

LN93-039

Newsletter

Fall 1997

\$2.50

# The Natural Farmer



photo by Jack Kittredge

Warren Williams milks one of his organic cows in central New York.

The surge in demand for organic milk has given dairying a future once again in the Northeast.

News, features & articles about organic growing in the Northeast, plus a Special Supplement on:

## Organic Dairying



# The Natural Farmer

Fall, 1997 Vol. 2, No. 34 Publication of the Northeast Organic Farming Association ISSN 1077-2294

## Conference Notes

by Julie Rawson

As a 13 year attendee and 11 year co-coordinator of the NOFA Summer Conference and Celebration of Rural Life, I have come to see it as an integral part of me and my family's life. The rejuvenation I receive from seeing old friends that I only see once a year at this event is irreplaceable. The ecstatic kids at the fair, the octogenarians who lead workshops, the single people who meet life mates, the teens who hang out in style, all are aspects of the conference that make it such a highlight in so many people's lives.

This year's conference, as usual, boasted perfect weather with one little cloud burst during the fair.

Friday's events started with 2 workshop options and then a wonderful organic repast. Terry Gips led a Sabbath Supper for those so inclined. The keynote program started off with the conference staff's rewrite of "Queen for a Day." The contestants pulled at the audience's heart strings with their farmer tales of woe. The ad for "Moans Pills" convinced even the most skeptical of their great curative value. Special thanks to our walk on musicians Robin and Caleb Langer for the beautiful violin music that accompanied our skit. Ed McGlew was the surprised recipient of the NOFA "Person of the Year" award. Ed has been a stalwart member of the NOFA/Mass chapter who has been managing certification in Mass for almost a decade. His contributions to the NOFA Interstate Council have also been significant over the years. Congratulations Ed for earning this most prestigious of NOFA awards.

Gene Logsdon, "Contrary Farmer" and life long farmer and homesteader, was our keynote speaker for this 23rd Annual Conference and Celebration of Rural Life. The message that community, alternative agriculture and institutions are going to be our salvation as a culture was a message well-received by the audience.

Friday night's Get Acquainted Party in the Red Barn was the first of many successful entertainment activities for the weekend.

This year our fair coordinators brought back the judging contests. Though the applicants were few, we hope interest will heighten next year. Thanks to Bill Mackentley who was our fair emcee. Besides announcing all the events he was able to garner \$346.50 for our next year's scholarship fund with the auction at the end of the fair. Hopefully you were looking for garlic this year. It seemed to be in plentiful supply at the farmer's market! Though we had to ask a llama to step in for our cow plop due to an outbreak of Johnne's disease at the Hampshire farm this year, our llama was nice enough to grace the square of G.W. Murphy who split the pot with NOFA. Stan Ingram was the lucky winner of the beautiful NY quilt. I was standing next to him when his ticket was drawn; what excitement! And Mary Gagnon took home a bountiful basket of CT products.

Many thanks to Clare Pearson who designed this year's logo. It was so popular that the short sleeve t shirts sold out by Friday.

Though all the Saturday night entertainment was popular, people seemed to really enjoy the music of the Hot House Zydeco band. I am sure it will be a keeper for next year.

Thanks again to the over 100 presenters whose workshops always form the main draw for the conference. Hopefully much information was exchanged and folks went home with new ideas for next season.

If you haven't yet filled out an evaluation in the back of the program book, please do so and send it in. Evaluations results give us the information that we need to make improvements for next year.

If you would like to present or know someone who would for '98, please give me a call or drop a line to me at 411 Sheldon Road, Barre, MA 01005 (508) 355-2853, email: jackkitt@AOL.com. I will gather ideas until the end of the year and spend January and half of February putting the program together.

I would like to publicly thank all the Summer Conference staff members who made each

piece of this conference happen so smoothly. They are Elaine Peterson (and her son Colby) on registration; Deb Kowalski on helping hands; Cate Rosseel and Richard Murphy on entertainment; Charmaine Dupont-Getman and David Getman from the fair; Audrey and Dennis Cronin, our AV coordinators; Lynn Klein who runs the children's conference and graphics; Suzanne Barth, Greg Garvan and Beth Ing-ham on publicity; Rita Horsey, who coordinated food donations, menu, ads, and exhibits; Jack Kittredge - co-coordinator, publications and video project; and Penny Pitts, our Amherst behind the scenes logistician. Special thanks to Bryna Bass who is leaving as our teen coordinator and Kate Stevens, John Hoffman and Betsy Corner who will retire from NOFA Nibbles.

The next meeting of the Summer Conference committee will be on Sunday, September 28 at Audrey and Dennis Cronin's house in Rutland, MA. Anyone interested in joining the committee should contact me before the meeting.

The 1998 Logo design contest is underway. Interested parties are asked to submit a theme and or logo design for next year. Please send it to me so that I have it before September 28. If we select your theme and logo we will provide you with free registration, housing and meals, plus a t shirt, or \$100 plus a t shirt. If we like your theme only or your logo only, we will give you part of the above remuneration.

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photo by Jack Kittredge

Draft horse workshop gave attendees a chance to learn about and try out alternatives -- something evaluations say is one of the main attractions of the NOFA Summer Conference.



## Letters to the Editor

Dear Jack:

I very much enjoyed your Summer 1997 issue of *Natural Farmer*. For the most part, it was filled with interesting news and practical, objective information (OK, so I'm a little biased). I must, however, take issue with the article, "Science Wars on Nature" by Hyman Srulo. To contend that AIDS and Gulf War Syndrome are but 2 repercussions of transgenic bioengineering is sheer lunacy, supported by nothing more than the writer's philosophical objection to this practice. Everybody is entitled to their own viewpoint, and some rational concerns about transgenic bioengineering have been raised by a number of individuals. However, the irrational contentions and "pseudoscience" used by this writer to support his position merely reinforce others' impression that the organic movement is dominated by a bunch of nuts on the fringe of society. Unfortunately, it then becomes all too easy to throw the baby out with the bathwater, and dismiss the organic philosophy as a whole.

Sincerely, Wayne Wilcox  
Department of Plant Pathology  
NY State Agr. Expt. Sta.  
Geneva, NY 14456

Dear Wayne:

Thanks for your generally favorable comments about the paper. Mr. Srulo often has a short contribution, either as a letter to the editor or a short article. He is a man with strong views and doesn't pull his punches, but I think there are many in NOFA who would share his basic distrust of man's effort to "improve on" nature.

Such efforts usually involve new, relatively untested techniques and are often directly beneficial to some private interest. These are both reasons to ask hard questions and go slow, I think. While Mr. Srulo did not cite any evidence, it is not necessarily a "lunatic" notion to suppose that AIDS may have resulted from some effort by man, quite possibly using transgenic technology, to create a virus which can evade immune defenses. AIDS is mild compared to some of the pathogens we have dreamed up in our biological weapons labs.

I would, in fact, argue that the folks putting forth the irrational contentions and pseudoscience are not organic advocates but those "scientists" who have donned corporate livery and try to quash proper labeling of such things as cigarettes, BGH milk and tomatoes with firefly genes in them. They travel highly circuitous "logical" paths in their attempt to obscure or deny what every person with horse sense knows. They give the profession a self-serving mien.

I have a lot of respect for the western rationalist tradition, in which the scientific method is founded. But I think one of the most important discoveries of this century is of the limits of the scientific, reductionistic approach. We have learned that nature is far more complex and subtle than we had ever imagined.

The organic movement is more than "farming without chemicals". It is farming (and living) with respect for natural systems and trying to pay attention to the rhythms and insights of nature. To some this may make us seem like a bunch of nuts, but I suspect we are on to something important.

Jack Kittredge

## The Natural Farmer Needs You!

The *Natural Farmer* is the newspaper of the Northeast Organic Farming Association (NOFA). All members receive a subscription as part of their dues, and others may subscribe for \$10 (in the US or \$14 outside the US). It is published four times a year at 411 Sheldon Rd., Barre, MA 01005. The editors are Jack Kittredge and Julie Rawson, (assisted by their kids), but most of the material is either written by members or summarized by us from information people send us.

**Moving or missed an issue?** The *Natural Farmer* will not be forwarded by the post office, so you need to make sure your address is up-to-date if you move. You get your subscription to this paper in one of two ways. Direct subscribers who send us \$10 are put on our data base here. These folks should send address changes to us. Most of you, however, get this paper as a NOFA member benefit for paying your chapter dues. Each quarter every NOFA chapter sends us address labels for their paid members, which we use to mail out the issue. We don't keep copies of these, and if you moved or didn't get the paper, your beef is with your state chapter, not us. Every issue we print an updated list of "NOFA Contacts" on the last page, for a handy reference to all the chapter names and addresses.

As a membership paper, we count on you for articles, art and graphics, news and interviews, photos on rural or organic themes, ads, letters, etc. Almost everybody has a special talent or knows someone who does. If you can't write, find someone who can to interview you. We'd like to keep the paper lively and interesting to members, and we need your help to do it.

# Organic Milk Turning the Corner or Bump on the Downhill Slide?



by Jack Kittredge

If any type of agriculture ought to survive in the northeast, given our thin soils, short season, and hilly terrain, it is grass-based dairy farming. Our wet, cool growing season is ideal for grass, we're close to large markets for this perishable product, and 4-legged grazers do lots better on slopes than tractors. Thus the long, slow decline of dairy farms in this region in the face of competition from the midwest and Canada has been particularly galling.

The recent explosive growth of demand for organic dairy products, however, has been a boon for family farming in the northeast. Especially in Vermont, New York and Maine, farms which had been hanging on by dint of an enormous drain of personal energy, family harmony and farm capital have turned some sort of corner. While many are not yet receiving the prices they need to be making a profit, at least there is a hopeful spirit that once again hard work and good management can be enough to support a family.

Are we witnessing a sea change in the fortunes of agriculture here, or is it just a temporary lull soon to be swept away by renewed competition from outside the region, this time by cheap certified organic milk?

The farmers featured in this issue of *The Natural Farmer* are betting that organic dairying has a long term future here. They have made serious changes in their operations to become certified, and exposed themselves to considerable risk. For every dairy farmer who has started this transition in the last year or two, there are a dozen others watching carefully.

For those of you involved in one way or another in dairying, we hope this issue helps you evaluate the problems and potential of making the transition to organic. For those who support organic farming but don't have a milker, we hope it encourages you to make a real difference by purchasing local organic dairy products.

## Advertise in *The Natural Farmer*

Advertisements not only bring in TNF revenue, which means less must come from membership dues, they also make a paper interesting and helpful to those looking for specific goods or services. We carry 2 kinds of ads:

**The NOFA Exchange** - this is a free bulletin board service for NOFA members. Send in up to 100 words (business or personal) and we'll print it free in the next issue. Include a price (if selling) and an address or phone number so readers can contact you directly. If you're not a NOFA member, you can still send in an ad - just send \$5 along too!

**Display Ads** - this is for those offering products or services on a regular basis! You can get real attention with display ads. Send us camera ready copy and enclose a check for the appropriate size:

Full page (15" tall by 10" wide)	\$240
Half page (7 1/2" tall by 10" wide)	\$125
One-third page (7 1/2" tall by 6 1/2" wide)	\$85
One-quarter page (7 1/2" tall by 4 7/8" wide)	\$65
One-sixth page (7 1/2" tall by 3 1/8" wide), or (3 3/4" tall by 6 1/2" wide)	\$45
Business card size (1 1/2" tall by 3 1/8" wide)	\$12

*note: These prices are for camera ready copy. If you want any changes we will be glad to make them - or to type set a display ad for you - for \$10 extra. Just send us the text, any graphics, and a sketch of how you want it to look. Include a check for the space charge plus \$10.*

We appreciate a submission in any form, but are less likely to make mistakes with something typed than hand-written. To be a real gem, send it via electronic mail (jackkitt@AOL.com) or enclose a computer disk (3 1/2 inch size). We use a Macintosh SE with Microsoft Word 5.1 but can with only modest difficulty convert IBM disks as well.

**Frequency discounts:** if you buy space in several issues you can qualify for substantial discounts off these rates. Pay for two consecutive issues and get 10% off each, pay for 3 and get 20% off, or pay for 4 and get 25% off. An ad in the NOFA Summer Conference Program Book counts as a TNF ad for purposes of this discount.

**Deadlines:** We should receive your ad copy one month before the publication date of each issue. The deadlines are:

January 31 for the Spring issue  
April 30 for the Summer issue  
July 31 for the Fall issue  
October 31 for the Winter issue

**Contact:** If you have questions, or want to reserve space, contact our advertising manager, Rita Horsey (508) 529-6148.

**Disclaimer:** The *Natural Farmer* cannot investigate the claims of advertisers and we don't vouch for anything advertised here. Readers are expected to exercise due caution when inquiring about any product or service. Different NOFA chapters have different standards for fertilizers, for instance, and a product acceptable in one state may be prohibited in another. Please check with your chapter when in doubt. Remember, however, that advertisers are helping support the paper and, when appropriate, please support them.

Also, any graphics, photos, charts, etc. you can enclose will almost certainly make your submission more readable and informative. If you have any ideas or questions, one of us is usually near the phone - (508) 355-2853, fax: 508-355-4046

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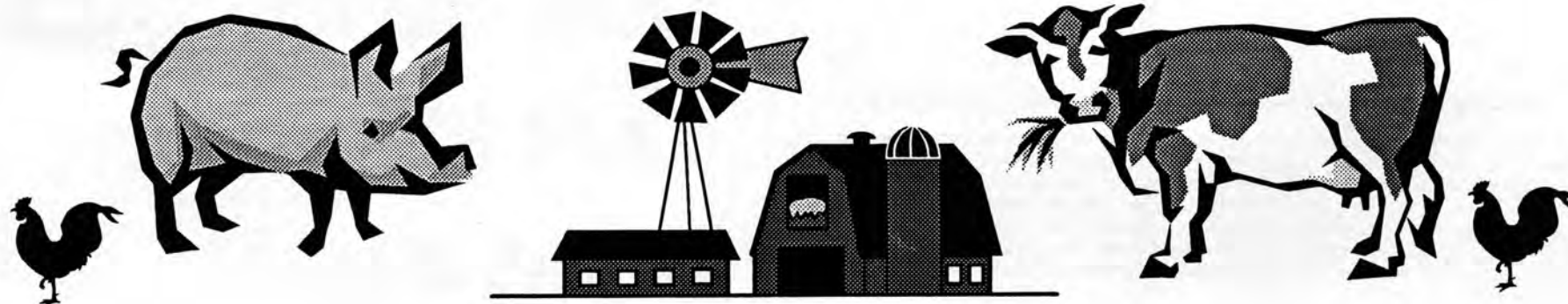


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**Kim Q. Matland**  
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## NOFA Exchange Blow Your Own Horn!

### Needed: Kindly CPA

NOFA/Mass has lost the services of our licensed CPA of many years and needs to find a new one. Work involves an annual review of our books to accompany our filing at the state AG's office. The books are computerized and in excellent condition, documentation is on file for transactions, our old CPA will even do the work papers for you if you like. Compensation is usually in kind - a free conference registration for the family, perhaps a bottle of Jack's finest or an organic ham. Give us a call at (508) 355-2853 and prove our suspicion correct that the profession has just had a bad press.

### Organic Farmer Needed

with experience with young people to help plan and then staff a farm on 50 orphanage acres on Long Island. Call Ellen Kamhi, (800) 829-0918

### Wanted: Land for Organic Farm

10 - 30 acres or more, 8-10 tillable, Buy, lease or use. Western Mass area, (413) 569-5804 Eileen

### N. California Land-Based Community seeking new members!

Sandy Bar Ranch is a collective of fun-loving, hard workers creating a sustainable living/working alternative in the Klamath mountains. We run several businesses including educational workshops and cabin rentals, and are designing a garden area along permacultural principles. We are seeking people interested in collective living and permaculture, with experience in general maintenance, gardening, hotel management, and marketing. Good communications, self-motivation and a sense of humor are essential. Contact us at: PO Box 347, Orleans, CA 95556. (916) 627-3379. Or e-mail us at: sandybar@earthlink.net

### Seeking Farmer-Gardener(s)

familiar with organic food production for 3rd year of operation of established CSA. Fertile 2-acre plot with irrigation located in southern York County

convenient to Baltimore, MD and York, PA. Presently producing seventy-five shares of vegetables weekly. Support system includes work commitment from share holders, internship program and active core group involved with marketing, community education, coordination of distribution and share holder work schedule, newsletter and special projects. For more information call (717) 235-9CSA (9272) or write to: Spoutwood Farm CSA, R. D. 3, Box 66, Glen Rock, PA 17327

### Looking for Food Purveyors

for Drumlin Farm (Lincoln, MA) Harvest Days, October 11-13. Event attracts 12,000 visitors for music, crafters, hayrides, demos, etc. Looking for providers of healthful, seasonal, local foods in a country fair atmosphere. Grilled meats, pocket salads, roasted vegetables, fruit and whole grain desserts, popcorn, and fruit drinks are some ideas. Contact Stacy Miller, (617) 259-9506 etc. 7700.

### Wanted: Land for Organic Vegetable Farm

5 to 10 tillable acres in eastern Mass, partner or lease, call Don at (413) 253-1502

### Oxen for Sale

5 year old team. One Devon X Shorthorn, other Devon X Jersey. Gentle, sociable. A bit mismatched. Do best at cart work. \$1000/pair. Luis Mendes, 7 Wilson St., Bristol, RI 02809 (401) 253-7537 [after 8 pm].

### Fall Internship

NOFA certified vegetable and herb farm seeks help for late summer through Thanksgiving. Work will include planting, transplanting, greenhouse, picking and helping with markets in NYC. Room, board, stipend and participation in C.R.A.F.T. (cooperative regional alliance for farmer training). Please send letter of interest with some history to: Claudia Kenny, Willy Denner, Little Seed Gardens, PO Box 158, Stuyvesant, NY 12173 (518) 758-1754

### Garlic

Carpathian Polish hardneck and 3 other varieties \$4 lb. plus 50¢ postage. Three varieties of fingerling potatoes. Ask. Johnny Random Farm, 199 Cherry Lane, Durham, CT 06422 (860) 349-3083

### For Sale

43 bags (50#) Black Rock Phosphate and 53 bags (50#) Greensand, \$6.25 and \$5.25/bag, respectively. Call (802) 869-2583

### The Caretaker Gazette

A unique newsletter containing job openings, advice and information for property caretakers, house-sitters and landowners. Published since 1983, the Gazette includes letters, caretakers profiles and classified ads. 500+ property caretaking/housesitting job opportunities are published each year, worldwide. Enjoy rent-free living as a property caretaker in desirable locations. Only \$24/year (6 issues). The Caretaker Gazette, 1845 Deane-N, Pullman, WA 99163. (509) 332-0806. garydunn@pullman.com  
<http://www.angelfire.com/wa/caretaker>

### NOFA/Mass Certified Organic Lamb, Chicken and Turkeys

Call or write for order form, more info, or to place an order. Heifer Project International, Overlook Farm, 216 Wachussetts St., Rutland, MA 01543 (508) 866-2221

### Organic Chicken

NOFA/Mass Certified, \$2.50/lb. Call (508) 355-2853. Julie Rawson or Jack Kittredge, Many Hands Organic Farm, Barre, MA

### Environmental Educator/Farm Coordinator Needed

for a small, alternative Quaker boarding high school. Desire to live and work with teenagers and teach environmental sustainability. Will manage agricultural program and supervise student field work. Monthly stipend, medical benefits, room and board provided. Singles or couples. Contact: Dawn Ashbacher, The Meeting School, 56 Thomas Rd., Rindge, NH 03461 (603) 899-3366

### For Sale - Breeding Stock

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# News Notes

compiled by Jack Kittredge

## Organic Sales up 26 percent in 1996

Sales of organic grocery and dairy products increased to a total of \$3.5 billion in 1996. This is the seventh consecutive year such sales have grown by over 20 percent. Of this total produce accounted for \$89 million. The largest category was grocery and dairy, with \$633 million in sales. About \$120 million of this was dairy sales, up 50 percent over 1995. *source: Alternative Agriculture News, July, 1997 and Acres, USA, August 1997*

## Premiums for Transition Offered in Britain

Two British co-ops are offering dairy farmers premiums for milk produced during the transition to organic. The premiums were felt necessary to get more British dairies to produce organic milk, for which demand is soaring. *source: Elm Farm Research Centre Bulletin, July 1997*

## Native American Food Crops Unearthed

University of Illinois archeologists digging in an Oneota village site have found, along with the traditional "3 Sisters" of corn, beans and squash which originated in Central America, two native "weeds" which they believe were grown as food. Charred seeds of knotweed and little barley were found in such a volume that scientists believe they were commonly roasted to make a carbohydrate rich gruel, eaten as late as 1600, hundreds of years after the 3 Sisters arrived. *source: Sustainable Farming, Spring, 1997*

## MOFGA's Sideman Named to NOSB

Secretary of Agriculture Dan Glickman has named 5 new members of the National Organic Standards Board (NOSB), among them Eric Sideman, technical director for the Maine Organic Farmers and Gardeners Association. Sideman was appointed to a technical slot, along with Marvin Hollen, OR (farmer/grower), Steven Harper, WA (handler/processor), Carolyn Brickey, AZ (consumer) and William Welsh, IA (environmentalist). The NOSB advises the Secretary on implementation of the National Organic Program (NOP). *source: Alternative Agriculture News, June, 1997*

## NOP Sent to Budget Office

On June 13 Secretary Glickman and the USDA General Counsel signed off on the Draft Proposed Rule for the National Organic Program and sent the several hundred pages of regulations to the Office of Management and Budget (OMB). OMB will evaluate the rules for their economic impact and coordinate the responses of other agencies such as the FDA and EPA. Within 90 days OMB must return them to USDA with comments for review by the Secretary. Following that review the regs will be published in the Federal Register for a 120 day public comment period. After that period the USDA must respond to the comments before publishing a Final Organic Rule. *source: Organic Food Business News, June 1997 and private communication from Eric Kindberg, June 13, 1997*



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## OTA Establishes OMRI

The Organic Trade Association (OTA) has set up an Organic Materials Review Institute (OMRI) to evaluate whether materials proposed for use in organic production are acceptable under certification guidelines. The program is expected to generate the brand name list of allowable materials once the NOP is established. Costs of the program will be borne by certification programs (\$10 per certified farm grossing over \$5000 with a 25% discount for members of the Organic Certifier's Caucus), manufacturers of proposed inputs, and government and private grants. For more information contact OMRI at (541) 343-7600. *source: What's News in Organic, June, 1997*

## Opposition Mounts Abroad to GMOs as Food

Concern in Europe over US acceptance of genetically modified organisms (GMOs) in the food supply is growing. In May the European Parliament voted to exclude GMOs from being described as "organic". In addition, nine European retail trade organizations have sent an open letter to Archer-Daniels-Midland Co. and Continental Grain Co. demanding voluntary labeling and segregation of genetically engineered soybeans and corn. Concern among European consumers about biotechnology in their food has stiffened since the Clinton administration has allowed food with genes from other organisms to be grown, harvested, and mixed in with unmodified foods without notice to the consumer. Norway has already stopped the import of US soybeans in protest of this policy. *source: Acres USA, July 1997 and private communication from Eric Kindberg, June 6, 1997*

## OCIA Problems Continue

Problems continue to plague the Organic Crop Improvement Association (OCIA), one of the major US organic certification groups. After the recent Glacial Ridge scandal, in which a processor was caught passing off conventional beans as organic ones with OCIA certification, the sudden resignation of Executive Director Betty Kanaan and move of the International office from Ohio to Nebraska, now Chief Operating Officer Tim Davis as well as 3 key salaried staff and 4 receptionists have quit. In addition, OCIA and Eden Foods got embroiled in a battle of press releases and a lawsuit accusing each other of bad faith and 5 OCIA chapters were summarily suspended and refused use of the OCIA seal. Several growers and processors, concerned about the disarray at OCIA, are now seeking alternate certifiers. Oregon Tilth reports its membership is up 20% this year to 200 processors and 2000 growers, and Quality Assurance International reports certifying several new processors who were with OCIA. *source: Ohio Ecological Food & Farm Association News, Early Summer, 1997, Organic Business News, July, 1997, and Organic Broadcaster, July-August, 1997*

## US Land Use Figures

There are about 1.9 billion acres in the 48 contiguous states. Of this about 42.3% is in grazing land, 21.9% is forest, 20.8% is cropland, and 15% is marsh, desert, urban or park land. *source: Acres, USA, August 1997*

## Ginseng Market Price Drops

Growing the medicinal herb ginseng is a \$90 million industry in Wisconsin and a pound of mature roots used to sell for \$90. Recently, however, production from Canada and Korea has resulted in a price drop to about \$10/pound. *source: Acres, USA, July, 1997*

## 3 Sustainable Web Sites Announced

The Wallace Institute site is <http://www.hawiaa.org> and the Sustainable Agriculture Network's is <http://www.ces.ncsu.edu/san/>. *source: Alternative Agriculture News, May, 1997*

## Pressed for Time?

Today's American family spends an average of 34 minutes on meal preparation daily, compared to three and a half hours a generation ago. *source: American Small Farm, July/August 1997*

# ORGANIC

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# Book Reviews



**A New Troubleshooter's Guide to Dairy Cows**  
by David B. Hoke, D. V. M.  
supported by a Dairy Technical Assistance Grant  
available through NOFA/VT (address in back of  
this issue) for \$12 plus \$1.25 for shipping/  
handling)

Reviewed by Kathy Morris

This concise, straightforward guide to dairy cow farm management should be read by everyone who owns one to a thousand dairy animals. It is based on the Animal Process model developed by Taylor Hyde, a veterinarian in Oregon. The Animal Process apportions the complex interrelationship of animal health into four building blocks - Habitat, Nutrition, Behavior, and Selection, and urges consideration of all four when searching for the cause of a particular disorder. These four factors are, in turn, influenced by four other considerations - stress, endemic organisms, timing and technology.

In the introduction Hoke, a Vermont large animal veterinarian for 13 years, provides the background for his development of this approach to animal health. He points out that the guide is a culmination of his thoughts to view health disorders as symptoms of disorder in a larger system. He alerts readers that his guide is not a booklet on specific treatments, for he feels that this fosters postponement of a broader understanding of the underlying conditions leading to the condition.

The second section of the guide defines each of the four building blocks in the Animal Process. Although he never uses the word 'holistic' (and I don't blame him), his approach to herd health is all encompassing. As he states, "Consideration of all the building blocks of animal health keeps the focus on the relationship between the nature of the beast, the nature of the farm, and the nature of our production desires."

The next section of the booklet examines the effects of stress, endemic organisms, timing and technology. This section addresses human intervention and manipulation of dairy animals (but it applies to any domesticated animal) to suit our needs rather than the nature of the animal.

The fourth and longest section of the guide discusses individual health disorders within the context of the major organ systems of the animal. First he discusses the role of the organ system, then he describes each disease, suggests a cause, and then discusses which of the building blocks are involved and corrective management strategies which will correct the situation. Diseases which involve multiple organ systems are noted in each pertinent section and detailed in the organ system primarily involved. In certain cases treatments are mentioned.

Hoke's conclusion points out that "The essence of this book is that disorders of dairy cattle are the direct result of interference with the cow/calf relationship at birth and manipulation of every aspect of the cow's life thereafter."

While I said initially that every dairy animal owner should read and study this guide, in reality the largest farms have exceeded the realm of this type of management - the factory farm with animals manipulated like machines and milk production the sole focus. Often in the discussions of organic livestock farming the conversation turns to the question of whether organic also encompasses humane. This guide clearly demonstrates that by viewing the whole picture and following the natural instincts and rhythms of each animal (humans included) a healthy productive life for all can be achieved. Hoke states, "Farm systems that enhance the quality of life for cows and eliminate the causes of animal health disorders will more likely achieve the full potential of healthy livestock in profitable farms run by happy people." Amen.

P. S: Another Chapter or another Guide, Please!

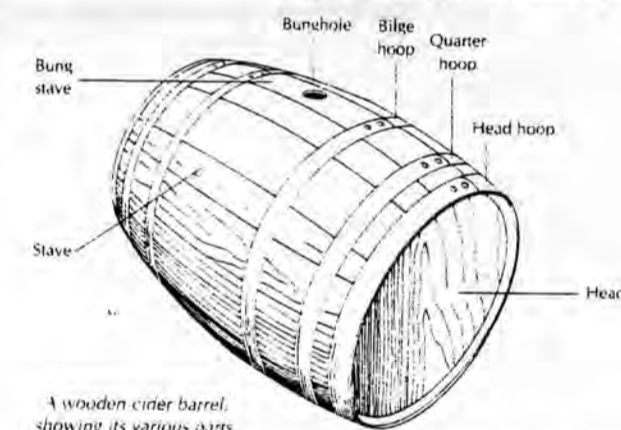
Hokes states in his introduction that, "No matter his thoughts or approach, his animals occasionally get sick and may even get sick and die. Things happen." Things happen to all of us. When my cow was down with milk fever, my only concern, at that moment, was to keep her from dying. I knew it was management - rich alfalfa hay in the late dry period. But even though I knew what to do, I wanted to read again how to treat her - stated concisely and completely in lay terminology.

