

Learning How to Use Management-intensive Grazing in our Dairy Operation

Matt and Diana Stewart, Oelwein

We have completed our third year of transition from traditional, confinement dairy to a grass-based system. Our farm is located in Northeast Iowa on gently rolling Floyd-Kenyon loam soils. All of our pasture had been in corn-hay rotation for the past thirty years. Our challenges have been never-ending up until this point. We would like to outline some of our ideas that might help others interested in a similar undertaking.

Helping the Seedbank Conversion of cropland to productive pasture and pasture renovation are major stumbling blocks facing all graziers. We were in total shock in late April at the sparsity of plants in our third-year pastures. We had tremendous success establishing thick clover pastures in 1994 using 1 lb red clover, 1 lb ladino clover, 1 lb canarygrass and 5 lbs brome grass. The grasses were present throughout but thin. This spring the clovers were gone and the grasses were still thin. By the first of May, new clover seedlings were growing, but they were months away from becoming feed.

Matt Stewart in one of his pastures



Our only solution was to cover 10 acres a day with 80 cows, which reduced our rest period to 6-7 days. We were still supplementing with corn silage until May 20. This "hoof and tooth" treatment successfully thickened our grasses and encouraged new clover seedlings - at the expense of total tonnage produced. We were not able to harvest any pasture for winter feed until August 1. In fact, ten acres that was intended for haying in late June had to be grazed (even though it was waist high) to slow up our rotation. The week that the cows spent strip grazing that hayfield allowed our pastures to progress just enough that our feed needs went from 5 acres per day to less than 2 acres for 95 cows.

How could this pasture density problem have been avoided? I now believe, through my own experiences and after witnessing similar clover/grass imbalances in the efforts of others, that our problem probably stems from our method of establishment. Most new pastures are started in the same way that we have learned to establish hayfields; cover crop or direct seeding, a cutting in July, and cutting or grazing late in the summer. This works well for legumes but not grasses. In contrast, if I were starting a new lawn, I would be mowing my new seedlings every week or two to increase the density of my grass stands. This could be accomplished with mowing or grazing or a combination of the two. If this method is too harsh on the legume seedlings, frost seeding can easily add legumes back into the pasture. It's a lot easier to successfully frost seed legumes than grasses. We lost at least a month of grass this year because of all the sunshine that was wasted on bare ground.

On the topic of frost seeding, we have seen many pastures that, in years 3-5, are suffering from lack of nitrogen caused by a lack of legumes. It appears that it might take 5-10 years to gain a sufficient seedbank to maintain an even clover stand in rotated pasture. By the time one realizes that frost seeding was necessary, it is too late. One to two pounds of a mixture of red and ladino clover spun on top of the ground in March may be the best insurance a new grass farmer can buy.

Seedbanks created and stimulated through managed intensive grazing (MIG) provided increased profitability to our farm this year. Two twenty-acre fields, side by side, had been seeded to alfalfa and orchardgrass in 1993. When we started MIG in 1994, one field became pasture and the other was left a hayfield and always grazed off in the fall. This spring, we experienced total winterkill of orchardgrass. By May 2, it was obvious that the hayfield must be plowed. But the orchardgrass in the pasture had reseeded; hundreds of new seedlings had taken the place of each dead clump of orchardgrass. In August of this year, when grain and protein prices were at record levels, this pasture was producing enough feed to support 35,000 lbs of Holstein heifers and dry cows per acre per day. The yearling heifers were later weighed and had been gaining 1.86 lb/day (see side-bar).

Mineral Nutrition on Grass Mineral supplementation to MIG heifers and lactating dairy cows is very much undetermined. Our heifers over 400 lbs receive no grain while on pasture. Every week or so they are in a paddock that contains a trace mineral salt block. Reproductive performance of this group has been satisfactory.

Nutritionists had advised us to balance the needs of lactating dairy cows on grass as if the cows were consuming this same feed as hay and using book values or testing the harvested pasture hay and using those figures. We decided to drop the quantity of supplemental mineral until we saw a problem.

