

# Summer Conference 2000

by Julie Rawson

A one in 75 years storm, according to our new Exhibit Coordinator, Nancy Brunelle, was probably the "hottest" news of the 26th Annual NOFA Summer Conference. It came Friday night with a vengeance and dropped somewhere between 3 and 5 inches of rain on the conference. We moved the contradance and get acquainted party to the Crown Center and then Hampshire was gracious enough to allow our campers to move in to sleep the night. Some damage came to the exhibits in the tents as the canvas was unable to keep the torrential rain out.

Eliot Coleman was a real hit as keynoter, as was his and Barbara Damrosch's workshop on their winter farming operation the next day. Eliot spoke about many things that are "wrong" in our world, and questioned the direction of an organic agribusiness model, along with a world where we lose track of our local roots and our local farms. I felt he was most eloquent on the issue of trusting our land to provide us with good health and vitality and wholesome food if we only get to know it intimately and work with it. Eliot has an insatiable curiosity about natural systems, appropriate technologies and the ways of nature. With 35 years of farming experience, he has honed small farming techniques to an absolute science. Looking at the slides of their winter greenhouse operation it was clear how much care and thoughtfulness goes into every aspect of their farming system.

As coordinators, Jack and I get a special treat of spending extra time with our keynoters during

the conference weekend. Barbara and Eliot, as Jack puts it, "don't suffer fools easily." Their no nonsense approach coupled with a real devotion to the land and to their local community made them really refreshing folks to host at this year's conference. Eliot's stimulating and inspirational speech was among the best that we have heard at recent NOFA conferences. We hope to print a transcript of his speech in the Winter issue of the Natural Farmer. (Anyone who could not attend Eliot's keynote talk or the slide show he and Barbara gave on their movable greenhouse winter harvest system can get a videotape of either for \$15 from the NOFA Video Project at this address.)

The staff skit is Jack's pride and joy. I felt it was one of his best this year. Not only did he aptly and succinctly take pot shots at almost all of us and our eating habits and inconsistencies, but we finally figured out the microphone situation adequately so that almost all the lines could be heard.

We will probably keep the get acquainted party and the contradance in the Crown Center. Not quite the same atmosphere as the Red Barn, but very convenient after the keynote address to bring the party to the people. And maybe next year we will be able to do a little stargazing with Stan Ingram. . .

It seemed that the workshop room situation was a little crazier than usual this year. Perhaps it was the addition of 50 more workshops over last year that seemed to burst the seams, and Hampshire's late revelation that 3 of our normal rooms had been converted into other spaces. We could have had better signage for you all, and I apologize for not doing that better. I heard generally marvelous comments about the content of the workshops, however, and can never even begin to thank the 172 presenters for their wealth of knowledge and shared information.

The "Can Local Agriculture Feed the World" debate was able to happen finally when Al Johnson, long time NOFA member and Sean



photo by Jack Kittredge

## Eliot Coleman delivers keynote speech at NOFA 26th Annual Summer Conference.

Clark from Berea, KY stepped up to take the con side at the last minute. They ably challenged Terry Gips and Rod Frenz to defend their belief in the productive and nutritional capacities of local and organic agriculture.

Thanks again to Richard Murphy who arranged a fine set of films, the debate, the contradance, (continued on page 27)

## Inside this issue:

### Features

NOFA Chapter Certification Plans	5
Saving Indian Line Farm	22
Assuring Farmland Preservation	29

### Supplement on the Transition to Organic

Why Farm Organically?	11
Twin Oaks Farm: Making the Transition	12
Vince Foy & Deb Yonker's Transition	15
NOFA/CT's Transitioning Conference	16
Rodale: Studying the Organic Transition	17
Seeing the Light: the Martens Transition	20
Transitioning at Land View Farms	24

### Departments

Editorial	2
NOFA Exchange	4
News Notes	6
News on Genetic Engineering Pollution	7
Book Reviews	32
NOFA Contact People	34
Calendar	35



photo by Jack Kittredge

Over 200 workshops during the weekend ranged from hands-on farming techniques to health care, food policy and homesteading skills.

# Letters to the Editor

Jack,

Good issue on bees. One thing in the article on the Kurtzes struck me as odd — it said that, if necessary, they feed the bees sugar water. They also have a problem with mites.

Although I'm not a farmer or a beekeeper, I do know a little about macrobiotics and Chinese medicine. We know sugar is bad for humans and makes them susceptible to disease — why should animals be any different?

The Kurtzes might want to try feeding them an unrefined sweetener — barley malt, rice syrup, fruit syrup, or Florida crystals (dehydrated cane juice) and see if the bees' resistance to disease goes up. These may be more expensive initially, but probably not when you factor in the cost of replacing hives lost to disease.

Mark Lipsman, Massachusetts

Dear Mark,

Thanks for your thoughts. I know a number of beekeepers do use sugar water to feed their bees over periods of dearth. Even better than the items you suggest, it seems to me, would be honey itself. That is what they produce themselves for such periods, and leaving a little bit of their surplus for such times would probably be best for their systems.

Jack

## 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.

Upcoming Issue Topics - We plan a year in advance so that folks who want to write on a topic can have a lot of lead time. The next 3 issues will be:

Winter 2000-01 - Feeding the World

Spring 2001 - Home Gardening

Summer, 2001 - The Other Organic Systems

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.

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 G3 with Microsoft Word but can with only modest difficulty convert IBM disks as well. 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 - (978) 355-2853, fax: (978) 355-4046

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Northeast Organic Farming Association

# Making the Transition

Organic food is the fastest growing sector of the US food economy. As health consciousness becomes more widespread in this country, more and more people are making the connection between good nutrition and preventive health care. The new federal regulations governing organic certification will give even more credibility to this food choice, and will encourage its adoption by larger numbers of people.

As a result of this increasing popularity and market share, more farmers are being attracted to organic production. The transition from conventional growing, however, is not an easy one. In soils that have been treated with chemicals, life is depleted. The natural diversity of microorganisms that enable plants to flourish takes time to reestablish itself. Livestock raisers who have depended on antibiotics or hormones need to learn new management practices. This, as well, takes time.

NOFA has been an important force in helping northeastern farmers make the transition to organic growing. Our conferences, videos, publications, farm tours, and informal interactions have helped countless individuals with practical information. Our public advocacy has broadened support for organic management of farmland. Our certification programs have helped farmers market their products for a fair return.

In this issue of The Natural Farmer we are looking at transition in more detail. The articles here discuss the realities of fertility, pest and disease control, marketing, finances, and other difficulties that confront transitioning farmers. We hope such an in-depth examination helps people who are already farming evaluate their own situations and move toward organic alternatives. There is still plenty of room for more organic growers!

## 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 and TNF subscribers. 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! Send NOFA Exchange ads directly to The Natural Farmer, 411 Sheldon Rd., Barre, MA 01005 or (preferably) E-mail to [JACKKITT@AOL.COM](mailto:JACKKITT@AOL.COM)

**Display Ads** - this is for those offering products or services on a regular basis! You can get real attention with display ads. Send camera ready copy to Justine Johnson, 145 LaPlante Circle, Easthampton, MA 01027 and enclose a check for the appropriate size. The sizes and rates are:

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.

**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 for Display Ads:** Send display ads with payment to our advertising manager, Justine Johnson at 145 LaPlante Circle, Easthampton, MA 01027. If you have questions, or want to reserve space, contact Justine at (413) 527-1920 or [JJSL145@aol.com](mailto:JJSL145@aol.com).

**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.

Let us thank these Friends of Organic Farming  
who have generously supported

# NOFA Exchange

**Garlic Seedstock** soft and hardneck varieties, extremely hardy, performing well throughout the northeast, certified NOFA-NY. \$5.50 lb + shipping, discount on quantities. Doug Bowne, 345 Lynch Rd, Little Falls, NY 13365. (315)866-1403, email: EMBOW@ntcnet.com **Want to farm, but lack the capital to start?** We have more agriculture resources than are being used, and will assist individual/couple with entrepreneurial spirit start. Farm is certified by NOFA-NY, soils excellent, numerous markets. Doug Bowne, 345 Lynch Rd, Little Falls, NY 13365. email: EMBOW@ntcnet.com, (315) 866-1403

**Ideal tenant/caretaker-type seeks long term living situation.** I am a mature, quiet, responsible, non-smoking, employed educator with significant organic vegetable and perennial gardening experience, interior/exterior and moderate home repair skills, No four-footed pets, and excellent references. I am seeking a quiet, private place to live in exchange for either modest/reduced rent for exceptional care and maintenance or a live-on caretaker position (part-time, flexible hours). Within 20 mile radius of Northampton, MA. Please contact Leslie Hoffman, P.O. Box 139, Amherst, MA 01004. E-mail: leslie.hoffman@the-spa.com. Phone: 413-467-3666. Request good through May, 2001.

**Farmer Wanted:** Experienced in commercial organic vegetable production. Position and compensation dependent on level of experience. Year round position. 40 acres certified vegetables and berries, apples. Farmstand. Contact John at Hutchins Farm, 754 Monument St., Concord, MA 01742. 978-369-5041, hutchfarm@earthlink.net

**Internships available** for Fall 2000 and Spring 2001 at Holcomb Farm CSA, West Granby CT. Interns participate in all aspects of vegetable production and distribution on a 16 acre CSA farm. The CSA serves households and social service organizations in the greater Hartford area, and also provides on farm experience for at-risk youth. Compensation: \$600/month, fresh vegetables, and assistance with housing. Send resume and letter to Paul Bucciaglia, Holcomb Farm CSA, 111 Simsbury Rd., West Granby CT 06090. Phone(860)653-5554, email csamanager@hartfordfood.org

Buffalo Organics, a 4 year old 140 member **CSA**, **needs a farmer** to assume management or ownership responsibilities. Equipment is available for lease or purchase. Business includes two prime farmers markets, an excellent location, and close proximity to Buffalo and suburbs. Housing is available on the farm. Terms negotiable. CSA brochure at WWW.buffalo-organics.com. Contact Stewart Ritchie at buffalocsa@hotmail or (716) 655-5625.

**Apprentices wanted:** Genesis Farm is seeking 2 apprentices for the 2001 growing season (4/1 - 10/31). The Community Supported Garden biodynamically manages more than 20 acres on a 140 acre farm in northwestern New Jersey. There are 8 acres of vegetables, 3.5 acres of orchards and berries, with the rest in meadows. Applicants should be seeking a hands-on learning experience. Room, board, and a stipend is offered. We recommend a visit to the farm in the fall. Send resume and letter to CSG at Genesis Farm, c/o Mike Baki, 41B Silver Lake Rd., Blairstown, NJ 07825

Bow Greenhouses, two 21'x36' fiberglass/propane heaters, benches. Organically certifiable. You take down. \$1000 each, or \$1800 for both. Brentwood (603) 679-5718. sunpit@mediaone.net

**Farm for Sale:** in Washington County, NY; 170 acres, 50 tillable acres (certified organic by NOFA-NY), 120 acres of woods and pasture (managed organically), frontage on the Hudson River, Three houses, barn with 32 tie-stalls and space for 50, 2-inch pipeline milking system and hay mow; Two equipment sheds. Good potential for livestock (goats, beef, heifers, sheep), a few acres for vegetables. Excellent location within 45 minutes of Schenectady, Albany, Troy, Saratoga, Glens Falls, and Bennington. Equipment available. Contact Aaron Gabriel, 119 Waite Rd., Schaghticoke, NY 12154, 518-692-7279

**Hairy Vetch seed for sale.** \$1.00 per lb. 50 to 500 lbs., 90¢ per lb. 500 to 5000 lbs., 80¢ per lb. 5000 lbs. or more. Also **Arroostook Rye seed for sale.** 56 lbs. \$6.00 per bag 1 to 40 bags, \$5.50 for 40 bags or more, Bulk \$4.50 per bushel plus freight. No Sunday calls. 573-549-2231

**Cow Effect Available** for Your Farm - Small, organic, biodynamic oriented livestock farm in northwest Vermont offers a variety of gentle, knowledgeable and adaptable cattle to help grow your farm. From aged cow to bred heifer, started steers and heifer calves. Start your compost or start your cow herd. Call or write: Dave Hoke, 7069 Chester Arthur Road, Enosburg Falls, VT 05450. (802) 933-6651

**Southern Vermont Homestead,** 10+ acres, 1 1/2 cleared, 9+ woods. 3 or 4 bedroom home, wood heat, orchard, gardens and outbuildings. Hillside, southwest exposure, 150 day growing season. Asking \$110,000. Call Blake or Vanda (802) 694-1381