And I'd like to hear how best to treat her from someone whose philosophy of herd management echoed mine. And I'd like a guide that highlighted the main problems in our region of the country. I think lots of other dairy people would, too.

## Cider: Making, Using and Enjoying Sweet & Hard Cider

by Annie Proulx & Lew Nichols  
published by Storey Communications, PO Box  
445, Pownal, VT 05261, 800-441-5700  
1997, 219 pages, \$14.95 in stores or \$18.40 post-paid

Reviewed by Jack Kittredge

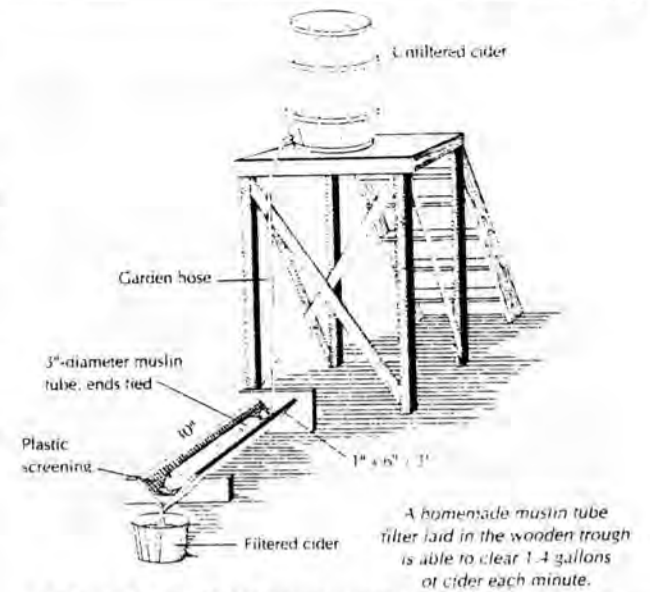


A wooden cider barrel showing its various parts.

This handbook, a reissue of a 1980 Storey book to capitalize on the boom of interest in hard cider, will tell you more than you thought you needed to know about making cider, hard cider, applejack, apple brandy, vinegar, and perhaps a few other liquid apple products I forgot. The part about cider is, naturally, fairly short. What is there to say other than gather your apples, grind 'em, squeeze 'em, and bottle the juice. They manage to stretch this part out to about 20 pages covering types of presses, what to do with the pomace, apple blends, etc.

The bulk of the actual cidemaking part of the book is devoted to hard cider. This, as any homesteader in New England knows, is made simply by letting your cider age. The natural yeasts present in the air and on the apple skins will soon break the cider sugars down into alcohol. Unfortunately (depending on your taste), this process will continue (unless humans intervene) and the alcohol will be further transmuted into vinegar. In the interest of controlling this simple biochemical process the authors write a good deal about possible equipment, measurements, operations, problems, etc. to which you can devote a good deal of time, money, or both in your pursuit of various tasty products.

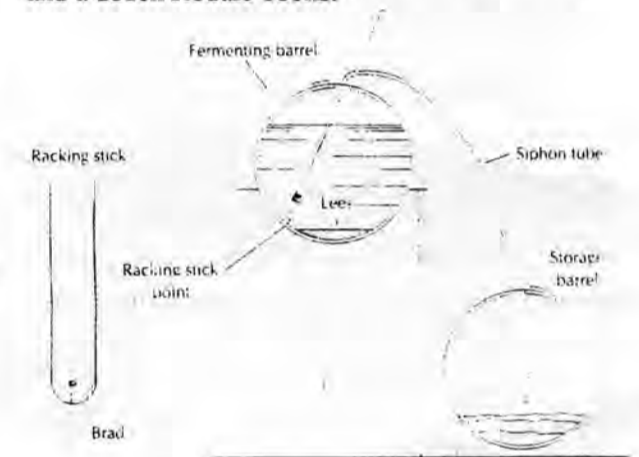
As sort of a slapdash fermenter myself, my eyebrows go up at the suggestion that you need all the paraphernalia listed here to make hard cider. If you don't trust putting your cider on the back porch and sampling a little every day until you're satisfied, maybe get a \$2.00 fermentation lock to stick in the jug's cork. But I'm sure there are those who will want to make this a conspicuous hobby rather than



A homemade muslin tube filter laid in the wooden trough is able to clear 1-4 gallons of cider each minute.

a simple part of fall homesteading, or who want to do it on a quasi commercial scale and can't afford a mistake or two. They will be interested in the oak barrels, sterilizers, hydrometers, titration equipment, etc. discussed. There is even a chart listing the 29 sizes of commercially available taper corks by top diameter (in both inches and millimeters), length, and point diameter.

Even this wealth of information, however, takes only another 65 pages. What to do? Can't sell an 85 page booklet for \$15. Fortunately, someone realized cider requires apples. Perhaps the reader would like to plant an orchard to get the full experience of his or her hobby? So the next 70 or so pages are on growing apples - varieties, climate zones, soils, spacing, diseases, pests, sprays, IPM and organic management options, and grafting. You know the stuff - you've seen it in nursery catalogs and a dozen Rodale books.



When racking off from an opaque container be sure to leave at least three inches for the lees when positioning the racking stick and siphon.

By now we're over 150 pages and need only 50 or so more to make the minimum thickness required in the trade. So we get 50 pages (the best in the book, as far as I'm concerned) about flavored vinegars, applejack and distilled products (only for historical purposes, insist the authors, citing the \$10,000 fine and 5 year jail sentence threatened for any dear reader who acts upon the plans they lay out oh-so-simply for making a stovetop or free-standing still).

Finally, ten pages reiterate the legal difficulties you will encounter for doing what they suggest and give you addresses and phone numbers for the various ATF offices where you might want to turn yourself in. Now we're over 200 pages and a 5 page appendix on kits for presses brings us to the index and completion!

Not to be too jaundiced about it, this is a good book. It's padded considerably, but some of the padding is useful and more is simply interesting. If you know someone who is into cider it would be a fine present, especially as the price is up there where a gift should be - to show you really care - not down there where the necessary information would justify - but would make you look like a cheapskate. (Whoops, there I go again!)

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# The Natural Farmer

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### Historic Dairy Farming in New England

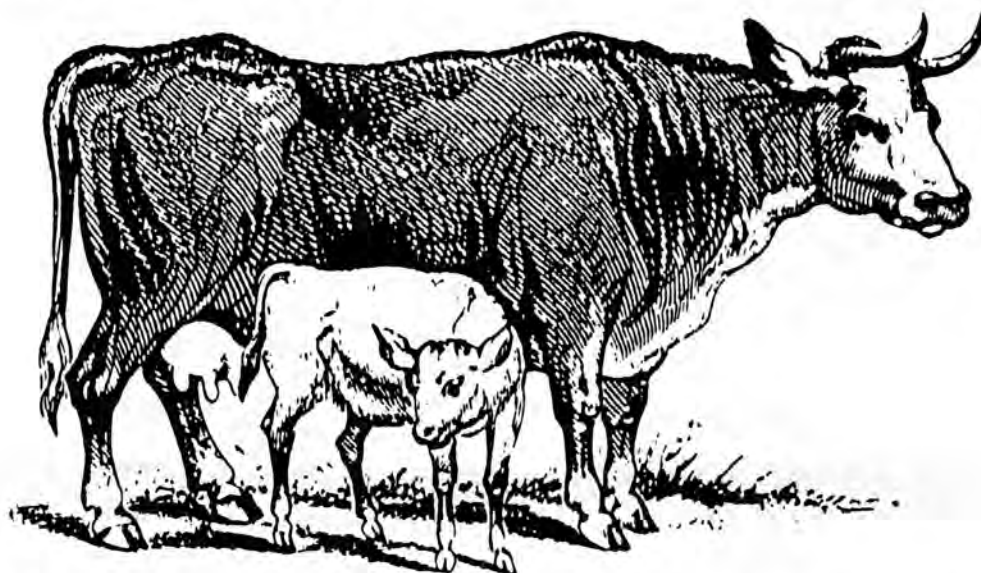
By Dave Miner

The history of dairy cattle goes back to the beginning of settlement in New England in 1620. By 1630 cattle are being shipped from one settlement to another and large numbers of these cattle are not of a particular breed. They are described as a color, such as yellow or red cattle. A major contributing factor to this is the practice of using a community owned bull for breeding all the cows in a town.

Other important factors in livestock management are feed and housing. The feed is largely determined by the fertility of the land. Those settlements close to the coast have the good fortune of salt marsh hay, while other settlements further inland rely on open meadows. At first the cattle are left to fend for themselves and, with little shelter from New England's harsh winter weather, many perish. By 1635 crude shelters are built to protect livestock and it becomes common for cows to be tied in for winter. This practice goes on well into the 1700's with towns providing common bulls and the main concern being that the male offspring be good draft animals.

These animals were relatively small to our way of thinking. Even up to the middle 1700's animals would only dress out at 300 to 400 pounds. With most of the concern being draft animal related, dairy products were secondary in consideration until the turn of the century and the beginning of specialized farming. Also, by the mid 1700's we begin to see crops such as corn, wheat, peas, and other grains in surplus. Feed being in abundance, the cattle are by now shipped from New England to the West Indies and other parts of this continent.

As this industry grows, it has profound affects on other industries in New England. Where cattle are grown, slaughter yards soon develop. In neighboring towns tanneries and leather products become



important. Moving into the 19th century, the Industrial Revolution takes hold and as the population begins shifting from farmer to factory worker the demand for agricultural products also changes. We begin to see that if a cow can produce more dairy products than are needed on the farm, there is a market for the surplus. Soon it becomes apparent that milk, butter, cheese, and other dairy products can produce income.

Farmers begin to select and import animals for more specific needs and we start selective breeding. But even in the middle of the nineteenth century the common bull is available in most towns. It isn't until the latter part of the 19th century that we see the import of pure bred dairy animals such as Jersey, Holstein and Guernsey in large numbers. The end of the 1800's sees other changes. State colleges run experimental stations developing combination crops of peas, oats or barley. The crops are improving in volume and quality through the use of manufactured equipment and the application of manure and blended minerals.

Here at the New Hampshire Farm Museum's Plummer Homestead it is 1893 and our Jersey cow is milked on a wooden floor by hand. In spring, summer, and fall you'll find Buttercup grazing on pasture. Her diet, largely hay, includes vegetables such as peas, pumpkins, beets, cattle beans and corn. Her milk may be separated in a number of ways. The centrifugal separator is available, but we use a simple cylinder and let the cream rise to the top overnight. We draw off the skim milk in the morning and make butter from the cream in a small hand crank chum. In larger operations rocking churns may be powered by water or steam. Milk could be shipped by train to the city and is handled in volume, delivered to hundreds of homes in glass bottles. In July you may catch farmer Fred swinging a scythe in the field out back, but if he had his druthers he'd have a horse-drawn mower and rake, making hay for those long winter months. If the corn crop looks good, we may have enough to put up some silage.

Note. This article was largely developed referencing the book "A Long, Deep Furrow" By Howard S. Russell, and I highly recommend it if you have an interest in New England history.

*Dave Miner is Operations Manager at the New Hampshire Farm Museum in Milton, N.H. and has worked in the agricultural field for over twenty years. A deep love of history and agriculture combined make historic farming more a pleasure than a job and sharing this with the public is just plain fun.*



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# Beyond Black & White: Use of Rare Breeds of Cattle for Grass-based Dairy Production

By Carolyn Christman

There are two elements in sustainable livestock enterprises: management and the breeds appropriate to the environment and the production system. This article describes rare breeds of dairy and dual purpose breeds that have the characteristics valued for grass-based commercial dairying and for the home production of dairy products. Rare breeds are well adapted for these production niches, and they can be economically competitive under low input systems.

## Cattle Breeds in the Dairy Industry

The dairy industry in North America -- and around the world -- is dominated by a single breed of cattle, the Holstein. No other breed has been as successfully selected to produce massive volumes of milk when given maximum nutrition and veterinary support, ample clean water, and excellent husbandry. There are an estimated 9.5 million Holsteins in North America, and about 400,000 purebred calves are registered annually. While this number dwarfs the registrations of the other dairy breeds, the disparity is even larger than indicated, since only about 15% of dairy cows are registered.

The intensive and expensive dairying system that produced the Holstein is, however, beginning to change. The combination of high production costs and low prices for dairy products is leading some dairy farmers to try grass-based dairying. This shift in production methods has also brought into question the industry's reliance on the Holstein. Grass-based production requires cows that are active grazers, able to maintain body condition, produce milk, and reproduce efficiently on a forage diet. Efficient reproduction is very important, since cattle must conceive promptly when bred in order to produce their calves when pastures are at their best. Longevity also has value, as cows may be expected to have longer productive lives on pasture. This also reduces the need for the annual purchase of replacement cows, which is a significant cost in conventional dairying.

The need to improve grazing ability, fertility, and other characteristics in grass-based dairy herds has led some farmers to do what would have been considered heresy not too long ago: crossbreeding their Holsteins or replacing them with "colored" breeds. The Ayrshire, Brown Swiss, and Jersey are experiencing a revival of interest. Farmers are also looking at rare dairy breeds, such as the Canadienne and the Dutch Belted, which can impart hybrid vigor or be competitive under low inputs.

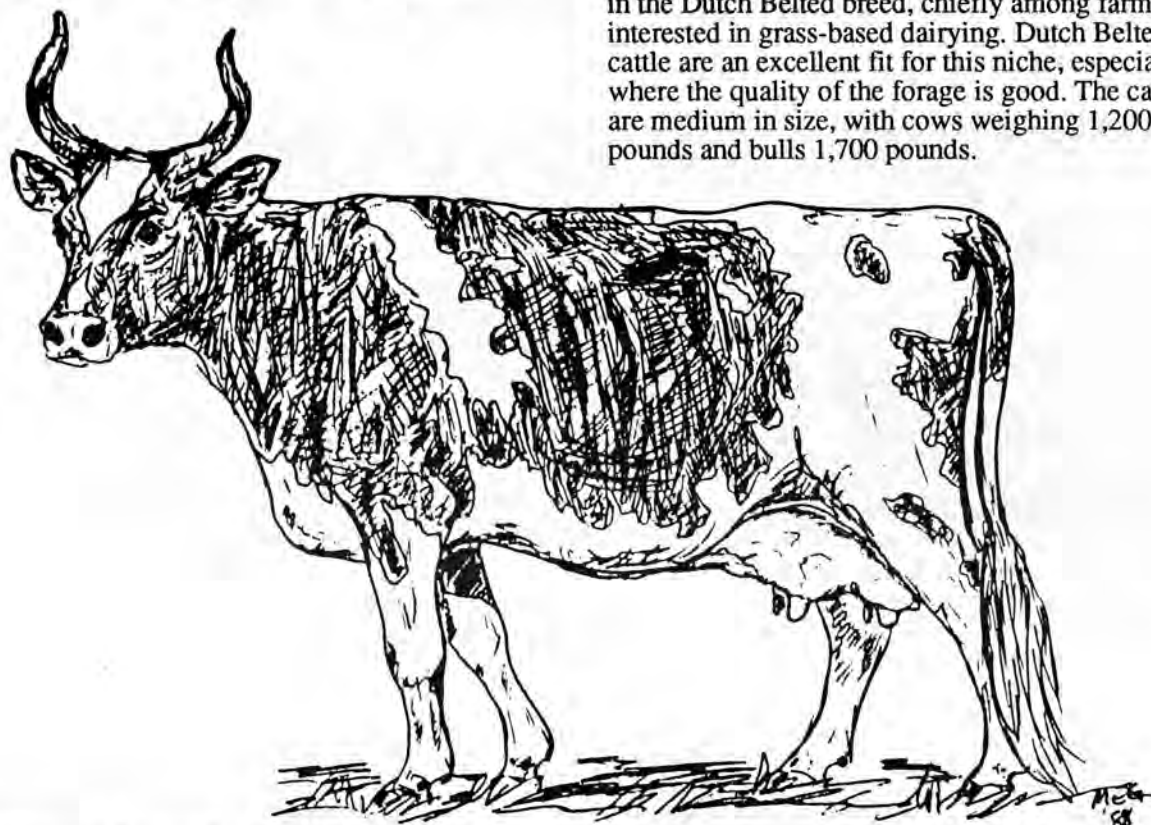
The Jersey breed continues to increase in numbers because of the high percentage of solids in its milk. The breed is also noted for its heat tolerance, and it fits in well with small scale and commercial production. Its popularity indicates that much more than production is involved in breed dynamics, since the Jersey is a strong breed numerically despite its more modest milk yield compared to the Holstein. The Brown Swiss breed also remains relatively strong, with its numbers holding steady during the past twenty years. Breed numbers are also supported by continuing exports to Central America and the Mediterranean, where the breed enjoys an excellent reputation for adaptability, hardiness, and longevity.

## Rare breeds for Grass-based Dairying

### Ayrshire

The Ayrshire is named for its home region, County Ayr in southwestern Scotland. It was developed beginning in the 1700s, with selection emphasizing milk for the manufacture of cheese and butter. Ayrshires were first imported to North America in the 1830s.

Ayrshires are hardy dairy cattle, well adapted to cold climates and rugged environments. The cows are excellent grazers, able to maintain condition, reproduce efficiently, and produce up to 20,000 pounds of milk per year, primarily on pasture. The longevity of the cows adds to their value for pasture based production systems.



Ayrshire by Martha Gibbs

Ayrshires are known for being alert and active in disposition, and the breed is considered the most stylish of the dairy cattle. The handsome, lyre shaped horns are distinctive. Ayrshire cattle are white with dark red or reddish brown spots and speckles. They are medium in size; cows weigh 1,100 pounds and bulls 1,600 pounds. The Ayrshire is relatively numerous globally, though its decline in North America has made the breed the subject of conservation activity.

### Canadienne

The Canadienne is one of the few historic breeds of livestock developed in North America. It descends from cattle of Normandy and Brittany which were brought to Canada between 1601 and 1660. This population was shaped by natural selection in the demanding climate of eastern Canada, becoming known as the Canadienne. The breed is closely associated with its home region of Quebec, and even today the majority of the cattle are found in this province.

Canadiennes are black, brown, tan or russet with a pale fawn muzzle and udder. Many cattle have a lighter colored stripe along the back. The black-tipped horns curve up and turn back toward each other. Cows weigh about 1,100 pounds, and bulls about 1,600 pounds. Milk production averages 11,000 pounds or more annually. Most significant is the breed's ability to produce milk on poor forage and under very challenging conditions. No other dairy breed demonstrates this combination of hardiness and productivity.

The Canadienne breed is critically rare, with fewer than 300 cattle in North America today, most in Quebec. The breed merits attention for use in grass based dairying, especially where the quality of forage is low. Under these conditions, the Canadienne will be able to demonstrate its value to dairy farmers and thus gain a broader base of support.

### Dutch Belted

The Dutch Belted is a dairy breed named for its country of origin and its unusual color pattern: black with a bright white belt around its middle. In the Netherlands, where the breed originated, it is known as the Lakenvelder. The term *laken* means a sheet or blanket around the body, and the name is shared with the Lakenvelder chicken breed, which has a similar color pattern. The Dutch Belted has been known in the Netherlands since the 1500s. It was selected as a specialized dairy breed able to convert lush pastures into milk.

Dutch Belted cattle were imported into the United States between 1840-1900. While never numerous in the United States, the Dutch Belted breed was well known and nationally distributed, managing to carve out its own niche in the dairy industry. It became rare in this century, however, and by the

1970s, the Dutch Belted neared extinction, both in America and in the Netherlands. It was only through the action of a handful of breeders, including Kenneth and Winifred Hoffman of Earlville, Illinois, that the Dutch Belted breed survived. Today there are less than 1,000 Dutch Belted cattle in the world, including perhaps 200 documented purebred cows in the United States.

In recent years, there has been a revival of interest in the Dutch Belted breed, chiefly among farmers interested in grass-based dairying. Dutch Belted cattle are an excellent fit for this niche, especially where the quality of the forage is good. The cattle are medium in size, with cows weighing 1,200 pounds and bulls 1,700 pounds.

Dutch Belted cattle are black or occasionally red with a white belt. The belted pattern is dominant, so that crossbred Dutch Belted cattle (especially Dutch Belted-Holstein crosses) may have the markings of a purebred. For this reason, crossbred cattle have sometimes been marketed as purebreds. This, plus the number of undocumented, unregistered purebred cattle, have been obstacles to the conservation of the breed.

### Guernsey

The Guernsey cattle breed originated in the Channel Islands between France and England and is named for the Isle of Guernsey, which is the most western of the group. (The Jersey breed was developed on the neighboring island of Jersey.) The Guernsey breed was standardized over the past 200 years, becoming consistent in conformation and in color, which is a range of fawn to golden with white spotting. Today, Guernseys are medium to large in size, with cows weighing 1,400 pounds and bulls 2,000 pounds. The breed is usually horned, though polled strains have been developed. Cows are noted for their quiet dispositions.

A distinctive characteristic of the breed is the golden color of its milk, which results from exceptionally high levels of carotene, a precursor to Vitamin A. It is thought that the Guernsey excels in its ability to absorb this nutrient and transfer it to butterfat. Guernsey milk has been promoted under the trademark "Golden Guernsey," and the butter made from the milk is also distinctively golden.

Guernsey cattle were first imported to North America in the 1830s, and they have had a prominent place in American agriculture historically. The breed has fallen into decline in recent decades, however. With the dairy industry focused exclusively on the quantity of milk produced under confinement husbandry, and pricing favoring the quantity of fluid milk over the quality of the components (such as protein and butterfat), the Guernsey's characteristics lost market value.

The Guernsey is strong numerically, especially in Britain, but the breed is declining and has an uncertain future. It is not clear if the Guernsey can take advantage of the movement to grass-based dairying (as has the Jersey), nor is it known if changes in component pricing will return some of the market value to its milk. Traditionally the breed was a good grazer, able to produce on quality pastures, and adaptable to a variety of climates and conditions. These abilities will be called upon if the Guernsey is to regain its historic place as a leading dairy breed.

### Milking Shorthorn

The Shorthorn breed had its origins in northeastern



England, especially in the counties of Durham and York, where imported Dutch cattle were crossed with native stocks and selected for performance in both meat and milk production. Shorthorns were first imported to America in the late 1700s, with the largest number of cattle brought in after 1820. The Shorthorn was valued for its dairy and beef qualities and also valued as a draft animal.

Throughout the Shorthorn's history, breeders have differed in their view of its purpose, with some selecting for maximum dairy production, others favoring beef, and still others selecting for a balance of the two. Early in the 1900s, the breed was formally split into a beef type, called the Beef Shorthorn or simply Shorthorn, and a dairy type, called the Milking Shorthorn.

The Milking Shorthorn breed declined in the last few decades because of its inability to compete with the Holstein. In an attempt to increase milk production, the breed's herdbook has been opened to substantial introduction of outside blood, first from Illawara (Australian Shorthorn) and then Red and White Holstein. Today, many of the bulls registered as Milking Shorthorn are actually one-half or more Holstein. While these introductions did increase production levels, they also reduced the breed's genetic uniqueness and consistency of performance in its historic traits, such as the ability to produce on grass.

Although there are several thousand Milking Shorthorns (or Dairy Shorthorns) in Britain, the breed is declining globally. Pure American strains are the conservation priority in the United States. These strains will perform well for grass-based dairying, since they are forage efficient, healthy, long-lived, and productive, with the extra value of high quality beef.

The Milking Shorthorn is medium to large in size, with cows weighing 1,200-1,400 pounds and bulls about 2,000 pounds. Milking Shorthorns are red, white, roan or a mixture of the three, sometimes with extensive speckling. Most cattle are horned, though polled strains have been developed.

**Dual Purpose Cattle for Home Dairy Production**

Traditionally, all cattle were multi-purpose animals used for milk and meat, and sometimes oxen. Over the past two centuries, however, breeds have gradually been selected to be more specialized producers of either beef or milk. These two goals seem to be at the opposite ends of the selection spectrum, as selection for extreme beef qualities come at the expense of dairy traits and vice versa.

There are still a few breeds, however, which have historically been selected for a balance of beef and dairy characteristics. Most are now selected for beef production, though the cows retain dairy characteristics, such as milk quality and milk quantity often far exceeding that found in beef breeds.

Dual purpose breeds are well suited for home production. Milk from these breeds is high in solids, making it excellent for cheese and butter manufacture. The fact that cows produce less milk than the dairy breeds is an advantage for the home dairy.

**Dexter**

The Dexter originated in southern Ireland during the early 1800s. The breed was developed from the

Kerry, an Irish dairy breed, and its name came from one of its early promoters. The Dexter was popular with smallholders in Ireland and in England, who appreciated its efficiency in producing both milk and beef on limited acreage. Dexters were imported to North America beginning in 1910.

Dexter cattle are among the smallest of cattle breeds, standing 40 inches tall and weighing 700-900 pounds. They are solid and compact in appearance. Most Dexters are black, though red and dun are also found in the breed. Their black-tipped white horns arc upward.

Dexters are hardy, forage efficient cattle with excellent maternal qualities. As with other dual purpose breeds, the quantity of milk produced varies among strains; those strains which have had more dairy selection produce more milk, while those which have been selected for beef produce less. The milk produced is high in solids, making it ideal for butter and cheese production. Dexter beef is lean and high in quality. The small size of the carcass makes the breed an excellent choice for use in direct marketing programs. Dexters are good browsers and can rid pastures of some pest plants, and they may also be used as handy sized oxen.

**Milking Devon**

Devon cattle come from Devonshire in the southwestern peninsula of England. They were triple purpose, valued for the rich milk used in Devonshire cream, for high quality beef, and as the quickest and most active oxen in the British Isles. The hardiness and practicality of this breed (plus the ready availability of Devon cattle near the ports of departure) made the Devon a natural choice for the Pilgrims and others coming to America. Devon cattle have been known in New England since 1623. The breed became widespread, distributed from the Carolinas to Oregon.

By the 1950s, the market for dual purpose cattle had disappeared, and the Devon breed was nearly extinct. Breeders split, with the majority selecting their cattle for beef. This population was called the Devon or Beef Devon. The remaining breeders continued to select their animals for the traditional purposes: milk, meat, and draft. This population was called the American Milking Devon. The Milking Devon reached its low point in the 1970s, when fewer than 100 cattle remained, but it survived due to the persistence of a few New England dairy farmers and teamsters. Today, there are over 400 Milking Devon cattle in existence and the population is increasing.

Milking Devons are ruby red with black-tipped white horns. Cattle are medium in size, with cows averaging 1,100 pounds and bulls 1,600 pounds. The appearance is compact yet fine, with a straight topline, square set legs, and a well-formed udder. As with most dual purpose breeds, the Devon population exhibits a range of dairy and beef characteristics. Relatively few strains are being actively selected for dairy production, though the type persists because these lighter animals are said to make the best oxen.

**Red Poll**

The Red Poll was developed in eastern England in the early 1800s from the combination of the Norfolk and Suffolk cattle breeds. The breed was recognized in 1846, and its original name "Norfolk and Suffolk Red Polled cattle" was shortened to Red Poll in about 1880.

Red Polls were known as efficient and competitive dairy cows, especially where total profit over feed costs was measured. They were also celebrated for their longevity, as cows were often able to produce over 10,000 pounds of milk per year even as teenagers. Other breed characteristics include superior fertility, calf vigor, and calf growth rates.

Red Poll cattle are consistent in appearance, medium in size, dark red in color, and polled. Cows weigh 1,200 pounds and bulls 1,800 pounds. A little white on the underline is tolerated but not desired. Red Polls are adaptable, with quiet dispositions, and they are an excellent choice for rotational grazing and other systems where ease of handling is required. The milk is high in protein and butterfat, making it especially good for cheese. In England, Red Poll cheese is still produced.

**Choosing a Cattle Breed**

Before you acquire cattle, you should plan your management system, with careful attention to the capacity of your pastures and other resources. Then, you can research the breeds that will be the best fit for your farm. This is best done by talking with and visiting breeders in your area. It is not a mistake to choose the breeds that you like the most, because these may well give you the most satisfaction.

The rarest breeds merit consideration, though they also carry the responsibility of stewardship. For example, it is important that the cows be bred pure rather than crossed, and that the offspring be registered. For more information, contact the American Livestock Breeds Conservancy, PO Box 477, Pittsboro, NC 27312, phone 919-542-5704, fax 919-545-0022.

*Carolyn Christman is Program Coordinator of the American Livestock Breeds Conservancy, a non-profit membership organization dedicated to the conservation of genetic diversity in livestock through the promotion of rare breeds. Don Bixby, Executive Director of ALBC, also contributed to this article.*

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Recombinant bovine growth hormone, rBGH or rBST, was the first genetically-engineered, "bio-tech" food product in wide use in the U.S. rBGH's entrance onto the market and in the food supply has been a test case for government, industry, farmers, and consumers for the introduction of bioengineered food products. Dozens of new genetically engineered crops and foods are either on the market now or in development.

