

Economics of Adopting Voisin Grazing Management on a Vermont Dairy Farm- The Atkinson/Thomas Experience

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Winooski, Vermont
February 1989

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ACKNOWLEDGMENTS

We wish to thank the following people for their cooperation and contributions to this study:

Richard Atkinson and Nancy Thomas, dairy farmers, East Montpelier, Vermont.

Bruce Chapell, District Conservationist, Soil Conservation Service, Montpelier, Vermont.

Roben Barnes, Civil Engineering Technician, Soil Conservation Service, Winooski, Vermont.

SUMMARY

Purpose: To illustrate the successful adoption of Voisin Grazing Management on a dairy farm in Vermont.

Brief Explanation of Voisin Grazing Management:

A system of planned grazing which relies upon the use of relatively small pasture areas *called* paddocks to be grazed for short durations in a planned system. Sufficient time is *allowed* for regrowth.

Conclusions or Study:

1. Voisin Grazing Management should be economically advantageous to many Vermont dairy farmers. The costs of adopting it would be offset by its benefits.
2. Benefits could include reduced purchases/feeding of hay; less labor to feed the animals and to manage their manure; and increased quantity of production.
3. Costs could include fencing, providing water, moving animals or temporary fences, mowing, spreading manure in the paddocks, liming and fertilizing.
4. Voisin grazing's value to Vermont dairy farmers has been proven. The task now is to "spread the word" to those who would benefit.

For Further Information:

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Economics of Adopting of Voisin Grazing Management on a Vermont Dairy Farm

(The Atkinson/Thomas Experience)

Voisin Grazing Management is a short-duration system with pastures sub-divided into sections, or paddocks, which are grazed one at a time in a planned order. Cows are allowed to graze a paddock long enough to harvest the existing forage down to 1 inch, but not long enough to eat any new growth. A Voisin grazing system requires at least 10 pasture divisions. The size of these paddocks depends on the stocking rate and productivity of existing forage species.

Richard Atkinson and Nancy Thomas operate a Jersey dairy farm in East Montpelier, Vermont. In 1983 they adopted Voisin Grazing Management. This study is based on their experience with 38 milkers and 10 heifers for a 183-day grazing season from May 5th to November 4th. They have 24 paddocks averaging about 1.25 acres each (see figure 1).

The soils involved are Dummerston and Brayton. Dummerston is a very deep, very fine sandy loam, which is well drained. Brayton is a very deep, poorly drained silt loam. The Dummerston Series is better suited for pasture than Brayton but given proper management, such as deferred grazing during wet periods, Brayton soils can be effectively used for pasture production.

The cows are moved into a new paddock daily. The milking cows occupy a fresh paddock first and the dry cows and the heifers follow on the next day. Paddocks 1-16 are rotated during the first 8 weeks of the grazing season. Paddocks 17-24 are harvested for hay in early to mid-June and rotated with the other paddocks after a 30 day regrowth period. Richard would like to begin moving his animals twice a day in the near future.

This economic analysis of Voisin grazing is based on a "without vs. with" approach. "Without" refers to continuous grazing with a low level of management. Although Richard and Nancy have never practiced continuous grazing on this farm, they implemented a crude system of rotational grazing their first year on the farm in 1983. Estimates for continuous grazing in this report are based on Richard's experiences the first year and some of his past experiences with continuous grazing on other farms. The "with" situation in this report is based on 1988, after 4 years of experience with Voisin grazing which significantly increased the production of the pastures.

Richard and Nancy found that the use of Voisin grazing caused an increase in pasture production. With the Voisin system they were able to extend the grazing system by 35 days. This meant that they could barn feed less hay during the growing season. They saved 18 tons of hay because of this. Since the pasture forage also improved in quality they were able to feed a lower protein grain. This resulted in savings of \$20/ton for grain.

There were substantial savings in labor with the Voisin system. The first savings was due to having to feed less hay. The other savings in labor were with manure handling because the cows were outside more.

The greatest benefit realized was an improvement in the quantity and quality of milk produced. Production increased an average of 1,260 pounds per cow during the grazing period. Protein increased by 1.2 points. These improvements amounted to \$5,173 annually. Richard and Nancy feel that these improvements can mostly be attributed to Voisin grazing. From farm records it was determined that an improvement in the genetics of the animals accounted for \$525, bringing the net benefit in milk production to \$4,648.

The total of these types of benefits amounted to \$7,866 annually (see Attachment 2).

Of course, there are costs associated with adopting Voisin grazing. Richard and Nancy already had a perimeter fence but they needed to purchase an energizer and temporary fencing. The temporary fencing was amortized over an estimated 10 year life and the energizer was amortized over 30 years to convert to an annual cost.

Richard and Nancy found it more advantageous to leave the temporary fence in place and, instead, move the animals. This was done easily in about 25 minutes per day. A cost for this is included, with labor arbitrarily valued at \$5 per hour.

