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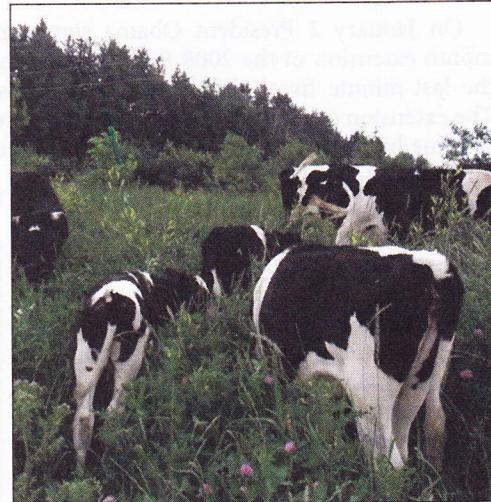
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# Grazing Acres

## Standing Tall for Soil Fertility & Dairy Health

by Lauren Turner

Cheyenne Christianson is an organic dairy farmer who grew up on a small farm in Chetek, Wisconsin. He has seen the numbers of small farms and the towns they supported diminish and small dairies like his giving way to large corn and soybean farms. In 1960 Wisconsin had 95,000 dairy farms. By 1980 that number plummeted to 44,000. When he started milking on his farm in 1993 there were 28,000 dairy farms in Wisconsin; now there are about 11,000.

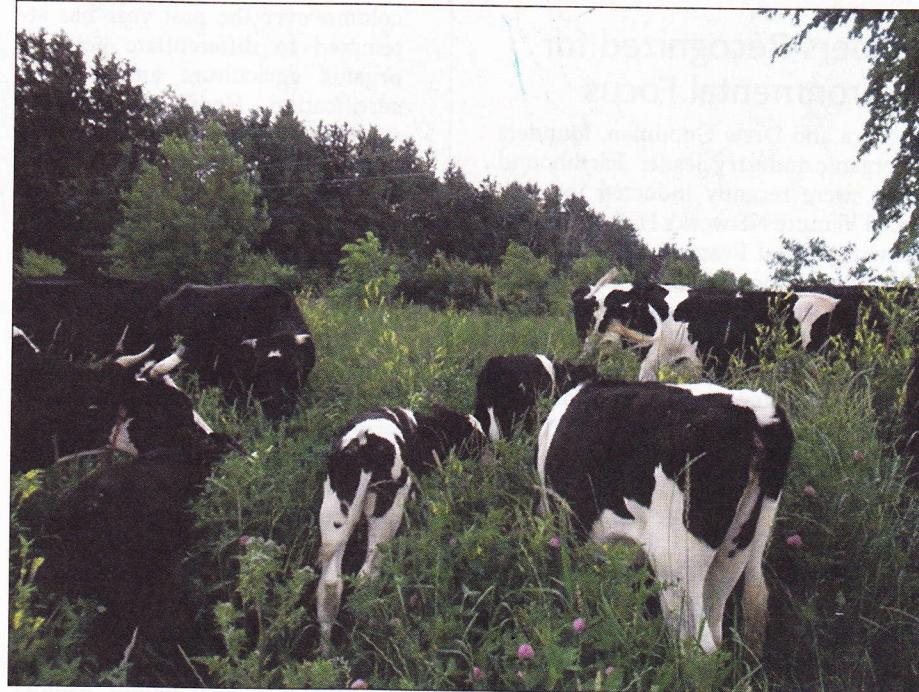
The farm Christianson grew up on had 25 to 30 dairy cows, horses and other assorted animals. His father didn't use chemicals, a fact not lost on Christianson. He read his dad's issues of *Acres U.S.A.* magazine while growing up and learned sustainable farming at his father's side. He was always oriented to organic practices, which he applies today on his own farm with his wife, Katy and their children.

Cheyenne and Katy met in high school. Katy, two years younger than Cheyenne, lived 10 miles away in the rural farm area. Cheyenne graduated in 1990, worked on a ranch in Montana for the summer, then came home and helped his parents and did other work in the township. After he and Katy married, they lived in a small house on his parents' property until moving to their current farm, five miles away, in 1993.

