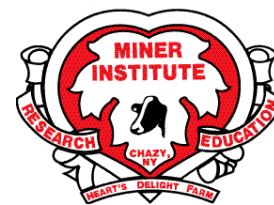


William H. Miner Agricultural Research Institute FARM REPORT



Chazy, New York 12921

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August 2004



EV DOWN UNDER

If you're reading this newsletter soon after receiving it, I'm in Australia (first) or New Zealand (second) speaking at a series of silage management seminars. At least I hope I still am after reading Bill Bryson's wonderful book about Australia, "In A Sunburned Country," and Bryson's description of Aussie wildlife:

"(Australia) has more things that will kill you than anywhere else. Of the world's ten most poisonous snakes, all are Australian. Five of its creatures—the funnel web spider, box jellyfish, blue-ringed octopus, paralysis tick, and stonefish—are the most lethal of their type in the world. This is a country where even the fluffiest of caterpillars can lay you out with a toxic nip, where seashells will not just sting you but actually sometimes go for you. If you are not stung or pronged to death in some unexpected manner, you may be fatally chomped by sharks or crocodiles, or carried helplessly out to sea by irresistible currents, or left to stagger to an unhappy death in the baking outback. It's a tough place."

This didn't sit too well with The Bride until I reminded her that I had a lot of insurance, with her as the sole beneficiary. This appeared to cheer her up somewhat except that I was thinking health insurance, while T.B. was thinking life. I'm sure she's kidding, but of late she's been referring to me as her "first husband." Anyway, assuming that I haven't been bitten, stung, nipped, pronged, chomped, attacked by a seashell, or sucked out to sea, I'll be back in the office on August 9th.

Ev Thomas
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Montarie Lanier of North Carolina State University feeding calves during her Summer Experience in Farm Management at Miner Institute.

LIVE AND LEARN...

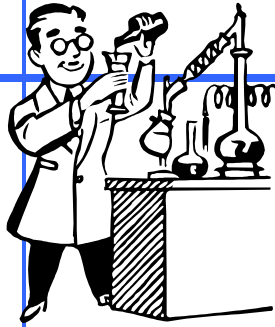
One of the big disappointments in the Institute's cropping program has been the poor performance of two fields we seeded three and four summers ago. Both were July alfalfa-reed canarygrass seedings into very low fertility soil on land we had recently leased. At the time we needed alfalfa more than we needed corn, so we manured the fields, plowed the old grass sods and seeded alfalfa, using a high rate of starter fertilizer and then applying plenty of potash afterwards. Obviously, this wasn't enough as both seedings came up fine but haven't persisted well at all. Meanwhile, no-till corn planted in an adjoining field, currently in its third year, has done just fine.

The lesson here is that it's very hard to make quick, significant increases in fertility when starting with the abysmally low soil fertility we did. (How low? Cornell University soil test P = 1, K = 40 and 55.) From now on we'll plant corn into the old grass sod, manuring it liberally for a few years before we seed to alfalfa.

—E.T.

FARM NOTES

- **USDA** is predicting a record corn crop of 10.6 billion bushels. This in spite of terrible early season weather in the upper Midwest, where corn has been well behind much of that in this region.
- **Syngenta Seeds** has purchased a 90% stake in **Golden Harvest Seeds**. This increases Syngenta's market share to 15% in corn and 13% in soybeans. Rumors abounded for months that Syngenta was going to purchase another seed company. Obviously, they weren't just rumors...
- **University of Nebraska** tested several brands of glyphosate (A.K.A. Roundup) for three seasons in five locations and didn't find any significant differences in weed control. The researchers did note that the cheaper the product, the less technical support likely should things go wrong.
- A **University of California** survey of milkers on 112 dairy operations found that the number of foreign-born workers varied by region: West, 81%; Midwest, 49%; Southeast, 34%, and Northeast, 22%.
- A study reported in the **Journal of the National Cancer Institute** concluded that drinking a glass of milk each day can lower your risk of colorectal cancer. Two glasses a day are better than one, and milk is better than other dairy products.



FORAGE LAB MINUTE

I just returned from the Dairy Science meetings in St. Louis after presenting our work on corn cutting height and monitoring of dietary phosphorus levels. I was planning on writing a short article about the corn height project for this month's "Farm Report," but apparently Rick beat me to it. So, here are a few tidbits that I picked up at the meetings.