Costs associated with watering were not included since these costs were the same as they would be with conventional grazing.

The paddocks are limed and fertilized according to soil tests. The costs were calculated based on fertilizing every two years with 200 lbs of 0-10-40 per acre and applying 2 tons of lime per acre every 5 years. Richard emphasized that he managed the species that were presently in the pastures to improve on their forage quality and quantity rather than reseed new species. Each paddock is mowed with a 5 foot rotary mower and a chain harrow is pulled behind the mower to spread out the manure clods. The machinery costs for this were estimated using Extension Service costs.

Another cost Richard and Nancy felt they incurred by changing to Voisin grazing was the additional hay and grain to feed dry cows for three weeks prior to calving. (The lush, green pasture forage was too low in fiber for cows at the end of their gestation.) This amounted to an average annual cost of \$432 for 25 cows.

The cost of gravel to maintain the cattle lanes was also considered because the lanes would not be present in a conventional grazing system. The annual cost for this is \$100.

It was economically advantageous for Richard and Nancy to adopt Voisin grazing. With average annual benefits of \$7,866 and average annual costs of \$2,093 they realized net benefits of \$5,773. Looked at another way, they received \$3.80 in benefits for every \$1 they spent on Voisin grazing.

Based on 38 milkers the net benefits would be \$152 per cow, and using the 183-day grazing season net benefits would be about \$32 per day (see Attachment 1).

Richard and Nancy's overall impression of Voisin grazing is very favorable. Besides the economic benefits described in this report, they feel that their animals are in better condition under Voisin grazing. They can monitor their animals better for heat detection and the cows have fewer health problems overall. This saves on veterinary and breeding expenses. Richard and Nancy also felt that a major side benefit of Voisin grazing is that all animals (especially heifers) handle better because they are accustomed to being handled under Voisin grazing. In general, the ease of operation is better during the summer because Richard has more time to manage his cows.

An environmental benefit derived from Voisin grazing is a reduction in soil erosion. A forage source with little or no erosion (pasture) replaces sources that can be associated with significant soil erosion (corn, oats, etc.). Furthermore, water quality will benefit because a pasture holds and utilizes nutrients better than row crops such as corn.

Voisin grazing is a low-cost input alternative to the high cost of capital intensive dairy farming. Although a capital intensive operation with confined feeding may increase milk production, the higher input costs for machinery and labor could negate the added benefits. The lower costs associated with Voisin grazing make it profitable and sustainable over the long term.

Note:

This report is site specific; the figures are for the Atkinson/Thomas operation only. Adoption of Voisin grazing might have a different economic effect for other farmers. Each farmer should estimate costs and benefits for his or her own situation. This report could be used as a guide.

One item likely to differ from Richard and Nancy's experience is the labor required moving the animals (or the temporary fence). Because their paddocks are close to the farm buildings Richard and Nancy are able to accomplish this quickly. Some farmers may have to spend more time on this. Notice, however, that even if this cost increased many times over Voisin grazing would still be economically advantageous for Richard and Nancy.

Attachment 1
Atkinson/Thomas

Economics of Voism Grazing

Additional Benefits from Adopting Rational Grazing	----	\$7,866
Additional <i>Costs</i> of Adopting Rational Grazing	----	\$2,093
Net Additional Benefits		<u>\$5,773</u>

$$\frac{\$7,866}{\underline{\$2,093}} = 3.8:1.0$$

Therefore, for every \$1 spent on rational grazing they received benefits of about \$3.80.

This analysis is based on 38 cows, 10 heifers, and a 183 day grazing season. Therefore:

Net benefit per cow -----\$152

Net benefit per grazing day -----\$ 32

**Attachment 2
Atkinson/Thomas**

Benefits of Adopting Voisin Grazing (Annual Basis)

1. Replaced Hay/Silage -----	\$ 1,715	
Savings in Grain Price-----	\$ 278	
	\$1,993	
		\$ 1,993
2. Reduced Labor to Feed -----		\$ 350 1/
3. Reduced Manure Handling -----		\$ 840 2/
4. Reduced Bedding -----		\$ 35
5. Production Improvement: -----		\$ 4,648
(quantity only -Atkinsons feel that there is no change in butterfat content of milk with Voisin grazing)		
	\$ 7,866	

1/ Saves the labor involved in unloading and feeding one truckload of hay (about 800 bales). Labor arbitrarily valued at \$5 per hour.

2/ Includes labor saving of \$240 and machinery expense of \$600. Costs are all inclusive – from running gutter cleaner to spreading in field. Labor arbitrarily valued at \$5 per hour.