Their farm, Grazing Acres, was quite rundown, particularly the soil fertility. It had been repossessed and rented out for a number of years. The buildings needed work, especially the barn. Tenants had removed hay from the land without replenishing the nutrients removed and hauled away manure to their farms.

### NATURAL APPROACH

Cheyenne took a natural approach to farm improvement. He understands the Albrecht system of soil fertility and subscribes to Albrecht's philosophy, but favors building and maintaining healthy soils that support healthful plants for animal feed by recycling nutrients on-site versus importing them. He did truck



Nurse cows and calves on very mature pasture.

in some lime and rock phosphate early on. He started rotational grazing in 1994, letting the cows be selective. This left residual grass to return to the soil to build organic matter and increase biological activity. This increased organic matter from 1.7 to 3.4 percent in a matter of years on sandy loam soils with pure sand underneath.

Cheyenne thinks his process was too slow, due to his reluctance to import soil inputs that were critically short. Different than most dairy farms, Cheyenne wasn't buying grain, proteins or hay to bring in extra nutrients. Potassium, an essential element for forage production, was the most deficient. In retrospect, he said would have imported some potassium to speed up the process. In recent drought years, bringing in hay has added much fertility to fields.

In 1996 Cheyenne decided to use only certified organic inputs and made a transition to organic farming. He advocates small, diverse, local farms such as his that work with natural systems to maintain soil fertility and environmental health.



The Christianson family

He avoided buying potassium because many dairy farms had excess levels in soil and feed. Too much potassium can negatively affect cows. However, as his herd grew and drought came, Cheyenne suffered yield loss on some fields due to potassium shortage. He has spread some potassium sulfate within the last couple of years to fields that won't see manure for a few more



What the heifers are grazing.

years, applying manure to fields that are most in need of a fertility boost. He has sprayed on some liquid kelp and calcium; OceanGrown in 2004 and liquid kelp in 2006. Sea salt can also be diluted and sprayed on plants to increase minerals, a method Cheyenne is considering but hasn't yet tried, but he has spread sea salt on some acres. He has added trace minerals such as copper sulfate, zinc sulfate, boron and sulfur in small amounts.



Fall oats planted in early August and grazed in October.

Cheyenne has used small amounts of Hi-Cal lime over the years, which raises soil pH, adds calcium and helps release other nutrients to plants. He applied one ton per acre in fall 2011 and another ton per acre in summer 2012 to raise the pH from the low 6 range to the mid to upper 6's. He is mindful of finite reserves of some mineral sources in the world and feels a responsibility to avoid depleting them. He thinks long-term, and is interested in working with "what we have

here." His lighter soils don't have the reserves that heavier soils have. He strives to be self-sufficient and sustainable.

Manure cycling through the cows is the greatest resource increasing soil fertility. Summer rotational grazing spreads manure. Another source of manure is bedding pack from the winter barn, where cows are housed from about the beginning of December until sometime in April. Grazing Acres has two large cover-all barns, one for bedding and

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one for feeding. The cows move freely between the barns. The one used for bedding pack gets new bedding daily, becoming 4 to 5 feet deep by spring. Current-year calves' winter housing is a pole shed protecting them from the elements with some access to the outside. The bigger heifers and bulls stay outside with bedding packs amid windbreaks.

Manure stays in the building until bedding packs get cleaned out in spring. This prevents nutrients leaching away in spring rains, or concentrating in one spot. It is spread raw to the field then tilled in the same day with a Howard rotovator, before seeding the field with an annual such as oats or Japanese millet. The bedding packs provide a couple hundred 400-bushel spreader loads. Cheyenne purchased a new 600-bushel heavy duty Meyers spreader to streamline the task.

### GOOD GRAZING

Waste grass (stubble from grazing and leftover grass/millet stems tilled in) is another valuable resource for increasing soil fertility. Cheyenne has been grazing knee-high or taller grasses with his herd for over a decade and has encouraged farmers to increase the height of their grass to get away from short, high protein, fiber-deficient grass.