Dr. Bill Weiss of Ohio State University discussed Manganese (Mn) requirements of dairy cattle. Little work has been conducted looking at the true requirements for Mn and the NRC 2001 recommendations are much lower than the previous NRC 1989 values. In a mineral balance trial comparing the amount of Mn fed and that excreted in manure, Dr. Weiss showed that milking cows have a minimal requirement of 33 ppm in the diet whereas dry cows require 55 ppm. These levels are approximately 2-3 times greater than the NRC 2001 values. Manganese is important in growth, skeletal development, reproductive performance, and development of the newborn.

Dr. Jesse Goff of the USDA-ARS, National Animal Disease Center, presented work examining how DCAD diets work to reduce milk fever. The action of altering the dietary DCAD balance affects the acid-base status of the cow, which alters the action of parathyroid hormone (PTH). This hormone stimulates vitamin D synthesis in the kidneys, which aids in the absorption of calcium from the diet and also helps prepare bone to release Ca into the blood stream. The discussion focused on metabolism, but one important point was brought up that feeding a DCAD diet absolutely requires the dietary potassium (K) level to be below 1.8% in order to work effectively. The lower the K levels, the better; DCAD diets would not work if K were too high. All the more reason to analyze dry cow rations for accurate mineral levels.

Lastly, Sally Flis, a former student of ours, currently studying at the University of Wisconsin, presented work comparing milk urea nitrogen (MUN) levels to urinary N levels. Both of these N measurements have importance in identifying whether proper levels of dietary protein is being fed and in the proper proportions of rumen degradable and undegradable forms. Nitrogen components of urine are becoming of increasing interest in determining the extent of microbial contribution of protein to the small intestine of the cow. Sally found that N values of the AM urine samples correlated much better to MUN levels than the PM urine samples. These results are significant to our research efforts when predicting microbial flow to the lower gut, on which urine sample, morning versus evening, may be the better predictor. Also, this difference in AM/PM urinary N values may be telling us of different diurnal patterns of consumption and metabolism of N fractions in the cow throughout the day.

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FROM THE PRESIDENT'S DESK— MEET ME IN ST. LOUIS

As I write this article, I am sitting in a hotel room in St. Louis while attending the annual meeting of the American Dairy Science Association. At this meeting, dairy scientists from around the world get together to discuss the most recent research in dairy production and dairy foods. Since there are nearly 1,000 research reports, I want to focus on just a few that caught my eye in the area of forage use by dairy cattle.

Several studies continued to evaluate the effect of cutting height of corn silage on nutritive value and milk response. The bottom line is that we still can't predict when high-chop corn silage will truly be profitable. Most researchers find that nutritive value increases with chop height, but tonnage obviously decreases. The key to profitability is: how great a production response can you expect? Wisconsin researchers evaluated 8 versus 24 inches chop height and observed a 2.5 lb/d milk response to the higher chop height. We reported some research conducted by our own Ev Thomas that predicted a 3% increase in milk production per ton of silage, but a 3% reduction in milk per acre when comparing 6 versus 18 inch chop height. Stay tuned. On a related topic, Cornell University researchers evaluated stubble height for perennial grasses and reported that, as stubble height increased above 4 inches, there was negligible effect on NDF, NDF digestibility, and protein content. So, if you have a list of things to worry about, stubble height for grass (within reason), is one you can scratch off the list.

By the way, the question of which is better—brown midrib (bmr) corn silage or high-chop corn silage—was examined in a trial conducted at Wisconsin. In their trial, cows fed bmr corn silage or a conventional corn silage chopped at 26 inches produced the same amount of milk. Tonnage per acre was not reported—that would be key number to know when deciding which was better, bmr or higher chop. We also know that substantial differences exist in NDF digestibility among all of the non-bmr corn hybrids currently on the market.