**Positions for 2001 Season: Asst. Farm Manager** - share responsibility for management of 18 acre farm and CSA. Field planning, seed selection, greenhouse and planting schedules. Field work and tractor experience necessary. Need good communication skills, work as team member. Living space, farm vegetables, workman's comp and salary. **Apprentice:** Must work long hours, will be involved in all aspects of the farm operation. Private room, farm vegetables and stipend. Work week is 5 1/2 days April to November. Contact Eileen, Ol' Turtle Farm, 385 East St., Easthampton, MA 01027, 413-527-9122 olturtle@javanet.com

**Help wanted** on scenic, diversified organic rare livestock breeds farm/homestead. Seeking able-bodied, mature, competent couple with strong commitment to organic agriculture, sustainable living. One-bedroom apartment for rent. Some on-farm paid hourly work available but off-farm income will be needed. Opportunity to pursue homestead lifestyle in supportive environment with access to clean organically raised food. We need reasonable chore help on the farm, along with the synergy of cooperative efforts toward similar goals. Please no smoking, drugs, or dogs. References appreciated. Howland Homestead Farm, Philip and Dianne Lang, 175A Geer Mt. Road, South Kent, CT 06785

**Openings for new farmers** - we provide low cost land and equipment to start-up farm businesses. All farmers contribute to the goal of producing 10% of Burlington, VT's fresh food needs. Designed for entrepreneurial farmer, wanting to make a living from farm business. We will have over 30 acres of land available in 2001 and can accommodate up to 10 new incubators. Need simple application by September, 15. Contact Andy Harper, Intervale Foundation, 128 Intervale Road, Burlington, VT 05401 (802) 660-4949

**"Organic Weed Management"**, by Steve Gilman — the first in a series of manuals on organic gardening and farming being published by NOFA/Mass — is freshly off the press. A 60 page book with illustrations by Jocelyn Langer, it is available for \$5 plus \$1 for shipping to NOFA/Mass, 411 Sheldon Rd., Barre, MA 01005

Herb Pharm is proud to offer our **HerbaCulture Work/Sudy Program** for 2001 on our certified organic herb farm nestled in the Siskiyou Mountains of southern Oregon. Program runs mid-March thru June. Work involves cultivation and harvest of medicinal herbs in exchange for classes involving many aspects of organic farming and herbalism. Must be prepared for hard work. No monetary fee. Communal housing provided. To receive an application form, write to: Monica Lloyd, Herb Pharm P.O.Box 116, Williams, OR,97544. Deadline to apply Feb 1, 2001. Acceptance decisions start on Dec 1, 2000. For more info. Call (541) 846-9121 or Email workstudy@herb-pharm.com.

## Blow Your Own Horn!

**VT farm for sale,** 30 acres south sloping meadows & pastures in Middletown Springs. Farmhouse, barn, sheds, garage/shop. Clay loam, no atrazine. 1,000-tap sugarbush available. \$175,000.00 Michael Beattie, 802 235 2468 three house lots for sale with sewer, power, road, and custom house design. Sandwiched between conservation lands. 3, 4 and 6 acre lots available. Additional commonly-owned lands included. South facing. Starting at \$55,000.00 Call for more information: 802-235-2335.

**Looking for building space,** or land, with connections to a farm. I hope to relocate a 2,000 sq. ft. wood and metalworking shop, from Boston to the country. I prefer to own, but am flexible. There could be a complementary relation, in both practical and spiritual terms, between my work (solar inventions to carpentry) and an organic farm. Does anyone in the NOFA network have an outbuilding, or corner of their land for my shop? I could be useful with farm repairs, and the farm could help shop security when I am away. Tim Harkness, Art of Invention, <tiharkness@earthlink.net>, 617-541-4626

**NOFA/Mass certified organic garlic seed!** Stiffneck - \$6/lb under 5 lb., \$5/lb 5 lb - 24 lb, \$4/lb 25 lb or more. Postage - add \$3.75 under 5 lbs, add \$5 from 5 lb to 15 lb, over 15 lb - add \$6. Garlic Braids - \$7.50 each plus shipping as above (each braid weights about 1 lb.) **NOFA/Mass certified chicken** - (\$3/lb.), **pork** - priced per cut (\$4-\$4.50/lb.) Many Hands Organic Farm, 978-355-2853

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## News Update!

# How are the NOFA Chapters Preparing for the National Organic Program?

by Jack Kittredge

Reports by chapter representatives at the Interstate Council meeting on August 13 indicate that different NOFA states are taking different approaches to meeting the accreditation requirements of the federal organic certification regulations.

Connecticut expects to drop out of certification and let the state government take over, much as Rhode Island and New Hampshire currently do.

Massachusetts is evaluating the question at an upcoming meeting between board and certification committee representatives. The discussion will focus on how much remaining as a certifier will cost the organization, whether current volunteer help can be expected to continue under the new program, and what are the possibilities of a private/public hybrid program.

New Hampshire will continue with the current state government program.

New Jersey will stay as a private certifier for their Pennsylvania customers, but will work as an agent of the state government to certify its New Jersey farmers. The legislature is appropriating funds to facilitate this changeover and help NOFA meet the costs of qualifying under the NOP.

New York will stay as a private, fee-based program under the NOP. The chapter expects all the certification and accreditation costs to be fully funded by fees.

Rhode Island will continue with the current state government program.

Vermont will stay as a private, fee-based program under the NOP. They are talking of adopting and certifying to higher standards than the minimum required by the NOP. The chapter expects all the certification and accreditation costs to be fully funded by fees, although it is possible the state may help with some of the accreditation costs.

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# News Notes

compiled by Jack Kittredge

**NOFA-VT offers organic dairy technical assistance.** Under an ongoing program, NOFA-VT offers grants of up to \$200 to assist farmers in becoming better organic managers, as well as conferences, workshops, publications and precertification visits to help farms making the organic transition. For more information, contact NOFA-VT at PO Box 697, Richmond, VT 05477, (802) 434-4122, or [nofavt@together.net](mailto:nofavt@together.net). *source: NOFA-VT press release*

**\$10 million for transition to organic.** The Agricultural Risk Protection Act of 2000 has authorized \$10 million annually in Commodity Credit Corporation (CCC) funds for cost share assistance to help farmers with conservation and sustainable agriculture-related practices such as making the transition to organic production. The total payments to any person in one year may not exceed \$50,000. By funding the program through the CCC, the act avoids an annual appropriation process in Congress. *source: In Good Tilth, Vol. 11, No. 1*

**Federal crop insurance now possible for organic producers.** The Agricultural Risk Protection Act of 2000 has codified organic farming as "good farming practice", thus opening the way for organic producers to participate in the federal crop insurance program. Previously, a farmer's failure to use chemical fertilizers and pesticides gave insurance companies an acceptable excuse for not covering losses to those crops. The USDA still has to collect data to develop actuarial tables for organic crops, so implementation of the act may take years. *source: Northern Plains Sustainable Agriculture Society Newsletter, July, 2000*

**Negative report on organic foods retracted.** The Feb. 4, ABC News "20/20" segment, hosted by correspondent John Stossel, that made the case that organic food is not necessarily healthier than conventional food — and might actually be dangerous because organic food is grown in manure and hosts pathogens — has been partially retracted. The network said that research it claimed had shown such results was in fact never conducted. It blamed the mistake on David Fitzpatrick, a show producer. The error was brought to light during a follow-up investigation by the Environmental Working Group. *source: The New York Times, August 8, 2000*

**Simple test devised for GM grain.** The Brazilian Agriculture Ministry's research arm, Embrapa, said exporters of Brazil's soybeans have developed a simple method to prove to discerning buyers that their soybeans are free of genetically modified (GM) herbicide resistance. Soybeans are placed in paper towels moistened with a diluted solution of the herbicide being tested for. "Once the beans germinate in the diluted solution, the transgenic seeds will have normal root development but the conventional soybeans will not develop any roots," Embrapa researchers said. *source: Internet news, May 29, 2000*

**EPA finds Dursban more dangerous than previously thought.** The US Environmental Protection Agency (EPA) has decided, after the most extensive assessment of a pesticide in its history, to remove Dursban (chlorpyrifos) from all over-the-counter products. Farmers will still be allowed to spray it on crops, however. The product is manufactured by the Dow Chemical Co. and it is included in about 800 consumer products. The ban resulted from studies showing the compound caused brain damage in fetal rats. *source: The Boston Globe, June 1, 2000*

**Study shows eating organic more nutritious.** Commissioned by the Organic Retailers and Growers Association of Australia (ORGAA), the Australian Government Analytical Laboratory found that organic tomatoes, beans, peppers, and beets grown in soils enhanced with minerals had higher levels of calcium, potassium, magnesium, and zinc than the same types of conventional produce. The levels were sometimes up to ten times as high. The study was not a replicated plot experiment, however, and has not been published in a peer-reviewed journal, so the results "are only an indication and not a direct comparative study" says the ORGAA. *source: Pesticides and You, Spring, 2000*

**Novartis bans GMOs in its food!** The Swiss biotech giant Novartis, one of the world's largest providers of seeds for genetically modified food, has banned genetically modified ingredients in all its own food brands worldwide. The company's consumer health division markets a variety of health foods and is responding to "the current sentiment among the population towards GMOs". Asked about an internal conflict, a Novartis spokesman replied: "All our business centres operate independently in totally different markets. The market for seeds is totally different from the market for food products." *source: Reuters, August 4, 2000*

**Triple resistant weeds found in Canada.** Canola weeds resistant to Roundup, Liberty, and Pursuit — the three herbicides which canola has been genetically engineered to resist — have been found in the fields of a farmer in Alberta, Canada. The farmer had planted seed from three different canola varieties, each designed to resist one of the herbicides, in fields only 30 meters apart. This is the first case of natural gene stacking in canola and is blamed on mixing due to bee and wind pollination. *source: Pesticides and You, Spring, 2000*

**Pesticides found in meconium.** A study by scientists at Wayne State University has found pesticides, heavy metals, and polychlorinated biphenyls (PCBs) in the bowel movements of newborn babies. Samples were taken in 1998 from 44 newborns in Australia and showed the persistence of these pollutants in the food chain. While DDT has not been available in Australia since 1981, for example, 7 babies showed traces of the compound in their feces. Researchers reason the pollutants must have come from the mother in-utero. *source: Pesticides and You, Spring, 2000*

**New York City activists file suit to stop spraying.** A coalition concerned with city spraying of sumithrin, resmethrin, and other pyrethroids to control mosquitoes bearing West Nile Virus has filed suit in federal court charging the program violates federal and state environmental statutes, including the Clean Water Act and the Federal Insecticide, Fungicide and Rodenticide Act. They cite cases of dizziness, headaches, nausea, vomiting, seizures and long-term neurotoxic effects and cancers associated with spraying of these chemicals. *source: Our Toxic Times, August, 2000*

**Kirschenmann appointed director of Leopold Center.** North Dakota grain farmer and organic activist Fred Kirschenmann has been hired to direct the Leopold Center for Sustainable Agriculture at Iowa State University in Ames, Iowa. His family will continue to run his 3500-acre certified organic crop and livestock farm near Windsor, ND while Fred oversees the Center's \$1.6 million budget for identifying negative impacts of agriculture and developing profitable farming systems which conserve natural resources. *source: Northern Plains Sustainable Agriculture Society Newsletter, July, 2000*

**Broccoli thrives with purslane living mulch.** Purslane, normally considered a weed, has been used as a living mulch in spring broccoli production in Connecticut and compared with mechanical and chemical weed control, as well as black plastic mulch. Broccoli yields in the fields seeded to a purslane mulch were comparable to those with conventional weed management. *source: American Journal of Alternative Agriculture, Vol 15, No. 2, 2000*

**Alaska salmon industry seeks organic label.** Alaska Senator Ted Stevens is pushing the USDA for wild salmon to be included in the national organic program. Under the current draft, bees and aquatic animals are excluded from coverage. The organic label would increase the value of salmon by 25 to 35 percent, industry analysts believe. *source: American Journal of Alternative Agriculture, Vol 15, No. 2, 2000*

**Respected journal editor says funding sources compromise scientific research.** In a May, 18, 2000 editorial, Dr. Marcia Angell, the outgoing editor of The New England Journal of Medicine, charges that research funding from drug and medical-equipment makers has led medical schools to strike a "Faustian bargain". They are influenced toward favorable findings on products by accepting gifts, trips, consulting fees and other forms of compensation. She calls for a strong code of ethics banning arrangements which lead to such conflicts of interest. *source: Our Toxic Times, June, 2000*