The process to approve the use of rBGH in the U.S. set numerous distressing precedents for new genetically engineered foods. Industry and the federal government have allied to deny the public the right to know if their milk was from rBGH treated cows by claiming that the milk from cows injected with rBGH is the same as milk from untreated cows. This relieves agribusiness of the burden of conducting long term studies to prove their new products are safe for humans, or the larger environment.

## What is rBGH?

rBGH is the genetically engineered hormone injected by farmers into cows to force them to make more milk. rBGH is a close copy of a cow's natural growth hormone. rBGH could hurt family farmers with an oversupply of milk, pushing down already low milk prices. rBGH's package cites many potential cow health problems, such as mastitis. rBGH may be bad for humans, but we simply do not know yet because there have been no long term health studies, though they have been called for by the American Medical Association and others.

rBGH is banned in Europe, Canada, Australia, New Zealand, Israel, and other countries because of potential threats to people and family farmers. Despite these concerns, in 1993 the US Food and Drug Administration (FDA) approved the commercial use of rBGH, and said rBGH use poses a "manageable risk" for consumers. The FDA does not require labeling for milk and dairy products from cows injected with rBGH. Instead the FDA has left these regulations up to the states. At present, only the chemical giant Monsanto Company makes and distributes the drug commercially.

## US FDA Found "No Significant Difference..."

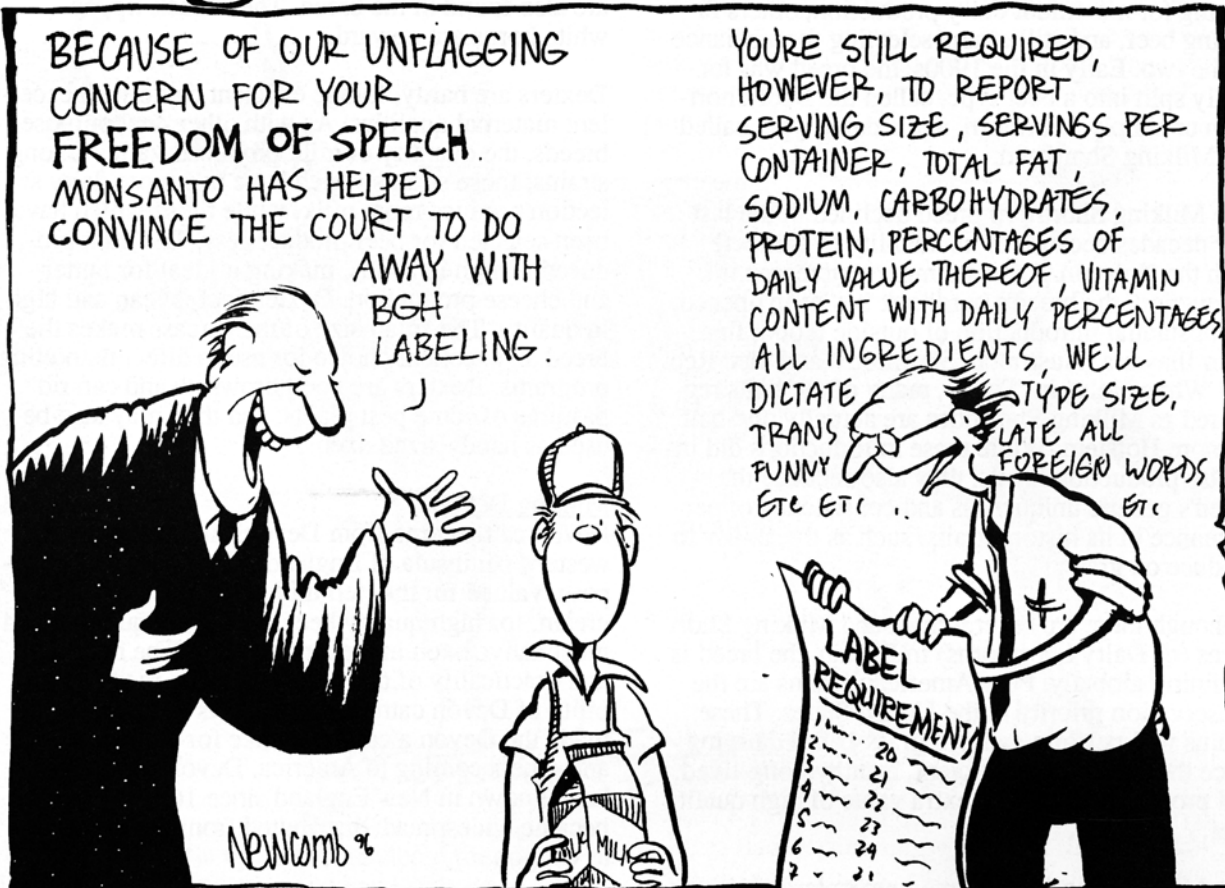
The U.S. FDA paved the way for agribusiness to transform food production by concluding that "no significant difference has been shown between milk derived from rBST-treated cows and untreated cows." "Significant" is clearly in the eyes of the beholder. As rBGH critics Drs. Samuel Epstein and David Kronfeld point out, numerous differences exist in rBGH milk versus controls, such as nutrient composition, rBGH residues, higher insulin-like growth factor levels, and use of more antibiotics to control the health effects of rBGH use on cows.

The FDA was well aware of these differences but concluded that rBGH milk is safe. As a result, the FDA required no long term health studies, nor did it require that the residues of rBGH in milk be labeled like other food additives.

## rBGH Use Boosts Organic Milk Sales

"We've seen a huge jump in sales since the FDA approved rBGH in 1993," says Bunny Flint, co-owner of the Organic Cow of Vermont. "But that is a double edged sword. We want it to grow because people want nutritional foods. Fear buying is not a positive thing," says Flint.

"People are switching to organic foods to avoid chemically contaminated and genetically engineered foods that have not been proven safe," says Ronnie Cummins, National Director of the Pure Food Campaign. "With milk, it has been rBGH driving organic milk and dairy sales," he added.



"Many of my customers have turned to organic dairy products because of their concerns about rBGH and other hormones in milk," says Deborah Messing, dairy buyer at the Hunger Mountain Food Co-op, in Montpelier Vermont, and a long time opponent of rBGH use in Vermont. "Customers want the extra assurance of organic certification," says Messing.

## rBGH Down but Not Out

Since its first commercial use in 1994, public opposition and farmer rejection of rBGH have stalled its sales in the U.S. After three years of commercial use, only a small portion of the US milk supply may be from cows injected with rBGH, according to the Pure Food Campaign, perhaps 4% of cows every two weeks. Approximately 10% of U.S. dairy farmers have tried rBGH on a limited number of cows. Other estimates of rBGH use are just as dismal. A 1995 "Dairy Today" survey estimated that only 20% of dairy farmers had even tried rBGH and 40% of those who tried it later dropped it.

## Public Wants Labeling

Strong demand has created a vibrant, niche market for rBGH-free dairy products, but Vermont is one of the few states where rBGH-free has become a market standard. Vermont consumers were able to exercise their choice in the supermarket after Vermont's landmark 1994 law that required labeling of milk and dairy products from cows that may have been treated with rBGH. This law was in effect for a year until a federal appeals court blocked it in August, 1996.

In 1997 Vermont's legislature extended Vermont's voluntary labeling law. "No one questions the economic importance of being rBGH-free to Vermont's dairy industry. That's a real victory for dairy farmers," says Jenny Nelson, a Vermont dairy farmer, state legislator, and Rural Vermont board member.

The FDA left it up to states to insure rBGH labeling is truthful and not misleading. Still only 10 states have regulations for voluntary labeling by rBGH-free dairies and processors. The other states are Maine, Wisconsin, Minnesota, Pennsylvania, Michigan, Missouri, North Carolina, Ohio, and Utah. In 1997 Massachusetts has had under consideration an rBGH labeling bill. Other states have hesitated to adopt labeling laws because of the legal challenges to Vermont's landmark law.

## Global Food System

The success of European consumers to resist genetically engineered foods is heartening. In Austria, over one million people, or about 21% of voters, signed petitions calling for "No!" to genetically engineered foods. After intense public pressure, in June 1997, the European Union enacted new regulations to require companies to label foods that are genetically altered.

Monsanto and other companies that want to sell rBGH have the full weight of the federal government in pushing rBGH internationally, despite opposition by the European Union or others. The European Union's ban on rBGH sales expires at the end of 1999. In Canada, anti-rBGH activists fear the Canadian government may soon approve rBGH despite strong opposition from consumers and farmers across Canada.

For several years the United States has lobbied unsuccessfully to the Codex Alimentarius Commission, contenting that rBGH is safe. The Codex, an obscure, international trade organization, has broad powers to set standards for food safety and labeling. With a favorable Codex ruling on rBGH, the U.S. could use the World Trade Organization to force countries to allow rBGH sales. In June, 1997, Codex, lead by the European Union countries, soundly rejected the U.S.'s attempt to have Codex proclaim rBGH safe. Instead Codex sent the issue back to Codex committees for further study. Codex will review rBGH safety again in 1999.

Ultimately, marketplace resistance and offering alternatives like organic milk is important to give consumers choices in the short run, but those choices are limited. National policies must be changed to block untested food biotechnologies and require their labeling throughout the processed food chain. The cost of losing this battle is enormous. The fate of our food supply and sustainable agriculture is at stake.

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# Butterworks Farm: Jack and Anne Lazor

by Lisa McCrory

Jack and Anne Lazor first met working on the historical farm at Old Sturbridge Village in the early 70's. There, in a museum living agricultural history setting, they discovered activities such as threshing grain with a flail or shelling and grinding corn and baking it into bread in a beehive brick oven.

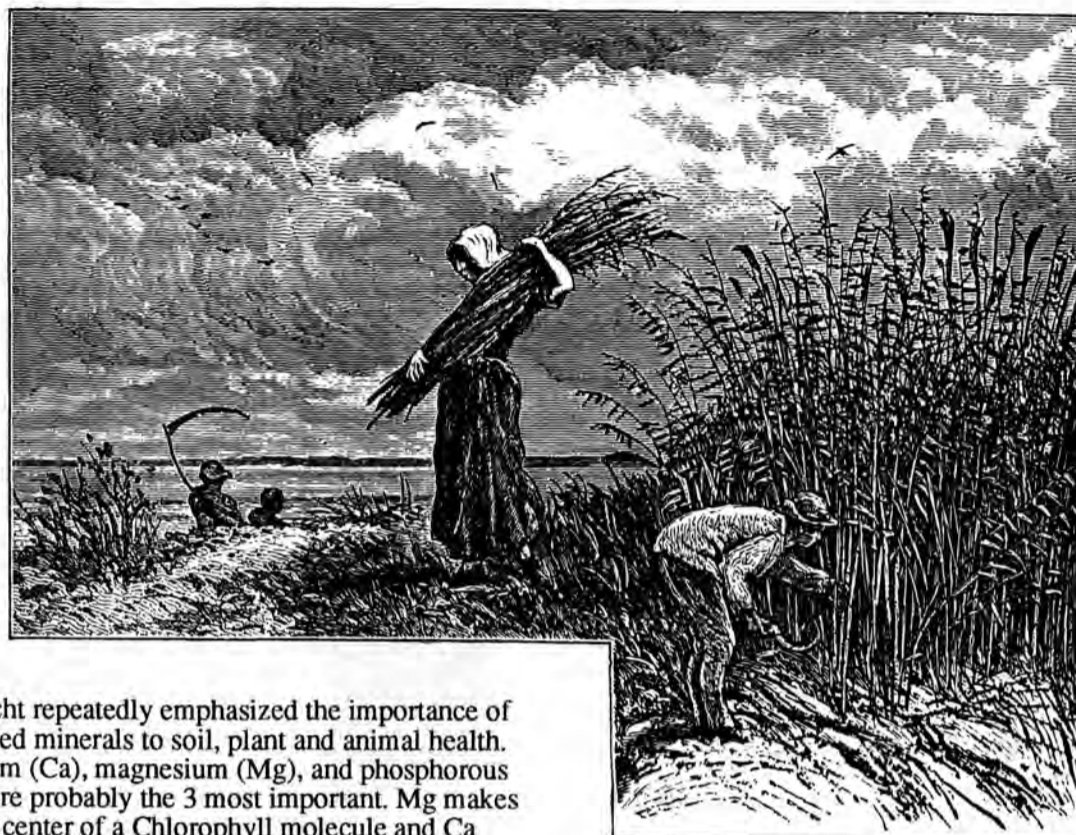
After a year in Wisconsin, the couple began homesteading in Irasburg, VT in 1975. A week after moving to their little rented farm, they had a family cow. Pigs, chickens, and a work horse soon followed, as well as some very cheap cast-off equipment for putting up loose hay. This was the beginning of their "life of process" in Northern VT. They purchased the beginnings of their present farmstead in 1976, and in 1977 began growing wheat for their bread and barley and oats for their animals. Technology was Amish style; a grain binder and threshing machine.

Twenty years have gone by since they began their little homestead/farming adventure. They have gone from a 4 cow, door to door, community dairy products kitchen stove-top processor to a 45 cow (90 head total) organic yogurt dairy. Total crop acreage has grown from the original 40 to 250 acres of planted grain crops, 100 acres of forages, and 25 acres of permanent pasture.

Fertility management and enhancement was a real mystery when they first began. They've made plenty of mistakes and have learned many lessons. The one theme that hasn't changed is that they must give more back to the earth than they take.

Their first exposure to any type of information about building soil fertility was an older Rodale text about composting. Jack remembers layering his first compost pile with cow manure and green plant material, wondering how there would ever be enough N, P and K in this small amount of material to fertilize even a small plot of land. He was raised under the paradigm that soil fertility was a numbers game and that certain essential elements had to be present in the proper amounts to insure a good crop. An understanding of the power of microbial life to gradually release nutrients to plants was yet to come.

Shortly after this Jack read the Albrecht Papers published by Acres USA. Dr. William Albrecht, an agronomist at the University of MO, had analyzed the mineral and physical make-up of the most fertile land in North America - the virgin prairie. Grass grew shoulder high and bison roamed in a belt that stretched from the Panhandle of Texas to North Dakota. Because evaporation and precipitation are at a perfect balance, these soils produce wheat of the highest protein.



Albrecht repeatedly emphasized the importance of balanced minerals to soil, plant and animal health. Calcium (Ca), magnesium (Mg), and phosphorous (P) were probably the 3 most important. Mg makes up the center of a Chlorophyll molecule and Ca and P the outside. Ca is an essential nutrient as well as a pH adjuster.

In 1976 the Lazors met the late Fred Franklin of Vanguard Farms in Orleans, VT. Fred had studied under Dr. Norman Curtis of Cobleskill, NY. Dr. Curtis and Wm. Albrecht had been contemporaries. Fred did soil testing, consulting, and had a small soil amendment business. Fred considered Magnesium to be the mineral most essential and the most lacking in Northern Vermont. Fred's program included generous doses of dolomitic (Lee) lime, hard Florida rock phosphate, medium doses of magnesium oxide from Ontario, sulphomag from New Mexico, along with a sprinkling of boron and sulfates of manganese (Mn), copper (Cu), iron (Fe), and zinc (Zn). Everything was balanced in relation to the available calcium in a soil. The program was expensive and for the most part Jack and Anne could only apply a proportional amount of what he recommended.

After 1984 they were able to use more dolomite, rock phosphate, and sulphomag because their yogurt business had finally gotten off the ground and gave them enough income to buy a carload of Florida rock and several tractor trailer loads of Lee Lime.

By 1986, crop yields had doubled, legume populations increased, and animal health had improved. Jack and Anne found out for themselves that an adequate amount of balanced minerals made the soil life even more dynamic. This soil life is what really runs the show in organic farming and it needs a

mineralized environment to function at a high level of life. Since that time they have found many new sources for minerals. Fred passed away in December of 1988, but his legacy lives on.

They have tried many other kinds of lime such as dolomite from Potsdam, NY and South Stukely, Quebec, but Lee remains the best. They get their rock phosphate from McInnes Natural Fertilizers in Rock Island, Quebec. Other products that they would recommend are basalt and mica dust. Mica dust is a rock source of potassium and magnesium, and basalt is an igneous black volcanic rock dust that bulks up lighter soils and improves the cation exchange capacity.

Butterworks Farm is an upland farm. Sitting at 1350 feet above sea level, it looks out over the Missisquoi Valley 500 feet below. For the past 20 years, crops have been rotated between hay and cereal grains - wheat, barley, and oats. Cereal grain straw has been the only source of bedding on the farm - "a great way to keep the carbon home", Jack says. Hay fields were plowed in the fall and seeded the following spring to a cereal underseeded with a legume. The legume was either plowed down for green manure or retained as a future hay crop. Jack expanded the rotation to include corn and soybeans beginning in 1990. Sod was plowed for corn, followed by soybeans, two years of small grain and then back to hay.

The Lazors have found that legumes such as native white and ladino clovers have continued to thrive and increase in population in their hay fields, so less tillage and cropping is taking place on the home farm. Cow numbers have increased and more hayfields are being grazed. The corn and soybeans have been moved onto river bottom land in North Troy, 10 miles to the north and 800 feet lower in elevation. Heat units are higher in North Troy, and there are no rocks there.

The process of soil remineralization has begun all over again on about 175 acres of the river bottom land. Manure and compost are used on the corn land, which is planted on plowed sod. Dolomitic lime and rock phosphate have been applied and after four years things are beginning to wake up. Corn is still followed by soybeans, and small grains are grown with a legume the third year. Fields spend the fourth year of the rotation in a legume like alfalfa or sweet clover before they are once again plowed for corn.

The process continues at Butterworks Farm. Every small part adds up to a whole picture that has brought well-being and satisfaction to farm stewards Jack and Anne Lazor.

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# A Family Cow

by Hillary Nelson

Long before we finally left New York City to move to our farm in Canterbury, New Hampshire, my husband and I had been arguing about owning a cow. I was a pastry chef and had fantasies of my own wonderful milk, cream and butter, fresher, more delicious, than anything I could ever buy in a grocery store. But my husband, who grew up on a dairy farm, was adamant.

"You don't have a clue," he railed at me. "Keeping cows is a lot of work. Think of what it's like to be milking at five in the morning in January in an unheated barn in New Hampshire. And we'll never be able to leave the farm. It's not like you can just hire a babysitter for a cow."

After a while, I began to keep my mouth shut and bide my time. I knew I'd get my cow someday, somehow.

We decided to put up a barn on an old foundation; it was a beautiful structure, based upon two hundred year old posts and beams moved from another site. Neighbors stopped by to ask what the barn was for. "Oh, I'm sure we'll think of something," my husband would answer, and I'd just smile my secret smile, knowing all the while exactly what that barn was for.

Well, a farm abhors an empty barn the way nature abhors a vacuum. I think the first creatures to move in were probably mice and swallows, but they were soon followed by a flock of chickens and an angora bunny. In a little while, we added a couple of feeder pigs, two dogs and a cat and had planted a large garden. Going away on vacation was tough with all that responsibility. But then the new neighbors moved in.

Dan and Ruth and their three kids took up residence just down the street down at Canterbury Shaker Village. Only problem was there wasn't a bedroom for Ruth's horse, so Ruth called me up and said she heard we had a big old empty barn and did we want to board her horse.

"Absolutely not," my husband said when I consulted him, so I called Ruth back and said, "Sure." I talked my husband into it by explaining that Dan would build a stall for the horse, that Ruth would trade babysitting for the board and they were willing to do chores for us when we went out of town. What I didn't mention was that Dan and I had begun discussions about the possibility of going partners in a cow. He, too, had grown up on a dairy farm, only the experience hadn't soured Dan, on the contrary, he and Ruth were eager to have their own source of milk. They had the know-how, I had the barn and the pasture. Now my husband just needed a little more convincing.

In the end, it was actually the breed of cow that decided my husband to go along with us. I had bought a family membership to the American Livestock Breeds Conservancy, an organization devoted to the preservation of rare American breeds of farm animals and my husband became an avid reader of the ALBC newsletter. Then for Christmas, clever Dan and Ruth gave us a subscription to The Weekly Market Bulletin put out by the New Hampshire Department of Agriculture and each week my husband began scanning the livestock notices to see if there were any rare breeds for sale. Finally one week, there she was: "American Milking Devon heifer, 12 months old, \$400.00."

A Milking Devon was precisely the kind of cow we needed. Small, dark red animals which are traditionally left unpolled (with horns intact), Devons are known as excellent foragers. They are a multi-purpose animal, used not only as dairy animals but being nimble-footed and athletic, they are in demand as draft animals. A first calf Milking Devon heifer produces only about two gallons of milk a day, only one gallon if she is managed by leaving her with her calf to suckle half the day. This kind of low input-low output animal (as opposed to a ten gallons of milk, twenty pounds of grain a day Holstein) was exactly what we were looking for. She



Derek Owen milking his Brown Swiss. She gives about 6 gallons a day. photo courtesy Hillary Nelson

wouldn't cost us much to keep and she wouldn't produce more milk than two families could comfortably use.

If you don't know anything about cows, try to take someone along who does and read up before you go (*The Family Cow* by Dirk van Loon, Garden Way Publishing is an excellent resource). Basically, you want a healthy animal, with a gentle disposition and a good, sound udder. A heifer (a young female who hasn't yet calved or is a first time mother), especially one that has been kept with her mother, will often be very skittish and difficult to approach. If possible, try to look at her in an enclosed space instead of the pasture so you can get close enough to make sure she has four sound teats, a nice straight back and sound legs and hooves. A cow that is producing milk should have four sound quarters in her udder, that is, all four teats should milk.

A cow that has been milked a while should be gentle when approached and touched, especially around the udder. An animal that behaves belligerently, that waves its head at you or kicks should not be purchased, no matter how much she milks and how good her confirmation. You do not want to own an animal that wants to hurt you! Also, if the owner makes any jokes about what a great escape artist this cow is, forget about her. In spite of that big floppy udder, cows run fast; you do not want to own an animal that doesn't stay where you put it.

Make sure to check with your state Department of Agriculture about any local regulations regarding animal sales before moving a cow. This is especially important if the animal will be crossing state lines and needs proof of vaccinations and a clean bill of health before it can legally cross the border. It's also wise to travel with a bill of sale; in some states where rustling is a problem this is required by law.

For the beginner, the easiest cow to handle will be a second or third calf animal which is within a few months of giving birth. Her milk production will be dropping off in preparation for the two month dry period she must have as a rest before calving; you'll be able to get a little experience milking before she goes dry and then have a couple months to get to know her before she calves.

Of course, we bought no such creature; our Milking Devon, Ruby, was a wild little heifer who had never been away from mama's side and didn't know what a halter was. We had to keep her inside for a couple weeks, feed her by hand and gently brush and talk to her before she calmed down, though to this day, she's a bit eccentric.

If you buy a heifer or a cow which is not pregnant, you will be quickly faced with one of the most daunting tasks of cow ownership - getting your animal bred (you'd be amazed how many people don't know a cow has to have a baby before it will give milk). Derek and Ruth Owen, my friends who have owned family cows for more thirty years, say breeding a cow used to be easy. There were lots of small dairy operations around and artificial insemination (AI) was widely available and inexpensive. But with the demise of the dairy industry in New England, the companies which used to provide AI have gone out of business. The big dairy farms have all bought liquid nitrogen tanks for storage of 'straws' of semen, and they have people on their own staffs who have been trained in AI. The best answer for most family cow owners is to find a nearby dairy farm and see if you can make arrangements to have their AI expert come over and breed your cow. The problem is this will cost anywhere for \$20-\$45 for the technician in addition to \$10 or more for each straw of semen, so you've got to be really good at judging your cow's heat cycle, which is quite tricky.

Cows often get a little crazy when they come into heat, mooing and getting twitchy and jumpy and if they're milking may just about dry up for a few days. If there are other cows around, they might mount the cow in heat. The cow's vulva will get pink and swollen and moist and she will hold her tail to one side. The most successful way to artificially inseminate a cow is to use one straw when you think the cow has come into a strong heat and then inseminate her again 12-24 hours later and hope one of them takes.

Another option is to take your cow to a bull, or bring a bull to your cow. With Ruby, we did the latter, playing host to John, the Milking Devon bull, for a couple of months. There are three problems with this. First, it is tricky to decide just when your cow got bred. We kept John around for so long because we were certain that Ruby hadn't gotten pregnant on the first heat cycle, when in fact, she had. She calved a full month earlier than we anticipated! The second problem is that of disease. Bringing a new animal onto your farm, or taking your animal to a strange farm can easily result in the passage of illnesses. My friend Derek had a very nasty form of dysentery sweep through his barn the last time he brought a bull in. The third problem is that bulls, especially dairy bulls (as opposed to beef bulls) tend to be extremely unpredictable and aggressive. I've been told that before the advent of artificial insemination, dairy bulls were the leading cause of farm deaths. In general, the younger the bull, the easier it is to handle, and many are sent to slaughter after the age of two.



Cow housing does not have to be elaborate. It should be dry, well ventilated and preferably have four walls, though some cows are kept in shelters with only three walls. Many people have cement floors in their barns; if you do, be certain you keep lots of bedding on top of it to protect the cow's legs and to keep her comfortable. There are even special inflatable rubber mattresses made for this purpose. Our barn has dirt floors which we cover with lots of wood shavings. Though some farmers just keep putting clean bedding on top of the soiled bedding and do a big cleanout several times a year, with just one cow, you should take the time to clean out the manure every day.

Treating your cow with respect and fondness will pay off. Animals that are brushed daily, that are spoken to kindly, that are properly fed and watered, will look forward to spending time with you, will produce more milk and will trust you to help them calve. Grooming your animal also gives you an opportunity to take a close look at her every day to be certain there are no problems developing that merit calling in the vet. So far, we've never experienced a serious illness and have only had the vet visit for yearly rabies shots, worming and to install a magnet in Ruby's digestive tract to protect her if she happens to eat something like a nail.

We also keep on hand Juliette de Bairacli Levy's classic *The Complete Herbal Handbook for Farm and Stable* and N. Bruce Haynes, D.V.M.'s *Keeping Livestock Healthy* just for guidance and reassurance when we have concerns. As an offensive measure, we let chickens free-range to help control parasites by eating them out of the cow manure.

Cows like to be on a schedule; they want to be milked at the same times every day, to be let out and let back in at the same time, to be fed and groomed at the same time; here's where being in partnership on our cow has really proven itself. We've split the chores so that I do morning chores and Dan and Ruth do evening chores, though Dan comes by in the morning to milk. We only milk once a day, because we don't need more milk than that. We separate Ruby from her calf at night and then pasture them together all day.

Milking by hand is something you have to practice to really get the knack for. First, the cow's teats are washed to help keep the milk clean. You don't actually pull on the teat, you squeeze it from the top down in a little ripple, first trapping the milk in the teat with your index finger and thumb and then pushing it out with your remaining fingers like toothpaste from a tube. We let Dan do most of the milking because he's fast and Ruby's tough to milk; he uses a stainless steel bucket designed just for the purpose which cleans up nicely and doesn't drip when you pour. We give Ruby her grain while she's milking, as do most farmers, but I recently saw a milking operation where they feed the cows before milking them and feel the animals are much calmer as a result.

After milking, we take the milk over to the house and strain it through a very fine sieve. I used to use my milk raw until, in the course of doing research

on e. coli 0157-H7 for an article I was writing, I happened to mention that fact to a doctor from the Centers for Disease Control. "Are you trying to KILL your children?" he screamed at me, and then proceeded to fax me a quite convincing article about weighing the benefits of drinking raw milk against the hazards (Potter, M.E., Kaufmann, A.F.: *Unpasteurized Milk*: Journal of the American Medical Association 1984; vol.252, No. 15, 2048-52.) Believe me, raw milk lost in a big, big way. There are many diseases which can be spread through milk, e-coli 0157-H7 and tuberculosis to name a few. In all fairness, Dan and Ruth don't pasteurize their milk, the Owens raised their kids on raw milk and have been selling it to their neighbors for many years and my husband consumed no other kind of milk while growing up and none of them has ever had a problem. Just keep in mind that very small children, the elderly and those who are immuno-compromised by illness (cancer and AIDS patients for example) all could succumb to a bug that you and I might never even know we have, and that a cow would show no symptoms of possessing.

To pasteurize milk, you need to bring it to 190 degrees for a short time, which gives it a cooked flavor, or bring it to 150 degrees for a half hour which results in a much better flavor. This can be achieved by setting the milk in a double boiler over simmering water, or directly over a flame, which can get tricky.

If you let your milk set for a long time, the cream will rise to the top and can be scooped off. But if you are in a hurry for it, you can buy a cream separator and let centrifugal force do the separating for you. Making butter, at least on a small scale, can be done with some piece of kitchen equipment you probably already own, like an electric mixer, blender or cuisinart; all you're really doing is whipping the cream until it 'breaks' into globs of butter and whey. Cheese making, on the other hand, is a real art and takes much practice to become good at. If you are interested in selling any of your dairy products, be sure to check with your State Department of Agriculture about their regulations. They tend to allow you to sell what you want out of your own home, but if you are interested in marketing to stores, restaurants or at a farmers' market, the rules usually become much stricter.