Several reports have been published that show the advantage to be gained in milk yield when higher NDF digestibility corn silages are fed. At these meetings, Cornell researchers fed a range of corn silages (leafy hybrids, brown midrib silage, and two hybrids with a range of fiber digestibility) to provide approximately 1.05% of bodyweight as forage NDF, or about 31% total NDF in the diet. The bottom line here was that corn silage hybrids selected for improved forage quality will result in higher milk production, especially with higher forage diets. We have a lot of work ahead of us, but this type of research really points us in the direction we need to go: higher forage diets. But, higher for-

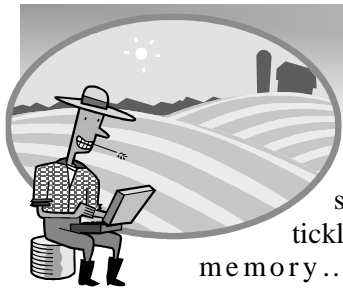
age diets will only be profitable if we can consistently offer the cows highly digestible forages. Easier said than done; but, we can't let up on this area of research and development of better feeding strategies on-farm.

There were many more interesting reports, and I'll come back to them in the coming issues.

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RESEARCH SUMMARIES

- Continued application of manure increases soil test P levels, but less is known about the effect of long-term manure use on phosphorus runoff. **USDA-ARS** researchers studied 128 soils with a long-term history of manure use, including 115 from N.Y. Soil test P increased with the amount of manure used, but the proportion that was water-soluble declined. Manure also adds calcium, which apparently binds the phosphorus and causes the soil to behave like it's calcareous even when soil pH is less than 6.5. The relative decline in water-soluble P in manured soils may lead to an overestimation of P runoff losses. *Source: ans3@psu.edu.*
- In a long-term study, **Montana** agronomists found that one big application of phosphorus fertilizer increased soil test levels and crop yields for more than 17 years. Spoon-fed phosphorus to low P soils on an annual basis didn't produce the yields that one big application did. The downside to this is the high initial cost of the big fertilizer application. Another downside—and the reason it may work better in arid Montana than in the humid Northeast—is the increased likelihood of phosphorus runoff. *Source: Agricultural Research, July 2004.*
- **Agriculture Canada** researchers in Ottawa investigated silage harvest timing of dual-purpose vs. leafy corn hybrids. They discovered that leafy hybrids have a softer kernel texture, a slower decline in whole plant moisture content, and therefore a longer harvest window compared to dual-purpose hybrids. They also discovered, as others have, that kernel milkline isn't the best way to predict proper silage harvest time. Silage harvest should be based on whole-plant dry matter content. *Source: MAB@agr.gc.ca.*



WHAT'S HAPPENING ON THE FARM

It's a scent that tickles the memory... The fragrance of corn silks on a hot, summer's afternoon. The corn out in the fields behind my house on Miner Farm Road are over 6-foot-tall, a deep rich green, and their delicate golden silks are starting to show, their tasseled heads shaking in the light breezes. High summer in northern New York is a season full of bountiful activity, from the Crops Crew finishing off the last of our second cut, to the astonishing yield of wild red raspberries and blackberries along the riparian zones between our meadows and Corbeau Creek.

Out in the pastures, the much-dreaded summer slump has started. There is now an urgent need to ensure that the grazing animals (dry cows and heifers) have enough, nutritious green forage available and an *ad-lib* supply of good quality hay. On the rotation system here at the Institute, we are finding it necessary to shift the fence line around each strip every two days now—in late spring, there was enough food in each piece to last our animals between four and six days. Soon, however, as the ancient urge to reproduce before the winter kicks in, the tall fescue, Ladino clover, Timothy, and rye grass will take off again, and we'll be able to leave animals on each section for a longer period of time, ahead of the stockpiling rest period. If we are to have a successful and well-managed system of rotational grazing during the warmer weather, it is imperative that the care of the grasses and a comprehensive knowledge of their structure and function occur. By doing this

grazing the correct way—as opposed to simply putting the cows out in a dry-lot or onto uncontrolled grazing—we are saving in purchased feed costs and lowering the cost of vet bills.

The new insulated barn has offered pleasant respite to our staff as the temperatures outside soared. Although we are about to commence a fan/ventilation research trial, it seems that the animals are not being unduly stressed from high heat and high humidity. We are finding heat spotting much easier on the rubber-coated floors. The Activity Monitor Report from our Boumatic-DairyComp 305 computer system is now an integral part of our morning inspection. Not only does this particular report offer a very useful management tool, but when accompanied by the Milk Deviation Report it makes finding sick animals that much quicker—always beneficial, allowing early intervention and a faster response time. Get her milk back in the tank as soon as possible, right!