Mob grazing is another method for feeding soil biology. It can easily meet the nutritional needs of young stock, but one must be sure to give enough that they can trample about a third of the crop. Cheyenne grazes when the grass is waist-high or taller, which provides a nice mix of mature, dead and green understory. Milk cows need much more energy, so he only does mob grazing with heifers, bulls and dry cows, although his method of grazing milk cows on taller pasture, moving them twice daily, emulates mob grazing somewhat.

Cows are milked twice daily, grazed in a new area of grass after each milk-

**Of his 280 total acres, 240 are used for hay, baleage and pasture. Grazing Acres produces all of their own hay and baleage. Baleage may preserve more vitamin A than dry hay, since it doesn't bleach out in the sun.**



*Spreading bedding pack manure for fall oats and rye. Notice leftover pasture also gets tilled in for soil building.*

ing. This controls which parts of the plant and how much they eat, keeping a balance in their rumen. When grazing an annual, Cheyenne only grazes an annual half the day, using regular pasture the other half. This keeps from fluctuating the cows' diet so much and adds balance. He has planted/grazed turnips, sorghum, Sudan grass, rye, triticale, peas, barley, oats and Japanese millet.

Cheyenne has about 200 Holsteins, including bulls. Over 90 head are milk cows. About 20 of the cows are pastured separately and used as nurse cows for babies separated from their mothers shortly after birth. Cheyenne lets the babies nurse for a few milkings, to get the critical colostrum from their mothers before they go to the nurse-cow group. They nurse from birth to 4-5 months and are weaned by putting them on the other side of a double-wire fence, where they eat the lusher grasses.

For weaning in winter, calves go to separate pens instead of pasture, and are weaned on quality grassy mix hay.

Of his 280 total acres, 240 are used for hay, baleage and pasture. Grazing Acres produces all of their own hay and baleage. Baleage is moister forage wrapped in plastic with an inline wrapper, which preserves it to be fed later. Baleage may preserve more vitamin A than dry hay, since it doesn't bleach out in the sun.

Cheyenne rents 50 acres near Grazing Acres once used to grow grain. He has not grazed the cows since 1999. He was motivated to eliminate grain partly because he knew that research had long recognized the benefits of grass-fed cattle, and he has always wanted to excel at producing the best possible food. It was also expensive to grow and cultivate grain and grinding/feeding it was labor-intensive. Additionally he'd had a bad experience with acidosis related to feeding grain, when cows weren't getting enough fiber from forage because of too short of pasture.

### DEALING WITH DROUGHT

Cheyenne has a closed herd. He uses his own bulls, breeding for animals that thrive on forage. He is trying to adjust the numbers to what he can maintain even in dry years. His animal numbers

doubled over the last five years, to about 230 head. This year he sold off most of his bulls and culled his herd, reducing to 200 head, still too many for dry conditions. Eight of the past 10 years have seen drought in northern Wisconsin; Cheyenne let the herd grow faster than it should have under adverse conditions.

He has considered installing irrigation to support a bigger herd. He struggles with that idea because surface water levels are lower than he's seen in his lifetime; many wells have gone dry in the region. He concentrates instead on projects such as moving fences in a bit to let windbreaks grow, planting more trees and keeping cover on the ground. His goal is to capture all the rain that falls, with snow run-off being one option for irrigation if he digs some ponds. His sandy soil may make that a challenge. His focus is on feeding soil biology and building organic matter, which ties to soil fertility and the mix of plants available and amounts left behind for microbes. Farmers are accustomed to maximizing use. Leaving as much as possible behind is a whole new concept.