Most family cow owners I know feed about a pound to a pound and a half of grain per gallon of milk. This amount will not push the cow into maximum production, thereby saving her a deal of physical stress. Organic cow grain is distributed in New England by Vermont Organic Grain Company of Bethel, VT (1-800-564-8125) and is available from local retailers, often organic farmers who are looking for a way to underwrite their own purchases. It goes, in my neck of the woods, for \$12.25 a fifty pound bag, about \$4 more than a bag of conventional cow grain purchased from Blue Seal or Agway.

In addition to grain, your cow will need access to pasture in the warm months. According to Kathy Salinitro, the owner of Ox-K Farm in Gilford, New

Hampshire, you can figure you'll need about an acre a cow if you let her feed freely. But Kathy is an expert in the art of 'strip grazing', and she says with a little care you can keep a cow on as little as 1/3 of an acre of decent pasture. To achieve this you need portable electric fencing or to stake the animal. Every day or so, you just move the cow to exactly what she can eat in one day.

During the winter you will need to feed your cow all the decent quality hay she can clean up two or three times a day. My friend Derek's Brown Swiss eats about one thirty pound bale a day, while I figure my little Devon eats about 2/3 that amount. If you have storage space, I recommend buying the best quality hay you can find during the summer; loading it onto your truck directly off a field will often save you substantial money. And buy a little more than you think you're going to need, especially if you are buying organic hay which can be very hard to find. There's nothing worse than paying \$4.50 a bale for yellow hay at the bitter end of winter when you could have bought top quality in July for \$1.75.

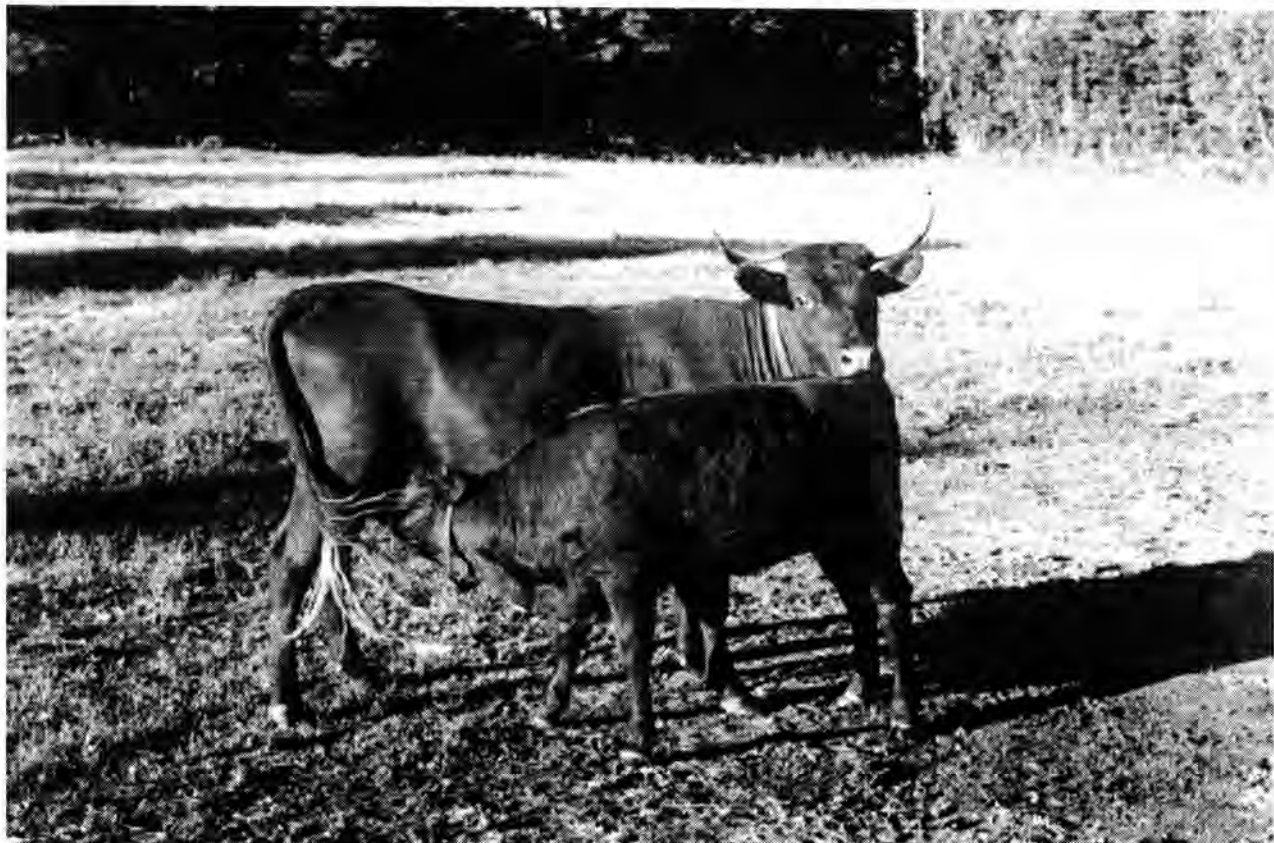
Remember that water is just as important to a cow as food and she must have access to it at all times. In winter this can be tricky because of freezing; we've solved this by buying a frost free automatic waterer that warms the water enough to keep it from becoming icy. In summer make sure your cow has access to shade and water. In the heat of the day, we let Ruby into the barn and spray her down with citronella to get rid of the biting flies and to cool her off.

My husband was right, keeping a cow is a lot of work. And I imagine we pay significantly more per gallon of milk than we would if we just went to the grocery store and bought the stuff they truck in from the Midwest. But let me tell you a little story. When my son went in for his one year checkup, he was enough underweight for the doctor to be concerned. At the eighteen month checkup, the doctor was still worried. When I brought my son for his two year checkup, the doctor was astounded. My son's weight and height had surged; the doctor had never seen anything like it. What, he wanted to know, had I been doing differently in last six months? What magic elixir had I been feeding my child? I wracked my brain and then suddenly it came to me. Just six months earlier, we had begun milking our own cow, and every day my son was drinking glass after glass of our own homegrown milk.

As for my husband, he's a convert. We've gone partners on a second Milking Devon with Dan and Ruth and it looks like we'll be adding a White Park heifer (another rare breed) sometime soon. And even though we have someone to do the chores for us when we want to go away on vacation, I have to practically use a crowbar to pry him away from our farm.

"There's no better place than this in the world," he says, gazing out over the pasture. "Don't those cows make that field look pretty? Why would you ever want to leave?"

In addition to the references listed in this article, two great sources of information on dairying are your local County Extension Service and ATTRA (Appropriate Technology Transfer for Rural Areas) 1-800-346-9140. Both will provide friendly, knowledgeable people to help you over the phone and will send you loads of information for free, though ATTRA promotes sustainable agriculture practices, while the extension services tend to be more conventional.



Ruby with her 6 month old calf Fergie.

photo courtesy of Hillary Nelson

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# Are Cows PC?

by Susan Cannon, Heifer Project International

Welcome to the Age of Political Correctness. These days one must be aware of the constantly changing trends in food, music, and dances, and especially word choice in order to be 'hip' and politically correct in the nineties. Not surprisingly, people are not the only ones to be caught in the crossfire of politically-correct adjectives; in recent years animal rights activists have focused some attention on whether or not cows are a suitable component of the world's ecosystem. Blamed for destroying the environment, cows are not always considered to be an asset to our Mother Earth; however, there is a growing movement to speak out in the defense of cows.

One of the major complaints of those who feel that cows are environmentally destructive is that they release not only methane, but also nitrogen and phosphorous into the environment through their manure. Methane, a gas released with manure, has been blamed for contributing to the depletion of the ozone layer. The Worldwatch Institute claims that methane is the 'second most important greenhouse gas,' and the Earth Save study reports that 'Twenty percent of total world methane emissions comes from cattle.' In defense of cows, however, an article published by the American National CattleWomen, Inc. (ANCW) entitled 'Save the Earth -- Don't Eat Meat?' recognizes that cows are responsible for 'only about 0.5 percent' of 'world production of methane per year' which is equal to 'less than one-tenth of one percent of global warming,' and therefore should not be considered a serious threat to the ozone layer.

In its January 1993 issue, a small publication called The Washington Spectator quoted the Worldwatch Institute as saying that if cow manure reaches a body of water, the nitrogen and phosphorous will 'over-fertilize algae, . . . deplete oxygen supplies, and suffocate aquatic ecosystems.' In addition the Worldwatch Institute notes that 'Manure nitrogen also escapes into the air as gaseous ammonia, a pollutant that causes acid rain.' However, a brochure published by the American Society of Animal Science entitled 'We Need Farm Animals' states that manure 'provides . . . nitrogen, phosphorous, and potassium that aid in crop production' through 'increased yields and a reduced need for commercial fertilizers.' Since commercial fertilizers, along with commercial herbicides and pesticides, are a leading cause of groundwater contamination, the alternative use of manure is more ecologically friendly and could reduce the levels of pollutants in our drinking supply.

Another general complaint about cattle-raising is land that is used to support cows should be retained for other purposes. Environmental activists argue that too much land is wasted by using it to raise grain to feed cattle. Ingrid Newkirk, founder of People for the Ethical Treatment of Animals, calls for 'a shift to "crop culture," not crops to feed animals, but crops to feed people.' An article called 'Vegetarianism and the Environment' also pro-

claimed that 'If the United States were vegetarian,' it would 'instantaneously' solve 'one of the most intractable problems of American agriculture.'

However, a report published by The Land Institute in Kansas argues that such a presumption is 'an oversimplification and probably false.' They point out that livestock can 'eat more photosynthate than can simple-stomached forms' (like humans), and that they can 'turn that photosynthate into better quality food for us and avoid many of the environmental costs of grain and vegetable production.' In further defense of cattle, the American Society of Animal Science points out that cattle are hardy enough to use land that cannot be used for crops. Indeed, only about ten percent of the earth's land surface is suitable for raising crops. Cattle can also be fed crop residues from grain and by-products such as canning wastes, soybean meal, and citrus pulp, as well as surplus grains that cannot be consumed by humans.



In addition to all the other criticism, cattle have been blamed for inefficiency in terms of how much grain it takes to produce one pound of beef. The EarthWorks Group, publishers of the book 50 Simple Things You Can Do To Save The Earth, reports that it takes sixteen pounds of grain and soy to produce one pound of beef. The ANCW refutes this, instead claiming that EarthWorks used misleading sources and that scientific research has shown it only takes 4.5 pounds of grain and soy to produce one pound of beef.

A final criticism of the cattle industry is that cows destroy the land by overgrazing and by overconsuming water. Alex Hershafit of the Farm Animal Reform Movement states that 'Raising animals for food wastes up to 90% of our irreplaceable agricultural resources, including topsoil and groundwater . . . .' John Robbins, in an article in *The Animals' Voice Magazine*, is concerned that so much of America's water supply is being used for cattle that it will deprive our children of drinking-water resources. He writes that 'To produce a single pound of meat it takes an average of 2,500 gallons of water' and that 'Over half the total amount of water consumed in the United States goes to irrigate land growing feed and fodder for livestock.'

On the other hand, the ANCW cites these statistics as 'myths,' instead stating that '200 gallons of water are used per pound of beef produced' and 'only about one quarter of water [consumption in the U.S.] is used for livestock production,' which includes crop irrigation. Darrell Huddleston, the Northeast Regional Director for Heifer Project International, put these statistics into perspective when he compared the two hundred gallons of water for a pound of beef to '1,500 gallons for a barrel of beer and 107,000 gallons for household use by the average USA family in a year.'

Some people think cows are evil incarnate, and some believe that they are angels from above. Are we talking about the same cows here? How can two groups have such differing opinions regarding the same animal? Are cows actually destructive or beneficial? To quote Dr. James DeVries of Heifer Project International, 'The fact is that animals can have either a positive or negative impact on the environment: the difference is their management.'

Although large-scale feedlots are a common method of management is US beef production today, there are alternative methods. A management technique that is rapidly gaining favor and exercises environmentally-friendly actions is intensive rotational grazing, which is the idea of dividing pastures into small areas and rotating the animals through them. Such a procedure succeeds in distributing manure more evenly, greatly decreases the amount of grain needed as extra feed, reduces erosion, and encourages natural soil organisms which, in turn, increase soil fertility.

Intensive rotational grazing fits into the permaculture model. In a magazine edited by Anna Bedford, permaculture is described as 'paying attention to how nature renews itself in a particular setting and applying that principle to one's whole way of life.' The Land Institute gives one example of how cows play an important role in the environment: 'Keeping grasslands cropped short through grazing reduces transpiration without increasing evaporation, thus maintaining soil moisture and higher water tables even in dry seasons.' Other benefits of intensive rotational grazing are numerous. The rotations prevent overgrazing which can kill the terminal growth bud of the plants. It also prevents the domination of the least desirable and least nutritious grasses since the livestock are not allowed to overgraze on the best grasses. Parasite problems can be reduced with frequent movement. Furthermore, less time is spent feeding and cleaning out barns. Cows can truly be an asset to a harmonious, productive environment.

In conclusion, today's cows can be as 'unhip' as they want to be. If reform is to occur that will satisfy both those opposed to animal agriculture and those in favor of it, it all lies not only in how the cows are managed, but also in how consumers choose to show their support for ecologically-sound production methods. Therefore, it is not the cows who must strive to be politically correct and environmentally sensitive, but indeed the one who raises the cows.

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# Milk: Food of the God's or White Death?

by Ellen Kamhi

The Essene Gospel of Peace is a book translated in 1929 from original ancient Aramaic Scriptures known as The Dead Sea Scrolls. According to these writings, when Jesus was going to do a healing, he would send messengers ahead of him to announce that he would be coming. Those wanting a healing had to fast on water and pray for three days prior to his arrival. He would often lecture to them on the proper diet to remain healthy, "for your body is what you eat and your spirit is that which you think, wherefore prepare and eat all fruits of trees, and all grasses of the fields and all milk of beasts good for eating. So eat always from the table of God: the fruits of the trees, the grain and grasses of the fields, the milk of beasts and the honey of bees."

In the Old Testament, Israel, the promised land, is referred to as the place of milk and honey. So, milk is considered a 'health' food according to these ancient writings.

In the Nutrition Almanac, an excellent reference for specific nutrients found in foods, milk is described as having an abundance of important nutrients including vitamins, minerals, essential fatty acids and amino acids, the building blocks of protein.

Dr. Hazel Parcels, my dear teacher who passed away in 1996 at the age of 106, advocated an eight day goat milk fast in combination with special herbs to rid the body of parasites. I have personally seen many patients regain their health after following this milk fast.

In Ayurveda, the traditional healing system used in India for thousands of years, and still in practice today, milk is used as a nourishing, therapeutic food. Various healing herbal mixtures are cooked in milk, and used externally, or given as a drink. Example: A glass of warm milk with ginger taken at bedtime is nourishing to the body and calms the mind. Milk heated with raw cashews and raw sugar promotes strength and maintains sexual energy.

And, of course, with famous people of every age, size and descriptions now sporting white milk mustaches on billboards, buses and advertisements everywhere all over the country, milk MUST be something that is not only A-okay, but a wonderful, desirable, health inducing food. But, as those of us involved in natural health and healing know, there is a darker side to this milk-white picture. Here is a list of many reasons not to use milk and dairy products:

1. Pesticide residue. Dairy products have high pesticide residues, six times higher than the average of non-animal product.

2. Antibiotics are routinely added to the feed of cows. This comes through the milk and meat. This can upset the natural balance of intestinal flora in the body and may be related to candida problems so widespread today.

3. BGH, DES and other female sex hormones are routinely administered to cows. Residues are transmitted to people. Possible consequences of this are cancer, early sexual maturation of girls and boys, behavioral disorders connected to uncertain and confused sexual identities and an expanding assortment of sexual aberrations indicating that human hormonal systems are being affected and imbalanced.

4. Congestion. Dairy products are mucus producing and commonly involved in many instances of allergies, sinus congestion, post-nasal drip, bronchial congestion and lung congestion.

5. Prostate cancer. Milk and cheese are specifically identified along with eggs, as risk factors for fatal prostate cancer by the American Journal of Epidemiology, August 1984. Prostate problems are very widespread in men over 40 years old, increasing in probability with age.

6. Uterine fibroids. Consumption of dairy products is strongly linked to various disorders of the female reproductive system, including ovarian tumors/cysts, vaginal infections and uterine fibroids. (See Food as Healing by Ann Marie Colbin)

7. Osteoporosis. A high concentration of protein in dairy products causes urinary excretion of calcium. This calcium loss actually promotes osteoporosis, a disease of thinning bones very commonly found in older people.

As a young nurse working in hospitals, I was appalled to see children with pneumonia, asthma and other respiratory disorders given milk and cheese as part of their hospital meals. An almost instant reaction would occur. The children became more congested and at times mechanical means had to be employed so they did not choke on their own milk induced mucus. The doctors orders indicated an increased dose of decongestant medicines along with their toxic side effects. I have had personal experience caring for children with the same illness in a natural health care setting. Here, we ELIMINATE all dairy products in these children and administer herbs (Fenugreek, Golden Seal, Mullein, Elecampane), vitamins (C, bioflavonoids, Quercetin), minerals (calcium, magnesium) and foods such as Miso soup. These children suffer less, get better faster and have a much lower reoccurrence rate than those on dairy products and medication.

Thousands of people, especially those of Afro-American and Jewish descent, have a condition called 'lactose intolerance'. This is a situation where their bodies stop producing lactase, the hormone needed to break down lactose, or milk sugar, shortly after two years of age. These people experience symptoms of bloating, indigestion, rashes, and even hives after ingesting dairy.

For others, these allergic symptoms are not quite so easy to recognize. According to Robert Ivker, M.D., in his book Sinus Survival, the mucus secretions seen in illnesses such as allergic rhinitis, bronchitis and sinusitis are often triggered by the consumption of milk and all other dairy products. He recommends that all dairy be completely avoided by those who suffer from these conditions.

No discussion of the pros and cons of using dairy products would be complete without considering calcium and osteoporosis. It seems that the dairy industry has been successful in perpetrating the belief in a popular myth that eating dairy helps allay osteoporosis. Actually, the opposite is true. In Diet for a New America by John Robbins, he points out that osteoporosis is most common in exactly those countries where dairy products are consumed in the largest quantities, the United States, Finland, Sweden and the United Kingdom. Countries in which the normal diet contains almost no dairy products, such as Japan, also have a very, very low, or almost non-existent, rate of osteoporosis. If you are interested in increasing the level in your body of good, usable calcium, increase consumption of those vegetable sources that are very rich in calcium such as kale, broccoli, sesame seed and sesame seed butter, tofu, sea vegetables and soy cheese.

The milk that is available commercially today may have a wide range of processing. Probably the worst product is pasteurized, homogenized, and taken from factory farm cows that never see the light of day and are pumped full of bovine growth hormone and antibiotics. The organic farm movement is making great strides in increasing the availability of milk and dairy products that are hormone and antibiotic free. Non-homogenized products which are easier to digest are also making a comeback. Obtaining a truly fresh product, raw goat's milk for example, is a luxury reserved to those who have access to a local farm. In many states it is illegal to sell unprocessed milk except for animal use.

Deciding whether or not to use milk and dairy products as part of your diet is an issue that requires knowledge and research. Test out your aller-

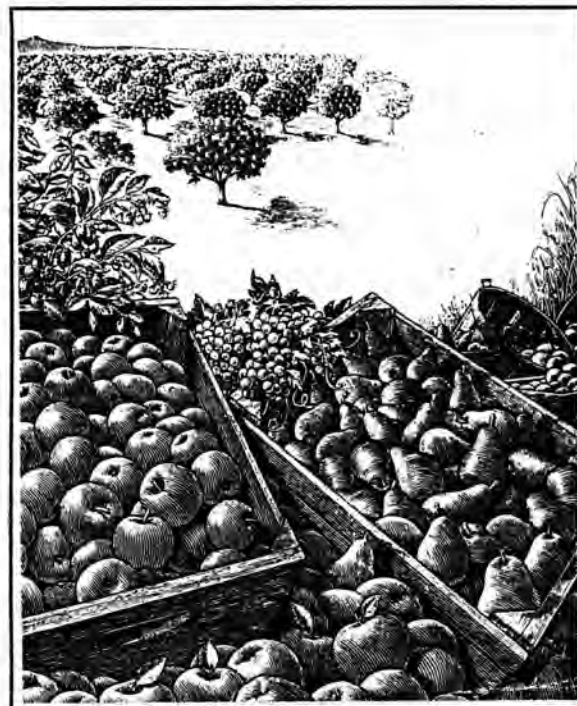
gic response by having a food allergy panel done, preferably by a holistically oriented health care practitioner, or take the elimination challenge. Commit to a completely dairy free diet for one month. If this seems threatening to you, such as 'Oh no! What will I eat???' then you are consuming too much dairy. Many people notice moderate to overt changes in their health, for the better, after the one month dairy hiatus. These may include better digestion, no stuffed nose, in the morning especially, less colds and flus, reduced joint aches and pains, clearer vision, more energy.

So, organic dairy products may well be a healthy addition to your diet, but the opposite could also be true. Become a self empowered, educated health care consumer...not just another white mustache!

Ellen Kamhi, PhD., RN, *The Natural Nurse™* is an author, public speaker and radio and television host with Natural Alternatives. To find programming in your area, or for more information, call 1-800-829-0918.

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# Pioneering with The Organic Cow

by Jack Kittredge

When talking about the growth of organic dairying in the northeast, wherever you turn you find Peter and Bunny Flint and The Organic Cow. Nestled on a back road which winds up a hillside in Tunbridge, Vermont, their dairy farm has grown into a processing plant and headquarters for a \$5 million business supplying organic milk products along the east coast.

Peter, a Vermont native, started farming in 1972 when he got out of college and began farming at the current site in 1976. He and his wife Bunny teamed up in 1986. At that time, although they were familiar with organic ideas and had attended NOFA conferences, they were "successful" conventional dairy farmers. They pushed the cows to make production records and used all the latest techniques. In 1989 they were recognized as first in the country and second in the world for Jersey milk production. But this life of what Peter calls "ego" farming was burning them out. Bunny developed health problems so they began to eat organically and change their lifestyle.

"For a while we didn't make that connection for our cows," Bunny recalls, "but finally we did. We took them off the conventional feed and although we lost production, we also lost a lot of health issues. They don't have problems getting bred back anymore. They rarely get mastitis or get sick at all. We're treating them homeopathically and their systems are so strong they promote good health. We've seen a huge difference with organic management. We used to walk in the barn and the cows would be vigilant - 'what are you going to do to me?' Now, the herdsman says, 'You have to wake them up to milk them!'"

The Flints currently have about 125 head, including 80 milking Jerseys. They have help with the farming nowadays, but Peter still insists on getting away from the business to make hay and pound fences when he can, as therapy.

In 1990 the Flints decided they had to create a market for organic dairy products and started processing their own milk. That fall they started making cheese and in the spring of 1991 started selling fluid milk in glass bottles. They had accounts at ten local stores, including Ken's General Store, the Hanover Coop, the North Tunbridge General Store and the Chelsea Country Store. Once the fluid milk got on the shelves it kept selling out. So they knew they had a market.



photo by Jack Kittredge

Peter and Bunny Flint, owners of The Organic Cow of Vermont

"Later," Bunny says, "we decided that glass was earth-unfriendly so we moved to the paper-board carton. (Glass is heavy and involves extra trucking, a company brochure states, as well as allowing rapid degradation of Vitamins A & D and Riboflavin by dairy case lighting.) That we launched October 10, 1994 with just our own milk. We soon added two farms and the milk just flew out. It got out of control. We'd think we had enough milk and then more orders would come in and more farms would sign up. In March of 1995 we had four farms and felt we were where we wanted to be."

"We weren't interested in growing to be big," Peter continues. "But when you have a lot of friends coming over saying 'Can we join your company?' you can't say no. Now we're at a comfortable level - thirty Vermont farms plus some from Maine and New York. But we're always getting new farms in. We'll have ten new ones on Friday, six a month from now, and more from Maine soon."

The Flints experienced about a 25% surge in demand the month BST was approved for use in milk production, so they trace some of their success to health concerns surrounding conventional dairy

management. But, says Bunny, much of the demand relates to concern about how conventional cows are treated -- they get more questions about animal confinement, tail docking, and other inhumane practices than about health issues.

The Flints start the processing plant up at 4 in the morning, six days a week. The milk is trucked from farms to the plant and pumped into large tanks where it is pooled. Depending on the demand of the day, the milk is pumped through a cream separator and back to tanks where it is stored by type - 2%, whole, milk for cheese, etc. The fluid milk is pasteurized, bottled and shipped to distributors. They have some 'natural product' distributors and some regular ones, including a lot of the major supermarket chains: Shaw's, Stop and Shop, Grand Union, Star Market, DeMoulas, and Hannaford. They ship fluid milk as far as Florida.

A lot of milk also goes to processed product. Some gets shipped to Stonyfield Farm for yogurt and ice cream, some to Cabot for processing into butter under the Organic Cow label, and much is made into cheese.

"We make cheese here," says Peter. "We started with a cheese we call Tunbridge cheese. It's a round wheel cheese like a Havarti. We did a 2% cheddar, but discontinued it because sales weren't great. We also do a non-fat cheddar, as well as a full-fat cheddar. Our Havarti won second place in the American Cheese Society's judging last year. The category was American Originals, which is a hard one since you're competing with people who may milk 20 sheep and make the most incredible California cheeses.

"The first time I made cheese it was disastrous," he continues. "But I had a guy who worked for me here who was phenomenal - consistent and regular. He taught me to stick to the recipe. Now we have a line of aged cheeses and we're going into some new ones - Monterey Jack, flavored cheeses, Mozzarella."

Several companies have followed the Flints into the burgeoning northeastern organic milk market. Steubben owns a dairy called Elmhurst that owns the brand name Juniper which comes out of New York with an organic milk line certified by OCIA. They've been in business about a year and a half. Another outfit out of New York and Pennsylvania is called Natural by Nature. It owns Sunnydale, which is certified by OCIA and QAI and was launched here about 2 years ago. There is also competition from the midwest and Colorado. CROPP is a Wisconsin-based organic coop which markets the



photo by Jack Kittredge

Regular East Coast deliveries as far as Florida mark the success of organic milk



Organic Valley brand, and Horizon is a big national company.

Peter is concerned about the direction in which these competitors may move northeast dairying: "The market is getting to be really cutthroat. Horizon comes in and plunks down \$5 million for slotting fees to get distribution. That's probably our company's net worth! We're trying to pay our farmers as much as we can. That's our whole thing.

"Some organic processors," he continues, "are trying to hammer away at the price of organic milk. Does that contribute to the sustainability of farmers and the land? That gets right back into the conventional mindset of 'Let's push, push, push because we're not going to get that many dollars for our milk.' We should lay off the cows a little, let them produce what the Good Lord intended for them to produce, pay the farmers a sustainable price and be done with it. As long as we can we're going to make sure that happens."

The Organic Cow's growth led the company into the traditional quandary which besets successful small business - the need for more capital. The Flints had tied up all their own assets to secure the letters of credit necessary to guarantee payment to their farmers. With more farmers joining the system all the time they needed more capital, but, profitable as the business was, they had run out of personal resources.

"We felt we needed a partner," Peter relates. "We had been inundated with offers to sell out, but weren't interested in not being part of the company. Then H. P. Hood came to the table, willing to let it still be our company. They want an organic line themselves and are now owned by a New England family who want to see sustainable agriculture continue in the region. The story was that 'Hood buys Organic Cow'. When you say 'Hood' it connotes a big, \$500 million company. For some people they're the enemy and we lost some customers who thought we had sold out.

"Well, we just took Hood on as a partner. They are a distributor for us and do some manufacturing as well - 150,000 lbs a week of fluid goes down to Hood in Agawam, the rest we do here. We will be doing about 240,000 lbs. a week of fluid and cheese here by the end of this week. By fall our total supply should be up to 3 million pounds, maybe three and a half million. That's sixty some farms. We have 5% of the dairy farms in Maine selling through us. As the correct story goes out our business is going back up."



photo by Jack Kittredge

The milk cartons are automatically filled upon pasteurization and placed in cartons for refrigeration and shipment.

The difference between selling a controlling interest to Hood and to someone else, Peter maintains, is that Hood will still let the Flints manage the business. If Peter wants to raise the price of milk, Hood doesn't question it. They support paying farmers a sustainable price. And that is what Peter Flint says he is about.

"We have set the standard as buyers", he maintains. "The competition comes to the table and says 'We'll pay you \$17, maybe \$17.10.', and the farmers say 'Organic Cow will pay us more.' We push that. If we don't get the milk that's fine. But we want the farmers to get a good price."

The Organic Cow did six months of research in Maine to figure out what sustainable pricing was for Maine dairy farmers, to assure that the farmers could keep supplying organic milk. The company pays \$18.25 to Maine farmers, plus up to a dollar premium for quality and 15¢ a point for butterfat. In addition, these rates are reviewed regularly.