Another load of high-quality alfalfa arrived from Wyoming and, after much deliberation, we have returned cottonseed to the ration. Nothing has happened to improve production as yet, but then again it's only been four days. In a few weeks, our vet, Dr. Kent Henderson, will take blood samples and once again look at titres indicating sub-clinical ketosis. Another change in the feed mix has been the re-introduction of molasses. It is hoped that not only will this addition assist in the prevention of grain settling and sorting by animals, but will also supply added energy.

Speaking of feed mixing

issues: We found that on the smaller loads it is very important that not only the order of the ingredient is correct according to the Mixer-Wagon's manufacturer's list, but that even where the ingredients are placed within the mix box is crucial to get an even, uniform blend of rations; the last thing you want is clumps of grain in some places and nothing at all in others. Watch for that acidosis, increased feed refusal, and a corresponding decrease in milk per cow in the milking parlour. We had some acidosis earlier in the month and appeared to solve this problem by providing the animals free choice sodium bicarbonate. There are recent studies that suggest that cows do not consume more bicarb in an effort to correct acidosis; however, for now it is working with *our* cows. Twice per day feeding has also started. We commence at 06h00 and then again at 18h00, dividing the quantity into two 50% deliveries. This may prevent heating during the high temperatures around noon, and as we noticed that most of the animals are presently doing most of their eating in the cool of morning and night hours, we opted to feed them when they are telling us (not in so many words, of course) they want to eat.

Deer in the grass/alfalfa fields, blueberries up at Flatrock, two full bunker silos, a fresh delivery of high-grade pregnant heifers, sun tans, and red-winged blackbirds building nests in the wetlands—summer, and the living is easy.

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VET CORNER

Lameness has diminished already in the new dairy barn. Hair is growing back into denuded areas of previously painful hocks. Review of the most recent hoof trimming record revealed no contagious hairy heel wart or foot rot. The most common foot ailments are related to laminitis, which occurred in the old barn on the concrete slatted floors. Now that the cattle are on rubber floors, the feet tend to overgrow because there is little wear. It is anticipated that many cows will need 2-3 maintenance trimmings every year so the trimming bill will increase.

The "Crops Dude" has sounded the alarm that copper sulfate footbaths will reduce soil fertility if their contents are spread with the barn manure on fields. With this in mind the footbath protocol was reviewed and changed in light of the foot trimmer's report of no contagious foot problems.

The footbath capacity is 3 feet wide x 6 feet long x 4 inches deep for a total capacity of 45 gallons. For treatment of a foot rot/hairy heel wart epidemic, a 5% copper sulfate solution is recommended; so 18 pounds of copper sulfate must be added to the footbath (previously 25 pounds of copper sulfate was added and a fresh batch was mixed twice daily for each milking). For maintenance, **a 2.5% solution is needed so only 9 pounds will be added as long as the Miner herd continues to get good foot trimmer reports.** The "Crops Dude" and accountant should be delighted by the 500% copper sulfate reduction.

For the solution to be effective, the feet should be reasonably clean. After all milking machines are removed, dirty feet are hosed off and the cows are sent down the return alley to walk through a water

bath before going through the footbath. No more than 240 cows should track through one preparation. If more than 240 are milked, then the solution should be changed during milking. 165 head are milked and since extra precautions are taken, we will start by using only one preparation for both daily milkings. If the footbath looks bad during the second milking, it will be replaced.

The footbath is in the return alley before the palpation rail where cows are moving and not allowed to stand. If they can spend time there, they will defecate in the bath or drink it.

Since the feet are in good shape, the copper sulfate bath will only be used three consecutive days each month. Tetracycline footbath will be used in sequence on three

consecutive days two weeks later. A new environment-friendly footbath is under consideration and may be added to the sequence after University studies have been reviewed. If there is herd incidence of lameness assessed by the herd veterinarian of over 15%, the footbath will have to be used on a daily basis.

Several sources have recommended hairy heel wart vaccine, with the best return from protecting purchased and home-raised heifers entering the milking string. As stated in a Vet's Corner on biosecurity, Miner springing heifers receive three doses of hairy heel wart vaccine prior to calving. The cows will not be vaccinated unless an epidemic occurs.

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DAIRY FARMING IN NORTHERN N.Y.