**Kathy Lawrence to direct National Campaign for Sustainable Agriculture.** The founding executive director of New York City's Just Food, a longtime advocate for organic farming, has been hired to lead the national advocacy group's efforts to make federal farm policy more supportive of family farms, rural communities, a clean environment and high quality food. *source: National Campaign press release, August 16, 2000*

**We're spending less on food.** In case anyone doubted it, a Cornell study documents that Americans are spending less on food. In 1960 we spent 25% of our personal disposable income on food, but in 1970 it was only 13.8% and by 1997 it was down to 10.7%. Away-from-home meals and snacks accounted for 26% of food sales in 1960, 34% in 1970, and 45% in 1997. The farmer's share of the food dollar has declined to 20¢, the USDA estimates. *source: Growing for Market, July, 2000*

**Organic farming on increase.** Between 1995 and 1997 the US acreage dedicated to producing organic vegetables, fruit, herbs and livestock increased nearly 50%, according to the USDA. The 1997 number was 1.35 million acres, up from 918,000 in 1995. Nearly one-third of US herbs, mixed vegetables and buckwheat are now grown organically. The US organic industry accounts for about \$6 billion in sales in 1999, and will increase 20% this year. Other interesting facts: more than half of US organic vegetables are grown in California, but Vermont has the highest state percentage of organic vegetable acres out of total farm acres. *source: In Good Tilth, Vol 11, No. 2*

**Halifax bans pesticides.** After banning perfumes earlier this year, the Halifax, Nova Scotia city council has approved a by-law making it illegal to use pesticides on lawns and gardens in the city. The ban will cover schools, hospitals and homes of the medically sensitive by April, 2001, and all other places by April of 2003. A Canadian Parliamentary Committee is also considering a national ban on any pesticide used for only "cosmetic" purposes. *source: Our Toxic Times, August, 2000*

# News on Genetic Engineering Pollution

Gene Flow from Genetically Engineered Crops  
by Roberto Verzola  
<rverzola@PHIL.GN.APC.ORG>

Here are some data on GMO contamination in various places around the globe. For fuller documentation, please check: <http://utopia.knoware.nl/users/archief/GRASS/gedebate.html> [http://www.biotech-info.net/verzola\\_GE\\_debate.pdf](http://www.biotech-info.net/verzola_GE_debate.pdf) <http://www.bwf.org/gedebate.html> Roberto Verzola

**7.1. CLAIM: Pollen and seeds do not travel very far. Isolation distances of 50-100 meters will prevent any genetic contamination.**

Pollen can be carried by wind, bees and other insects, birds, and other pollinators. Animals can eat seeds and then travel long distances. Their droppings can contain viable seeds. People can inadvertently transport seeds hundreds or even thousands of kilometers from the source.

Genetic pollution is one unanticipated consequence of GE technology, especially for wind and insect pollinated crops such as corn, canola, potatoes, and squash. Genetic drift is a huge issue for organic growers, since GE is prohibited by all organic standards in the world, and consumers expect organic foods to be GE-free.

At the annual meeting of the Spanish Association of Cereals and Oilseeds Merchants in Madrid last week, Monsanto and Novartis officials said it was practically impossible to prevent the wind from carrying pollen from GM crops to nearby fields, delegates said. (See: Spanish Shippers Say Hard to Segregate Gm Foods by David Brough, 14 June 1999, Reuters)

Examples:

**A. THALIANA:** *Arabidopsis thaliana*, weed species often used for GE studies, was found to be more prolific and promiscuous when genetically modified. This implies that GE can substantially increase the probability of transgene escape, heightening the risk of producing weedy or pest populations of wild relatives. In field studies, HT *A. thaliana* produced by gene transfer of a resistance allele outcrossed to wild relatives roughly 20 times more often than ordinary mutants expressing the same mutant allele as the transgenic plants. (Bergelson, J., Purrington, C.B. and G. Wichmann. 1998. Promiscuity in transgenic plants. *Nature* 395: 25)

**BEET:** Dr. Norman Ellstrand (Professor of Genetics, University of California, one of the world's leading GE authorities) on the economic implications for farmers of gene exchange between crops and weedy relatives: "We see this as a multi-million dollar problem. In Europe, there is already a big problem with gene flow between wild beet and cultivated beet. Oil-seed rape also has close relatives and is going to cause problems in the future. One would expect that the kind of genes that are now being engineered are going to be the ones that have a higher potentiality for causing trouble." (From: Protect Organic! Campaign [jasonab@mediaone.net](mailto:jasonab@mediaone.net) (617) 661-5609)

**CORN:** In May, the Swiss Dept of Agriculture (Budesamt fur Landwirtschaft; Bern) and the district president of Baden-Wurttemberg (Tubingen, Germany) discovered that Pioneer Hi-Bred's non-GM corn seed varieties, Ulla and Benicia, actually

contained novel genes from a variety of Bt corn. Contamination of the seeds, which were harvested in the U.S., was "probably caused by stray pollen during the growing season," says Ulrich Schmidt, managing director of Pioneer in Buxtehude, Germany, which represents the grain manufacturer in Switzerland. The GE contamination into Ulla and Benicia probably occurred this way because "Pioneer does not offer a commercial GM variety of Ulla or Benicia." Before the contamination was discovered, Pioneer had sold enough Ulla and Benicia seeds to sow 400 hectares (roughly 0.5% of total corn cultivation in Switzerland), about 200 hectares of which had already been planted. (See: Furst, Ingeborg. July 1999. Swiss soiled seed prompts tolerance question. *Nature Biotechnology* 17: 629) <<http://www.natural-law.ca/genetic/NewsJuly-Aug99/GEN8-3ContamSeeds.html>>

**CORN:** Pioneer and the entire grain industry are not able to guarantee the genetic purity of their conventional non-GM varieties, says Ulrich Schmidt, managing director of Pioneer in Buxtehude, Germany. "Genetic inserts are in the nature of things," agrees Rainer Linneweber, spokesperson for Novartis Seed (Bad Salzufflen, Germany). "Despite our high-level quality management and our ISO certification, even a 100% [technical] purity for conventional seed is utopian," he adds. (See: Furst, Ingeborg. Jul 1999. Swiss soiled seed prompts tolerance question. *Nature Biotechnology* 17: 629) <<http://www.natural-law.ca/genetic/NewsJuly-Aug99/GEN8-3ContamSeeds.html>>

**CORN:** The American Corn Growers Association (ACGA) on Tuesday called on US farmers who plant non-GM crops to test their seeds following the discovery of evidence of contamination by GM seeds. Genetic ID, a pioneer in GMO testing, said its lab detected the presence of GE seeds in 45 percent of the 20 traditional seed corn varieties it tested, largely due to contamination of fields. "Farmers who are seeking to sell to the non-GMO markets must protect themselves by getting their seeds tested," said Gary Goldberg, ACGA chief executive officer. "If we are to maintain our export markets and possibly gain non-GMO premiums, we have to take steps to guarantee the purity of our crops," he added. (See: Agence France Presse, 7 Dec 1999, "US Corn Growers Urged to Test Non Genetically Modified Seeds")

**CORN:** According to information passed to Greenpeace, on Monday 22 May 2000 and Tuesday 23 May 2000, the European Seed Association (ESA) sent faxed copies of a letter about GM contamination to a variety of public bodies including the European Commission, EU Governments and MEPs on the Agriculture and Environment Committees of the European Parliament. In this letter there is a two-line reference to a problem with the European maize crop. Greenpeace understands that for the maize seed planted this year, between 5% and 15% of the European crop is contaminated with GMOs affecting a total crop area of up to 975,000 hectares across the EU. There was also a lesser degree of contamination of the 1999 planting of maize in Europe and illegal GMO's entered the food chain as a result. (See: "Greenpeace reveals new outbreak of GM contamination - up to 975,000 hectares of maize crop affected across Europe", 14 May 2000, Greenpeace Press Release)

**FISH:** A single GM fish released into the wild could wipe out local populations of the original species,

biologists warn in the *New Scientist* (4 Dec 1999). William Muir and Richard Howard of Purdue University, Indiana, studied fish carrying the human growth hormone gene (hGH), which increases growth rate and final size. US and British biologists are doing similar experiments with GE salmon. Muir and Howard put hGH in embryos of Japanese medaka, a common aquarium fish, which then matured faster and produced more eggs than normal fish, rapidly spreading the new gene. But only 2/3 of the GE medaka survived to reproductive age, which led the population to dwindle. In a computer model, 60 GE fish in a wild population of 60,000 fish, caused extinction within 40 generations. Even a single GE animal could lead to extinction, they found, but it would take longer. "You have the very strange situation where the least fit individual in the population is getting all the matings - this is the reverse of Darwin's model," says Muir. The researchers say this is the first evidence that GMOs could have catastrophic consequences on their own species. (See: Environmental News Service, 2 Dec 1999)

**HONEY:** Traces of special GM genes for herbicide-tolerance developed for oilseed rape crops were found in honey by the German agrochemical company Aventis. The test area is understood to be in Oxfordshire. Brian Stenhouse, general secretary of the Bee Farmers Association of the UK, advised

members to move hives at least six miles from any GM crop site. (See: The Independent/London, 17 May 2000, "Honey Has Been Contaminated by GM Crops, Claims Friends of the Earth" by Michael McCarthy)

**HONEY:** Bees are making honey containing traces of genetically modified crops, it was claimed yesterday as the \$210million-a-year bee industry demanded a temporary halt on further trials of the new technology. They caused consternation at the Bee Farmers Association which has already advised members to move their hives at least six miles from the nearest GM site - the distance organic farmers have been advised by the Soil Association to consider "safe" from contamination. (See: "Bee-keepers seek GM halt after honey contamination" by James Meikle, 17 May 2000, The Guardian)

**Herbicide Tolerance (HT):** Gary Barton (Monsanto's director of biotechnology communications): "Resistance can develop" but superweeds - hybrid plants resistant to herbicide - were not an issue since they could always be sprayed with other weedkillers to which they were not resistant. (See: Independent, London, 25 Apr 1999)

**HT:** The potential transfer through gene flow of genes from herbicide resistant crops to wild or semidomesticated relatives can lead to the creation of superweeds. (Lutman, P.J.W. (ed.) (1999) Gene flow and agriculture: relevance for transgenic crops. British Crop Protection Council Symposium Proceedings No. 72. Staffordshire, England. As cited in: "Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world"; Miguel A. Altieri, UC Berkeley and Peter Rosset, Institute for Food and Development Policy, Oakland, CA)

**HT:** Transgenic, herbicide-tolerant weed-like plants, exhibiting high fertility and the same morphology and chromosome numbers as in the weedy relative, were produced in field experiments where GE herbicide-tolerant interspecific hybrids were grown together with the weedy relative. (Mikkelsen, T.R., Andersen, B. and R.B.Jorgensen. 1996. The risk of crop transgene spread. Nature 380:31, as cited by Kapuscinski 1999)

**Oilseed Rape (OSR):** Spontaneous hybrids and backcrosses occurred between GE oilseed rape and its weedy relative, Brassica campestris, under field conditions. (See: Jorgensen, R.B. and B. Andersen. 1994. Spontaneous hybridization between oilseed rape (Brassica napus) and weedy B. campestris (Brassicaceae): a risk of growing genetically modified oilseed rape. American Journal of Botany 81:1620-1626)

**OSR:** Studies in Denmark, Scotland and Lower Saxony in Germany have shown that GMO rapeseed can pass on its traits to, not only non-GMO rapeseed, but also weedy relatives up to 2.5 km away. This can lead to superweeds.