"Now we're a decent sized company," Flint insists, "and we can set the standard for a sustainable price. It is absurd for us not to have successful farmers. Then we don't have a successful business. There is no other dairy company that thinks like that. The others want to buy for cheap!"

"Sure, as a company you have to grow," he concludes. "But you have to make sure that this isn't going to end up like conventional milk. That's the big fear that the farmer has. As long as we're here and still in the market, we can set the price. Yes, our milk is expensive, but we're setting the standard for what to pay farmers."

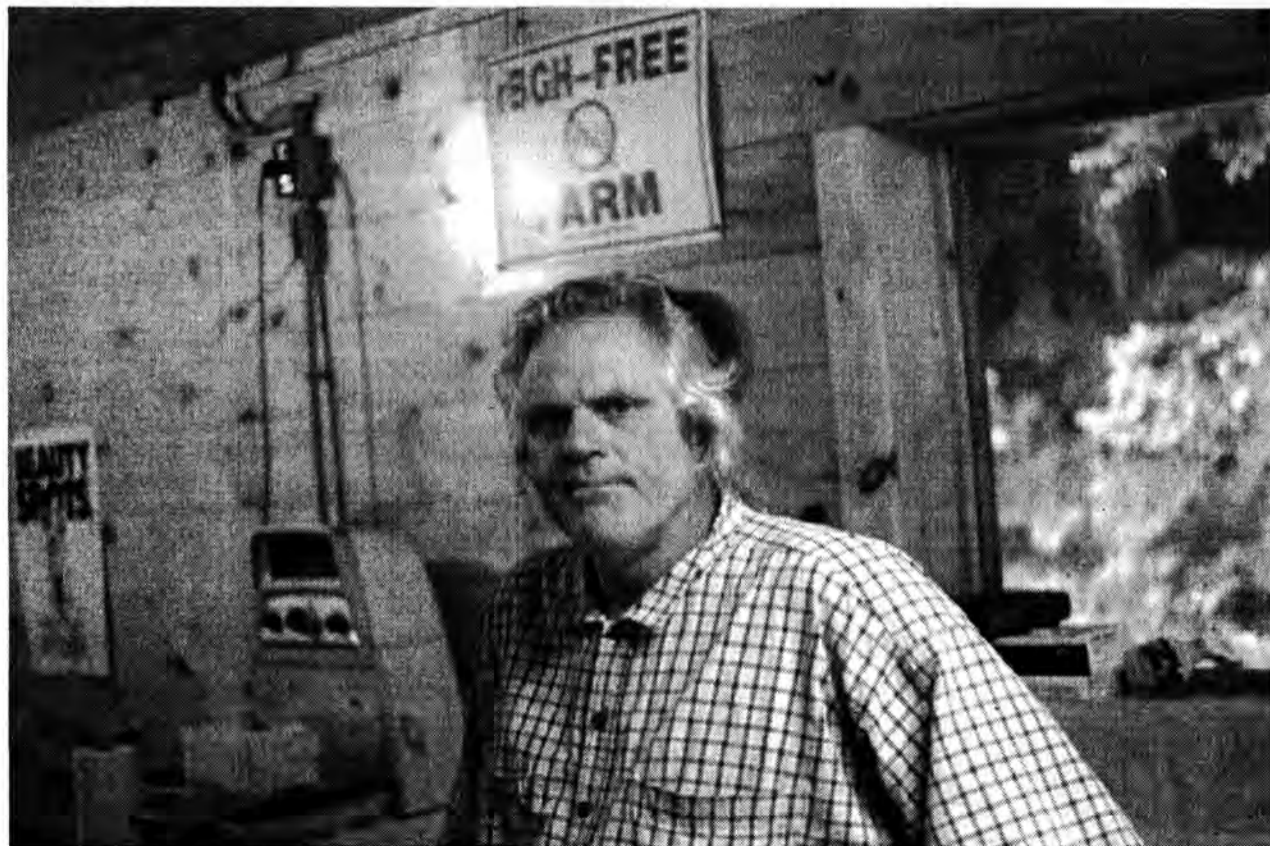


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Peter Flint in the new plant he and Bunny built. It already runs pretty much at capacity.

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# “Well, if you’re organic, how do you treat...”

by David Hoke

There are several reasons someone might choose to operate a certified organic dairy. For the dairy farmer that “goes organic”, herd health presents one of the greatest challenges. Organic certification standards have evolved from a fundamental desire to manage an entire farm as a harmonious living system that fosters beneficial processes and interactions, encouraging internal stability rather than a heavy reliance on external control measures. On the other hand, the modern dairy industry that includes cows, farms, and all the support services has developed in the context of our cultural predilection for driving ever higher production by steadily developing and adopting technological control inputs. Once the crutch of antibiotics and hormones is eliminated, many farmers stagger while searching for that harmony.

Though there is a shortage in the Northeast of experienced practitioners of dairy cow homeopathy, naturopathy, herbal therapy, acupuncture and so forth; there is a growing interest in approved organic treatments. I have often been asked how to treat a certain disorder in an approved fashion only to respond with the observation that an individual disorder can serve as a starting point for a quick review of the whole farm system. My remedy avoidance syndrome parallels the old story about asking someone for the time only to be told how to build a watch. Whether or not organic dairying is simply conventional dairying with approved organic technological control inputs, applied technology can diminish efforts to analyze direct experience, and can lead to a cascade of thoughtless repetition of technological manipulation.

The complex interrelationship between the farm system and the cow herd can be considered as four building blocks of animal health: habitat, nutrition, behavior, and selection. Within the collective building blocks one can usually find the cause of an individual disorder as well as the management steps available to correct the disorder. A half-serious rule of thumb is that 95% of all dairy cow problems are nutritional; and the other 5% are nutritional causes we have yet to identify. Ruminants incorporate their habitat into their bodies in the form of nutrition in greater volume than most other species. A cow is the creation of the building block of nutrition which is a consolidation of the building block of habitat. Although nutrition is an obvious starting point in the search for the cause of a disorder, there are four building blocks to consider each time to avoid over emphasis and oversight. Consideration of all of the building blocks of animal health keeps the focus on the relationship between the nature of the beast, the nature of the farm, and the nature of our production desires.

## HABITAT

Consideration of the habitat building block begins at the ground level with the parent rock composition, the geologic cycle, and the climatic forces that created the soil. The habitat building block includes soil types, levels of soil organic matter, and soil bioactivity. Habitat consideration involves the whole farm layout, including different slopes and elevations, shelter areas, prevailing winds, forest, forage, and farm buildings. The water cycle is also important and includes not only the drinking water sources but also the whole path of water through the farm, from precipitation to penetration and absorption. Drainage, storm effects, frost penetration, percolation, and water table are part of the water cycle. Sights, sounds, structures, and sensations are also part of the habitat. Other components include herd sizes, ages and classes of farm livestock, diversity of wildlife, proximity of neighboring herds of wild and domestic animals, fence layouts, and lane designs.

## NUTRITION

The nutrition building block also begins from the ground up. Nutrition is a direct reflection of habitat because nutrition includes consumption and extraction of nutrients from part of the habitat. In addition to the minerals, soil, and water of the building block

of nutrition, the nutrient content, maturity, health, and variety of plants in the system are important. The animal’s nutrient requirements are part of the building block of nutrition. Requirements for the newborn and for the growth, breeding, pregnancy, lactation, and maintenance of the adult cow are a part of considering the building block of nutrition.

Nutrition is based on an extraordinarily complicated chemistry. In addition to well-known requirements for protein and energy, there are requirements for minerals and trace minerals that extend beyond our understanding. Scientific study has only recently demonstrated that nutrient requirements are not met simply by providing adequate elements; the form that the elements are in has a significant role in determining their biological value. This is true with the form of energy and protein in the diet. This is particularly true with regard to trace minerals and the functioning of the immune system. Organic mineral complexes that are the result of mineral incorporation into living tissue of plants, bacteria, and fungi have far more biological value than inorganic minerals. The health of livestock depends directly on the health of the nutrition building block, which is an extension of the health of the habitat.

## BEHAVIOR

The building block of behavior is comprised of all the different activities that an animal engages in, alone or in a group. Rest includes time spent ruminating as well as time spent sleeping. Consumptive behavior includes grazing, trailing to water, nursing, and bunk and manger behavior. Reproductive behavior includes calving, breeding, estrus cycles, heat duration, maternal bonding, and weaning behavior. Social behavior includes posturing, eye contact, animal spacing, response to other species, herd positioning, training, social structure, and noise and odor response. Social behavior also includes considerations of herd size. Cows are herd animals that develop patterns of dominance and submission within a herd, as well as comfort levels associated with numbers. Herd interaction allows individual animals to dissipate stress into the group. An example of this stress dissipation is the milling of a group in a cold, wind-blown area. The milling allows the animals to shift position and temporarily benefit from the shelter of another animal.

Herd sizes in excess of 75 to 80 cows produce discomfort when there is not adequate room for the herd to segregate into smaller subgroups. There is a time and space requirement for membership changes within the herd to allow for social accommodation. Survival behavior is masked in modern dairy facilities. Survival behavior includes predator response, calf care by groups, herd instinct, weather response, stress dissipation, and immune regulation.

## SELECTION

The building block of selection includes the suitability of the animal for the general environment described by the other three building blocks. Selection also includes disposition, environmental adaptability, birth weight, rate of gain, longevity, age of puberty, fertility, structure and soundness, teat and udder traits, milking ability, mothering ability, parasite resistance, colostrum quality, and strength of immune system. Genetic progress in selection is a direct function of the number of traits that are being intentionally selected for. The rate of genetic progress declines dramatically with each additional desirable trait included in the selection process.

Using this model of building blocks, troubleshooting the farm system backward from an individual animal’s disorder can reveal the cause of the disorder and potential management steps for correction. A more traditional approach to diagnosing the cause of an infectious disease is to identify the causative organism. The disease is what we see, and the disease seems to be related to the causative organism. Unfortunately, most causative organisms are also endemic; in other words, they are univer-

sally present in most cattle populations. Diagnosing an endemic agent as the cause of disease is similar to diagnosing gravity as the cause of a collapsed barn roof. What we don’t see in a diseased animal are all the interactions that allowed an endemic organism to be associated with an illness at the moment of the disease. Conditions that favor rapid multiplication of an endemic organism increase the risk of an associated disorder. Troubleshooting helps identify causative factors that can be managed and that are not universally characteristic of all dairy systems.

Here are three examples:

**Diarrhea or Scours:** the most common disorder in calves from birth through weaning. At birth, a calf absorbs its habitat into its body through the hooves before they harden, through the navel before it dries, and through the skin, eyes, nose, and mouth. In fact, the calf begins absorbing its in utero habitat, swallowing amniotic fluid. The eager investigative and consumptive behaviors that are manifest in a newborn calf are important in establishing the maternal bond, initiating feeding, and imprinting on habitat and feed. At birth, the calf digestive system is capable of absorbing large complex molecules such as antibodies in the colostrum. Calves have the capacity to consume over 12% of their body weight in colostrum at the first feeding. A normal calf left undisturbed with its dam will consume two gallons or more of colostrum in the first 18 hours after birth. Cows that consume their placenta after calving have prolonged colostrum production. Colostrum is a live food full of enzymes, hormones, antibodies, and vital nutrients, and is a critical part of the building block of nutrition for a calf.

Not only does suckling allow the calf to express normal behavior patterns with the cow, it also inoculates the calf’s gut with organisms from the dam’s habitat. This is the start of a lifetime relationship with microorganisms as an integral part of the digestive system. Suckling the dam also triggers formation of the esophageal groove, a distinctive anatomical structure that bridges the gap between a milk-based diet and a forage-based diet. The groove is actually a potential groove that forms, as needed, to pipe milk to the abomasum directly, bypassing the rumen and avoiding wild fermentation of milk. The esophageal groove allows calves to continue nursing for several months and at the same time begin normal ruminations as early as a week or 10 days after birth.

Modern calf management techniques are the result of several trends in the dairy industry. The first is the trend of emphasizing the importance of saleable milk. Milk is both the main production commodity and the main food for calves. This food/commodity dilemma established an objective of minimum daily feeding volumes and early weaning, permitting maximum sale of milk. These goals have produced some strongly held opinions about the effect of overfeeding, prolonged milk feeding, and the like. The fact is, the best feed for calves is milk right out of the cow, direct, in as much volume and as often as the calf wants, for as long as the calf wants or until weaning is necessary for other management concerns. This is true for development of the major organ systems as well as for development of fertility, maternal instincts, and normal social behavior. This is a fact established in beef breeds, based on growth rates, weaning weights at 200 days, maternal traits, fertility, and longevity, where the same conflict between milk as calf food and milk as a commodity doesn’t exist.

Another significant trend in dairying has been expansion. As long as a calf is going to be fed by a person, expansion means more labor for calf feeding and calf care. This requires manipulation of the calf’s habitat and control of the calf’s herd behavior patterns for efficiency, at least, if not disease control. The combined effect of managing the building blocks of animal health by isolation and constraint is stress that affects the absorption of nutrients and the immune system’s response to poten-



tially pathogenic organisms. Segregation of calves at birth is fundamentally contrary to the nature of the beast as a herd animal and is a source of stress.

Tempting as it is to identify the causative organisms of scours, they are almost always endemic. Manipulation of the building blocks of animal health produces the disorder that allows scours to be linked to a causative organism. The habitat of the dam that produces the flora of her skin, the habitat at calving, the behavior patterns of the cow and calf, the nutrition of the cow and calf, and selection of cattle suited to their environment all contribute to the incidence, or absence, of scours. However, different organisms produce different effects in their relationship with a calf gut.

Traditionally, scours is thought to have one of four common causes: protozoal, bacterial, viral, or mechanical. The organisms commonly associated with scours are endemic. Favorable conditions for rapid multiplication of endemic organisms increase the risk of associated disorder. The National Animal Health Monitoring Service just reported (1996) that the number one organism associated with scours is the protozoa, cryptosporidia. Usually associated with mild scours after a week of age, cryptosporidia can build up in habitats and be a scourge of calving facilities and confinement rearing.

Coliform bacterial organisms are also associated with calf scours and can contribute to rapid death or prolonged debilitation. Manure buildup in the calving habitat and contaminated calf feeding utensils are the most common causes. Newborn calf behavior of struggling to stand and nursing on dirty tails, flanks, and teats increases exposure. Coliform organisms are usually associated with scours that erupt at 36 hours of age or less. Coliform organisms are often associated with such severe dehydration and depression that force feeding or I.V. fluids may be necessary. This can be a life-threatening medical emergency.

In addition to bacteria and protozoa, viral organisms are also commonly associated with scours, especially when there is a predictable history of onset at a week or at 10 to 14 days of age. As with most viral associations, the cellular disruption can be severe, causing loss of absorptive surface and consequent fluid loss and decreased passage time. Cells of the digestive tract grow so fast that the lining heals in 2 to 3 days, and the scours is usually short-lived unless there is a concurrent disorder.

Mechanical causes of scours include poor mixing of replacements, overfeeding, and improper feeding. The ideal food for calves is fresh, warm, whole milk. Milk is a live food containing essential enzymes, cellular components, and trace nutrients that promote optimum health. Overfeeding is a relative term that only occurs in relation to periods of underfeeding. Calves offered free access to a nurse cow actually consume more milk than calves on restricted feeding programs. If a calf has to be reared by a person, the calf should suck from a nipple held low, forcing the calf to hold its head down at udder level. Otherwise, calves should be fed on sucker barrels with hard rubber teats connected to a milk reservoir via long tubes. The angle of the head and neck, the vigorous sucking required for a meal, and copious salivation all stimulate formation of the esophageal groove, preventing milk from entering the rumen.

Because newborn calves have few reserves, scours can be rapidly debilitating. The two important objectives of care for a scouring calf are continued nutrition and rehydration. In most cases of scours in young calves, they can recover if they are fed, warm, and dry. It is important to continue feeding suckled, fresh, warm milk—not diluted, not mixed with something else—so that the esophageal groove will function and so the milk will form a clot in the abomasum. Oral rehydration is highly beneficial as support therapy for any young calf with scours, and can be accomplished using one of many commercial electrolyte formulas fed separate from milk according to label directions.

**Parasitism:** ruminant internal parasites are virtually endemic. Signs of parasitism reflect an imbalance somewhere in the soil, the plants, the animal nutrition, animal numbers, or animal immune function.

Parasite infection is spread through contaminated manure. Infective larvae require at least a week to mature under ideal habitat conditions. Infection can occur in a susceptible host following consumption of mature infective larvae. Neither parasite larvae in the environment nor adult parasites in the host

can live forever. The weak link in the parasite life cycle is the free-living larval phase in the habitat. As nematode larvae, they are susceptible to predation by soil and surface microorganisms, destruction by climate extremes, and exhaustion from depletion of nutrient reserves. Given enough time and a vital soil biology, infective risk from contaminated manure will dissipate.

Animals develop avoidance behavior that serves to reduce exposure to potentially infective larvae in manure-contaminated feed. Cows select their diet on the basis of energy density. Until soil fertility and soil biological activity is uniformly high, the lush growth around manure pies is rejected for more energy-dense feed. Young animals that have not fully imprinted on desirable feeds, or submissive animals in a herd, are at the highest risk of consuming manure-contaminated feeds. Training and behavior modification can overcome the rejection mechanism and increase the risk of exposure, for example, in management-intensive grazing systems. Increased risk of exposure with managed grazing may be transitory as the soil vitality and biology respond to the improved nutrient cycle, and predation on the nematode larvae at the soil level intensifies.

Parasites produce a strong immune reaction in healthy, mature animals. The number of consumed larvae that develop and lay eggs in the host is related to the strength of the immune response and concurrent stressors. Proper, balanced daily nutrition including trace elements and ready access to fresh water are important in maintenance of the immune system.

Parasitism illustrates the concept that each animal has a space and time requirement for optimum health. Given adequate space and enough elapsed time, parasitism would seldom be an issue except in unusual animals that have multiple concurrent health disorders. As farm management practices decrease the space and time allotment per animal to increase farm production, more animals are put at risk of parasitism. The technique of alternate species grazing is one method of decreasing the risk of parasitism. The effect is allocation of more space and time per animal by using multiple species that are not susceptible to each other's parasites. Machine harvest of forage also reduces the risk of parasitism by a similar mechanism. Machine harvest effectively allocates more time and space per animal by gathering forage over a large area without adding potentially infective manure from the grazing animal. Increasing the time and space allocated per animal attacks the weak link of the parasite life cycle.

**Infertility:** multifactorial disorder of dairy cows and heifers resulting in reproductive failure and elevated cull rates. In modern times, interest in rapid genetic progress through artificial breeding has made humans more directly responsible than ever before for heat detection, sire selection, collection and distribution of semen, and breeding. As a consequence, humans are often primarily responsible for infertility.

Fertility begins at birth. When a calf is born, the cow licks the calf vigorously, not to clean the calf off, but to complete a sensory bond between cow and calf. A study of sheep showed that ewe lambs removed for 24 hours from their mother immediately after birth manifested abnormal social behavior as adults and were consistently infertile. Numerous studies of different mammalian species in artificial environments have demonstrated direct influences of habitat, nutrition, and behavior on fertility and reproductive capacity.

Fertility and reproductive inclination are reflections of the whole farm environment that is described by the building blocks of animal health. Reproduction is the lowest priority function for energy allocation, after both lactation and growth. Historically, the low status of reproduction was a feedback mechanism from the cow's environment that coordinated the timing of reproduction in relation to the availability of dietary energy. Prior to domestication and transplantation, cows lived where the flush of new grass growth occurred on a nearly predictable annual cycle. Even though infertility is thought of as an individual animal disorder, reproductive failure actually threatens perpetuation of the herd. The farmer develops the whole farm environment and regulates the timing of events that encourage herd fertility.

Nutrition considerations for infertility begin, again, at ground level. Soils of the Northeast are often low in trace elements, such as Selenium, and deficiency

can result in failure of timely conception, which on most dairies is synonymous with infertility. Nutrition has a profound effect on timely resumption of fertile heats after calving, made more critical by the high production levels in modern dairy cows. Stress increases the requirements for trace minerals and increases the occurrence of deficiencies. Selenium deficiency has been linked to higher levels of infertility from several causes. Nutrition is important for the maintenance of the tissues of the reproductive tract.

Hormonal influences regulate both the development of egg-containing follicles and the selection of certain follicles for development and ovulation. The process of follicular development and ovulation is extremely complex and is hormonally regulated based on dietary influences, primarily energy metabolism and energy balance. Full development from immature follicle to ovulated fertile egg usually takes 70 to 90 days. In average milk cows, timely rebreeding after calving requires that the follicle development process takes place during the greatest fluctuations in the energy balance. In order for a cow to calve on an annual cycle, she must be bred before she reaches 90 days in milk. The high production demand for energy in the first 60 days after calving is met by dietary supply and mobilization of body fat. A large or prolonged negative energy balance suppresses normal follicular development. Fatter cows tend to have a deeper and more prolonged negative energy balance after calving.

Energy balance is influenced directly by the energy density in the diet. Effective dietary energy is influenced by dietary protein. Excess dietary protein requires energy for metabolism and excretion. Excess dietary protein can also produce elevated blood-urea nitrogen which can create a hostile uterine environment for implantation of the conceptus after breeding. Slug feeding high-protein supplements is the most common cause of unfavorably high blood-urea nitrogen. Effective dietary energy is also influenced by feed type. Pasture density and pasture quality influence the energy required for grazing. The steepness of slopes in a pasture and the proximity of grazing and milking facilities also influence energy expenditure for feed consumption.

Season of the year has an effect on heat behavior with the lowest incidence of observable heats in the darkest months of the year. Heat display and fertility increase as the photoperiod increases. Ambient temperature affects fertility, with breeding failure increasing as temperatures rise above 85 degrees Fahrenheit. Cows require adequate footing to display heat behavior and require the freedom to express heat behavior through interaction with herd-mates at times other than feeding.

Infertility can also be the result of chronic reproductive tract infection. Habitat at calving time and attention to hygiene during assisted calvings are important influences on the population of organisms in the reproductive tract after calving. Chronic infection can also be introduced at the time of breeding and lead to infertility. Early service after a short post-calving interval can lead to chronic infection of the uterus and failure to continue cycling. Certain techniques of artificial service, such as horn breeding, while potentially increasing the average first-service conception rate may also increase the risk of chronic infection and infertility after breeding.

Monocultures are unstable biological systems. Many dairies tend toward monoculture as a result of the focus on increased production from a single organism at the top of the farm food chain. Modern dairy cows are one of the most demanding of the common classes of livestock, requiring the highest plane of nutrition and reflecting relatively small instabilities in the farm system. Herd health is enhanced when the dairy herd is a part of a diversified farm enterprise that includes vital, well-mineralized, biologically active soils as well as several different crops and classes of livestock.

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# Grazing Management For Organic Dairy Farms

by Sarah Flack

In my mind, grazing is a natural and necessary part of organic dairying. It is the most healthy way to feed cows, calves and heifers, and it is an essential part of building healthy soils and growing a diversity of plants on dairy farms. Here in the North East, grazing usually doesn't feed livestock year round (the pastures are often under 3 feet of snow!), but the climate during the growing season is ideal for growing high quality, highly nutritious pasture.

Grazing management goes by a lot of different names, I refer to it as "management intensive grazing", because it most accurately describes the method. Management is the most important part of grazing... it isn't just turning the cows out to the "back 40" pasture after milking!

An increasing number of dairy farmers of all types are turning to management intensive grazing to feed cows on their farms and improve their farms' profitability. There have been many studies done to look at the economics of grazing and non grazing farms. Several studies done by NRCS, Universities and Extension in Vermont, New York, Pennsylvania, Wisconsin and Michigan show an increased profit per cow per year on grazing farms ranging from \$48 to \$250 when compared to conventional farms. However, improved profits is not the only benefit of management intensive grazing!

For organically certified dairy farmers, grazing management is often even more important than for their non organic neighbors. One of the reasons that organic dairy farmers rely on pasture as the primary source of forage during the grazing months is because it is the least expensive way to feed cows. The expense of harvesting forage, or buying certified organic forages from off the farm sources can often be quite high. Also, the feed quality that cows harvest by themselves is often higher than any purchased forage! During the grazing season, due to the high nutritional quality of pasture, the only supplemental feed that most grazing farmers provide to their cows is minerals and a relatively small amount of high energy grain such as corn meal or barley.

In addition to lower costs of harvesting and purchasing feed, farmers are finding that grazing lowers the costs of labor, repairs, fuel, fertilizer, veterinarian and medical costs and electric bills. Grazing can reduce wear on tractors and other equipment, and it often reduces cull cow rates and the need to purchase replacement cows. Economics isn't the only reason to graze dairy cows, other advantages that farmers report include improved herd health when cows are grazing daily, less time spent spreading and handling manure, less time spent feeding animals and environmental benefits.



photo courtesy Sarah Flack

Brown Swiss herd grazing at Shelburne Farms, VT (not organic)

Management intensive grazing can improve pasture quality and yield, and it can convert pastures which are weedy, brushy areas where animals have to search to find good quality forage into very productive pastures which can feed more animals a high quality forage, produced and harvested at a low cost. Many farmers find that as they continue to use management intensive grazing on permanent pastures on their farms, they have more and more pasture to feed their livestock! This means that they either need to get more animals to eat the pasture, or they have to harvest more excess forage for winter feed. Some farmers stockpile excess pasture in the late summer, and let the livestock graze it after the pastures are done growing for the year. This allows the animals to spend even more of the year outdoors, harvesting their own feed.

So what exactly is management intensive grazing? It is managing the plants in the pastures according to their needs... or according to the way they grow. Pasture plants need time to rest after each grazing, giving them time to replenish carbohydrates stored in roots (by photosynthesizing). Continuously grazing animals in the same pasture does not give the plants time to recover after repeated grazing, resulting in plants that weaken, may stop growing and even die. Cows in the same pasture for a week or two will return again and again to their favorite

plants and re-graze them. This re-grazing damages the plant, and grazing those short plants doesn't allow the cow to harvest enough feed. Some of the problems which continuous grazing can lead to include selective grazing of some plants, over-grazing bare spots of ground which lead to soil erosion (and nothing for animals to eat!) low quality pastures which have low production manure piling up in animals favorite napping spots, leading to nutrient transfer away from plants which need it, areas of rejected forage and more weed problems.

Most dairy farmers will give the cows a fresh pasture after each milking. Cows will graze each area for 8 to 10 hours, and then that area (called a paddock) will be left to regrow. The cows may return to that paddock as soon as 14 days in early summer when the plants are growing rapidly, but it may take as long as 40 days later in the summer before the plants are fully recovered.

It is best for both the plants and the cows to graze a paddock when the plants are 6 to 8 inches tall. Ideally, a pasture should be grazed rapidly down to 1 - 2 inches, and then rested for as long as it needs to grow back up to 6 to 8 inches. It is also important to move animals frequently, so that each paddock is not grazed for more than three consecutive days. Grazing periods of half a day to one day will result in much higher pasture quality and livestock performance.

Another important part of management intensive grazing is that when pasture growth slows down in later summer, the total number of acres needed to graze will have to be increased. If the number of grazing acres is not increased, the plants will not be getting enough rest, and dry matter intake by animals will drop, resulting in both poor animal and poor pasture performance.

When cows go into a paddock for 8 to 10 hours, they aren't just eating... They are trampling weeds and dead plants into the soil, which adds organic matter. They are dropping manure (about 50 pounds per cow per day) and urine out on the pasture so the farmer doesn't have to haul manure out of the barn and spread it with the tractor.

Permanent pastures being managed intensively provide cows with a "salad" of many types of plants. There may be as many (or more) as 20 or 30 different species of plants in a single pasture. This biodiversity provides the cows with a range of plants to eat, and means that even in a drought year or in a very wet year, something will grow. Here in the

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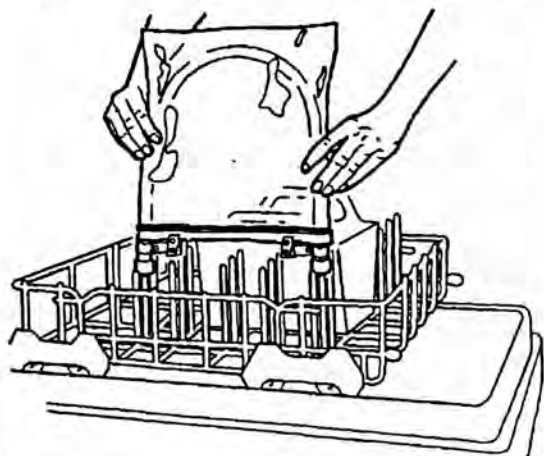
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North East, some of the common pasture grasses include Kentucky blue grass, orchard grass, reed canary grass, quack grass, timothy, tall fescue, perennial rye grass, and brome grass. Some of the pasture legumes include white clover, red clover, alsike clover, vetch, birdsfoot trefoil, and alfalfa. Some broadleaved plants that some may call "weeds" are actually good pasture plants, and they include dandelion, chicory, plantain, and many more.