USDA recently cranked out some new data on dairy farms and cow numbers in the six counties comprising Northern N.Y.:

	Clinton	Franklin	Essex	St. Lawrence	Jefferson	Lewis
2004 Farms	160	204	35	445	325	318
vs. 1997	-7%	-13%	-13%	-27%	-13%	-21%
2004 Cows	18,970	17,404	1983	38,018	32,736	26,440
vs. 1997	+3%	-2%	-22%	-4%	+11%	-6%
Cows/farm *	130	96	96	105	112	89

* Only farms with over 20 cows.

As a region we lost 20% of our dairy farms between 1997 and 2002, with all counties losing dairy farms. A much different story for dairy cow numbers though: Cow numbers in the region didn't change at all, with both Clinton and Jefferson counties gaining cows. For cows per farm, we didn't count any farms with 20 cows or less since almost all of these are hobby farms. Before the rural sociologists and other socially sensitive souls get their knickers in a twist: Dairy cows on these small farms only account for about 1000 of the region's more than 135,000 cows. The bottom line: Although this was before the abysmally low milk prices of 2003, it appears that the dairy industry throughout most of Northern N.Y. is continuing to follow the trend of the past umpteen years: Fewer dairy farms but more cows per farm, with relatively little change in total cow numbers.



CALIBRATING SILAGE INOCULANT APPLICATORS



The University of Delaware's Limin Kung says: "It's really hard to make bad corn silage." We agree with Limin; corn is chock full of sugar, which is food for silage-making bacteria. Even though corn silage normally provides the best combination of yield and quality at 33-35% DM, good quality silage is achievable at dry matters that are several percentage points either side of this range. Fermentation accounts for (unavoidable) dry matter losses of about 5%, and while careful silage management can limit storage and feeding losses to another 5% we think 10% is more typical. (We've visited farms with no "spoilage pile," but would not want to be a cow on most of them.)

We've long said that if we only had enough money to treat one crop on our farm, it would be alfalfa. That's because alfalfa is a relatively low-sugar, highly buffered crop. However, at Miner Institute we can still afford to purchase inoculant for all our ensiled forages (that is, as long as Marco doesn't buy too much high-priced Western alfalfa) and as a matter of fact we treat every ton of forage we ensile. There's plenty of research showing better quality retention from inoculating a wide range of forage crops. However, how sure are you that you're applying the recommended amount of inoculant?

The most profitable rates of inoculant vary depending on the "bugs" in the particular product, and in most cases the recommended rates are research-based. Apply less than the recommended rate and you risk reduced performance, more and you might gain a little more but

will spend too much doing so. In some cases there are dramatic differences between recommended and lesser rates. Limin Kung recently presented research with an inoculant containing *Lactobacillus buchneri* where, compared to the recommended rate, applying about 2/3 as much reduced bunk and face life by a stunning 80%!

Calibrating an inoculant applicator for corn silage is pretty simple since most of us harvest as fast as the chopper will allow. In lower-yielding corn, we simply speed up a bit, then when we hit better corn and the chopper starts complaining or the tractor starts rolling black smoke, we back off. Therefore, the time it takes to fill a self-unloading wagon, dump wagon or truck doesn't vary much. We fill our applicator at the beginning of the harvest season and then check forage truck weights to confirm total tons per full applicator.

Calibrating applicators for hay crops is a bit trickier, especially for second and third harvests, which usually are lower yielding and more variable in yield within the field than first cut. That's yet another reason to combine two or three windrows for these later harvests: It keeps the chopper cutterhead full, resulting in more uniform chop length, and the combined windrows tends to reduce the effect of within-field yield differences. Even combining windrows, you should recalibrate your inoculant applicator for second and third cut to be sure you're not over-applying inoculant—much more likely than under-applications.

—E.T.

WILL MY CORN MAKE IT?

Corn got off to a slow start in many areas, in some cases because the seed was still in the bag on June 1st. Fortunately, corn planted moderately late (June, not July) will mature in fewer days than that planted on time, but most corn planted in mid-June or later will need a lot of help to mature before frost. As we've noted before, a rule of thumb to remember is "Silk to silage in seven weeks." Therefore, in order to mature by the end of September—in much of this region there's about a 50-50 chance that a damaging frost will occur by then—your corn should be silked before August 15th. Corn that isn't dented has a better chance of living through a light frost. However, corn will mature very slowly after the end of September.