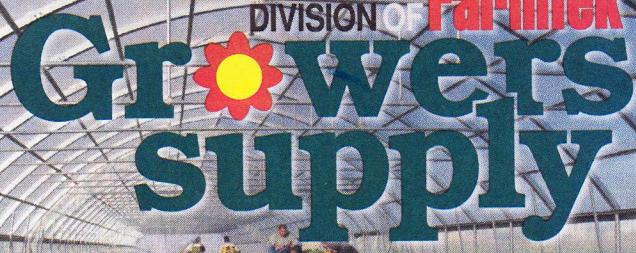
Cheyenne says that the current long drought has been stressful, though he enjoys the challenge and helping others through problems. He says it has been "humbling" dealing with adverse circumstances, emphasizing that he is constantly learning and adjusting.

Without grain, the tremendous energy needs of milk cows have to be met by forage — alfalfa, grasses and clovers — it's best to have a large variety of plants, forbs and "weeds." Clover provides more energy than alfalfa. Clover may be able to replace alfalfa, but alfalfa is more drought tolerant and has a deep taproot. Cows prefer clovers, but it can be hard to make hay from clover, due to its high moisture content. For that reason baleage works great for clover. Mixing in grass can help clover dry and makes a nice balance. Bloat can be a problem in a high legume stand, but giving just enough between milkings, so they eat the whole plant instead of just the clover heads solves that problem. Growing the clover taller before grazing also helps prevent bloating.

Grazing Acres has no set amount of pasture. Cheyenne uses poly wire to delineate an infinite number of pastures, rotating stock around to different fields of 8 to 12 acres. He is currently running four groups; cows, heifers and dry cows, nurse cows and bulls, each moved to new pastures two times per day. He rotates according to what's at the stage that he wants to graze, and he is always thinking ahead about where to go next, with what group. He uses a back fence to prevent heifers and bulls going back and eating new growth after their first pass. Cows generally want to move forward, not going back to eat new growth, and move through fields quickly.

Cheyenne determines the balance of his grazing system by observing the cows, particularly the consistency of their manure. Bellowing cows and constant wandering signal a nutrient shortage, or more likely, too much nutrient. Excessively loose manure means too much protein and it takes extra energy to process excess protein.

Grazing the pasture taller yields more fiber and lower protein. Feeding some grassy hay also slows the process down. Cheyenne avoids loose/runny manure. Stiff manure indicates that there is not enough protein. Balancing grass growth balances manure. Building soil is a constant balancing act for achieving the proper nutrient density for quality feed.



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Sulfur is supposed to build higher quality protein that is more digestible, so Cheyenne has added sulfur to his soils.

### ORGANIC VALLEY

The quality of Grazing Acres' feed and success of feeding without grain is borne out in extensive testing done by their milk distributor, Organic Valley. Grazing Acres is part of an Organic Valley study including nine farms being tested for milk and forage quality.

Grazing Acres' feed has tremendous energy levels, digestibility and relative feed quality. Test results for 2011 showed pasture NEL (an energy measurement) of .77-.84. This is similar to corn silage for energy. Total digestibility also measured upwards of .80. Relative feed quality was as high as 293 on summer pasture and 344 on a fall oats sample. This certainly supports producing milk without grain. Desirable ratios of omega-3 to omega-6 fatty acids and high levels of conjugated linoleic acid (CLA) in milk are also achieved by eliminating grain.

Weather affects the nutrient content of grasses, and during the current drought, Cheyenne has experienced a drop in milk production, due to lack of pasture and purchased hay not having the energy his own does. Production is down from about 12,000 pounds per cow per year to 9-10,000 pounds per cow per year. He accepts lower milk production in order to learn how to address it by maximizing his own system and experimenting with different options. Fixed production is not as important to him as having cows in good condition and learning through experimentation. He hasn't needed a veterinarian for the last several years, and has only needed one for calving issues during the past 15 years. Organic Valley's veterinarian has actually visited Cheyenne's farm to learn from him.

While Cheyenne hopes for production increases, experimentation is his primary focus. He has a lot of patience and learns by plenty of trial and error, reading articles, taking daily walks to make on-farm observations and adjusting accordingly. Advice he gives to others is to watch the cows that instinctively eat what they need. They show the way.

Cheyenne cautions farmers to go slowly if interested in getting their cows off grain. He recommends proceeding in steps over time, ensuring the

cows are still getting all the nutrients they need from plants grown in fertile soils, especially for cows bred to tolerate grain. Annuals can fill in and extend the season of high-quality pasture during that process and beyond.