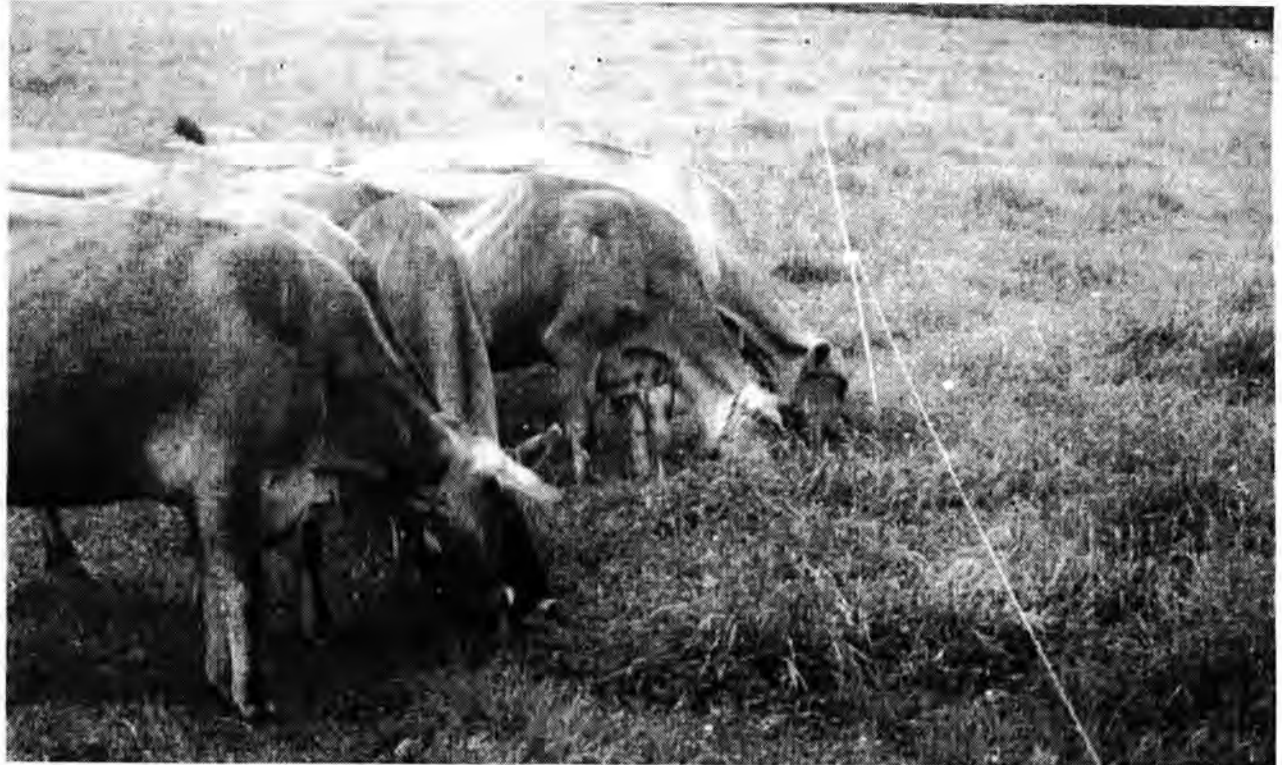
The biodiversity of plants above ground in a pasture is reflected below the soil surface by an amazing amount of biological activity. The roots from all these different types of grasses, legumes and other plants combine to make up one of the highest root concentrations found in any crop. In and around these roots there is a huge population of bacteria fungi and other organisms

The symbiotic relationship between legumes (such as white clover) and the Rhizobia bacteria is just one example of the beneficial role of these microorganisms. This symbiotic clover/bacteria relationship makes atmospheric nitrogen available to the legume, which may later make it available to grasses and other pasture plants. The bacteria in turn relies on the plant for nutrients and protection.

In addition to microorganisms, earthworms are an important part of the pasture ecology. Earthworms aerate the soil, help move dead plant material into the soil, and speed the break down of animal manure. Research done by Bill Murphy in Vermont found that there were between 1,109,00 and 1,776,000 earthworms per acre in well developed pastures. That adds up to between 2,318 and 3,454 pounds of earthworms per acre! When you add to that the number of fungi, bacteria, nematodes, plants and other organisms above and below the soil, you can begin to understand the incredibly complex ecology of a pasture.

Some environmental benefits of good pasture management include a dramatic decrease in soil erosion potential, decreased need for fertilizer, and a reduced amount of barnyard manure run off. Converting land which is prone to erosion over to well managed pasture is a good way to reduce soil loss. Well managed grasslands can even build soils and organic matter. This can preserve fertile soils with higher organic matter content for future generations. Good pasture management can also improve water quality for us, our livestock and aquatic life. Perennial grasses and legumes in pastures use carbon dioxide in photosynthesis, so increasing the number of acres in grassland could potentially decrease atmospheric carbon dioxide levels!

When using management intensive grazing, the farmer obviously isn't just turning the cows out to pasture and ignoring them! There are fences to move, water systems to maintain, pastures to walk through and check on... There is also a lot of time spent planning and thinking about things like what type of mineral to feed grazing cows, the amount (if any) and best type of grain to feed during the summer months, how big should the next paddock



In lush pasture cows will graze contentedly for hours.

photo by Jack Kittredge

be for the milking herd, how much land should be cut for winter hay and how much should be grazed.

So there is still plenty of work to do on a grazing farm, but the type of work is quite different than on a non-grazing farm. During the grazing season there is less time spent on a tractor, the cows are often cleaner so less time is needed preparing udders for milking, less time is spent feeding cows in the barn, there is less time spent pushing a wheelbarrow and less time spent cleaning the barn. This change in the type of work means that farmers on grazing farms can more safely take their small children with them when they are working. Moving fence or a water tub is something that a parent can do with a young son or daughter. Children who grow up working side by side with their parents, and feeling useful and needed on the farm are going to be much more likely to want to be farmers! Improved quality of life is one of the benefits of grazing which farmers and their families say they enjoy the most. I think that the cows probably enjoy how management intensive grazing improves their quality of life too!

If you want to learn more about management intensive grazing, there are many opportunities and sources of information. In many states there are pasture walks and farmer discussion groups where farmers can gather on each others farms and learn more from each other about grazing. Check with your local newspapers or ask at your local Extension office. You could also attend one of the several grazing conferences held each year in the northeast. There are also several good books on grazing management and some monthly grazing magazines.

*Sarah Flack is an independent farm consultant specializing in pasture management for all types of livestock. She does relief milking, works part time for NOFA-Vermont as an Organic Certification Inspector, and works part time with the Vermont Grass Farmers Association on a project funded by NRCS (Natural Resources Conservation Service). This project is a cooperative agreement with the University of Vermont Center for Sustainable Agriculture, NRCS and the Vermont Grass Farmers Association.*

*Sarah was a pasture consultant with the University of Vermont EPIC Pasture Program for three years. She has a Bachelors of Science in Environmental Biology and Agriculture and a Masters of Science in Plant and Soil Science from the University of Vermont. Sarah lives in Fletcher Vermont where she has a small farm, grazing sheep, horses and pasture poultry. She grew up in Fairfield, Vermont, where her family owns an organically certified pasture based sheep farm.*



photo courtesy Sarah Flack

Jerseys grazing on an organic dairy farm in Plainfield, Vermont. The Hill Farm belongs to Nancy Everhart and Peter Young.

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# CROPP: A Cooperative Approach To Organic Dairying

by Helen Jo Gudgeon

The Coulee Region Organic Produce Pool (CROPP) was born from the visions and efforts of a group of family farmers in late 1987. These farmers were reacting to the decades-long assault on family farming, which reached its lowpoint in the 1980's. They were searching for a way to preserve not only their livelihood, but their very way of life. At the same time, organic consciousness was on the rise in this country, and this group of farmers began to see the wisdom of a farmer-controlled marketing cooperative to sell their organic wares. These founding principles are reflected in the Purpose Statement of CROPP:

"The purpose of the Coulee Region Organic Produce Pool is to create and operate a marketing cooperative which promotes regional farm diversity and economic stability by means of organic agricultural methods and the sale of certified organic products." These words of intention still define CROPP in all its relationships, whether they be with farmers, manufacturers, or the consumers of our products.

From our humble origins in Southwestern Wisconsin only ten years ago, CROPP has now become a centralized cooperative that includes over 150 farms in six states who produce organic milk, eggs, vegetables, and meat. The majority of CROPP products are marketed through our own 'Organic Valley' label, but we also market to many other brands, such as Earth's Best, Horizon's Organic Dairy, Stonyfield Farm, and Cascadian Farm, to name a few. This combination allows CROPP to produce the widest array of organic dairy products in the country. In support of this, our marketing network presently extends into all fifty states and Japan.

Member farmers own 100% of the cooperative and only farmer/members may serve on the Board of Directors, thus assuring their continuous control of the coop. Another foundation principle of CROPP's is to cooperatively market certified organic products produced exclusively by our members. This keeps the marketing emphasis on members and their farm production, rather than the blind pursuit of maximum profits, at whatever the cost. Serving the CROPP Family of Farms and sharing our vision and experience with other family farmers are primary concerns which guide us in our work and dedication.

CROPP, as a cooperative, includes several different commodity pools- Dairy, Eggs, Vegetables, Meat- each organized with separate management, membership and equity requirements, protocols, and standards. The Dairy Pool predominates, accounting for 85% of sales and nearly all of the Cooperative's ac-



photo by Jim Wedeberg

## CROPP's line of organic dairy products are examined by an interested party.

culated net worth. All pools participate in the process of "farmer determined" pricing that emphasizes a fair, stable, and sustainable pay price. CROPP dairy farmers currently receive \$17.10 per cwt at 3.5% butterfat content and have averaged at or near the top of farm prices realized nationwide for the last several years. This farmer determined price is the foundation cost for all CROPP marketing and products. Thus, CROPP's dairy farmers are able to maintain a sustainable pay price, which upholds another core belief of the Cooperative.

During its first year of existence, CROPP sold \$120,000 worth of product. This figure increased over 100 times by 1996, and gross sales for 1997 are projected to exceed \$20 million. Given an estimated total organic fluid milk sales in the U.S.A. for 1996 of \$55 million, this makes CROPP a big player in a small but growing market. However, to put these figures into perspective, the conventional dairy industry in America is about a \$70 billion market. Organic dairy comprises a mere .08% of this mega market, and it represents approximately 2% of all organic sales. Compare this to the 10.5% dairy component of all conventional food sales, and the room for growth becomes apparent.

CROPP is excited about its continuing growth potential, but in keeping with its philosophy of operation, the Coop only expands its production pools into areas where farmers have demonstrated an interest in and willingness to practice organic farming methods. Happily, from our perspective, these conditions exist amongst a growing number of farmers in the Northeast region of the country. Due to this grass-roots interest (in the Northeast and elsewhere), CROPP is in the process of organizing farmers in Maine, Vermont, Massachusetts, Connecticut, and New York, as well as other states such as Pennsylvania, Virginia, and California. In Maine, six farmers are currently scheduled to begin organic dairy production on September 15 of this year. CROPP is very excited to be on the brink of shipping our first organic milk in the Northeast, and, as more farmers step forward, more production pools will join with Maine to strengthen the CROPP Cooperative in this region.

CROPP does not own any production facilities, so one of the necessary tasks it must perform for its farmers involves identifying manufacturing facilities that will produce goods according to our strict quality standards. CROPP prefers utilizing small-scale, regional processors for production needs. The reasons for doing so are twofold. First, it is typically the smaller plants that are most willing to meet our quality standards. Secondly, by using processors located near our various production pools, we are able to operate in an environmentally and economically sustainable fashion.

The Northeast represents a new area for CROPP. Surely, unique challenges and obstacles will appear in the future. However, with its nearly ten years of experience marketing organic dairy products, CROPP feels confident it will be able to meet the needs of Northeastern producers who choose to join this farmer owned cooperative. As Jim Wedeberg, CROPP Board President and himself a dairy producer says, "producers face the same struggles wherever they are. They all want a better price for their production. In that sense, farmers are little different whether they live in Vermont or Iowa."

CROPP remains committed to building an organic industry that recognizes the necessity of sustainable farming practices. We are excited at the prospect of sharing in this work with like-minded farmers and consumers in the Northeast.

For more information about CROPP Cooperative, please contact George Siemon at (888) 444-6455 or Jim Wedeberg at (608) 735-4539.



photo by Jack Kittredge

CROPP organizer Jim Wedeberg speaks at a meeting of dairy farmers in Massachusetts



# Saving the Farms: The Evolution of Bart's Low Fat Organic Ice Cream

By Tom Timmins

It has been over thirty years since Gary Schaeffer left the farm that his immigrant Great Grandfather Kelly had homesteaded just before the Civil War. The first time he left was a time of family celebration: Gary was the first grandchild ever to go off to college. The second time he left, two years later in 1967, was a time of family grief: The bank took the farm away.

It was the second leaving that determined the course of his adult life. He finished college. With no farm to fall back on and family pride at stake, he had to. He became a salesman for Wisconsin Power and Light, then enrolled in social work graduate school in St. Louis. Later, in 1977, as a social worker in Springfield, Massachusetts, Gary met Barbara Fingold, from Buffalo, New York and soon they were married.

Barbara had always impressed her friends with her ability to whip up gourmet meals effortlessly. Her special talent was baking. So when the opportunity to purchase Bart's Ice Cream Parlor in college town Northampton, Massachusetts presented itself, the couple figured that, since Barbara could bake irresistible cookies and Gary knew milk, the ice cream business was a good risk.

Since they had both been social workers, Gary says, "We went from doing long term psychotherapy to giving 'instant gratification therapy' to the masses. We've never looked back." From 1978 to 1983, the business grew to two busy cafés and a full-fledged "from scratch" bakery.

In 1983, Snow's Nice Cream Company, Inc., an institution since 1910 in Greenfield, Massachusetts, went up for sale and offered Bart's a 16,000 square foot USDA dairy plant with a large ice cream production capacity. Once Barbara and Gary owned Snow's, they continued the business expansion with their Bart's brand pints sold in small stores around the Pioneer Valley. Before long, their products made their way into supermarkets throughout New England. Bart's brand reached the #3 slot in Stop and Shop's ice cream sales behind Haagen Dazs and Ben & Jerry's, but ahead of Frú Gjen Gladje, a Kraft Foods ice cream, and Steve's, a famous Boston brand.

By the mid-80's, Gary began the search for locally produced milk which finally ended in 1996 when he met Russell Van Hazinga, owner of Brookside Dairy farm in Westminister, Massachusetts, one of only two organically certified dairy farms in the state.

The search was long and circuitous. The first step involved a partnership with New England Country Dairy, a start-up company whose vision was producing cultured dairy products from milk given by local cows. Try as they might, however, the combined efforts of NECD and Snow's couldn't create enough milk volume demand to cause local farmers to exit the safety of the co-ops and supply Snow's directly.

By the early nineties, Gary saw that Stonyfield Farm Yogurt was able to carry out his vision of having local farms supply milk. Yet, neither Snow's nor Bart's was in the financial position to guarantee Hampshire or Franklin county farmers the volumes and the prices they would need.

In 1996 Snow's started "Connecticut River Valley Foods," a division whose mission was to deliver regionally produced foods to locally owned markets. "Valley Foods" added twenty brands to Snow's group of 200 plus ice cream and novelties. Smith's Country Cheese from Winchendon, Massachusetts, Twin Willow turkey products from Belchertown, Massachusetts, Mrs. Maffucci's Pizza from Weathersfield, Connecticut, Vermont Stuffed Pretzels from Saxton's River, Vermont, and veggie burgers and tofu hot dogs from Lightlife Foods, led the list. Also at that time, Gary visited George Siemon of the CROPP Organic Dairy Cooperative in Lafarge, Wisconsin. Siemon agreed to come to the Pioneer Valley and make a presentation to local farmers about the opportunities for and obstacles to organic farming. Out of that meeting emerged a group of



Bart's Low Fat Organic Ice Cream

photo courtesy Bart's Ice Cream

six to eight farmers who will form a regional milk producers coop this fall. Snow's will be the marketing arm for the group.

In October, 1996, Barbara and Gary attended the Bioneers Conference in San Francisco. The Bioneers are a national group of visionary business people, scientists, artists, and scholars dedicated to rebuilding a sustainable way of living on the planet. The couple traveled the West Coast, looking for new ideas, seeking fabled avant garde frozen desserts that supposedly originate there before making their way back east.

"We didn't see any other ice cream parlors serving organic ice cream," Barbara said, "but we came back convinced that organic dairy products were the only way for us to achieve our goals of independence and sustainability."

Upon learning that a contract between Stonyfield Farms and the Organic Cow of Vermont guaranteed Stonyfield all the organic milk the yogurt company could use, essentially all the organic milk within reach of Greenfield, Gary decided to try to import organic ice cream mix and ingredients from CROPP. The shipping costs, however, made that strategy impossible to implement. Feeling that large corporations, even if this time they were philosophical kin, had taken the advantage again - by monopolizing the New England organic milk supply - Gary began to doubt that Bart's would enter the organic market in the near future.

One of Gary's friends in CISA heard about his plight and suggested that he contact Russell Van Hazinga. Russell, as independent as Gary, had an organic herd with an excess of milk. Gary sensed that if he didn't bring the ice cream market to Russell, Brookside Farm could be vulnerable to the same kind of loss his first family suffered in the 1960's. Gary offered a "superpremium" price for his milk, until Bart's could build enough volume to nurture the Brookside herd. Russell countered with an offer to distribute the ice cream to his bottled milk accounts in Boston, and the deal was made. Bart's and Brookside joined forces to create the first organic ice cream venture in Massachusetts.

From Barbara's daily interaction with retail customers, she knew that many customers would be confused by the concept of organic ice cream. "They understand organic vegetables. No sprays. Use manure. No chemicals. Everyone has a friend who has an organic garden. Even supermarkets carry organic vegetables now. But 'organic' ice cream? Somehow, people think cows just give milk, and it's pure and wholesome enough. So what's with 'organic' ice cream? I guess most peo-

ple have no idea what it takes to raise and maintain a herd of dairy cattle."

So to give the local, organic ice cream a chance in the marketplace, they decided to marry it to the fastest growing trend in new foods - fat reduced foods. Between Bart's and Snow's brands, the company produces over 80 different frozen dessert products. But meeting organic specifications and following federal nutritional regulations for low fat products meant a whole new mindset for the Bart's production team. Paper trails for individual ingredients had to be kept. Two major pieces of equipment had to be bought. Organic ingredients and finished products had to be labeled and stored separately from the other ingredients. Careful balances of organic milk and skim milk powder, organic sugars and organic chocolates had to be found in order to stay under the "Less than 3 grams of fat per serving" standard the product promises.

Sourcing and coordinating all the ingredients has been the most challenging part of the process for Gary. "That and the fact that I've never done anything like this," he said. The Organic Commodities Project of Cambridge, Massachusetts, supplies the organic sugar, which is imported from Paraguay through farmer co-ops, and the organic chocolate. The chocolate originates in Costa Rica and Panama, also through farmer co-ops. "We're dealing with companies from here to California. Just when I thought I had a guaranteed 5,000 pound supply of organic raspberries for puree, I found out that the crop has been damaged by heavy rain."

Bart's "Low Fat Organic Ice Cream" was launched at Bart's Northampton cafe on July 26, during the town's sidewalk sale days. Russell brought one of his organic cows to town so kids of all ages could have their picture taken with her. Barbara and Gary and the whole team handed out free samples of Vanilla, Cappuccino Fudge, Chocolate Raspberry, and Raspberry Chunk. The most common remark from samplers was "You're kidding me. This can't be low fat."

With the organic foods market growing at 15% per year in the U.S., and with a low fat ice cream that tastes better than most high fat brands, Bart's is uniquely positioned for success in the new millennium. Still, Gary cautions that, in order to protect consumers, suppliers, and manufacturers from a weakened meaning of "organic," strict controls must be maintained by the certifying organizations. "If we're playing on a level playing field," he said, "I'm not too concerned. We'll keep plugging away at our local market, no matter what happens. Besides, we believe that our ice cream tastes a lot better than all of the others. Ask for Bart's in your favorite store. We invite you to compare."



# Mar-War Farm: The Transition to Organic Grass Dairying

by Jack Kittredge

The rolling hills of east central New York state, south of the Mohawk River, are still dotted with working dairy farms. The area's lush rainfall (in normal years), the lack of development pressure on land, and their proximity to large markets have kept family dairy farms alive here despite stagnant or declining milk checks. But, as modern dietary trends keep demand flat and better refrigerated transport systems bring in more and more cheap midwestern and Canadian milk, the long term outlook is gloomy.

Not many young people are willing to choose dairying when the work is so hard, the schedule so unrelenting, and the rewards so scant. With no relief in sight, more and more of the farming population is on social security every year. Flat, fertile fields rent for \$30 an acre and the 'lucky' farmers, in local parlance, are the ones who have managed to sell out.

Twelve years ago, however, an optimistic Warren Williams and his wife Marsha came to Richfield Springs with a car, a truck, 2 boys and 40 head of young stock. Williams grew up nearby and had farming in his blood. Although his parents didn't farm, his grandfather had, and Warren worked on farms as much as he could. The couple rented a place for 2 years. Then, when it went up for sale in 1987, they bought it (with the help of FmHA).

"We worked together and Marsha helped me manage at first," Williams recalls. "We were getting along as best we could. I started buying pieces of machinery as we went along, got into breeding and sold a few head that way. We were 20th highest producer in the county once, with a 20,700 lb. herd average."

But in 1990 the price of milk dropped to \$10 a hundredweight, far less than it cost to produce. Warren and Marsha had to refinance the farm to keep it, and he vowed: "This is the last time I'm going to do that. We have to find a different way to farm. We have to get out of debt". In part because fertilizer was so expensive, in part because his land was hilly and full of stones, Williams moved toward managing his herd on grass.

"My fertilizer needs used to be between \$5000 and \$9000 a year," he says. "I just paid this year's bill, and it was \$1600. I'm trying to be more grass oriented. Grass, cut at the right time, can give you as much protein and energy as anything else. Ninety percent of my ration in the summer is grass. I really push it."



photo by Jack Kittredge

Williams has between 110 and 120 head, about 60 milkers and that many dry or young. The water to each paddock is gravity fed from springs. Each tank is on a float system. He dug below the spring, made a dam, and stuck pipe through it. The cows can't get near the spring.



photo by Jack Kittredge

Warren milks the entire herd himself twice a day. He usually has 5 milking at once in different spots throughout the barn and wastes few motions tending them.

When Warren decided to get more of his feed from grass he cut one of his best hayfields, a 57 acre piece, into rotational paddocks with electric fencing. He says that when people start arguing with him about how grazing doesn't work he asks them how many cuttings of hay they get. Most will say three. Then he smiles and tells them that last year the cows grazed these paddocks down 9 times!

"It costs money to go out and harvest grass," he emphasizes. "All the machine time, breakdowns and fuel needed to do that cost money. But a cow will go out and chew it off herself. They can go up the steep pastures easier than I can. It makes a lot better quality of life for me."

Williams also converted a 37 acre hillside behind the barn into paddocks for night grazing (the hill is steep and a hard climb in the heat of the day). It drains into a small creek which eventually runs into the Susquehanna River and becomes part of the New York City water system. To avoid building expensive filtration and treatment plants downstream, the state has water protection people throughout the whole watershed trying to correct

problems at the source. They like the idea of grazing land instead of cropping it, Warren says, and the Soil Conservation Service covered 75% of the cost of preparing and building a gravel roadway up the hill. Now, when it's rainy, the road doesn't get muddy and the cows don't slip around on their way to pasture.

Adapting to the new grazing system, however, took some time - for both Warren and the cows. "A cow should get 90% of her forage on the pasture," he asserts. "If you feed too much in the barn, a Holstein will just go right out there and lay down. She won't graze. That was a problem for me the first two years I went to grazing. They'd come in here and the mangers would be bare. I'd say: 'Gees, I'd better feed them some more'. But you kind of have to starve them a bit to teach them to graze. Also, I felt bad for the cows on a hot day so I'd keep them in. They got used to going out and eating for half an hour in a tight circle, then standing by the gate and bellowing. It was terrible!

"But after a while," he continues, "they learned to graze and to spread apart, so it would be cooler. I think the secret is teaching them to chew the grass. Getting them out when they're young. They have to learn to put their head down and eat. Now I put the young ones in a training paddock so they can learn to graze when they're young. That was another one of my mistakes at first. We let the milkers out to pasture, but fed all the heifers in the barn. But they need to learn to graze, too. If they stand in that barn and bellow and you throw them grain or corn silage or hay, that's what they'll get used to."

Because Warren was so heavily grass-based and didn't use many agricultural chemicals, when Elmhurst Dairy decided to bottle an organic milk line, "Juniper Farms", they spoke with him and two other nearby farmers about getting certified. They even brought George Siemon from CROPP in Wisconsin out to talk about what to expect during the transition period.

"They were offering \$16.00 a hundred," he remembers. "Conventional milk was so low there was no reason not to change. I did have 40 acres where I had grown conventional corn, however. That land couldn't be used to feed my milkers. But NOFA allowed me to feed the heifers off that transitional land, up to 3 months before they freshened. That helped a lot."

The other problem Williams had was that he wasn't totally off grain. He was getting offered the conventional milk price during transition but would have to pay to buy organic grain. Nevertheless, In July of 1995 the three farmers got together,





photo by Jack Kittredge

### Warren's milk ends up packaged as Juniper Valley brand organic milk

brought in a tractor trailer load from the Dakotas, and started feeding organic grain. Fortunately for Warren, it was a lot cheaper than. The first year for high moisture corn he paid \$90 a ton. The second year he paid \$150 and last year, in the fall before the new harvest, he paid \$275/ton for dried shelled corn."

"Most of my neighbors," Williams recounts, "said: 'When we see your first organic check we'll believe it!' Now they're getting \$12 a hundred and we're getting \$5 over the conventional milk blend price for organic. But the picture isn't all rosy. The costs of grain are way up and my production isn't what it was. We dropped about 5000 lbs. when I went organic, which is maybe 20%. Now my best cow gives 25,000 pounds and my herd average is 15,700 a year. But my bottom line is up. I'm not stressing the cows like I used to. The last time we tested a few days ago we averaged 47 lbs. a cow per day, compared to maybe 55 to 65 lbs. before, when we used to keep them in the barn. But we had to clean the barn everyday, twice a day and had to feed a ton or haylage a day, plus hay. We had 7 fans running in the barn. When I sat down and figured how much it was costing me to have that high production, it just didn't add up."

Elmhurst now makes daily runs to New York organic dairy farms. Pick-ups occur at each farm every other day and the milk gets trucked to a Roxbury, New York bottling plant. A number of conventional farmers are considering making the transition, according to Jeff from Don's Dairy Supply who stopped by Warren's while I was visiting, but the transition period and the uncertainty of producing without familiar fertilizers and other products is scary.

"Farmers are just like their cows," Williams laughs. "They don't want to change. 'Maybe we're not making enough money to get along, but if we change and everything goes to pieces where will we be then?' That's sometimes why a younger man can do it easier. He can afford to start over again if he has to. Even if the bottom dropped out of the organic market, I'd keep managing the way I'm managing. I just like it this way because I have three sons and my wife works out. Now we can go somewhere on a Saturday for 8 hours as a family. When I had to be in here at noon to feed them grain or more silage I couldn't do that. When they're out in the pasture they take care of themselves."

"I think," he continues, "that when the major part of my debt is gone I may try to feed the animals just on minerals and forages. This year I don't know if you could because the grass has no kick - without water to make it grow. But there's a farmer over in Springfield who just feeds hay and haylage in the winter and in the summer grass and a little dry hay. He's by himself and milks 50 cows. He says if he maintains 40 lbs. a cow with no grain bill he does all right. He has no debt, of course."

Another satisfaction of making the transition to organic milk is that Warren has fewer herd health bills to pay. In fact, he's still paying off old vet bills from when he was pushing his cows right to the edge every day to make 70 or 80 lbs. of milk. He feels his herd health now is better because they're not being pushed. They're out in the pasture chewing and walking every day, instead of in the barn.

"I used to have lots of milk fever and ketosis before," he says. "I don't have those anymore. The only health problems I have now are calving problems. I can't use the various treatments I used to, so that's one of the things I'm learning every day - organic medicine."

Williams is also experimenting a little with his breeding. He's using bulls to service his heifers and is breeding as many as possible this summer to get them all to freshen on spring grass. He's been crossing his herd back and has Jersey and Dutch belted crosses. He figures they're better at grazing and better converters of hay. When it's 95 degrees out they're still in the pasture chewing away!



photo by Jack Kittredge

### A tube is 150 feet long and Warren can get 35 bales in one. Here he has opened one to show how snugly the bale fits in the tube.

This year has been hard on Williams' fields. At first the cold, wet spring made for lush grass which he had a hard time keeping up with. He mowed 25 of his main paddock acres just to keep them down in mid-May. In the two months which followed, however, he hasn't gotten more than an inch of rain. Growth has all but stopped. Now, at the time of my visit in mid-July, he has 6 days of pasture left. After that, without rain he'll be forced to put the cows back in the barn and feed them hay from his precious early cuttings.