DISPOSING OF UNWANTED PESTICIDES



The NY State-sponsored "Clean Sweep" program that allowed farmers in Northeastern N.Y. to dispose of obsolete and/or unwanted pesticides was a big success, as 26,000 pounds of pesticides were collected. The program began on Long Island, and to date has accounted for 310,000 pounds of obsolete and unwanted pesticides. The program is free for the first 100 lbs. of pesticides; here at the Institute we got rid of a whopping 245 lbs at a cost of \$180. That might seem like a lot, but not to anyone who's priced commercial disposal of pesticides. There's an identical program this November for counties in the western half of Northern N.Y. For information, call (877)-952-2272. The people running this program are very helpful.

OUT THERE

—M.T.

The big story is the surreptitious videotaping of chickens being abused by employees of Pilgrim's Pride, a supplier to KFC, at its Moorefield, WV, plant. The video showed sickening episodes of chickens being thrown and kicked, tobacco being spat into their mouths and eyes, beaks being torn off, etcetera. Such abuses lead consumers to question whether the incidents are a one-time abhorrent act or something typical of the system. For its part KFC says it will audit Pilgrim's Pride plants with more vigour. There's no escaping the fact, however, that all actions taken by the parties involved were reactionary in nature. After all, it's very difficult to go on the offensive when there is no defense. (*Cow-Calf Weekly, July 23, 2004*)



The World's first commercial venture to generate electricity from rapeseed is planned for northern England and is set to start production next July. The pilot power plant will burn oil extracted from crops grown by local farmers and generate an initial 1-megawatt of electricity, or enough power for 1,000 homes. Rapeseed, whose bright yellow flowers colour the landscape across Europe in spring, is already being used in several European countries to make so-called biodiesel that is added to petroleum-based fuels to power vehicles. Swiss-based agrochemical group, Syngenta, is providing the seed for the project and farmers will sign a contract to supply their harvested crop to local firm Springdale Energy, which will run the power-plant. (*Reuters News Service, July 26, 2004*)



The U.S. Food and Drug Administration has determined that genetically modified wheat made by Monsanto is safe for human and

livestock consumption. FDA spokesman, Mike Hearndon, says the agency has completed its food safety assessment for the biotech wheat variety. Last month the company said it would shelve plans to introduce the world's first GMO wheat. Monsanto withdrew its submissions for biotech wheat from all regulatory agencies except the FDA. (*Planet Ark, July 26, 2004*)



Families with members who have potentially deadly food allergies celebrated this week the final passage of a Congressional Bill requiring food makers to list on their product labels any of the eight most common food allergens. The measure, which President Bush is expected to sign, would require plain English labeling by 2006 if a product contains wheat, milk, soy, peanuts, tree-nuts, fish, shellfish, or eggs. Those allergens account for an estimated 90% of all food allergies. (*Julie Rovner, July 23, 2004*)



Stagnito Dairy Field has released a listing of the nation's top 10 dairy co-ops by farm and milk intake. Volume (by It farms):

- Dairy Farmers of America (DFA), MO
- California Dairy, Inc., CA
- Land O'Lakes, Inc., MN
- Northwest Dairy Association, WA
- Dairyalea Co-op, Inc., NY
- Family Dairies USA, WI
- Associated Milk Producers, MN
- Foremost Farms, WI
- Manitowoc Milk Producers Co-Op, WI
- Michigan Milk Producers Association, MN

(*Stagnito Communications, July 25, 2004*)



The European Union is to audit the New Zealand dairy industry in November this year, according to the Acting Director of the Dairy and Plant Products Department. The audit will impact on all levels of the dairy supply chain, including farmers, laboratories, transport sector, stores sector, exporters, and verification agencies. The audit has a huge scope from farm water to residues, wall cladding to Dairy Certification Systems. (*NZFSA, July 19, 2004*).



CALENDAR DATES:

New Dairy Barn Open House, Thursday, October 7, 2004, 10:00 AM - 2:00 PM.

Dairy Day at Miner Institute, Wednesday, December 1, 2004, 10:00 AM - 3:00 PM. Featured speakers include Dr. Brian Perkins of Monsanto and our own Rick Grant and Ev Thomas.

Vermont Large Farm Dairy Conference at the New England Beef and Dairy Expo, Champlain Valley Expo, Essex Junction, VT, March 1, 2005 (trade show March 1 and 2). Instead of the traditional February meeting at the Sheraton, the Large Farm Conference has teamed up with the finest cattle trade show in New England.

CLOSING COMMENT

Nothing is impossible as long as you don't have to do it yourself.