**OSR:** Scientists from the Scottish Crop Research Institute in Dundee have shown that as high as 7% of the natural rape plants in a field 400 meters away were pollinated by GM pollen. They said that oilseed rape pollen had been found 4 km away from the nearest source - further than it had been previously discovered. They said "bees may be important pollen vectors over a range of distances" and concluded that "the results suggest that farm-to-farm spread of OSR [oilseed rape] transgenes will be widespread." (See: New Scientist, April 1999)

**OSR:** In 1997, a Swedish field test of GE rapeseed contained two unauthorized lines in addition to the one line authorized for testing by the government Board of Agriculture. The mixup was unintentional and was uncovered during analysis of test data by the testing company, Sweden's Sval-f Weibull. The lines, however, were produced by German transnational AgrEvo at their Canadian subsidiary, and this was where the mixup took place. Seed source: Canada. (Contact: Peder Weibull, Sval-f Weibull, +46-418 66 70 00 Robert Andr en, Board

of Agriculture, +46-36 15 50 00)

**OSR:** In 1997, an experimental GM OSR crop south of England was harvested and mistakenly mixed in-store on the farm with its non-GM commercial crop equivalent. Crop source: UK. <<http://www.rics.org.uk/csm/archives/nov98/531298.html>>

**OSR:** Scientists have found GM OSR pollen 4.5 km from a trial site. Friends of the Earth had contracted the National Pollen Research Unit at University College, Worcester to monitor airborne pollen on roads and public rights of way around the farm scale trial for spring OSR at Model Farm, Pirton, Near Watlington, Oxfordshire in June and July 1999. Pollen traps were placed on six bee hives sited in the area. Two were 500 metres from the crop, two were 2.75 kilometres from the crop and two were 4.5 km. The pollen was collected and analysed by a bee and honey consultant, Sarah Brookes, of Evesham, Worcestershire. Six samples of airborne pollen and 6 of beehive pollen were sent to the laboratory of the Federal Environment Agency in Austria for DNA analysis. All six beehive samples were found to contain GM oilseed rape pollen from an AgrEvo variety and 2 out of 6 airborne samples. The Government's rules for the farm scale trials require only a 50 metre separation distance between GM crops and other fields. For seed crops and organic crops the recommended distance is 200 m. The trial shows GM pollen at distances further than ever previously detected and shows the scale of the threat the trials pose to non-GM crops, beekeepers and the wider environment (Amanda Brown, AAP, London, 30 Sep 1999)

**OSR:** And scientists are finding that some GE crops, such as herbicide-resistant canola in Canada, are cross-pollinating with wild relatives more widely than had been predicted, creating hardy weeds that can survive herbicidal sprays. (See: Rick Weiss, Washington Post, 15 Aug 1999) <<http://www.washingtonpost.com/wp-srv/health/daily/aug99/gmfood15.htm>>

**OSR:** GE DNA Found in Honey: Traces of oilseed rape DNA have already been detected in several brands of Canadian honey. (See: "GM Foods and How to Avoid Them") <<http://wkweb4.cableinet.co.uk/pbrown/index.htm>.>

**OSR:** A scientific report, carried out for the British government in 1997 but not published until now, concluded that GE OSR could breed with ordinary farmers' crops and make them inedible. The study, conducted by the prestigious Scottish Crops Institute for the Ministry of Environment, says that contamination of farmers' ordinary fields is "inevitable" under current farming practices. (UK Sunday Independent, 21 Feb 1999)

**OSR:** In May 2000, GM-contaminated OSR was found to have been distributed in Europe for some two years. Seed source: Canada. <[http://news.bbc.co.uk/hi/english/uk/newsid\\_753000/753401.stm](http://news.bbc.co.uk/hi/english/uk/newsid_753000/753401.stm)> -

**OSR:** Agriculture Minister Nick Brown insisted today that the accidental sowing of thousands of acres of farmland with GM seeds posed "no threat to public health or the environment". In a Commons statement, Mr. Brown said about 13,700 hectares were sown with the affected stocks of seeds last year and this spring. Advanta Seeds UK advised ministers that some of its supplies of conventional rapeseed sold and sown in 1999 and 2000 in several EU countries, possibly including the UK, contained about 1% of GM rapeseed. It appeared the non-GM seed crop produced in Canada in 1998 had "come into contact with a GM crop being commercially produced in the area, resulting in a small amount of GM seed in the conventional seed". In the UK about 9,000 hectares were sown with affected stocks last year and about 4,700 were sown this spring. (See: "GM Seeds 'No Threat to Health'" By Trevor Mason and Dominic Hayes, Political Staff, PA News, 18 May 2000)

**OSR:** Thousands of acres of crops tainted by GM pollen have been growing in Britain for more than a year and may have been used in food production, the government admitted last night. Its scientific advisers had previously claimed there was little risk of cross-pollination with conventional crops. Hundreds of farmers have unwittingly planted the contaminated seed over two spring seasons without the safeguards used for GM field trials, but ministers, whose officials had known about the problem for a month, insisted there was no risk to health or the environment. The seeds came from the Canadian prairies, from plants that were growing more than 800 metres away from the nearest GM varieties but still picked up traces of modified material. The tainted seed is thought to have been used on 9,000 hectares last year, nearly 2% of the rape crop. This year it has probably been used on 4,700 hectares, involving between 500 and 600 farmers. It also emerged that there had been no random testing of imports of conventional seed for rogue GM material, despite the rapid spread of GM crops through the United States, Canada and Brazil. In this country no GM seeds are to be sold to farmers until after three years of farm trials to test their impact on the environment and wildlife. The seed is also thought to have been used on 600 hectares in France, 500 in Sweden and 400 in Germany, causing international embarrassment and highlighting a lack of international regulation of seed purity. (See: "Imported seeds tainted by GM" by James Meikle, 18 May 2000, The Guardian)

**OSR:** The Swedish Board of Agriculture today came to a decision on an injunction to the farmers that this year have sown seed from the lots of the oil seed rape variety Hyola 38, that has an impurity of Roundup resistant rape seed. The decision means that the crops must be destroyed by 7 July at the latest, unless a possible consent for a deliberate release has been given by the Board of Agriculture before that date. (See: Press release from the Swedish Board of Agriculture 24 May 2000, "The Swedish Board of Agriculture has decided that the crops with GM oil seed rape shall be destroyed")



OSR: The French government has become the first in Europe to order the outright destruction of rapeseed crops that include genetically modified (GM) material. Prime Minister Lionel Jospin's office said in a statement that 600 hectares (1,480 acres) had been planted with the seed in France. Checks had shown a relatively small proportion of GM seeds - about one percent of the total quantity - and at least one strain of herbicide-resistant rapeseed. "After careful examination of the case and immediate ways of remedying the situation, the government decided to call on the groups involved to proceed with the destruction of the rapeseed plants," it said. The decision followed the news last week that seed company Advanta had sold seeds imported from Canada containing traces of GM material - still highly controversial in Europe - to farmers in France, Britain, Germany and Sweden by mistake. Advanta is part of a 50-50 venture between Anglo-Swedish group AstraZeneca Plc and Dutch cooperative Cosun. (See: Reuters, "France decides to destroy GM rapeseed crops" By Joelle Diderich, 25 May 2000)

OSR: UK's government is advising farmers to plough up crops tainted by GM seeds after securing European Commission funding for affected farms. In what will be seen as a victory for green groups, Nick Brown, the Agriculture Minister, has followed the Swedish and French authorities in recommending that the GM-tainted oilseed rape be destroyed. Advanta, the company which supplied the seeds, last night demanded urgent talks with ministers. David Buckridge, Advanta's European business director, said destroying the crops was an "over-reaction". He said the company had drawn up a strategy to monitor, segregate and harvest the 11,000 affected acres. Advanta hoped to sell the produce to countries outside the European Union, such as the US, where herbicide-tolerant oilseed rape has commercial approval. The Government's decision comes only days after Greenpeace said it would take the Government to court unless it ordered destruction of the oilseed rape. A spokesman for the Ministry of Agriculture said yesterday that its legal experts had now determined that any harvest from the affected fields would be illegal within the European Union because the crop did not have commercial consents. He denied that the Government had been swayed by the Greenpeace legal threat. He said that ministers had been waiting for both legal clarification and clarification from the European Commission over whether farmers will lose arable crop payments if they destroy the rogue plants. <<http://www.the-times.co.uk/news/pages/tim/2000/05/29/timnwsnws02018.html>> (See: London Times, 29 May 2000, Crops tainted by GM seeds to be ploughed up by Nick Nuttall, environment correspondent)

SALMON: STRAINS of farm-bred fish developed to grow fat quickly are threatening to drive Britain's majestic wild salmon into extinction. Millions of GM fish have escaped into the Atlantic from offshore farms in Europe and America. And the new strains are mating with wild salmon, polluting their

gene pool and producing hybrids that can't survive in the open ocean. (Mail, 19 Sep 1999)

SALMON which grow 10 times faster than normal fish and could reach 12ft long and weigh 200lb are ready to be sold in US supermarkets, according to the company that has developed them. But the prospect of giant GE salmon escaping into the wild and attempting to interbreed with native populations has alarmed both environmentalists and the industry. (See: "Monster salmon scare for fish farmers" by Paul Brown, 12 Apr 2000, The Guardian)

SOYA: In 1996, some GM-contaminated soya seed were distributed in France. Seed source: US. <<http://www.netlink.de/gen/Zeitung/1999/991215f.htm>>

SUGAR: In 1997, 10,000 tonnes of sugar were contaminated when Monsanto sent an unauthorised consignment of experimental GM sugar beet to a refinery in Holland by mistake. Crop source: Holland. <<http://www.natural-law.ca/genetic/NewsNov-Dec97/GENews12-4beetmistake.html>>

TROUT: Environmentalists warned on Tuesday that GE fish which can grow 10 times faster than normal could taint the gene pool and upset the delicate balance of nature. The latest alarm bells about what critics call "Frankenstein Foods" were sounded after a U.S firm - AF Protein - engineered fish which could cut the cost of raising trout and salmon by half. AF Protein is reported to have inserted growth hormone genes from one fish and genes from another fish, which can activate them, into Atlantic salmon. (See: Reuters, "Environmentalists alarmed over giant GM fish" By Paul Majendie, 11 Apr 2000)

In 1997, unapproved GM seed for 600,000 acres was mistakenly released in Canada by Monsanto. Seed source: Canada. <[www.btinternet.com/~nlpwessex/Documents/canola.htm](http://www.btinternet.com/~nlpwessex/Documents/canola.htm)> No one can control the agricultural supply chain to the degree necessary to keep GM and non-GM material separate on a durable basis. The GM seeds and plants look identical to their normal counterparts. All it takes is a strong wind - or one combine driver or seed-store manager with a hangover. And that is what the biotech companies are hoping for - creeping contamination over a period of time so that non-GM becomes gradually no longer possible. Genes from GE plants will escape and enter into wild species. This is called gene flow and the NAS says, "[T]otal containment of crop genes is not considered to be feasible when seeds are distributed and grown on a commercial scale." (See: U.S. National Academy of Sciences Report on Biotech Foods, April 2000, pg.92)

### 7.2. CLAIM: A separation distance of 200 meters will prevent GMO contamination of neighboring fields.

An independent study commissioned by the Soil Association of the UK warns that organic plants could be contaminated by GMOs. The suggested

isolation distance of 200 metres between organics and GMOs will not prevent cross-contamination, it claims. The study says: "Pollen dispersal by insects has been recorded at up to four kilometres - some 20 times higher than the recommended isolation distance - and three kilometres by air flow." <<http://194.200.85.10/sources/154/621/4003551/000113b.htm>>

Steve Jones (professor of genetics, University College, London): Those [transgenic] genes are going to get out into other plants. Everybody knows that. And we have no idea what is going to happen. (BBC, 12 Apr 1999) - "This is only the latest in a long list of field trials showing that [GE] crops, once released, are totally uncontrollable. They will become a nightmare for conventional farmers to control. For farmers who do not want to grow them, such as the organic sector, these crops will be almost impossible to avoid." (Dr. Michael Antoniou)

John Innes Centre, one of Europe's leading research institute on GM crops, carried out research commissioned by the UK Ministry of Agriculture, Fisheries and Food. They reported: GE crops will "inevitably" contaminate organic crops. Pollen and seed pollution by GE crops could not be avoided entirely and "acceptable levels" of contamination would have to be set. They estimated that 1% of organically-grown plants in any one field could become GM hybrids because of pollen spread. They concluded that contamination by seed or pollen cannot be entirely eliminated. (BBC, 17 Jun 1999)

But Norman C. Ellstrand, a professor of genetics at the University of California at Riverside and an expert on pollen flow, said that long-distance pollen flow is poorly understood and that the appropriate isolation distance for drug-producing plants would depend on the particular crop and drug. "It's just not clear that setting a double distance is going to solve everything," he said. (See: "New Ventures Aim to Put Farms In Vanguard of Drug Production" by ANDREW POLLACK, New York Times, pg.1, 14 May 2000)

### 7.3. CLAIM: No emergency plan is needed in case of genetic contamination.

The European Commission has formulated a 5-point emergency plan if GE plants result in widespread illness or death of wildlife. The plan includes:

