15 years) = $_____

6. C. Harvest Costs for Hay $_____

7. D Additional Fertility Costs:

1. Lime:_____ tons at $_____ per ton every _____years = $_____ (annually)
2. Fertilizer _____tons at

$_____per ton every _____years = $_____ (annually)

Total Fertility Costs (1 + 2) = $_____

8. E. Additional Management Costs

1. Mow _____ times at $_____ per time = $_____

2. Breakup and spread manure: _____ times at $_____ per time = $_____

Total Management Costs (1 + 2) = $_____

9. F. Development of Livestock Water Facility

Installation Cost $_____ x _____

(amortization factor for _____% for 50 years) = $_____

Annual operation and maintenance expense = $_____

Total annual cost = $_____

Total Increased Costs (A+B+C+D+E+F) = $_____

III. Increase in Net Income

Increase Gross Income (1) = $_____

Less: Increased Costs (II) = $_____

Increase = $_____

IV. Increase Per Cow

$_____(increase) divided by _____cows = $_____per cow

INSTRUCTIONS FOR USING WORKSHEET FOR ESTIMATING THE NET BENEFITS OF CONVERTING FROM CONTINUOUS TO SHORT DURATION GRAZING

The intent of this worksheet is to guide the farmer to an estimate of the potential (or realized) economic impact of converting from continuous to short duration grazing. An incremental approach should be used, that is, compare additional costs vs. additional benefits. Do not include costs for anything that would be done anyway with continuous grazing. Instructions correspond to the same circled numbers on the worksheet.

1. If production only improved do not enter anything in B2 for butterfat. However, if butterfat is higher with short duration grazing this should be filled in and applied to all milk.

   If production and/or butterfat is adversely affected this should be accounted for in this section. If decreased feed costs are greater than any adverse effect on production/butterfat then the loss should be subtracted from the gain and the difference entered as the increase in gross income. If the loss is greater, then changing to short duration grazing is not economically sound. Examples:

1. Total Savings (from decreased feed purchases) =	$1,000
Total Decreased Production (if production is adversely affected) =	- 300
Total Increased Gross Income	$ 700
2. Total Savings (from decreased feed purchases) =	$1,000
Total Decreased Production (if production adversely affected) =	1,200
Total Increased Gross Income =	$ - 200

   Short duration grazing is not economical – Stop Here!

3. Thirty years is an estimated life – any other life could be used.

   Here and any place else that an interest rate is asked for enter either

   1) the rate paid to borrow money or 2) the investment rate foregone if farmer uses his own money.

   All amortization factors can be obtained from Soil and Water Conservation District Offices.

4. Seven years is an estimated life – any other life could be used.

5. It is difficult to value an operator's labor. A nominal cost per hour could be assumed. Use actual expense for hired labor.

6. Fifteen years is an estimated life for the pasture. Any life could be used. There are budgets in the Maine Farm Planning Guide (MFPG) which could be used, after adjusting for the farmer's own expenses where possible, to estimate

establishment cost if the farmer doesn't know his. Remember costs are on a per acre basis in the MFPG and should be multiplied by the number of acres in short duration grazing to obtain total cost.

7. Harvest costs for any hay that may be harvested from the paddocks. There are production year budgets for hay in the Maine Farm Planning Guide which could be used, after adjusting for the farmer's own expenses where possible, to estimate harvest costs if the farmer doesn't know his. Again, costs are on a per acre basis in MFPG. Multiply by the number of acres in short duration grazing to obtain total cost.

8. Liming and fertilizing, if done, may not be done every year. If this is the case, divide the cost by the number of years to get the cost on an annual basis. For example, 1 ton of fertilizer at $80 per ton every 2 years = $40 annually.

   If not included in the price of the fertilizer or lime machinery costs for spreading can be obtained from the MFPG if the farmer does not know his. Again, multiply to convert costs to the total acreage in short duration grazing.

9. The Maine Farm Planning Guide has costs for operating various machinery. These costs can be used if the farmer does not have his own. As before, costs are on a per acre or per hour basis. Multiply by total acres to get total cost.

10. Include costs of machinery, any costs of pumps, plumbing, seeding and fencing, tanks well tiles, etc. in the installation cost. Facilities in Maine will usually include development of a spring or construction or reconstruction of a pond.

    Fifty years is an estimated life. Any life could be used. Most developments should last indefinitely if properly maintained.

    The annual operation and maintenance expense could include such items as pump repairs or replacement, mowing, cleaning trash racks, power costs for pumps, etc.