Attachment 3

**Atkinson/Thomas
Costs of Adopting Voisin Grazing (Annual Basis)**

1. Extra animal handling (moving animals) (about 25 minutes per day)	_____	\$ 375
2. Mow and spread manure with chain harrow (done at same time) (paddocks 1-16 only) (12 x/year average)	_____	\$ 390
3. Fertilize (1 x/2 years) (192 pounds of 0-10-40/acre)	_____	\$ 385
4. Lime (1 x in 5 years) (two tons per acre) (\$25 per ton, custom spread)	_____	\$ 300
5. Fence (amortized cost of temporary fencing and energizer; perimeter fence already on site) ¹	_____	\$ 111
6. Additional hay and grain for dry cows (based on an average of 25 dry cows for the 3 weeks prior to calving):	_____	\$ 334
1. hay -17 lbs/day @ \$75/ton includes labor to feed	_____	\$ 98
2. grain -2.5 lbs/day @ \$150/ton includes labor to feed	_____	
7 Water ²	-----	\$ 0
8. Gravel for lanes (14 cubic yards)		\$ 100
9 Soil test ³		
TOTAL COST	_____	\$2,093

¹ If perimeter fencing was needed, it would have a total cost of \$1,600.00 (4600' of two strand, high tensile electric wire, posts, battens, and clips, etc.) Amortized over 30 years this would be \$170.00 annually.

² Not an additional expense of rational grazing since the same system would be in place for conventional grazing. System consists of 150' of garden hose, 2 tubs and 2 float valves. Water is pumped from house cellar and barn. Total costs =\$225. Annual cost is \$60, with tubs amortized over 8 years, hose amortized over 5 years, and valves replaced every 2 years. Includes an estimated \$15 for electricity.

No cost to Atkinsons, but done by them every two years with Voisin grazing.

**Attachment 4
Atkinson/Thomas**

Increased Production with Voisin Grazing

1. Average daily production with Voisin grazing (May-Sept.)	=	45.8 lbs./cow
2. Average daily production with conventional grazing	=	37.4 “
Improvement from Voisin grazing.	=	8.4 “
3. 8.4 lbs x 150 days ¹ (grazing season)	=	1,260 lbs
4. 1,260 lbs x 28.4 cows milking = 35,784 lbs 100 = 358 cwt		
5. Price received	=	\$14.87
		- .35 (trucking)
		- 15 (promotion)
		- 10 (dues)
net price received		\$14.27

6. Increased Production (\$14.27 x 358 cwt) = \$5,109

7. Increase in protein of 1.2 points
 \$.18/Cwt x 358 cwt = \$ 64
\$ 5,173

8. From cattle records it was determined that \$525 of the increased benefits (approximately 10 %) were due to genetic improvements.

\$ 5,173
- 525
\$ 4,648 net benefit

¹ A 150 day grazing period was used to compare milk production between 1984 and 1988 because the cattle were pastured for only 150 days in 1984 (even though the grazing period was 183 days in 1988).

**Attachment 5
Atkinson/Thomas**

Saving of Hay and Grain

More intensive use of pastures with Voisin grazing reduces the need to feed hay and allows a lower percent grain ration to be fed. The improved forage production with Voisin enables Richard and Nancy to extend the grazing season by 35 days and feed less during transition periods. The following savings were realized:

1. Hay/Silage

a.) Amount saved by extending the grazing season 35 days =
 $20 \text{ lbs/day/cow} \times 38 \text{ cows} \times 35 \text{ day} = 26,600 \text{ lbs}$
 $26,600 \text{ lbs} = 13.3 \text{ tons}$
 $2,000 \text{ lbs/ton}$
 $13.3 \text{ tons of hay} \times \$95/\text{ton}^{(1)} = \$ 1,264$

b.) Amount saved during the transitional periods
 (10 days in the spring plus 40 days in the fall = 50 days)
 $50 \text{ days} \times 5 \text{ lbs/day/cow} \times 38 \text{ cows} = 9,500 \text{ lbs.}$
 $9,500 \text{ lbs} = 4.75 \text{ tons}$
 $2,000 \text{ lbs/ton}$
 $4.75 \text{ tons} \times \$95/\text{ton} = \$451$

2. Grain

The amount of grain fed would remain the same but the percent of protein in the grain ration would be lower. Under conventional grazing, 20% grain ration would be fed whereas 13% grain is fed under Voisin grazing. The 13% ration is \$20 cheaper per ton.

$4 \text{ lbs/cow/day} \times 38 \text{ cows} \times 183 \text{ day grazing season} = 13.9 \text{ tons}$

$13.9 \text{ tons} \times \$20/\text{ton savings} = \278

3. Summary

Savings of hay/silage:	
From increased grazing period	= \$ 1,264
From feeding less during transitional periods	= \$ 451
	<u>\$ 1,715</u>
Savings in grain price	<u>\$ 278</u>
Total Savings	\$ 1,993

(1) \$95 is a weighted price between hay and silage. Two-thirds of the feed is hay at \$130/ton and one-third is corn silage at \$25/ton.