- 1) methods and procedures for controlling the GMOs in case of unexpected spread;
- 2) methods for decontamination of the areas affected and eradication of the GMOs;
- 3) methods for disposal or sanitation of plants, animals, soils, etc. exposed during and after the spread;
- 4) methods for isolating area affected by spread; and
- 5) plants for protecting human health and environment in case undesirable effects occur. (See: Independent, London, 4 Apr 1999)

### 7.4. CLAIM: GE crops increase biodiversity.

HT: The use of herbicide tolerant crops undermines the possibilities of crop diversification thus reducing agrobiodiversity in time and space. (Altieri, M.A. (1994) Biodiversity and Pest Management in Agroecosystems. Haworth Press, New York. As cited in: "Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world"; Miguel A. Altieri, UC Berkeley and Peter Rosset, Institute for Food and Development Policy, Oakland, CA)

Ecological theory predicts that the large-scale landscape homogenization with transgenic crops will exacerbate the ecological problems already associated with monoculture agriculture. Unquestioned expansion of this technology into developing countries may not be wise or desirable. There is strength in the agricultural diversity of many of these countries, and it should not be inhibited or reduced by extensive monoculture, especially when consequences of doing so results in serious social

and environmental problems. (Altieri, M.A. (1996) *Agroecology: the science of sustainable agriculture*. Westview Press, Boulder. As cited in: "Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world"; Miguel A. Altieri, UC Berkeley and Peter Rosset, Institute for Food and Development Policy, Oakland, CA)

The trend to create broad international markets for single products is simplifying cropping systems and creating genetic uniformity in rural landscapes. History has shown that a huge area planted to a single crop variety is very vulnerable to new matching strains of pathogens or insect pests. Furthermore, the widespread use of homogeneous GE varieties will unavoidably lead to "genetic erosion," as the local varieties used by thousands of farmers in the developing world are replaced by the new seeds. (Robinson, R.A. (1996) *Return to Resistance: breeding crops to reduce pesticide resistance*. AgAccess, Davis. As cited in: "Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world"; Miguel A. Altieri, UC Berkeley and Peter Rosset, Institute for Food and Development Policy, Oakland, CA)

A new study warns that widespread losses of plant species and varieties are directly threatening the productivity of modern agriculture. The study by Worldwatch Institute was sharply critical of GE crops arguing that "biotechnology is no solution to this loss of genetic diversity." While biotech companies have spliced in foreign genes to make crops resistant to pests or yield greater quantities, only nature can create such DNA - the basic building blocks of life, according to the report's author, John Tuxill. "If a plant bearing a unique gene trait disappears, there is no way to get it back," said Tuxill. The report, titled "Nature's Cornucopia: Our Stake in Plant Diversity," found a startling decline in the varieties of many common crops. In China, farmers were growing an estimated 10,000 wheat varieties in 1949, but this number had dropped to 1,000 by the 1970s. In Mexico, farmers today are raising only 20 percent of the corn varieties they cultivated in the 1930s. (See: *Organic View*, v.1 n.14, 28 Sep 1999)

#### GM genes 'jump species barrier'

A leading zoologist has found evidence that genes used to modify crops can jump the species barrier and cause bacteria to mutate, prompting fears that GM technology could pose serious health risks.

A four-year study by Professor Hans-Hinrich Kaatz, a respected German zoologist, found that the alien gene used to modify oilseed rape had transferred to bacteria living inside the guts of honey bees.

The research - which has yet to be published and has not been reviewed by fellow scientists - is highly significant because it suggests that all types of bacteria could become contaminated by genes

used in genetically modified technology, including those that live inside the human digestive system.

If this happened, it could have an impact on the bacteria's vital role in helping the human body fight disease, aid digestion and facilitate blood clotting.

Agriculture Minister Nick Brown, who was yesterday advising farmers who have accidentally grown contaminated GM oilseed rape in Britain to rip up their crops, confirmed the potential significance of Kaatz's research. He said: 'if this is true, then it would be very serious.'

The 47-year-old Kaatz has been reluctant to talk about his research until it has been published in a scientific journal, because he fears a backlash from the scientific community similar to that faced by Dr Arpad Pustzai, who claimed that genetically modified potatoes damaged the stomach lining of rats. Pustzai was sacked and had his work discredited.

But in his first newspaper interview, Kaatz told *The Observer*: 'it is true, I have found the herbicide-resistant genes in the rapeseed transferred across to the bacteria and yeast inside the intestines of young bees. This happened rarely, but it did happen.'

Although Kaatz realised the potential 'significance' of his findings, he said he 'was not surprised' at the results. Asked if this had implications for the bacteria inside the human gut, he said: 'Maybe, but I am not an expert on this.'

Dr Mae-Wan Ho, geneticist at Open University and a critic of GM technology, has no doubts about the dangers. She said: 'These findings are very worrying and provide the first real evidence of what many have feared. Everybody is keen to exploit GM technology, but nobody is looking at the risk of horizontal gene transfer.'

'We are playing about with genetic structures that existed for millions of years and the experiment is running out of control.'

One of the biggest concerns is if the anti-biotic resistant gene used in some GM crops crossed over to bacteria. 'if this happened it would leave us unable to treat major illnesses like meningitis and *E coli*.'

Kaatz, who works at the respected Institute for Bee Research at the University of Jena in Germany, built nets in a field planted with genetically modified rapeseed produced by AgrEvo. He let the bees fly freely within the net. At the beehives, he installed pollen traps in order to sample the pollen from the bees' hindlegs when entering the hive.

This pollen was fed to young honey bees in the laboratory. Pollen is the natural diet of young bees, which need a high protein diet. Kaatz then extracted the intestine of the young bees and discovered that the gene from the GM rape-seed had been transferred in the bee gut to the microbes.

Professor Robert Pickard, director-general of the Institute of the British Nutrition Foundation, is a bee expert as well as being a biologist and has visited the institute where Kaatz works. He said: 'There is no doubt that, if Kaatz's research is substantiated, then it poses very interesting questions and will need to be looked at very closely.'

'But it must be remembered that the human body has been coping perfectly well with strange DNA for millions of years. And we also know many people have been eating GM products for years without showing any signs of ill health.'

source: *Sunday May 28, 2000, The Observer*

# Special Supplement on the Transition to Organic

## Why Farm Organically?

by Elizabeth Henderson

In my work on transitions, I have asked this question of a lot of farmers - why farm organically? Farmers, of course, give various answers. Some make the choice to cut out synthetic materials because of illness in the family or out of a desire to make the farm a safer place for their children. For other farmers, the primary motivation is economic: the premium prices paid for some organic products or the greater independence that comes with reducing farmers attribute their decision to make changes to a spiritual awakening to their role as steward of God's creation. But the most frequent reason for eliminating toxic chemicals given by farmers I have interviewed is that they noticed that, compared with childhood memories, wildlife had diminished on the farm and earthworms had become so scarce that the soil seemed dead.

Organic methods offered a way to bring life back to the farm. Making the decision to change is the hardest part. Once made, you discover that you are entering a community of farmers who are seeking greater environmental, economic and social sustainability. There is a sense of excitement because there is no set orthodoxy. The solutions for each farm are unique, every season brings new discoveries and further changes.

Organic standards are amended every year as we learn more and additional discoveries are made, particularly in the area of biological controls. There is also a sense of nervousness about making these changes because there are no guarantees and not a lot of help from the usual sources, although recently there has been steady improvement in the availability of the information we need. With few exceptions, farmers who have begun to make changes themselves are generous about sharing what they have learned with other farmers.

In the marketplace, "organic" is presented with a stress on the negatives - no synthetic pesticides, herbicides, or fertilizers. Or the irritatingly misleading label "no spray." Those of us who are farming organically prefer to stress the positive side of our work. We have three interlocking goals: to conserve and build healthy soils, to create and maintain

diversity, and to cycle and "recycle" nutrients through the farm system, reducing dependence on non-renewable inputs. If there is an organic orthodoxy, it consists of the simple belief that healthy soils produce healthy plants and that the people and animals who eat those plants will tend to be healthier.

As scientists begin to study mature organic systems more carefully, they are making some surprising observations. Tissue tests of crops show a higher level of mineral content, especially potassium and phosphorous, than additions of soil amendments can explain. The mechanisms by which biologically active soils and plants interact are poorly understood. In practice, however, many farmers are using organic methods successfully. This is documented in the book **The Real Dirt: Farmers Tell About Organic and Low-Input Practices in the Northeast**, which is based on interviews with farmers running 60 farms in nine northeast states. Another recent book of interest is *Future Harvest: Pesticide Free Farming* by Jim Bender.

Converting to organic management is not just a matter of substituting organic materials for conventional ones. Substitution is only the first step. For a crop to do well using organic materials, you have to begin to think of the field, and then the farm as part of an integrated natural system in which all parts are interrelated. You have to go beyond substitution to redesign, changing varieties, soil treatment, pest management, rotations, cover crops and ground covers, and often modifying equipment and marketing as well. You can approach this as a big headache, or as an exciting opportunity to develop a comprehensive approach to planning for your entire farm.

Personally, I find the challenge of working with natural systems very satisfying. And at a time when so many farms are going out of business, it is a source of hopefulness to be part of a growing group of farmers and consumers who care deeply about the stewardship of the earth and see our work as the creation of a regional, sustainable food system. When the organic certification programs of the northeast came together to begin a transition to regional standards, we wrote a preamble which sets

forth the philosophical framework for organic agriculture in the region:

- \*To replenish and maintain long-term fertility by providing optimal conditions for soil biological activity.
- \*To produce viable quantities of high-quality, nutritious food and feed.
- \*To work with natural systems rather than seeking to dominate them.
- \*To reduce pollution that may result from farming.
- \*To work as much as possible within a closed system with regard to organic matter and recycled nutrients.
- \*To encourage the use of renewable resources in regionally organized agricultural systems.
- \*To create conditions for farm livestock that ensure them a life free of undue stress, pain, or suffering, and to provide for their sustenance in a way that is respectful of the carrying capacity of the land.
- \*To ensure decent and non-exploitative treatment of farm workers.
- \*To allow agricultural producers an adequate return and satisfaction from their work, including a safe working environment.
- \*To maintain the genetic diversity of the agricultural system and its surroundings, including the protection of plant and wildlife habitats.
- \*To consider the wider social and ecological impact of the farming system.
- \*To educate farmers and the public about organic methods.
- To encourage new organic farms and the conversion of existing conventional farms to organic methods.
- \*To sustain the land in healthy condition for future generations.

The final principle is the most crucial - and it doesn't matter if we call the kind of farming that gets us there organic or regenerative, sustainable, biological or just plain practical farming. What does matter, is that as farmers and researchers, we set aside artificial separations and we all work together because it will take all of us, all our creativity and varied talents to produce a secure supply of healthy food for the growing population of the world.

# Twin Oaks Farm: Making the Organic Transition

by Jack Kittredge

Rich valleys, gouged out during the last ice age, run up and down much of central New York. These flat, broad ribbons alternate with long, steep ridges left untouched by the glaciers. The mix of bottomland fields perfect for row cropping and grassy hillsides ideal for pasture makes a terrain well-suited to family-scale dairy farming. Development pressure has not hit much of this area and good land can still be found selling at agricultural prices of under \$1000 an acre. The climate can be harsh — in the winter it can hit 30 below — but the summers make up for it by reaching into the 90s.

Truxton, halfway between Syracuse and Binghamton, is the home of dairy farmer Kathie Arnold, her husband Rick, and his brother Bob. The partners manage Twin Oaks Farm, an organic dairy with 110 milkers on some 600 acres. Rick and Bob's family came to the town in the 1930s and bought Twin Oaks in 1969. Kathie, who came from a dairy farm 10 miles up the road, married Rick in 1979. At that time the town supported twenty-five dairy farms. Now the number is down to ten or eleven.

Kathie and the brothers started their partnership in 1980, mostly pasturing the herd on the hillsides, green-chopping in the summer and feeding the cows outside. But they were looking for higher production so in the early 1990s the team started keeping their high producing cows in the barn and feeding them higher levels of grain. But after a couple of years they became concerned about how much money they were paying out in feed bills. So they decided to make another change — this time to intensive grazing. They put a lot of the best gravel-based fields that were in corn or alfalfa into the grazing system. Now they start grazing the herd in mid April and the cows stay out until November 10 or so. The dry cows and heifers are out even longer than that.

