Ecological dairying sustains 20,000 lb. herd average

by Allison Arkinstall

Livestock are an essential component of ecological agricultural systems. Lawrence and Mathilde Andres of Anbros Farms recognize their milking herd of 58 purebred Holsteins as the central processing unit of their 300 acre farm. "My cows are integrated into the whole system" comments Andres. "Not only do I count on them for milk and reproduction but for their manure as well."

The Andres started farming biodynamically 12 years ago in Kincardine, Bruce County, Ontario, and have been continuously fine-tuning the management of their operation to achieve optimum recycling of resources. Andres defines the farm as a "living organism" where the on farm resources available generate the "true production" for a particular year.

Andres used to feed a conventional high energy dairy ration of high moisture corn, lots of haylage and dry hay. In 1985 he stopped growing corn and switched to a balanced protein ration high in digestible fibre containing oats and barley. Although it may seem to be a radical step to exclude corn from the diet, Andres felt that it was the fuming point for his whole farm operation. He abandoned corn for several reasons related to the land and livestock nutrition.:

-the lateness of harvest causes soil compaction problems

-a crop cannot be planted after it because it utilizes the full growing season

-treated corn seed upsets the activity of soil microorganisms

-as a high energy feed it may cause certain metabolic problems in the herd

-it increases the demand for a protein supplement, usually soybeans, which Andres does not grow on his farm.

Now all of Andres' land is used for livestock feed, comprising winter rye, oats, peas, barley and alfalfa/ timothy hay. He is not locked into a systematic rotation but generally follows the rotation shown below.

High production

By feeding barley instead of corn for energy and placing greater emphasis on oats, Andres notes that his herd enjoys "higher production and better health." In 1989, Anbros

Farms had the highest milk production record in Bruce County. Annual production was 10,014 kilograms on 48 records and the rolling herd average was 204.3 BOA. Projections for 1990 have dropped a bit to 9575 kilograms (21,065 Ibs) on 54 records.

Typical Crop Rotation on Anbros Farm

Year 1 - Winter Rye and oil radish catch crop

Year 2 - Oats and Peas, red clover plowdown

Year 3 - Barley and alpaca mix undersown

Year 4 - Alfalfa, timothy, brome hay

Year 5 - Alfalfa, timothy, brome hay

Year 6 - Alfalfa, timothy, brome hay

Andres explains that this high production came without the cows being pushed, and he concedes that the herd cannot produce the peak amount of milk experienced in 198889 more than once without encountering some additional complications. "Everywhere, 1988-89 was an exceptional production year" Andres adds. "I would rather have my production spread along a cows whole lactation and for several lactations than have them produce in peaks, and that is how the cows are fed".

Andres strives for longevity in the herd and to achieve this you must "treat every calf like the best cow in the herd". The average age of his milking herd is 6-7 years. Andres expects a lifetime production record of 60,000 kilograms out of each of his cows yet his goal is not to maximize production. He feels that by letting his cows adjust to their own production potentials, he can easily reach this objective in however many lactations the cows may need.

His philosophy on herd health is to keep the environment as natural as possible. The completion of a new 1100 large round bale capacity storage barn in July, where the herd can feed free-choice, encourages exercise all year round and unlimited access to good quality hay.

Andres prefers the hay quality in large round bales to square bales. The whole plant is wound within the round bale as opposed to short cut hay within square bales. "The more bulk added to the rumen, the better it makes the stomach work. If the feed is too palatable then the digestive system becomes lazy", he states. Andres firmly believes in the high digestible fibre diet. "You have to feed an animal the way they are designed. If I was not right, our cows wouldn't be that size or milking that well".

Andres has had good herd response with oats by paying careful attention to fibre levels in the ration. Foot quality and reproduction in the herd has improved. Andres does not like the high energy content of a corn-based ration before calving which tends to cause problems at freshening. "Ten days before freshening, the cows receive haylage and the oats-barley ration and they come into calving in good shape" states Andres. Dry cows are sent to another farm for 6 weeks where they have access to pasture and free choice hay.