To our surprise, through the heat of 1995 we had reasonably good conception with very little added mineral. The problem did show up in December, when we started breeding for fall, 1996 calving. Out of 40 breedings of milking cows, we achieved 3 pregnancies. The mineral level was increased in January, and conception rates improved immediately. This summer we again decreased the mineral in the grain mix and have a good pregnancy rate for spring 1997 calvings. Pasture clippings taken this fall seem to have pinpointed our problem.

Two separate samples taken from different types of pasture, both in the proper stage of maturity for grazing, showed phosphorus levels of 0.43% on a dry matter basis. This compares to 0.3% in high quality hay. This significant difference would easily have affected conception. Milk protein has also been linked to phosphorus levels in rations; longtime graziers had told me that milk protein was not depressed when cows went to pasture in spring. (Milk fat levels are usually depressed 0.2-0.3%.)

This experience led to our next learning experience. A New Zealand consultant once was quoted that the difference between a good and poor dairyman in his country is about two weeks. Our fall calving period this year was shifted backward 4 weeks by the problems we had in December last year. These cows were still ready to be dried up on August 1. Our "low milk" period was thus 10 weeks long instead of only six weeks. We calved almost all the cows in confinement, not just the tail-enders as planned. These late calving cows do not start out as well or return to breeding condition as fast as those that calve on pasture. Most of these will probably have to slide back into the spring calving season or be culled. Many of the labor savings are not available when we are still calving the first week of December.

How Much Grass? There was a time when we envisioned converting to a farm that was 100% grass. Today we are satisfied that 380 acres of grass is not what is best for Matt and Diana Stewart and family. For starters, we would be required to maintain a larger herd, and that's more cattle than I want to care for in the winter. We instead are moving toward converting the remaining 160 acres of farmland into a C-S-C-O-H and a C-O-H rotation. The row crops can be custom farmed for us and supply all our feed and bedding needs.

Our only shortfall this year was in forage needs, and improving pasture production should solve this problem. Dick Thompson has shown the benefit of a "fast" crop rotation that integrates hay and a variety of other crops. We have already appreciated the abundance of straw and oats versus feeding more corn and hoping to get cornstalks baled during a late fall. I question whether most Midwest dairymen, already locked into a confinement dairy, would have deep enough pockets to switch to a total grass operation. I also believe that we have the ability to be more efficient with our cycling of nutrients and use of all energy sources.

Finally, financially, the figures are not all in yet for 1996, but it appears that we will have good debt reduction for the third year in a row. It is important that anyone involved in the financial analysis of a dairy in transition like ours realize that total net worth may not be a reliable indicator of financial health. In fact, we are trying to avoid replacing our amount of annual depreciation. We would be more than happy to visit in greater detail with anyone concerning financial expectations of transitional dairy farms.

Gaining on Grass Our second trial was to conduct a rate of gain study using yearling Holstein heifers. A leading dairy nutritional consultant, reporting on a rotational grazing study that he was involved in two years ago, stated that sufficient gains should not be expected without concentrate supplementation. Other trials have been seriously flawed - inexperienced graziers, lack of sufficient pasture, etc. We attempted to demonstrate that knowledgeable graziers could experience acceptable gains under normal farm conditions.

Six yearling heifers were "gate sorted" off a larger group on June 3. These heifers had been on pasture for a month. Their beginning weight was 586 lbs. Ninety-nine days later they weighed 770 lbs, which calculates to an average daily gain (ADG) of 1.86 lbs per day. An ADG of 1.75 lbs is considered very good. For the first half of the trial they were on the home farm and often used as a follower herd or to clean up an area the milking herd found difficult to graze. On July 30, they were moved to the other farm and co-mingled with a group of larger heifers. For most of the trial they were on less than ideal pastures or in a situation that we considered overstocked. We plan on repeating this trial next year.