Much of the Arnolds' acreage is pasture that is fenced into strips. These can be subdivided with portable fencing, which they move after every milking so the cows can always have fresh grass. Generally, Kathie says, she doesn't like a field of grass much over 10 acres because the cows end up being in it too long. You don't want them nipping off the regrowth where they have already grazed.



photo by Jack Kittredge

## Kathie stands in one of the farm's hillside hay fields. The herd is in the valley below her.

She aims to put them back on after there is nice, young, lush grass about 6 to 8 inches tall. Depending on the wetness of the season, some pastures will get hayed in the Spring and not be put into the grazing system until July or August.

The Arnolds feed out most of their mowed grass as haylage, rather than hay or baleage. "It depends on your equipment and how you like to feed it," Kathie says, explaining the difference. "Baleage is mowed grass, wrapped up uncut. It's long-stemmed like hay but harvested when still moist and put in bags or wrapped so it will ferment. Haylage is mowed, dried a day or so, and chopped so it's short. Then it's put in a silo or it can be packed in an ag bag. You try to get air out of it so it will ferment, just like baleage. The feed value is very similar. Haylage is easier for us to handle and feed. You have 500 tons of haylage in this bunker with just one sheet of plastic to cover it. Baleage is harder to handle and you use a heck of a lot more plastic. But we put up some baleage for the heifers and dry cows. They're outside in the winter, on hillside pasture, so we just open up a bale and put it in a feed ring."

The Arnolds have a manure storage operation in the barn. But they find that, with 500 acres to fertilize, their manure doesn't go very far. They use it primarily on the fields they are cropping, especially corn and grass hayfields, and also grow legumes for nitrogen. Last year they bought a couple of loads of rock phosphate, but usually don't buy any fertilizer other than lime.

Kathie says they try to raise much of their supply of corn. It's hard to fully dry corn in New York without using fossil fuels, so they have the crop combined and stored in an upright silo as high moisture (25 to 30%) corn. It's ground as it goes into the silo, and ferments so it will keep. Studies have shown that this has a little better feeding value than dry corn because the cows can digest it a little better. It's softer and the fermentation has broken it down somewhat. Also, Kathie feels, it's better for the field to leave the stover, the corn stalks, in place than to take them off as silage.

The Arnolds' cropping land is mostly the flat land along the river. Normally, they will plant corn for a year, then small grains, then back to corn, then to a hay crop. This year the corn isn't as far along as it might be because of the wet weather. The small grains include a field of barley, oats and peas. It's an experiment, Kathie explains. The peas are supposed to give nitrogen to the crop, and you'll end up with a complete feed since the peas will provide more protein and the oats and barley, more energy. Also, when you put the 3 varieties out together the weather will certainly be right for one or the other and you'll get a good crop of something. With all the rain this year, however, the peas are not shutting down so they may not get a combinable crop.

They also have planted 17 acres of triticale. It's a fall crop, a cross between wheat and rye. The feed value is comparable to wheat, and this variety is supposed to have very high yields. The Arnolds tried it because they are so busy in the spring it's good to have a crop you can plant in August. Also the weeds don't thrive as much when a crop is planted in the fall.

The base of the Twin Oaks Farm mixed ration is haylage, mixed with wheat middlings, some corn, a small grain, a little soy and some salt and minerals. The wheat midds are a byproduct feed that comes from a mill in Pennsylvania which makes organic



photo by Jack Kittredge

Kathie's husband Rick and son Kirk string electric fence on one of the hillside pastures.



photo by Jack Kittredge

**The lightweight calf pens are partly sheltered and hold water and milk containers, as well as letting the calves learn to graze.**

flour. The midds are everything but the endosperm and contain about 18% protein. The soy is what is left after making organic soy oil.

Because purchased organic grain inputs are expensive, the farm minimizes these costs by using byproduct commodities, growing their own grains, and utilizing grass as much as possible. "Before we were doing much pasturing," Kathie recalls, "a cow would get 30 to 35 pounds of grain a day year-round (except for May and June when they would be out on hillside pasture). Since we decided to become grass-based, from mid April to mid November that amount gets cut in half, maybe to 15 pounds. Then in the winter we still feed a ration that's fairly high in grain — perhaps 40 to 50%. By going to grazing we probably cut our grain tonnage 25 to 30%. At the same time we also went from feeding a prepared feed to feeding commodities. That's much less expensive. Our nutritionist comes up with a ration for us and we dump in so many pounds of barley, so many pounds of wheat middlings, so many pounds of soy meal and so many pounds of haylage."

The Arnolds have kicked around the idea of doing without grain and going exclusively grass-based. They have run the numbers but the result always shows them losing money because per cow production on grass is so much lower. A cow on grass gives 35 or 40 pounds of milk a day, compared to 60 or 65 on grain.

So despite the fact that Kathie feels some of the components which are found in grass-based milk are healthier for consumers (reports suggest that CLA — conjugated linoleic acid — is a potent anti-carcinogen, and Omega 3 is a very desirable fatty acid) Twin Oaks stays with a mixed ration. Only with a premium price for exclusively grass-based milk would that be worth their while, she feels.

There is a benefit in herd health, however, by switching to more reliance on grass. According to Kathie: "When we went to grass-based dairying our vet bills went down. The vet is rarely here now except for monthly herd health checks for reproduction. Getting those cows out on that green grass and getting them some exercise did wonders for their health."

The Arnolds have paid attention to their cows' grass preferences, too. When they first started intensive grazing they seeded down their best fields to some new grass varieties that the magazines reported had the best growth potential. But they found the cows didn't like it. Even though orchard grass and clover were reported to be the premier pasture mix, the Twin Oaks cows didn't like them as well as timothy, which they milk better on. So the Arnolds let their fields return to timothy.

Twin Oaks was among the first farms in the area to stress grass-based production. Other local dairy

farmers watched their results and now, says Kathie, almost all have strengthened the role of grazing in their production systems. She feels that going to grazing has helped a lot of farms stay financially viable.

Their herd, close to 200 animals, is primarily Holsteins but they now have, in-utero, some Normandy and Brown Swiss crosses. Kathie says they are trying some cross breeding, looking for better milk fat and protein components in the milk, as well as more longevity and hybrid vigor. It's also fun, she adds, to see a different colored cow once in awhile.

In 1995 Kathie, Rick and Bob got an opportunity to buy a 150 acre piece of land just up the road. It was excellent bottomland and they didn't want to pass it up. Then a little farm right next to them came on the market. They didn't want a housing development there, so they bought those buildings and 30 acres of land, too.

In order to pay for all the new land they looked at transitioning to an organic dairy. But at that time there wasn't much of a market. Organic milk was getting only \$16 a hundredweight, and buyers would guarantee to pay it only on 25% of a farm's milk. The Arnolds figured it didn't make sense to feed their whole herd organically while selling only part of the milk that way. So they decided, instead, to increase the herd to pay for the extra land.

A couple of years later, however, Kathie says they started seeing ads for organic milk at \$19 a hundredweight, or \$5 over blend price. This was offered by Elmhurst Dairy, which at the time sold milk under the Juniper Valley label. That price piqued their interest, so the Arnolds talked with NOFA-NY and Elmhurst and decided the time was right.

Half the Twin Oaks acreage could qualify for organic production right away, although some of the hill fields had been fertilized with conventional nitrogen because it was so hard to get manure to them. So in 1997 Twin Oaks applied for certification and started separating out organic from non-organic crops. Once they had fed out their non-organic feed, they started the organic transition in January of 1998. They signed their first organic contract with Sunnydale Farms.

"According to NOFA-NY," says Kathie, "the cows have to be eating organic 90 days before you can sell the milk as organic. But that may not be the rule too much longer. The federal regulations will require 12 months. That would have made it a lot harder for us because of our grain purchases. Maybe if we raised all our own grain organically that wouldn't be so difficult, but it's hard to buy it in for that long without selling your milk at a premium. Organic grain is two to three times the conventional grain price. We would have had to think a lot longer about a 12-month transition."

For the first year or two as organic producers, when conventional milk prices were high, Kathie guesses they were making about the same, or a little bit more, than conventional dairies. But this year, when conventional farmers are getting only \$12 a hundredweight and organic farmers are getting over \$20, she knows the organic ones are well ahead!

Twin Oaks now sells to CROPP — the Coulee Region Organic Producers' Pool — an organic co-op from Wisconsin. Their current price is \$20.50, depending on milk fat, protein and solids. Most organic farmers in New York are still shipping to Horizon, however, which pays \$21.00. Another small co-op in New York, Butternut Farms, also buys organic milk.

"I think there's somewhat of a glut of organic milk in the market right now," says Kathie, "especially in the midwest. That's a concern of CROPP. They sell more milk back into the conventional market than they would like. I think the organic demand is still growing, but the supply is growing faster. The organic premium certainly makes a small farm more viable right now. You get a higher output for the same acreage, the same capital, and the same number of cows. You have to put in more management, of course!"



photo by Jack Kittredge

**The calf pens are easily moved by one person. Here Kathie drags the pivoting front wheel to a new location.**



photo by Jack Kittredge

**Twin Oaks is experimenting with growing 17 acres of triticale this year.  
The grain is a cross between wheat and rye.**

Examples of organic management challenges Kathie cites are doing without herbicides and hormones. Their corn, she says, now has weeds in it that wouldn't have been there before. But with annual rotations, blind cultivation with a rotary hoe and finger weeder, and row crop cultivation the weeds are kept to a level which doesn't hurt corn yields.

Rick was initially more concerned about doing without hormones than herbicides. But, says Kathie, their calving interval is down, and breedings per conception are the same or lower. Sometimes cows get cystic ovaries and now the vet manually pops them instead of giving a hormone injection. Kathie's a little skeptical about homeopathic medicines, wondering how they could possibly ever work, but has used them on a few occasions with the cows and finds they really seem to be effective. It's a lot of work though, she says, so generally they let the cows heal themselves, if possible. When the cows dry off she gives them a shot of vitamin E and selenium (which is in short supply in the soils there) and feels that helps their immune system work properly.

"There's a lot of time spent figuring things out and doing paperwork when you go organic," Kathie asserts. "Every time you do anything on the crops or take any hay off, you have to account for it all. The application takes a lot of time, and so does just getting new information. It could be marketing information, networking, finding out production ideas. It's not like before — you can't just call up your feed dealer and get a load of feed.

"Then you have the other challenges," she continues. "My brother-in-law thinks the two biggest problems are how to deal with flies and not being able to dock tails. Because our manure storage uses a gravity flow system we can't use a lot of bedding, so to keep the cows clean we started docking their tails. Now we can't do that and it's a nuisance to get swatted in the face with a dirty tail! We use sticky tapes to trap flies, put pans of soapy water along the windows in the barn, and built a walk-through flytrap. But they're still a problem — some types suck the cows' blood!"

An operation of the Arnolds' scale, Kathie says, needs a lot of machinery. "We have 8 or 9 tractors. They're all old — our newest is 20 years old — but there are times of the year when every single one is in use. We might be doing baleage while custom operators are hauling manure for us. So we have a tractor on the manure agitator and we have to have one to unload our baleage, one to load it, one to be raking, one to be baling, and one on the mixer wagon to feed with. Then one is set up for cultivating.

"One thing with farming in the northeast," she stresses, "is that you need to do things timely. Sometimes the windows of opportunity are very small. Those rain showers come, and then it dries off enough that you can get on the land and the hay's still not too old. You have to do it right away!"



photo by Jack Kittredge

**Kathie takes samples of triticale. When the moisture level is proper it will be ready to combine.**

The Arnolds right now have 13 calves, which are kept in portable calf pens. The pens allow the calves to graze on fresh ground every time they are moved, and also have an attached pan with multiple spouts. Twice a day this pan is filled with milk, which the calves eagerly suck out. The arrangement allows the calves to be separated from their mothers for management purposes without limiting their natural need for milk and grass. Calves are kept with their mothers after birth as long as the mother is producing colostrum.

"Our cows calve year-round," Kathie explains, "but some people like to have their herds freshen in early spring so that when the cows are producing the most milk, that coincides with the time of most pasture growth. Then they'll be dry in January and February when you'll be giving them feed. Sometimes on smaller farms that's the only way you can get a vacation — to have them all dry off at the same time. For those who go for the total grass-based dairy, too, that makes a lot of sense.

"But timing the cows all the same," she warns, "means that you'll be milking more cows than if some are always dry. So it depends a lot on your set-up. If you have a milking parlor where you can bring in group after group of cows, you're not so limited as to the number you can milk. If you have a stall barn, you have a limit there. With us milking year round we're milking fewer all the time, rather than more most of the year and none for two months. The other big issue, especially with organic production, is that the milk buyers want a year round supply. The way CROPP has dealt with this is to deduct fifty cents from the milk check in May and June and July and then add it back in for October, November and December. They don't tell a farm not to be seasonal, but they know it costs more to make milk in the winter and they are always dealing with too much milk during spring flush. They like to keep their supply even or they'd have a marketing nightmare."