#### FAMILY AFFAIR

Farming at Grazing Acres is a family affair. Katy and all of their children help out. They have nine living children having tragically lost one to illness at the tender age of six. Just as Cheyenne learned from his father, his children are learning firsthand from him the values of organic farming and sustainable living.

Cheyenne and Katy want to offer their children opportunity in farming, but don't force the issue. They want them to explore and decide on their own. Cheyenne notes that because it is so expensive to start up a commercial dairy now they consider options to enhance their existing acres but would help a child get started on their own farm if they chose. They are open to the kids using their land for other aspects of farming besides milking, such as a

poultry enterprise sharing the same acres.

Their oldest, now 20, left home last spring and is working in construction and concrete. He hasn't decided against an agricultural future, but has always liked building things. Their 18-year-old daughter loves animals and will most likely stay in farming.

The 15,16 and 18-year-olds help in the barn, and the 16-year-old boy drives the tractor. The 10-year-old helps in the barn and helps the 15-year-old move poly fences and cattle groups. The 3, 6 and 8-year-olds help with minor tasks around the house and yard. The youngest, at 8 months, is still up-and-coming. All work together, as a family. Family comes first for the Christiansons, then helping other farmers.

In 2006 *Graze* magazine ran a cover story about Cheyenne's dairy being six years off grain, shocking the dairy world and bringing a lot of attention to Cheyenne. He now advises other farmers interested in getting off grain, including advice about improving soil fertility in ecologically sustainable ways, as discussed above.

Besides the phenomenon of grainless dairy, there has been interest in this young farmer who is self-sufficient and making a profit doing things his way. Other articles have been written about him and he writes articles for *Graze* and other publications. He has spoken to farmers in several states. He also spoke on dairy farming without grain at the MOSES Organic Conference in Wisconsin.

Cheyenne represents northwest Wisconsin on Organic Valley's Dairy Executive Committee, one step below their Board of Directors. He is on the Grass Works board, a group promoting the benefits of grazing in Wisconsin. He has received lots of positive feedback and finds fulfillment in sharing.

Cheyenne Christianson can be contacted at [ckfarm@chibardun.net](mailto:ckfarm@chibardun.net) or by phone (715) 458-2835.

Lauren Turner is a freelance writer, specializing in agricultural, environmental and community topics. She retired from a 30-year career with the U.S. Forest Service, where she worked as a Wildlife Biologist, Ecosystem Manager and District Ranger. An avid organic gardener, she lives in Sequim, Washington with her husband and two cats.

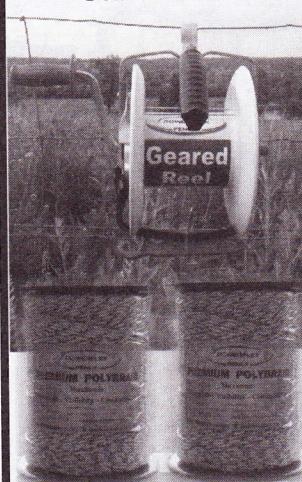
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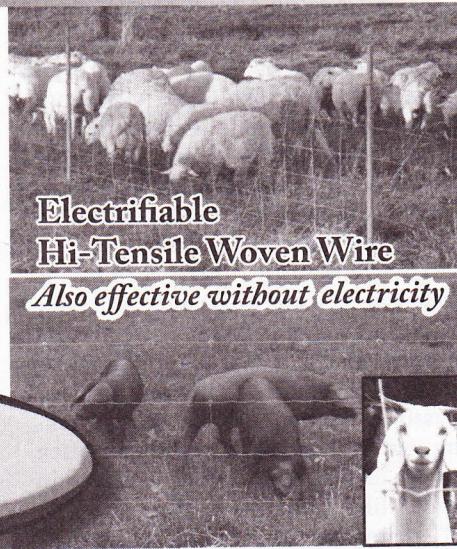
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