Because of the drought Warren has been able to make only about 75% of the hay he normally does. Last year he put up 3000 round and 5000 square bales. Williams continues to make the square bales because he hates to leave his barn hay loft empty and his kids prefer to feed square bales - the round ones have to be placed on a cart and dragged around from stall to stall in the barn so a little can be peeled off for each cow. They weigh a thousand pounds each so the cart is hard to drag and it barely fits down the narrow barn aisles.

The round bales are far more economical to make, store and handle, however. They contain 15 times as much hay as square bales so making and storing them is fully mechanized. In fact, Warren's 13-year old son Daniel made most of them last year. The bales are picked up from the field and loaded on carts with a tractor-mounted spear. The carts are then hauled to the tuber, a device which shoves the bales into a 150 foot long plastic tube which is then sealed. The hay is baled while still partially wet, so in about two weeks it ferments and is preserved in the tube.

"Although tubes cost \$110 each," Williams explains, "they save you the price of barn space. Another advantage of baling and tubing is that you can do it when the hay is half dry - you don't have to beat the weather so much. Also, when you bale bone dry hay, every time you move it you lose some - the leaves crumble and flake off. I handle my square bales 8 times between making and feeding them and I probably lose 20 - 30% of the nutritional value of the hay by the time I'm done."

"That's also why we're going to feed out more haylage this year," he adds. "That's chopped finer and can be mechanically fed. The main thing is to get stuff in front of the cows. That's the whole ticket to making milk. I'm grass based for 6 months of the year, maybe 8, depending on how long I can keep them out. That's the way I want it to be. As much as I can stay off the tractor seat, I want to. It costs money every time you fire machinery up."

"Some of my old friends don't care how much it costs to make milk," he sighs, "they have to be putting out 72 or 80 lbs. a cow. They're in the barn feeding them cows in the middle of the day, scraping under them and bedding them again and keeping them comfortable with fans. What does it get you? Nothing but a little 5 dollar trophy for that high production cow!"



photo by Jack Kittredge

This is the tuber. You set a round hay bale in it with a spear mounted on the front of a tractor and a piston pushes the bale into the tube. Placing the bale on the tuber releases the piston and shoves the bale in, which also advances the tuber the right distance for the next bale. One man can run the whole thing from the tractor.



# Making the Transition to Organic Dairy Production: A Profile of Lewis Creek Jerseys

by Enid Wonnacott & NOFA/VT staff

In the past several years, over 30 farms have made the transition to organic dairy production in Vermont, and currently there are many farms transitioning in both Maine and New York. The limiting factors to making the transition have been securing (and affording) organic grain, and knowledge of alternative animal health remedies. The farmers who have made the transition to organic dairy with the greatest ease are grass based farmers who rely a lot on pasture for seasonal feed, fertilize with manure, and have experimented with alternative health remedies such as homeopathy. For those farmers who have not used synthetic herbicides or pesticides in the last 3 years and synthetic fertilizers in the past year, the transition to organic has been fairly straightforward. Farmers who had been using chemical fertilizers on their hay land and a starter fertilizer or herbicides for corn have had to make the transition to organic over several years. Additionally, many farmers find that their cows need to make the change to organic grain slowly. Cows that have been used to a sweet, pelleted feed take some time getting used to a dry, mash with no molasses. Other changes that farmers have to make are: feeding all of the young stock organically instead of using milk replacer, discontinuing the use of breeding hormones, and discontinuing the non-emergency use of antibiotics.

Farmers differ in why they make the transition to organic agriculture. The majority of transitioning farmers interviewed were motivated to make the transition before the national organic certification standards are implemented, and to receive more money for their milk. Gary Zimmer, a soil nutritionist from Midwestern Bio-Ag, spoke at the Alternatives in Animal Health conference NOFA-VT sponsored in March, and articulated what many veteran organic farmers believe when he stated, "If you are having problems on your farm, going organic is not going to solve your problems. You have to get the cows healthy and repair the system before you can earn the right to go organic; you earn the right to go organic, you don't start there."

Vince Foy and Deb Yonker are one example of a farm that has made the transition to organic agriculture with the foresight required to make a successful transition and, in the words of Gary Zimmer, earned the right to be organic. They took three full years to transition to organic on their farm in northern Vermont, first experimenting with cultivating corn and ceasing chemical fertilizer use during those three years so they knew it could be done. They farm Lewis Creek Jerseys, managing 177 acres of owned and leased land, including 12 acres of corn, 123 acres of hay and 40 acres of pasture. They milk 70 registered Jerseys with the following milk quality profile: 120,000 avg. somatic cell count (a measure of white blood cells in milk), butterfat 5.0%, and 3.9% protein.

## Crop Management

Deb and Vince raise 12 acres of corn which they cultivate for weed control. Vince uses an S tine cultivator because of the rocks in his field and because grasses are his major problem. He cultivates 3 times, 8 days apart and then spinner spreads sweet annual red clover at 10#/A after the last cultivation. Whereas they used to use a chemical fertilizer as a corn starter, they transitioned to a granulated whey fertilizer with an analysis of 5-9-1 at the rate of 420#/acre and put 20 tons/acre of manure in the spring on corn ground. Vince usually grows 2 years of corn which gets reseeded to alfalfa and orchard grass. Vince and Deb stress that their land was not run down to begin with; it was a low-input farm. Their pasture system was highly developed before the transition so that their animals could be fed 6 months out of the year on a high quality feed. By the time they transitioned, they had put in good new seedings of alfalfa/grass, planting 10# of alfalfa and 5# of orchard grass per acre with a barley and peas nurse crop for weed control. They comment, "If we went without that kind of program, the transition would have been more difficult. We weren't heavy fertilizer users anyway."

They have found nitrogen fertilizer to be the limiting factor in organic production. Whereas they used

to use some synthetic nitrogen to fertilize their grass lands, they now use manure at 12 tons/acre and high mag lime where needed. Vince spreads 12 tons/acre of manure every other year on pastures, and lime as needed for areas with a low pH. Under organic management, their yields are as follows: 13-18 tons/acre for short season corn, 3 tons/acre for new seedings of alfalfa (3 cuttings, no grazing), and 2 tons/acre for grass (1 ton/acre first cut, 1/2 ton/acre second cut, 1/2 ton/acre pasture).

## Animal Management

Their preventative management was well established before they made their transition. For example, they receive 45,000 predator wasps every 3 weeks from Spalding Laboratories for fly control, and then in the end of July they do a double release. Spalding sends them 4 different species making the package of wasps adaptable to different climates. They spend \$500-600 annually to buy wasps. Although they used to just release the wasps in the barn, they are currently releasing most of the predators in the pastures. In addition, they use fly strips, fly traps and a fly repellent oil that is 5 gallons of mineral oil mixed with witch hazel, citronella, eucalyptus, cedar wood oil, penny royal and some 'Skin so Soft'.

They currently find that cystic ovaries are the biggest herd health challenge on the farm. Before transitioning, they used oxytocin and lutealase (hormones), which are prohibited for use in organic production. Prior to their transition Deb had experimented with homeopathy, so they were able to more easily develop an alternative approach to animal health. They found that their vet bills went down \$650 in the first year of their transition because they stopped routine dry treatment and used homeopathy more frequently.

When they first started feeding organic grain, they experienced a 10-15% production decrease. Whereas they used to feed their high cow 26 lbs of grain a day, they are currently feeding 20 lbs to the high cow. Vince has been very frustrated with both the quality and inconsistency of organic grain and found that their cows lost condition when they went to the organic grain at first. They are fed grain 4 times a day, before and after each milking as well as second cut hay during milking and corn silage and haylage after. Vince found that: "the rumen works better and the utilization of grain is better when grain is blended with chopped feed. The grain gets suspended in the chopped feed and they eat better. Maximizing the utilization of grain is critical when organic grain is so expensive." They are currently feeding corn (50% or more), roasted soybeans and canola purchased from Tri-Organic for over \$300/ton. In addition, they feed corn silage, which Vince feels is critical to maintain cow condition.

## Economics

In 1994, the last year Lewis Creek Jersey Farm was under conventional management, they grossed \$125,000 from 70 cows with a total of 908,000 lbs of milk shipped. In 1995, they had a transition year shipping conventional for part of the year and organic for part of the year, and by 1996 they were completely organic - receiving \$165,000 from 70 cows with a total of 890,000 pounds of milk shipped. With their premiums they are getting \$21.00 for a hundred pounds of milk (cwt) from Organic Cow, Inc. in Tunbridge, Vermont. In 1994, their debt to cow ratio was \$3,000 and they sold the development rights to their farm in order to decrease their debt and fund their transition to organic. Now their debt/cow ratio is \$1,500.

The greatest increase in expenses in making the transition to organic has been in the cost of grain. In 1994, they spent a total of \$45,000 on grain, and by 1996, spent \$73,500. Their grain/milk ratio has increased from 36% in 1994 to 44% in 1996. Vince notes that 1996 is a poor example because milk premiums were instituted in the middle of the year and given the current premiums, it would decrease the grain/milk ratio to 40%. Their goal is to bring the ratio down to 36%, and they hope to control the quality and the price of grain in the future by being able to store and mix grain on their farm,

putting in some bins and getting grinding equipment. Vince would like to be able to store whole grain and grind and mix it as needed.

## Transitioning Experience

Vince and Deb express that since they made the transition to organic production their outlook is a lot better in terms of the way they view their future. They have been farming for almost 15 years and they now feel more in control of the market and their destiny. "We like the fact that we rely on our own resources more. We are learning about homeopathy by experimenting and talking to other farmers." In addition, they stated, "our lifestyle has improved and we are able to pay more for help." Although their labor requirements have not increased during their transition to organic agriculture, they paid hired labor \$17,200 in 1994 and \$18,200 in 1996. The increase is a reflection of increased pay, not increased hours.

The down side of having made the transition has been the availability and inconsistency in the quality of the grain. In addition, they feel as if they need to increase their profit.

As part of NOFA-VT's SARE grant for organic dairy research (details on page 30), we interviewed many of the farmers that have made the transition to organic agriculture over the last year. Their predominant challenges in making the transition are as follows:

- consistency with feed quality. Many farmers mentioned this as the biggest challenge and recommended that transitioning farmers get a nutritionist to work with if they can't analyze the feed themselves. Many farmers mentioned that their strategy to overcome struggles with the inconsistency of grain is to increase the quality of their forages. One farmer stated "with increased quality forage, I feed very little grain, and in the summer only have to feed energy."
- increased management requirements: One farmer said that "organic takes management more than money. You have to look way down the road as far as land management and cow management and be organized and keep very good records." Another farmer said, "with organics, you have to catch the problem even before it becomes a problem - read the animals well, and spend time with them."
- fly control
- animal health: farmers are experimenting with homeopathy and mentioned that their best results have come from learning remedies from other farmers. They mentioned the challenge of educating their veterinarians and are frustrated with their lack of expertise.
- reproduction: several farmers mentioned that their cull rates are higher because they are unable to get their cows to breed back.
- initial decrease in milk production. One farmer mentioned that cows transitioning in mid-lactation dropped the most. Most farmers have experienced milk production stabilizing back to where it was before making the transition (although this seems linked to forage quality)

The positive results of having made the transition are as follows:

- farmer networking. Nancy Everhart has organized monthly farmer networking meetings in the fall, winter and spring open to all organic dairy farmers. The meeting is hosted by a different farmer each month and the farmers have an unstructured discussion about how things are going.
- working with Organic Cow, Inc.: many farmers like not having to be involved in a co-op, no trucking fees, and enjoy the working relationship with Organic Cow
- financial. One farmer determined that he has netted \$1,000 more per cow since becoming organic. This same farmer expressed that "you need to net \$3.00/cwt with organic to cover the 10% reduction in production and increased costs for grain."
- consumer satisfaction
- environmental
- support for small farms. Getting more money for their milk supports farmers milking fewer cows.
- cow health: farmers mentioned the fact that they do not have to push their cows any more



# Forage Production and Storage on Lewis Creek Jersey Dairy

by Vincent Foy

Debbie Yonker and I started Lewis Creek Jerseys in 1982 with the purchase of 36 registered heifers from Marion Welch of Kali-Yuga Farm, Ninesburg, VT. We milked for two years at a rented farm in nearby Huntington, VT before purchasing in 1985 a 272 acre dairy at the edge of the Northeast Kingdom in North Danville, VT. The milking herd now numbers 70 and is housed in a conventional tie-stall barn with overhead hay storage that we built in 1987. Our 50 heifers winter in a south-facing open-sided barn that contains six pens pack-bedded with sawdust and equipped with self-locking headgates through which they feed on round bales. This barn was built in 1995 on the site of the original barn that had become obsolete.

That year we transitioned into certified organic milk production when Peter and Bunny Flint of the Organic Cow, Tunbridge, VT approached us as eager buyers. We are pleased to continue the relationship to this day and encourage everyone to sample the great variety of products.

Dairy farming is an extremely capital intense endeavor, a reality that has shaped our system for producing, storing and feeding forage.

Rotational grazing has always been the basis of our summer feed program. Having cattle harvesting high quality forage themselves has been extremely cost effective. The farm is uniquely set up for grazing with all paddocks close to the dairy barn. In an effort to balance the high level of soluble protein found in rotational pasture, during milking we barn feed the dairy cows corn silage, second cut square bale hay and purchased organic grain. The highest quality hay is essential to consumption because Jerseys full on high quality pasture are picky eaters. Corn silage up to 10 lbs. per head per day is also readily eaten and is useful with a composition low in protein and high in energy. The only drawback with the summer regime is its short duration, leading to seven months of confinement feeding needed to complete the year.

Chopped alfalfa/grass haylage is the core of our winter ration. To optimize milk production it must be put up before becoming excessively lignified - which means within one week of early June. I mow everything with owned equipment, but we hire a custom operator to chop and rent a bagger to store the forage in a heavy 8' X 150' plastic bag.

This arrangement provides an extra hand at a most critical time and holds down our capitalization needs for equipment used only eight days a



photo courtesy Vince Foy

## Corn Silage is transported to dairy barn via bucket tractors and dump wagons.

year. The other advantage of using ag-bags is the minimal exposure of feed to oxygen and the near elimination of spoilage. The typical upright silo found on farms would work fine, but the high cost of erecting and operating them has precluded their use on our farm. Bunker (horizontal) silos are best suited to large confinement operations because of the need to remove considerable volumes daily to stay ahead of spoilage.

Corn silage compliments haylage as a forage source and when mixed with grain completes the a.m. and p.m. winter feedings. Growing corn also completes our crop rotation from predominantly orchardgrass sod to legumes (clover and alfalfa) and the nitrogen fixation so critical to original farming. Again, a custom operator is hired to chop the corn while I pack it with the rented bagger. Summer feeding of corn would not be possible for us without ag-bags because of the accelerated rate of spoilage resulting from increased temperatures.

Winter (and summer) feeding of the cows is completed with small portions of second cut square bale grass hay fed during milkings. This breaks up the monotony of an ensiled diet and helps maximize dry matter intake, another tenant of profitable

milk production. Square baling is done with our own equipment and only with second cut hay. It is a labor intensive operation that requires long stretches of good weather more common during July and August.

After the rush of early June chopping comes the production of heifer and dry cow forage by round baling dry or wilted hay with owned equipment. Lacking indoor storage for round bales, dry hay is sleeved in black plastic overslips and stored outside. This hay is fed out first to avoid excessive decay and must be baled extremely dry to prevent mold and dust formation. Dry square bales with their cut edge are better at respiring residual moisture than round bales that lack a cut edge and are baled very tight to maintain their shape for ease of handling. Wilted hay is round baled and individually wrapped in white plastic, producing silage. Its storage is more stable and they are fed out later in the winter.

Round baling is much more labor efficient than square baling and coupled with the option of wrapping provides the flexibility needed to harvest quality hay in a variety of weather conditions. Wrapping is also convenient for storing small lots of specialty forage such as cover crops (we use barley and field peas, the kale and mustard is unintended) and third cut alfalfa (September) that are impossible to dry regardless of the weather. Spoilage is practically nonexistent with only one bale needing to be exposed to air at a time.

In a nutshell, these are our cropping and storage practices. The reliance on plastic may be troublesome to some, but has afforded us the ability to maximize forage quality, minimize spoilage and maintain a sustainable level of capitalization. Recycling programs are just coming on-line for agricultural plastics and we re-use left-overs whenever possible. This technology has benefited farms our size the most after having been developed in Europe with its tradition of small family farms.



photo courtesy Vince Foy

Sleeved dry round bales in foreground, individually wrapped round bales in background.

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# Holistic Management at Northland Sheep Dairy

by Karl North

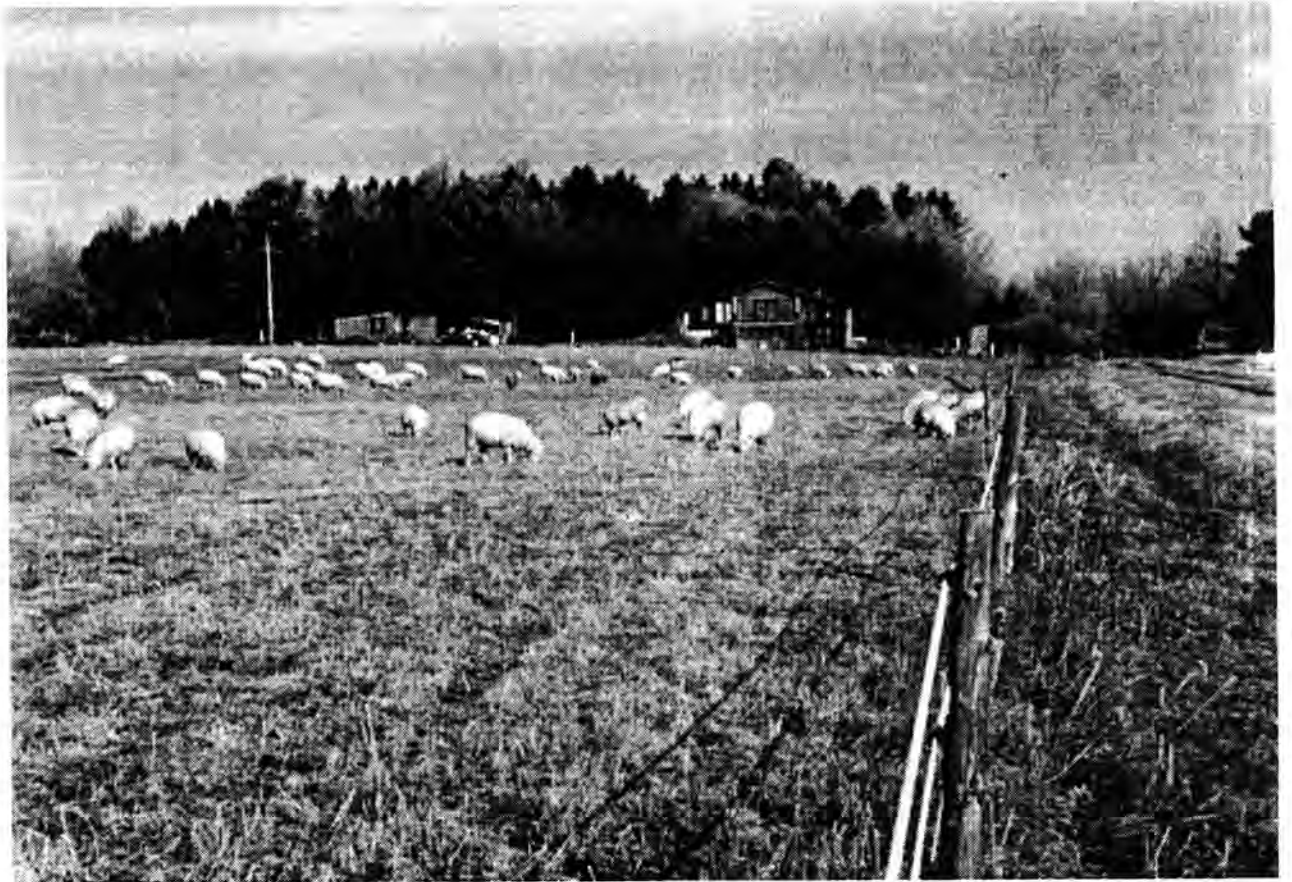
One of the most dramatic failures of the organic movement to date has been its inability to integrate animals with vegetable and fruit farming, despite the counsel of virtually all the leaders in the field.

This failure is often mirrored on organic livestock farms, where the primary, soil-building function of animals gets lower priority than it should. Albert Howard, a seminal writer on organic matters, concluded after much practice in both tropical and temperate climates, that healthy farming had to be a chain (holism before its time) with four essential links: people, animals, plants, and soil. More recently, putting a sharper point on the issue, Allan Savory and others have been reminding us that there are large urban populations to be fed; that this demands intensive, soil-depleting agriculture; that the only system capable of cycling carbon back to the soil fast enough involves livestock and pulsed grazing; and that as long as organic agriculture remains in denial about this we will be no more sustainable than chemical-industrial farming as its petrochemical quick fixes fade in the twilight of the oil era.

It might put a more positive spin on the current situation in organic agriculture to admit that we are all only somewhere on the road to sustainability, working things out as best we can, given the difficulties of operating an organic farm in a hostile political economy. This article will attempt to locate our farm on that road and describe some of the practices that have advanced us along it. But it needs to be restated at the outset that one of the main goals at the end of that road is a high organic matter soil. All the exciting recent advances in organics, for example, in biological pesticides and biological fertility agents, can be only adjuncts to a soil well stocked in organic matter. An excellent case in point is the drive in Cuba to mass produce a bacteria that unlocks phosphorus that is plentiful but unavailable in many soils.

Those of us who toured the Cuban organic revolution last year (see *The Natural Farmer*, Winter 1996-97) learned that the bacteria was reapplied before every crop, a sensible practice in soils that, despite serious composting efforts, often showed the effects of decades of chemical farming. But what if the soil and, therefore the bacteria, were well-fed? Would re-application be necessary? Or any application at all?

I thought of our farmstead vegetable garden, which like the rest of our farm, tested initially very low in phosphorus. After several years of pampering with sheep bedding compost, organic matter in the garden tested at 12%, and phosphorus levels were now very high, without any significant input of phosphorus to the farm. This would be just the first of several happy surprises that occurred by themselves on the farm as we progressed in rebuilding a worn-out soil, mainly with ground limestone and sheep bedding compost.



Karl's sheep graze contentedly on pasture with the North home in the background. photo courtesy Karl North

I have described the general process and rationale of soil-building with pulsed grazing before in these pages (See "The Grass-Ruminant Complex", Fall 1994). Here I will describe how we apply it on our sheep dairy, along with other practices intended to keep the operation showing a profit.

## Pros and Cons of Milking Sheep

It should no longer need arguing that the most sustainable way to make milk is from grass. In some ways sheep are well suited to this sort of dairy farming. They both graze and spread their manure more evenly than cows. Milking parlor and other handling machinery is economical because of their small size. All of ours is farm-built. A lactation of less than six months mirrors the grass season length in this climate, making seasonal dairying a natural. We time lambing for the beginning of grass in May; the lactation ends in early fall, and the flock finishes stockpiled pasture by the end of December.

Manure handling to retain nutrients in the winter is critical to rebuilding soil. Unlike many cow dairies, sheep farms have generally continued the excellent old tradition of bedding animals in deep litter at this time of year, on a growing manure pack, under cover, where nutrient retention is maximized, animals are kept warm and dry, and the proper car-

bon/nitrogen ratio is created for later composting. Rock powders needed for soil mineral balance, like limestone and rock phosphate are easy to add gradually during the course of the winter, right in the barn, and only make the bedding drier and more sanitary for the animals.

Sheep milk, mild and unpretentious as mammary products go, nonetheless possesses qualities that become obvious in the processing. The yoghurt is thicker and smoother than the cow or goat variety, without additives. Cheeses do not need the extra butter fat of double and triple cream to come out rich and smooth. Thick milk and fine fat globules are an advantage in fudge-making too. Cooking down, a mix of half maple syrup and half sheep milk becomes a velvety confection.

Now for the disadvantages. Although sheep milk has about twice the solids of cow or goat milk (less useless water to transport all over the country), this hardly compensates for the low yield per milking ewe. Dairy sheep breeds can average 3 quarts a day or more over a 5-month lactation, but like the high production Holstein, force the farm into a high input mode in order to serve their special feed, shelter, and medical needs. We began with ordinary meat sheep, all that were available at the time.

After 12 years of genetic selection both for a rustic, pasture-based life and for milk yield, the latter has doubled, but still averages only 1.6 quarts/ewe/day, and that only at the peak of their lactation. The upside of this equation is our success in maintaining our goal for an extremely low input operation. We are currently experimenting with various degrees of cross-breeding with the East Friesian, a dairy sheep of long pedigree in Northern Europe. Our goal is to discover what percentage of Friesian will add to milk yield without upsetting our low input system. The Cubans showed us just such a hybrid cow which they claimed performed to their satisfaction entirely on grass. They said it was the result of 15 years of crossbreeding the imported Holstein with a native tropical breed.

The second main disadvantage of sheep, whether for milk or meat, is the damage internal parasites can do to the health and growth of lambs. Here as elsewhere in farming there is a management solution to replace the chemical quick fix. But it takes a level of organization and development of the forage acreage of the farm that we have attained only in the last two years. First the main forage fields of the farm must be fenced, supplied with water,

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cleared of trees and rocks to permit haying, and all producing a quality of forage suitable for either hay or pasture, and for either empty, dry stock or lactating ewes and growing lambs. Then a three-year rotation can be devised that always puts the weaned lambs on parasite-free pasture, by grazing them on fields used only for hay the year before. The main forage fields are divided into 3 sections. The rotation proceeds: Hay only, Weaned Lambs, then Milking Ewes & Lambs to 30 days. As this is our first payoff year using the rotation, it may be too early to tell, but our lambs do look better. We are also collaborating with an academic research project to test epazote, a widely used traditional herbal vermifuge, on our lambs in a form that now permits safer dosage.

Lastly, although the sheep dairy industry in the United States has barely begun, there are already signs that wholesaling sheep milk may be dogged by the same profitability problems that have plagued cow dairies: forcing unwanted expansion, the use of high production (but also high maintenance) dairy breeds, debt, and a downward spiral of quality of life for the whole farm ecosystem (people, animals, plants, and soil). To avoid this we planned for on-farm artisanal quality cheese-making, and direct marketing of most of our products in a local farmers market. It was an easy decision, for when we started farming in New York we had just come from years of homesteading in France, where just this sort of small, vertically integrated dairy farm, and weekly local farmers markets as well, are old traditions. Still, the sale of cheese, lamb, yarn and tanned skins from a base flock of only 50 ewes barely provides a livable income, and then only because we enjoy considerable self-sufficiency in food (vegetables, meat, and dairy), energy (solar, wood heat, and draft horses), and of course fertilizer.

A younger couple (we are pushing 60) could operate the farm with 100 ewes and bring in a net cash income of close to \$20,000 without a great deal more capital investment. But the quality of life is excellent; we are free of much of the cost/price squeeze and resultant debt that is destroying family-scale dairy farming, and we enjoy the diversity of work: milking, processing, marketing, haying and logging mostly with draft horses, sheep and horse husbandry, composting and spreading, sheep dog training, gardening, and building and repairing simple structures and equipment with simple tools. Work gives way to semi-vacation when the grass season ends.

### Why Holism ?

Holism is a view of the world, and a way of managing our existence in it, that is gradually being forced on us by the increasing damage overspecialized applied science is doing to the biological systems that sustain us. That we farm in a way that does not simply maximize production or short run profit, but also looks to the good health of the ecosystem that is the farm's resource base, is, or should be, part of organic orthodoxy. My tendency to see the world in terms of complex wholes whose health ultimately affects the success or failure of what we do, may come in part from formal education in ecology and anthropology, disciplines that are more holistic than most. But even before that the generalist path - learning a little about a lot of things and trying to make the all-important connections - seemed more appealing than learning more and more about less and less - the path of specialization.

More recently training in Holistic Resource Management has helped to sharpen our awareness of the wholes we need to take into consideration in daily decision-making on the farm. The soil population and its ecosystem, the sheep as whole organism, not just milk factory, the farm family, the neighboring community and its economy, and the larger society and the global economy, are obvious examples of the wholes we must work within, but often neglect, in agricultural decision-making.

How some of our farm practices mentioned earlier reflect holistic perspective may not be obvious. Organic farmers value hedgerows for their multiple functions: shade, unique eco-niche with its edge effect, windbreak, spray drift stopper, esthetic boundary. In the same way our rationale for milking sheep, a rather low output dairy animal, depends on the way their multiple functions (soil builder, efficient forage harvester, bush hog, producer of meat, milk, wool, and skins) enhance the farm ecosystem and economy. Similarly the decision to breed dairy animals for low input rather than high output,



Karl milks the sheep on this platform to save bending over so often

photo courtesy Karl North

makes sense when the multiple impacts on the farm are considered: low feed and vet bills, no need for soil-depleting tillage and its expensive equipment, and more options as to the kinds of soils and terrain that can be successfully farmed. This appreciation of multiple impacts depends on looking at farming decisions in the larger context of the whole systems we are operating in. We need to strive to see the kinship that exists among all things, however mysterious the linkage.