Bob has a daughter who has graduated from college and another who will be a junior this year. Neither of his kids is interested in taking over the farm. But Kathie and Rick have a 16 year-old daughter and 12 year-old son. She says the jury is still out with them.

One thing that Kathie says they are struggling with is the problem of having more work to do than time to do it. "We have the economics down," she asserts. "We're a highly profitable farm. But neither my husband nor my brother-in-law want to deal with employees. So we've tried to do things without employees. We have a lot of our crop work custom done, we have people mow and chop and haul the haylage for us. But it seems like these past couple of years, with the added management of organic, even though we custom hire a lot of our field work it seems like we're only one day ahead."

Despite the amount of work involved in being certified, Kathie doesn't feel that the paperwork is excessive. "NOFA-NY has made some changes," she asserts. "This year Pat sent out lists with our animals from last year and we just had to update it. You can streamline things like that so we're not recopying information from year to year. But in order to have credible organic product there has to be some way to substantiate it. If the substantiation were less there would be more room for cheating. I also think the fees are reasonable. I've heard people complain about them, but I don't see it. I'm on the standards board for NOFA-NY and I have a good idea of all that the office has to do. Someone has to be paid to do it."

So far Twin Oaks is the only organic dairy in Truxton. The Arnolds have sponsored organic tours on their farm, but to date not too many local people have come. Kathie thinks part of the reason is that organic dairying requires so much paperwork and attention to detail. In addition, it's a real change in management. A farmer needs to cultivate instead of spray, for instance. Farmers are independent people, she says, and they don't like anyone telling them what they can and can't do.

# Transition to Organic: Vince Foy & Deb Yonker

by NOFA-Vermont Staff

In the past several years, over 30 farms have made the transition to organic dairy production in Vermont. 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 or synthetic fertilizers in the past year, the transition to organic has been fairly straightforward. Farmers who had been using chemical fertilizers on their hayland 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. 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.

Vince Foy and Deb Yonker made a successful transition to organic agriculture during the 1990s. They took three full years to make the transition on their northern Vermont dairy farm, experimenting during those years with cultivating corn and ending chemical fertilizer use. They call their farm Lewis Creek Jerseys, and manage 177 acres of owned and leased land, including 12 acres in corn, 123 acres in hay and 40 acres in pasture. They milk 70 registered Jerseys.

Deb and Vince cultivate their corn for weed control. He cultivates 3 times, 8 days apart and then spreads sweet annual red clover. Whereas they used to use a chemical fertilizer as a corn starter, they transitioned to a granulated whey fertilizer and also put on 20 tons/acre of manure on corn ground in the spring.

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 and orchard grass.

The couple has found nitrogen fertilizer to be the limiting factor in organic production. Whereas they used to use some synthetic nitrogen on their grasslands, they now use manure at 12 tons/acre and high magnesium lime where needed. They get 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.

Vince and Deb receive 45,000 predator wasps every 3 weeks from Spalding Laboratories for fly control. Spalding sends them 4 different species making the package of wasps adaptable to different climates. They spend \$500-600 annually on wasps. Although they used just to release the wasps in the barn, they are currently releasing most of the predators in the pastures. They also 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, pennyroyal and some skin-so-soft. They currently find that cystic ovaries are the biggest herd health challenge on the farm. Prior to their transition Deb had experimented with homeopathy, so they were able more easily to 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.

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. Their cows are fed grain 4 times a day, before and after milking, and are fed second cut hay during milking and corn silage and



photo by Lisa McCrory

## Vince and Deb stand in front of their barn at Lewis Creek Jerseys

haylage after milking. Vince has found that “the rumen works better and the utilization of grain is better when grain is blended with chopped feed. The grains get suspended in the chopped feed and they eat better. Maximizing the utilization of grain is critical when organic grain is so expensive.”

In 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 the first year in which they were completely organic they received \$165,000 from 70 cows with a total of 890,000 pounds of milk

shipped. The greatest increase in expenses in making the transition to organic has been in the cost of grain.

Vince and Deb have been farming for almost 15 years and feel that since they made the transition to organic production, 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.”

# Connecticut NOFA's "Transitioning To Organic" Conference

by Robert J. Durgy,  
CT NOFA Certification Administrator

For the past several years CT NOFA has held a Transitioning to Organic Conference. Our intention has been to introduce growers who are requesting certification for the first time to the organization. We try to cover every aspect of certification so a complete understanding of the rules and requirements is gained. This includes an introduction to organic fertility and pest management, marketing opportunities and a review of the standards and application. The conference is held in January, after the standards for the upcoming year are published. Interested producers can receive standards and an application at the meeting.

The daylong session usually starts off with an introduction to weed and insect management. Producers are often surprised by the importance of soil fertility and good farm management in pest control. An experienced grower provides a tool and equipment presentation. Having the right tool can make your life much simpler. Soil fertility is the subject for long time grower and NOFA member Bill Duesing. Bill offers an insightful view on soil health. Marketing opportunities are shared with new producers to encourage a unity among members. Connecticut producers have formed the Certified Organic Associated Growers (COAG) to expand marketing opportunities for its members. Our producers have found working together has greatly improved their sustainability and success. The day is concluded with a review of the application process. The application can be an intimidating

thing for a first timer. A thorough account of past, present and future management plans is a completely new concept for many producers. Inevitably, mistakes are made, but we stress that mistakes are okay. The certification committee should not be envisioned as an authoritarian tribunal. The committee is an instrument of the membership and an information resource for producers.

We always have an interesting mix of new and old certified producers as well as other interested people such as fertilizer dealers and the like. This past year's conference led to a particularly lively discussion (it was more like a debate) on the role of genetically modified organisms in blended fertilizer mixes. Is there any way to realistically monitor GMO's in the hundreds of products available? Do we have strong enough purchasing power to demand GMO-free products? Issues such as this are one of the many problems that face a new certified organic producer. It is more than choosing the right tool to manage a problem. Producers are encouraged to consult with the certification committee when faced with an interpretation of the standards.

Judy Perkins, a vegetable grower from Woodstock, is certified for the first time this year. Her family's farm is located in Connecticut's quiet corner, northeast of Hartford on the Massachusetts border. She markets mixed vegetables and eggs from a roadside farm stand. I became interested in being certified organic because I believe that transitioning to organic is the only feasible way to sustain our family's farm, both ecologically and economically, through the 21<sup>st</sup> century; it is the only way to

preserve the land and the way of life. This is true for most transitioning producers. They have been growing organically anyway for their own piece of mind and see organic certification as a way to maintain economic viability.

I recently asked Judy about the conference she attended this past January. All portions of the conference contained interesting and useful information, but I think I gained the most practical information from the exchange of questions, answers and ideas between those people attending the conference. One of the first things I learned when I started out as an agricultural educator was to let the growers teach each other. Growers that talk to each other and learn from each other strengthen the entire industry.

*Robert Durgy is Research Assistant, University of Connecticut  
Cooperative Extension System at 24 Hyde Ave.,  
Vernon CT 06066  
Phone: 860-870-6935, Fax: 860-875-0220, Email:  
rdurgy@canr.cag.uconn.edu*



# Rodale: Studying the Organic Transition in Depth

Excerpted, with permission, from Rodale Institute's "Farming Systems Trial: The First 15 Years" by Cass Petersen, Laurie E. Drinkwater and Peggy Wagoner

## Summary

Conventional agriculture, which relies heavily on synthetic fertilizers and pesticides, has come under increased scrutiny because of evidence that modern production techniques are having a negative impact on the environment. Organic agriculture has been put forth as a less destructive alternative, but widespread adoption of organic techniques has been hampered by questions about whether such practices can produce food and fiber as efficiently or as economically as conventional methods.

The Rodale Institute's Farming Systems Trial, now in its 19th year of continuous large-scale experimentation, was established to answer those questions. This report summarizes the first 15 years of the experiment. The primary conclusions:

- \* After a transition period of about four years, crops grown under organic systems yield as well as and sometimes better than crops grown under the conventional system. Moreover, organic systems can out-produce the conventional system in years of less-than-optimal growing conditions such as drought.
- \* Organic techniques significantly improve soil quality, as measured in structure (tilth), total soil organic matter, and biological activity. These improvements enhance productivity and reduce the potential for negative environmental impacts such as nitrate leaching and erosion.
- \* Organic systems that use only legume cover crops as a nitrogen source, as well as those that use animal manures, are capable of supplying enough nitrogen to produce crop yields equivalent to those grown with mineral fertilizers—even for heavy nitrogen users such as corn. Overall, available nitrogen levels are increasing in the Trial's organic systems while nitrogen levels are decreasing in the conventional system.
- \* The organic systems absorb and retain carbon at significant levels, an important finding that may suggest a role for agriculture in reducing the impact of global warming.
- \* Nitrogen losses through leaching—a pollution problem that can have human health consequences—were much higher in the conventional system than in the organic systems.
- \* After a transition period characterized by reduced yields, the organic systems were competitive financially with the conventional system. Projected profits ranged from slightly below to substantially above those in the conventional system, even though economic analyses did not assume any price premium for organically grown crops.
- \* Soils managed organically show a higher level of microbial activity and a greater diversity of microorganisms—long-term changes in the character of the soil community that can promote plant health and may positively affect the way elements such as carbon and nitrogen are cycled in the soil.

## The Research Design

Because The Institute wanted results of the trial to be useful to farmers as well as to academic researchers, farmers have been active participants throughout the 15 years of research. Cropping patterns and tillage, cultivation, fertilization, and pest control practices reflect the techniques used by fulltime farmers, who must balance economic concerns and time constraints with environmental and soil stewardship concerns.

The site chosen for the experiment also reflects The Institute's desire to make results useful to farmers. The Trial was established in 1981 on a 12-acre site at The Rodale Institute Experimental Farm (formerly The Rodale Institute Research Center) near Kutztown in southeastern Pennsylvania. The soil type is mostly a shaly silt loam, and the land slopes gently to the south.

The soil is naturally compacted in most areas at a distance from 20 to 35 inches below the surface, which can prevent drainage and hamper crop growth during periods of excessive rain. Small areas of the experimental site have slightly different soil types with no subsurface compaction.

The site was chosen because it is typical of farmland in the area and presents the same crop-production challenges in overly wet or overly dry years. The land had been used to grow corn almost every year since at least the early 1960s, using chemical fertilizers and pesticides. Thus, the condition of the land at the outset of the experiment was typical of conventionally managed farmland in the area.

The physical size of the site allows the use of farm-scale equipment, which is not always possible in research conducted on much smaller experimental plots. Again, the size reflects the pragmatic needs of farmers, who require information on the practicality of farming methods as well as on yield, environmental, and cultural benefits.

The Trial encompasses these 3 cropping systems:

**Conventional:** This system represents a typical cash grain farm operation. It uses a simple five-year crop rotation of corn, corn, soybeans, corn, and soybeans, reflective of commercial operations in the area and throughout the Midwest, where huge tracts of land are devoted to the production of these crops for animal feed. Fertilizer and pesticide applications follow the recommendations of The Pennsylvania State University.

**Organic, animal-based:** This system represents a livestock operation. Grain crops are grown, but for animal feed, not cash sale. The system uses a diversified five-year crop rotation that is more complex than the rotation used in the conventional system: corn for grain, soybeans, corn for silage, oats or wheat, and red clover hay.

Aged cattle manure is used as a nitrogen source, and is applied two years out of five, immediately before plowing the ground for corn. Additional nitrogen is supplied by the plowed-down residues of legume hay crops. The system uses no herbicides, relying instead on cultivation, weed-suppressing crop rotations, and relay cropping, in which one crop acts as a living mulch for another.

**Organic, legume-based:** This system represents a cash grain operation without livestock. Like the conventional system, this system produces a cash grain crop each year, but it uses no commercial fertilizers, relying instead on nitrogen-fixing green manure crops as the primary nitrogen source.

The rotation includes corn and soybeans, and like the animal-based system it also includes a greater variety of crops in a more complex rotation scheme. Both organic rotations include a small grain such as wheat or oats grown alone or interseeded with red clover; soybeans are grown alone or seeded into a small grain. Either hairy vetch or red clover are grown as the green manure and are incorporated before corn planting. The initial five-year crop rotation in the legume-based system has been modified twice as the need for improvements became clear. Throughout the 15-year period the same crops have been grown, only the sequence and frequency have been changed. Weed control practices are the same as in the organic, animal-based system.