Mastitis has not been a severe problem and any flare-ups are treated with a homeopathic remedy (a whey-based colostrum) that stimulates the cow's immune system. He admits that if illness does become a problem, he will treat using an antibiotic.

No chemical inputs

Sustaining a high producing milking herd on land that has had no commercial chemical inputs has been a challenge for Andres. His foremost goal is to encourage the life processes in the soil. "This in turn will stimulate all of the desirable physical and chemical processes needed to keep a soil fertile" states Andres.

This component of the Biodynamic system depends on the cows. Andres has observed that his manure quality is very much enhanced since he started. Andres follows the rule of thumb that "if you have enough feed for the animals, then you will have enough manure to fertilize your land."

However, Andres is not completely self-sufficient as he has had to buy in some feed and straw. "We use an above average amount of straw" adds Andres. When Andres must purchase straw, he obtains it from a farm that practices the same type of production principles as he does, or he seeks a "conversion" farm.

Andres handles both liquid slurry and solid manure. When he bought the farm, he constructed a self contained area made of concrete for the solid manure and adapted the slurry tank to collect the liquid runoff from this area. With the completion of his new round bale storage barn this year, Andres has allowed for all the yard scrapings to be collected in the slurry tank as well.

The slurry tank is covered with straw about 30 cm in depth. Weeds naturally establish on the straw based crust that is formed on the top of the tank. This cover is necessary for proper aeration of the slurry and the prevention of nitrogen loss in the form of ammonia. A submersible diffusion pump aerates the slurry in the tank which stabilizes the nutrients in the manure. Andres applies his liquid manure at a maximum rate of 22,000 L/ha on winter cereal stubble before seeding oilseed radish. Sometimes slurry is applied after the first hay crop on long term hay fields.

Overall, Andres prefers solid manure. He composts all of his manure in the yard from November to April and then windrows it next to the field where it will be applied. Summer manure is too dry to be composted so Andres spreads it in September using a

"thin layer principle" on double-cut red clover that is to be moldboard or chisel-plowed in the fall. The thin layer of manure is shaded by the clover and slowly decomposes.

Andres likes manure that has decomposed enough to prevent heating in the windrow, adding that the "hot" composting method causes the loss of too many nutrients. He uses a Biodynamic compost starter to stimulate the activity of microorganisms. The compost is applied in late summer to all stubble gelds and every 2 years to a mixed hay field if it is to become a permanent stand. Compost is not applied to hay stands that are part of a 3 year hay rotation. Andres tries not to apply compost that has advanced to a "finished" stage. "By applying a finished product I'm not enhancing the soil life very much" comments Andres.

Cover crops

The heavy emphasis on manure as a nutrient source does not discount the use of cover crops on Andres' farm.

He plants his oats and peas mixture with an undersowing of double cut red clover for plowdown. The value of this interseeding is in weed control and moisture and nutrient conservation.

"I think red clover can't be beat" states Andres, "with very little effort it really takes off on my land." Andres has tried oilseed radish following spring grains but prefers following winter rye. Following oats there is a lot of cereal regrowth to compete with the oilseed radish. The winter rye is also harvested earlier which enables more timely seeding of the oilseed radish.

Andres states that the most important management scheme on a farm is to reduce losses in the system. "The farming organism should be everyone's concern and optimization of your farms resources is key". If nutrients are lost, then they have to be purchased from outside the system. However, if you close those holes through careful management then the efficiency of your farming system will be maintained. "If you have an efficient system' 80 percent of what you feed will go back to the land" Andres states.

The kind of interrelationships that Lawrence Andres strives to maintain on his farm have definitely proven successful. His strong belief in biodynamics are a reminder to farmers that one has to be an adept observer and manager of events taking place on the farm. He recalls when he started farming that many did not believe in his organic/biodynamic approach. "People said that my farm would be depleted in 3 years' but I am still going 12 years later."