The kind of multidimensional thinking holism represents can be as simple as putting sheep and apple trees together and trying to manage the whole for the benefit of both. After several years of pasturing our once-abandoned orchard is again free of briar, thorn and other brush, and is starting to look like fine green parkland, but I believe most of the potential in the relationship is yet to be obtained, or even understood. Another example is the live legume tree fence post, which we were shown in Cuba. We have begun to plant root sprout cuttings from the small stand of native black locusts on the farm; dare we dream of fence posts guaranteed for life that also produce soil nitrogen, legume browse, and shade?

The base soils on our hills are probably as poor as any in the state outside the Adirondacks, and previous farming had left the topsoil so badly mined that whenever subsoil was brought up by accident and mixed in, plants grew better. Under these conditions, the twelve years of rebuilding we have attempted with sheep, intensive rotational grazing, and composting can only be a bare beginning on a long road. Yet the results so far are surprising and gratifying. The first field to undergo renovation once produced only 80 bales of first cutting hay; today that field gives 250 bales on the first cutting.

Yields still may not match conventionally grown alfalfa/timothy on neighboring farms that are plowed for corn every two or three years as the alfalfa disappears, but quality is superior. Along with trefoil and Puna chicory obtained by overseeding, a permanent and very palatable pasture salad and several higher yielding hay species have appeared on their own in response to grazing management and soil improvement. As far as we can tell this diversity is permanent and will never require tillage. Probably the significant improvements in forage quality we have obtained (at very low cost) are as much responsible for our steadily increasing milk yields as all our attempts at genetic selection.

Our cheese-making, like the soil-building, we see as a work in progress, taking European recipes and ideas, adapting them to North American conditions, and creating something a little different in the process. We enjoy being part of a growing group of cheese-makers in this country who are introducing European notions of quality to consumers who have long been content with the green, unripened cheeses that are standard in American supermarkets. Of these, probably the most lacking in character is the one our society seems to take the most pride in, calling it American Cheese.

Perhaps if the colonists whose puritanism was for several centuries a dominant, defining element in our culture, had not been so quick to jettison the good along with the decadent in their ancestral European culture, we would be better able as a society, to recognize quality when we see it. Most of our educational effort occurs at the farmers market or over the phone, and is bearing fruit as our cheese sales continue to increase. All in all, running an organic sheep dairy provides us, if not a sumptuous living, much of the satisfaction and challenge of the good life.

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# NOFA-VT Studies Organic Dairy Production

by Enid Wonnacott

In 1995, NOFA-VT received a \$169,000 grant from the Sustainable Agriculture Research and Education program (SARE) to conduct a three year "Systems Analysis of Organic and Transitional Dairy Production." Eight dairy farms in Vermont (5 organic, 2 transitional and 1 conventional) have participated in the study, and the final publication will be completed by March 1998.

The general purpose of the project is to collect and analyze data on organic dairy farms and farms that are making the transition to organic dairy. The project was generated out of a lack of studies available providing a systems analysis of organic dairy, or answers to questions such as "How much does it cost to produce a hundred pounds of milk organically? Is there any connection between feeding a lower energy ration to my cows and a decrease in animal health problems? Will milk production decrease if I feed my cows organically?" By getting baseline data on all of the organic farms in the state and a number of farmers who are interested in making the transition to organic farming, we can document the entire management system on several different farms.

We have two full years of cropping data from each farm, two full years of animal management data, (including feeding and nutrition and herd health), and we completed the economic data collection for 1993-1995 on 7 of the 8 farms. The data analysis and case study writing will be completed by March, 1998. The following information is provided to give you an idea of some of the issues addressed in animal and crop management.

## Animal Management - feeding and nutrition

The predominant questions for the participating farmers regarding feeding are: if you are relying primarily on pasture, how do you best supplement energy? If you don't want to stress cows, but you want enough energy, how much feed should cows be getting?

The assumption among organic dairy farmers is that if you feed cows a lower energy feed, the cows will be stressed less, will tend to have fewer health problems and will be productive milkers for more years. The majority of the organic farmers in Vermont, and in this study (6 out of 7) are grass based farmers. While most conventional farmers rely on corn silage for energy, grass based farmers must increase milk by putting up high quality forages (16-18%) to maintain condition. One of the farmers in the project said that "you make milk on your forages, you can't afford to rely on purchasing (expensive) organic grains to maintain body condition." This is an obstacle for farmers transitioning to organic dairy who are used to the conventional goal of managing cows for production. It is difficult to purchase organic corn silage, so a farmer who does not grow his/her own will have to reformulate the ration to rely on organic forages and purchased grain. One transitioning farmer, who has had to stop feeding corn silage because he can't get it organically, is chopping all of his feed and has found that the grain gets suspended in chopped feed and is eaten better, with improved utilization of the grain - an important realization when the grain is so expensive.

Many of the farmers in the program are trying to determine the best amount of grain to feed their cows. Most of the farmers target to feed their cows 8-10 lbs. of grain/day from freshening until drying off to mobilize fat and maintain condition through the dry period. Three of the farms in the project have made the transition to seasonal production this year, synchronizing their herd so that they all calve in the spring and they can take advantage of the grazing season to make milk as cheaply as possible. According to Vermont's organic certification standards, breeding hormones are prohibited for use in organic management systems, thereby relying more on maintaining the body condition of the cows to breed. One farmer relayed that she was feeding 18

lbs of grain in June, with a per cow production of 58 lbs. She started cutting back on grain, and with 12 lbs of grain/cow, the production decreased to less than 50 lbs. She is nervous about cutting back because of making the transition to seasonal production and needing the cows to maintain condition.

Through both the economic analysis and crop record keeping components of the study, one farmer has determined that it is cost effective for him to grow all of his own grains. In a March 1996 technical meeting he reported on the economics of his grain production, his yields (1800 lb./A of soybean in 1995), and his plans for successive seasons (including working with open pollinated varieties). He is finding that they may make more sense for organic farmers since hybrids are bred to perform with high inputs. He also recommended that farmers interested in growing their own grains start with cereals as they are cheaper to grow than corn when starting out. This knowledge is complementary to information that Stu Gibson, nutritionist and project advisor, has recommend to farmers. Through his extension work he has found that in order for farmers to maximize the use of their roughage they need a readily degradable protein source to balance the pasture, and have found that barley is a good choice. While many of the farmers are getting barley in their purchased feed, the increased demand for organic grain in Vermont is causing many farmers to start growing their own grains.

One of the biggest challenges for farmers making the transition to organic dairy production is to go from a pelleted, sweet feed to a dry meal. Many of the cows find the grain unpalatable and have dropped production. Whereas most of the cows have started eating the grain and are slowly gaining back their production, they have not achieved the level of production they were at on conventional grains. While their production has decreased, their income over feed costs have increased due to feeding less grain; however, some of the farmers still struggle over not feeding their cows at the maximum level to maintain production, body condition and sales value of their cows.

## Animal Management - herd health

Before this grant, few of the farmers were getting their milk quality tested (somatic cell count) and were not identifying the mastitis pathogens. Since working with the Quality Milk Research Lab (QMRL) at the University of Vermont, the farmers are now sampling their cows when they dry them off, when they freshen, when they purchase a cow into the herd or when they have a clinical. The QMRL has identified that *Staphylococcus aureus* is the most common mastitis pathogen, and hypothesize that this is due to the age of the cows, and the fact that most organic farmers keep their cows around for more lactations than conventional farmers. This finding has stirred a debate about whether the organic farmers with cows with *Staph. aureus* should treat those cows with an antibiotic when they are dried off. If farmers can now identify which cows in their herd have *Staph. aureus*, and are therefore responsible for elevating the somatic cell count, those cows could be treated individually. The organic certification standards prohibit the routine use of dry treatment and its use may be prohibited in subsequent years. Given this, the farmers are working with the QMRL to determine what other management practices might be contributing to the occurrence of *Staph. aureus* and how to control it in the herd, i.e. changing pre and post dipping solutions and segregation of cows with *Staph. aureus*.

All of the participating farmers (with the exception of the conventional farmer) rely primarily on homeopathic remedies for herd health, yet there is only one veterinarian in Vermont who is a homeopathic large animal practitioner. Dr. Steve Woodard became the consulting veterinarian this year

and scheduled on-farm visits with each participating herd between April and September 1996. All of the farmers found it incredibly helpful to have Steve on their farm, assessing their management systems and being able to talk through their approach to animal health. Because the QMRL and the participating farmers are very interested in getting some data on the efficacy of homeopathy, several of the participating farms this year set up research trials, working with Woody Pankey and Dr. Woodard.

- the conventional participating farm has started working with Dr. Woodard to trial a nosode for hairy heel wart, and an Ecoli nosode for the bull calves (a nosode is a disease product obtained from any part of the organism during illness). Being unfamiliar and initially unbelieving of homeopathy, they started off using the nosode just for the bull calves, so they wouldn't risk any new process on their heifer calves. They saw such good success on their young bull calves, however, that they are now treating all of their heifer calves and have passed on the information about use of nosodes for calf scours to other conventional farmers.
- an organic farm experimented with a footrot nosode. They treated the whole herd in the water in June and had no more cases.

## Crop Management

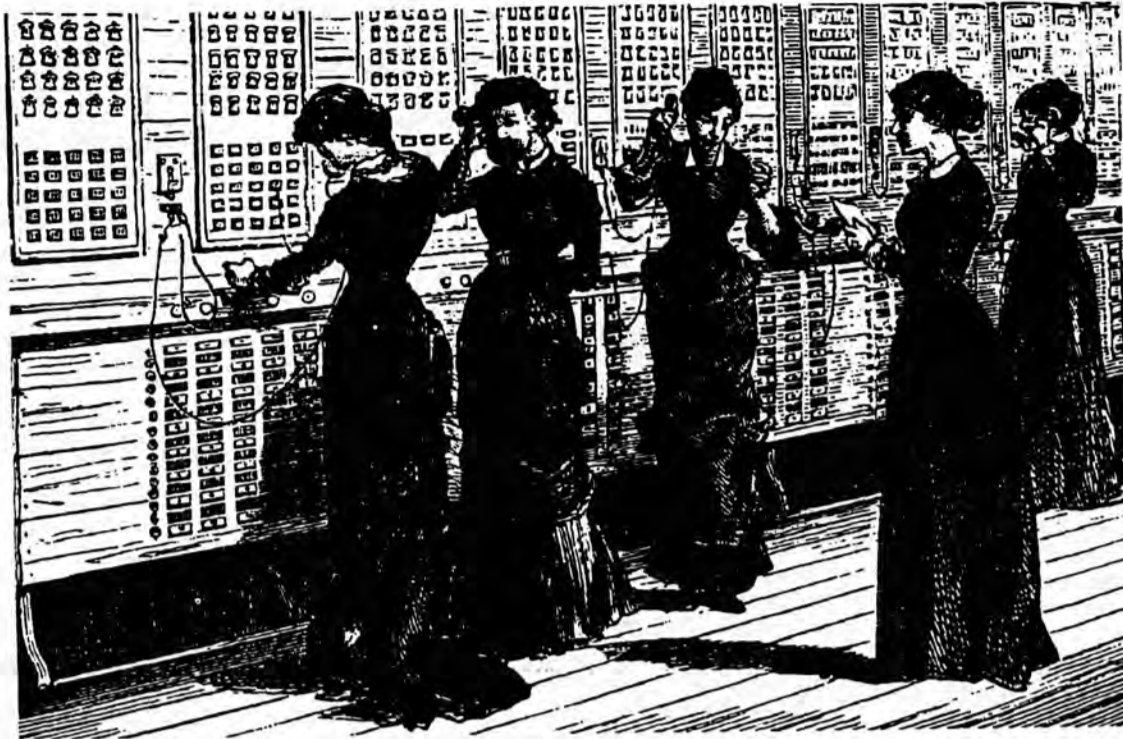
The predominant issues for the farmers who are making the transition to organic dairy production is how they can maintain fertility without the use of synthetic chemical fertilizers and how to manage weeds in row crops without the use of herbicides. The farmers in the project have been using the crop management record keeping system to track amount of fertilizer used, time involved in spreading, and yield information. One identified problem for some of the organic dairy farms in the project concerns low soil fertility in pastures. The major concern is whether there would be enough improvement in pasture production and quality to offset the high cost of organic fertilizers. To address this issue, two farms initiated a mini-research project in 1996:

- one farm questioned whether manure can sustain the fertility of their farm. They have determined that they have enough manure to spread 10 tons/acre on 12 acres a year. They have estimated that 50% of the total manure gets spread by the cows during the grazing season. They identified three pastures as being very unproductive. A soil test taken in June 1996 showed that all three were very low in phosphorus. They will have two treated areas and two untreated areas, applying 100 lbs. of  $P_2O_5/A$ , based on soil test recommendations. They are particularly interested in evaluating whether the expense of spreading expensive organic fertilizers will be recovered in increased value or quantity from their pastures.
- After reviewing several years of animal/pasture records, the farmer learned that he was getting 2 tons of dry matter per year off his pastures and felt that pasture production could be better. A soil test taken in June of 1996 on one of the bigger pastures showed a low soil test for potassium. A trial was undertaken to supplement a portion of the pasture with Sul-po-mag (22%  $K_2O$ ) to satisfy the soil test recommendation (100 lbs. per acre. Two sections of the pasture system were treated and two sections were not. Data that will be gathered in order to compare treatments include: grazing days per animal unit, soil tests, tissue analysis and pasture yield.

As this project is nearing completion, we are starting a second SARE grant entitled "Efficacy Evaluation of Homeopathic Nosodes for Mastitis and Calf Scours, and Documentation of Homeopathic Practices in Organic and Conventional Dairy Production." NOFA-VT received a two year, \$161,026 grant to do extensive testing on 10 herds in Vermont. Although we are currently planning the project, it will not formally start until January, 1998. For information on either of the SARE grants, please contact the NOFA-VT office.



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Org # 611037-000  
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# Garlic Revisited

by Grace Reynolds  
Hillside Organic Farm

Back in 1992 Hillside Organic Farm was the subject of a feature in *The Natural Farmer*. At that time I thought I was doing well if I harvested a bulb 2" in diameter, and a lot of our crop was too small to market. Now our bulbs average 2" with many over 2 1/2", and only a small percent are small. We would like to share with you some of the things we have learned that have helped us to improve our production.

There are five different varieties of garlic and numerous strains within each variety. Choosing the right variety and strain is very important to growing garlic successfully, as different strains prefer different climates and conditions. We've tried well over 100 strains and annually select 8 or 10 of our most successful to offer for market. We've found that the hardneck varieties, those that produce a curly scape at the top, grow the best on our farm.

We now plant our garlic in raised beds, covering the cloves with about 2" of soil, spacing them 4 1/2 - 6" apart (depending on size of cloves) in rows 9 - 10" apart. This is pretty intensive growing, as most growers give their plants much more space, and greater spacing might produce more big bulbs, but we've found it to be adequate under our conditions.

After planting we apply compost and mulch to about 2". We experimented one year with various mulches and found we had the best production under chopped leaf mulch and the most damage (chlorosis) with fresh sawdust. Unfortunately we did not include hay mulch in our trial, so we can't say how that compares, but since that time we have switched from using leaves for mulch to using bales of hay because they're easier to transport and don't blow away as easily as leaves. We buy big round bales, simply unrolling them on the beds, and have had excellent results with this.

Some people recommend taking the mulch off in the spring to allow the ground to warm up, but we leave

ours on unless the plants are having difficulty coming up through it. We have heavy soil that crusts if exposed to sun and wind, and the mulch prevents this. The mulch also moderates soil temperature, which I think is more beneficial to garlic than having the soil warm up in the daytime only to cool off again at night or during a cold snap.

Probably the most important lesson we've learned about growing garlic is that soil moisture needs to be controlled at all times. Garlic requires moist, well-drained soil. Soggy soil will cause it to rot, and if the soil dries out at any time during the growing season, the bulbs will not size up properly. The first season that we incorporated drainage, irrigation, and mulching into our system our production increased by 50%.

People often ask how we tell when it's time to harvest. We have found that there are a number of indicators, all of which are taken into consideration. First, we look at the plant. The stems should still be green but the bottom 2 or 3 leaves should be all dried up. The rest of the leaves should be dying back to varying degrees. Second, we leave the scapes (bulbil-producing tops) of a few of the plants as indicators. When these are nearly straightened out but have not yet burst, the bulb is usually ready. Third, we dig a few bulbs and inspect them. Cloves should be bulging out enough so you can see them distinctly without peeling. Smooth, round bulbs are immature. Finally, we peel the bulbs. Rocamboles and purple stripe varieties will have some color on the clove skins, varying anywhere from soft pink streaks to a solid bright purple color. If we still can't decide, we cut the bulb horizontally through the center. At maturity we can usually see little spaces between the cloves where they've begun to shrink.

None of these indicators are foolproof, but taken together they can guide you to an appropriate harvest time.

The harvest tool we settled on is a single shank subsoiler with a 22" half-disk placed between the shank and the blade, curved side forward. This is drawn under the plants at a slight angle, causing the soil to rise slightly and then drop back down. This loosens the soil enough so we can pull the plants out of the soil easily by hand. The soil is then shaken off and the plants are transported to the drying shed. In the shed we have tiers of wooden snow fencing hung vertically on studs. The bulbs are hung on the wires between the wooden slats in the fencing. We end up with a solid wall of bulbs on one side of the fence with their tops hanging down on

the other side. In this way we can cure a huge amount of garlic in a relatively small area. Plants with bulbs that are too big to fit between the slats (>2 1/2") are tied in bunches and hung elsewhere.

The garlic is then left to cure for about three weeks. At this time we cut a few stems off, leaving 1" stubs on the bulbs. We then inspect the centers of the stubs. There should be no green color and no moisture to the touch.

We've been doing some research with Dr. Larry Lawson of Murdock Labs on the allicin (medicinal) content of garlic. One year we added Sul-po-mag (K-Mag) to see if the addition of sulfur to the soil would increase allicin, which is a sulfur compound. We did get a 20 - 30% increase in allicin in some strains, but this was in response to an application rate of 3000 lbs. of Sul-po-mag per acre, which is about 10 times the usual recommended rate.

Another project we did was to test over 50 strains of garlic to see if there were differences in allicin content between kinds. There were no definite winners amongst varieties, as there were overlaps in the values of some strains in different varieties, but on average they scored in this order (highest to lowest): porcelain, rocambole, silverskin, purple stripe, artichoke. One strain stood above all the rest that year. It was a porcelain variety called Romanian. This was also high when we tested a second year, though it was only average a third year. We also found differences in allicin values between one strain grown in different parts of the field and from season to season, which only goes to show that how you grow your garlic influences how healthy it is.

Another research project involved harvesting garlic at different times of the day to see if this influenced allicin content. We found that bulbs harvested after midnight were higher in allicin than those harvested in the daytime by 7.4%

Finally, here's a tip for those who are wondering whether to eat their garlic raw or cooked. Dr. Lawson says that cooked garlic is good for blood pressure, fighting cancer, and stimulating the immune system, and raw garlic is best for its antibiotic and cholesterol-lowering activity.

If anyone has any questions about growing garlic or about the allicin research, they can contact me at (518) 279-9637 or write to Hillside Organic Farm, 141 Carrolls Grove Rd., Troy, NY 12180.

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# Holiday Popcorns

Lee Reich

And yet more holiday fare - I was surprised at the different colors of my ears this autumn (popcorn ears, that is). 'Strawberry' popcorn lived up to its name, yielding stubby ears with dark red kernels. But peeling back each dry husk of 'Papoose' popcorn revealed an ear of a different color, or, rather, of different colors, since each ear had white, yellow, red, and blue-black kernels. Some ears were almost all yellow, dotted with a few dark kernels; other ears had these colors in opposite proportions. There even were ears with almost all mahogany-red kernels.

I will bring some of these popped kernels to Thanksgiving dinner, just as Indian chief Massasoit's brother, Quadequina, brought along a sack of popped popcorn to the first Thanksgiving feast three-and-a-half centuries ago.

Popcorn actually predates that first Thanksgiving in America by thousands of years. Kernels have been found in the remains of Central American settlements almost 7000 years old. The Quichas of Peru and the Aztecs of Mexico grew red, yellow, and white popcorns. Even after that first Thanksgiving dinner, popcorn was eaten by settlers in the Northeast as a breakfast staple with milk and maple sugar, or floated on soup (very good!). In this century, movie and television viewing caused a resurgence in popcorn consumption.

I can just hear some "rational" person explaining to me why popcorn is not worth growing in a backyard garden. After all, you can drive to the grocer's and pick up a whole pound of popcorn for about a dollar. And not just any popcorn, but "gourmet" popcorn that makes tender and large (expansion ratio of forty-four to one, for the technically-minded) popped kernels.

If you grow popcorn, you also have to set aside a separate portion of the garden for it, isolated from sweet corn, so cross-pollination does not make your popcorn less poppable and your sweet corn less sweet. In my garden, a distance of thirty feet was enough to keep popcorn and sweet corn chaste.

Another rationale against growing backyard popcorn is the trouble of weeding and keeping pests at bay. I did weed, but there were no pest problems.

And then, if you grow popcorn, you have to go to

the trouble of harvesting the ears and preparing the kernels for popping. On a recent dry, sunny day, I went out to the garden and snapped each ear off its stalk. I sat down on an overturned crate next to my basketful of popcorn ears, and as the low, autumn sun warmed my shoulders, I pulled back the dry husks to expose the ears, then tied together the ears in bundles by their husks. (Not what I would call unpleasant activity.) Most of the bundles now are hanging in the garage, and the rest of them are in the kitchen.

To ready the corn for popping, I snap off a few kernels to make some empty space on an ear, then grasp the ear in both hands and twist it the way friends and I used to give "Indian burns" on each others' wrists when we were children.

When it comes to actually popping the corn, you can have confidence that almost every kernel of store-bought popcorn will pop. Water - just the right amount (13 to 14.5%, once again, for the technically-minded) - is the secret to getting popcorn to pop. I have heard of gardeners trying to get their harvested popcorn to the right moisture level by either sprinkling the kernels with water or by spreading the kernels on trays to dry in the sun. An old gardening book recommends letting popcorn "dry in a loft for a season or two. Dry two-year-old corn pops best." [!]

I have never let fear of non-popping dissuade me from planting popcorn. By leaving ears on the stalks late into the season, then hanging them to dry first in the garage, then in the kitchen, my popcorn's poppability matches that of store-bought.

I admit that my popcorns' expansion ratio is only a measly twenty to one, but this ratio depends more on what variety is grown than on my horticultural skill. Taste differences between popcorns are subtle, but I believe that my popcorn tastes better than store-bought. I also noticed that yellow 'Papoose' kernels have a richer, "cornier" flavor than the other kernel colors. I plan to save some yellow 'Papoose' kernels for planting next year. I also plan to try some other old varieties, mostly on the basis of name: 'South American Dynamite' and 'Squirrel Tooth' are two likely candidates.

All in all, it seems to me that the main rationale against growing popcorn is having to decide whether to pop it up or to just let the colorful ears hang from the kitchen rafters, where I can admire them through the winter.

*Excerpted from A NORTHEAST GARDENER'S YEAR (1992, 261 pages, paperback), by Lee Reich, available in bookstores or directly from the author, by sending \$14 ppd to him at 387 Springtown Rd., New Paltz, NY 12561.*



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## Connecticuters Can Learn of Impending Neighboring Pesticide Applications

by Dorothy J. LeGeys

PO Box 173  
East Hartland, CT 06027-0173

Connecticut residents can register to be notified when a neighbor/butter will be having his/her lawn treated with pesticides. This was news to me and I felt it very worthwhile information to pass on.

I learned of this possibility via an excellent article, *Pollution by the Yard*, by Abram Katz in the June 16, 1997 issue of the Register Citizen (Torrington, CT) newspaper.

To register for prior notice of commercial neighborhood pesticide application, follow these steps:

(1) Obtain an **Application for Inclusion on Pesticide Notification Registry** form and an accompanying **Information Sheet** by requesting one either by mail from:

Registry  
Waste Bureau/Pesticide Management Division  
Dept. of Environmental Protection  
79 Elm St.  
Hartford, CT 06106

or by telephone at:  
860-424-3369

Be sure you speak to someone at this number to make a direct, personal request. Their answering machines do not always function properly. This blank application form can be duplicated to pass on to friends.

(2) Fill out the application.

(3) Return the completed application to the Registry at the address above by December 31, 1997 to be included in the 1998 Registry.

Once you're on the Registry, the licensed applicator should notify you the day before the planned pesticide treatment.

Since only 140 persons' names were on the Registry as of June, this "protection" does not seem to be well-known. Let's spread the word and exercise our rights to at least be able to close our windows, take in laundry, pets and children; cover the sandbox, pool and vegetable plot; and even vacate the premises if we need to. Albeit this is not the ideal situation we would prefer. But at least it is a constructive step toward, hopefully, causing the licensed lawn companies to have to do more work before applying their poisons.

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**Marsha Menter**, 46 Warner Hill Rd., Derry, NH 03038 (603) 432-2497  
**Jack Kittredge and Julie Rawson**, *The Natural Farmer*, NOFA Summer Conference, 411 Sheldon Rd., Barre, MA 01005 (508) 355-2853

## Northeast Interstate Organic Certification Committee

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**Elizabeth Henderson**, Rose Valley Farm, Rose NY 14542, (315) 587-9787  
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# Calendar

**Saturday, September 13 to Sunday, Sep. 14:** Ginseng Growing Workshop and American Ginseng Conference, Ithaca, NY for more info: (607) 326-3234

**Sunday, Sep. 14:** Taste of Organic Connecticut on the grounds of The Barney House in Farmington for more info: (860) 564-7987

**Friday, Sep. 19 to Saturday, Sep. 20:** Biodynamic Conference featuring Gunther Hawk, Green Mountain Waldorf School, Wolcott, VT for more info: (802) 888-2828

**Friday, Sep. 19 to Sunday, Sep. 21:** Common Ground Fair, Windsor, ME for more info: (207) 622-3118

**Saturday, Oct. 11 to Monday, Oct. 13:** Drumlin Farm Harvest Days, Lincoln Mass for more info: (617) 259-9506

**Friday, November 7 to Saturday, November 8:** Northeast Regional CSA Conference: A Future for Farming in the Northeast, Hancock, MA for more info: (413) 528-4374

**Friday, November 14 and Saturday, November 15:** Conference on Preserving Crop Biodiversity and Saving Seeds in the Northeast, State College, PA for more info: 814-863-8641

**Friday, November 14 and Sunday, November 16:** 12th Annual Sustainable Agriculture Conference, Carolina Farm Stewardship Association, Hendersonville, NC for more info: (919) 542-2402

**Sunday, Nov. 16 to Tuesday, Nov. 18:** NE-SAWG's 4th Annual Resource Harvest, Portland, ME for more info: (413) 323-4531

**Monday, Nov. 17 to Tuesday, Nov. 18:** Practical Partnerships, A New England Sustainable Agriculture Conference, Portland, ME for more info: (802) 656-0037

**Friday, Nov. 21 to Sunday, Nov. 23:** Advanced Vegetable Farming Workshop with Jean Paul Courtens, Philmont, NY for more info: (518) 426-9331

**Wednesday, January 21, 1998 to Saturday, January 24, 1998:** 18th Annual Ecological Farming Conference, Asilomar Conference Center, Pacific Grove, CA for more info: (408) 763-2111

## NOFA Membership

You may join NOFA by joining one of the seven state chapters. Contact the person listed below for your state. Dues, which help pay for the important work of the organization, vary from chapter to chapter. In all states membership includes a subscription to *The Natural Farmer*.

Connecticut: Individual or Household: \$35, Business/Institution: \$50, Supporting: \$100, Low income: \$20  
**Johan van Achterberg**, 359 Silver Hill Rd., Easton, CT 06612-1134, (203) 261-2156 (home)

Massachusetts: Individual: \$25, Family: \$35, Low income: \$15, Supporting: \$100  
**Julie Rawson**, 411 Sheldon Road, Barre, MA 01005, (508) 355-2853

New Hampshire: Individual: \$25, Family: \$35, Supporting: \$100  
 c/o White Farm, 150 Clinton Street, Concord, NH 03301

New Jersey: Individual: \$25, family/organizational: \$35, Supporting: \$50, Sponsor: \$100, Low Income \$15  
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New York: Student and Senior (over 65): \$15, Student and Senior Family (2 adults): \$20, Individual: \$25, Farm Listing: \$30, 2 adult family: \$30 (each additional adult, \$5), Business: \$35, Patron: \$100, Corporate Sponsor: \$500, Lifetime: \$1000  
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Rhode Island: Individual: \$20, Family: \$30, Supporting: \$50, Lifetime: \$250  
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Vermont: Individual \$25, Family/Business: \$35, Sponsor: \$75  
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