## Answering the Question of Initial Lower Yield

Switching from conventional farming practices to practices that require fewer or no purchased inputs such as fertilizer and pesticides has a natural economic appeal, aside from any environmental benefits that might be achieved.

But farmers and agricultural scientists alike have long recognized that changing to organic practices nearly always resulted in several years of reduced yields - a powerful disincentive for economically pressed farmers.

In 1980, the U.S. Department of Agriculture released a report outlining the problem and calling for research to identify the reason for lower yields on organic farms. The Farming Systems Trial was launched in part to answer that research need.

The trial essentially mimicked the process that a typical farmer would go through in converting from conventional to organic practices. Scientific measurements and observations guided the experiment and contributed to an understanding of what was happening at the most elementary level of farming - the soil - as manures and diverse crop rotations replaced synthetic fertilizers.

The results also suggested several methods that farmers might use to maintain yields during the period of transition to organic practices.

Inadequate available nitrogen was the main cause of lower corn yields in the early years of the trial. As nitrogen supplies improved, corn yields rebounded. It makes sense, then, to start the transition to an organic rotation with a crop that is less demanding of nitrogen than corn, such as soybeans, a legume forage or cover crop, or small grains.

In the early years, a gradual transition that reduces but does not eliminate commercial nitrogen fertilizers may be necessary to avoid low yields and low economic returns. If organic certification is important for economic reasons, organic nitrogen sources such as manure or composts could be purchased.

After the transition, corn yields in The Institute's organic systems, which produce corn at least every third year, are comparable to the yields from a conventional corn-soybean rotation.

While the organic systems often showed yields comparable to the conventional even when they were weedier, excessive weeds can reduce yields, especially in years when there is too little rainfall. Organic systems using manure are particularly vulnerable to weeds because of seeds introduced through the manure, and soybeans are particularly vulnerable to yield reductions from weed competition. Timely cultivation is important, but not always possible if wet conditions prevent field work. Using crop rotations that help suppress weeds, therefore, is critical. Alternating cool-season crops such as canola and small grains with warm-season crops such as corn and soybeans helps control weeds. Including a diversity of crops also allows farmers to vary the timing of primary tillage, which helps prevent weeds from becoming established and producing seed.

Relay cropping a legume forage crop into wheat allows the farmer to accomplish the twin goals of

income production and fertility maintenance in the same year, and aids in weed control as well.

### Soybeans

Because soybeans can fix their own nitrogen, yields were not affected by the lower nitrogen levels in the organic systems in the early years, as corn yields were. From 1982 through 1985, soybeans in both organic systems yielded significantly higher than the conventional system. The soybean crops failed in 1991 in all cropping systems due to poor quality inoculant and are not included in the analyses.

## 16

In the second five years of the Trial, soybean yields in the legume-based organic system were 37% lower than in the other two systems as researchers experimented with cropping methods and rotations to achieve the complementary goals of yield, income, soil fertility, and weed management. In the last five years, soybean yields have been stable across all systems.

On average, soybean yields in both organic Systems have been as high as those in the conventional system, even though the organic systems tend to be weedier than the conventional, which uses herbicides.

However, weed levels in soybeans have been increasing over time in the organic systems. In three of seven years studied (in the middle of the 15-year trial), soybean yields suffered from high weed pressure, suggesting that soybeans are more sensitive to weed competition than corn.

### Small Grains and Forage

The conventional system, which uses a standard commercial rotation of corn and soybeans, does not grow small grains or forage crops such as hay or corn for silage. However, these crops are a part of the more complex rotations in the two

organic systems.

The manure-based system requires forage crops because of the need to produce feed for livestock. In the legume-based system, the experiment initially harvested the red clover as a hay rather than plowing it down as a green manure. These crops contribute soil fertility and weed suppression.

Because the conventional system did not grow these crops, it was not possible to directly compare yields from the organic systems to those in the conventional system. In general, yields of wheat, oats, barley, hay, and corn grown for silage rather than for grain were comparable to the average for conventionally managed farms in Berks County, home of The Institute's Experimental Farm.

### Soil

Among the most important findings was that adding a variety of organic residues with a low carbon-to-nitrogen ratio (such as manure and legume green manure crops), in conjunction with a diversified rotation, significantly reduced carbon and nitrogen losses from the soil and increased both active and stable soil organic matter.

The trial also demonstrated that organically managed soils achieve better physical structure. Soils in the organic systems gradually became looser and more porous, and absorbed and held water better than conventionally managed soils.

These improvements in soil quality directly affected yields, helping the organic systems maintain high production even in drought years, for example. They also enabled the organically managed soils to perform their broader ecosystem role more effectively.

The organic soils had reduced levels of nitrate leaching compared to the conventional soils and were more effective as a carbon sink. These findings have important implications for the global environment as well as agricultural productivity.

In summary, as measured by soil respiration rates and available or potentially available nitrogen levels, both of the organic systems indicate higher levels of microbial activity than the conventional system. Of potentially more significance, the organic and conventional systems have differences in the species composition of microorganisms.

The finding suggests that, while short-term increases in

microbial populations and activity are influenced by seasonal factors and the types of organic residues available for microbes to feed upon, long-term changes in the composition of the microbial community are more strongly influenced by long-term farming practices. These differences in community structure persist even when the same residues are added to both soils under the same conditions.

### Nitrogen

In the early years of the Trial, plant-available nitrogen levels in the two organic systems clearly were not adequate to produce yields of corn that were equivalent to the conventional system - corn is used as the benchmark crop because of its heavy requirements for nitrogen. In the first five years, corn yields in the organic systems averaged 28% lower than those in the conventional system.

In the last 10 years of the Trial, average corn yields have been equivalent in all three systems. Soil tests indicate that plant-available nitrogen has become more abundant in both organic systems, and has declined slightly in the conventional system. However, the change in soil nitrogen levels cannot be explained simply by accounting for the quantity of amendments applied, residues returned to the soil, and crop exports.

Estimates of nitrogen inputs (in the form of crop residues, animal and green manures, and commercial fertilizers) and nitrogen removed by harvested crops indicated that the legume-based system received about half as much nitrogen as did the other two systems. The legume-based system has operated with about equal nitrogen inputs and exports (some years there is a small deficit and other years there is a small surplus), while the manure-based and conventional systems had more nitrogen applied than was removed by crops resulting in a significant surplus of nitrogen.

This would suggest that soil nitrogen levels should increase in the manure-based and conventional systems, and should stay about the same in the legume-based system. In fact, while total sod nitrogen did increase in the manure-based system, and remained the same in the legume-based system, it declined significantly in the conventional system.

The explanation for this difference appears to be similar to the reasons for differences in the carbon cycle, i.e. differences in the quality of organic residues (the form of nitrogen additions) as well as crop rotation also influence nitrogen cycling. For example, an experiment that used tracer analysis to follow nitrogen through the soils of the legume-based and conventional systems found a difference in how sod microbes handle nitrogen from organic versus mineral sources.

The experiment, conducted in 1987 and 1988, showed that nitrogen supplied by legumes was retained in the soil better than nitrogen supplied by mineral fertilizers. Nearly twice as much nitrogen derived from legumes remained in the active fraction of soil organic matter a year after a cover crop was tilled in, as compared to

23

nitrogen from commercial fertilizer that was incorporated into the soil at the same time.

After two growing seasons, more nitrogen from legumes (57% of input) remained in the soil than did nitrogen from mineral fertilizer (19%).

Microbial biomass, in turn, was affected not by the sheer quantity of nitrogen being supplied, but by the form of that nitrogen. More nitrogen from the legumes ended up in the microbial biomass compared to fertilizer nitrogen.

Both organic systems received large amounts of live plant residue, and the manure-based system received animal manure as well. The conventional system received only crop stubble. Live plant residues and animal wastes contain a higher proportion of nitrogen, relative to carbon, than does dead plant residue.

While the conventionally managed system is still yielding adequately after 15 years, measurements of soil nitrogen indicate that the soil is gradually becoming more impoverished, and future yields may depend more heavily on nitrogen inputs.

### Carbon and Soil Organic Matter

Nitrogen availability in soil is closely linked to carbon levels and soil organic matter. Organic materials returned to the soil, in the form of leguminous residues, animal manures, or crop residues, is converted to soil organic matter, which can be divided into two parts: the active fraction consists of plant available nutrients and living organisms; the stable fraction (sometimes called humus) represents the nutrient-holding capacity of the soil.

The two organic systems showed increases in soil carbon levels, which reflects total organic matter, while the conventional system did not.

### Nutrients and Microorganisms

Incorporating organic residues as nutrient sources results in a fundamental change in the agricultural ecosystem because a large and healthy population of soil microorganisms is needed to release nutrients from organic residues into forms that plants can use.

Mineral or inorganic fertilizers bypass the soil community by supplying nitrogen in simple forms that are easily taken up by plants. These forms of nitrogen are also more susceptible to being lost through leaching or converted to gaseous forms that are lost to the atmosphere. When nitrogen is supplied in the form of organic matter, it is bonded to carbon in complex molecules that must first be broken down by soil microorganisms.

The first step in this process is called mineralization. Microorganisms release nitrogen in the form of ammonium (NH<sub>4</sub><sup>+</sup>), which can be taken up directly by plants. Ammonium also can be bonded to soil organic matter and become part of the stable humus, or it can be further broken down by organisms called nitrifiers, which bond its nitrogen to oxygen, forming first nitrite (NO<sub>2</sub><sup>-</sup>) and then nitrate (NO<sub>3</sub><sup>-</sup>).

Plants can also use nitrate, and many plants prefer that form of nitrogen. However, nitrate is very

susceptible to leaching so optimal management requires that only small amounts of nitrate be present for plant uptake. Nitrate molecules are negatively charged and cannot be held in the soil by clay particles or by humus, both of which also carry negative charges. Positively charged nutrients such as calcium, potassium, and magnesium, as well as the positively charged ammonium molecules, can be held by humus or clay particles.

Thus carbon and nitrogen cycling are linked through the decomposers. Microorganisms break down organic matter into immediately available nutrients, while also forming more stable materials that can store nutrients for future use.

### Other Nutrients

The two other primary plant nutrients are phosphorous and potassium. Heavy applications of manure prior to 1940 and applications of phosphorous fertilizer since then left a substantial reserve of phosphorous in the experimental fields. Phosphorous and potassium levels are decreasing at similar rates in the conventional and legume-based systems and are decreasing at a slower rate in the manure-based system because of the phosphorous and potassium contained in manure.

### Economics

Farming is inherently a risky way to earn a living. Profits depend on many factors, not all of them under the farmer's control. A farmer's management skills and the quality of his or her soil are critical parts of the economic picture, but so are the weather, the costs of production, and the fluctuating market price for harvested crops.

Since farmers have little control over the prices they will receive for their crops, many are attempting to improve income by reducing production costs instead. Bolstering soil fertility with animal or green manures, instead of purchased fertilizers, is one way to cut costs.

Higher profits for the organic farms came largely from higher corn yields, which nearly doubled after the 1981-84 transition period. Even so, the organic farms had less corn to sell than the conventional farms, because corn was not grown as frequently under their crop rotation schemes. This was an income disadvantage when corn prices and yields were high. On the other hand, the organic farms suffered less than the conventional ones when prices or yields were low, because they had crops other than corn to sell.

In 1986, the legume-based organic system switched to a more intensive three-year rotation to include additional cash grains such as wheat and barley. There was also hay and straw to sell - typically low-value crops, but marketable crops nonetheless. One-third of the income from the organic farm came from sources other than corn or soybeans.

The diversity of crops meant that the organic systems were inherently less risky than the conventional systems. While profits for the organic farms were not usually as high as those on the conventional farm in good years, they weren't as low in bad years, either.

Expenses on the organic farms were significantly lower than on the conventional farm. The two conventional farms in the analysis spent about \$35,500 more each year - 95% more - than the organic farms for fertilizers and pesticides.

Overall, production costs on the organic farms were 26% lower than on the conventional farms, although machinery costs were higher because of the need to purchase and maintain equipment for harvesting hay and straw.

The second analysis also showed that the organic farm's per-acre income advantage decreased as the farm increased in size. At 750 acres, the organic farm showed a \$4,724 income advantage over the conventional farm for the 1991-95 period; at 1500 acres, the advantage increased only to \$6,326.

29

The reason is that the organic farm, because of its greater diversity of crops, has a greater labor requirement. If the farm increases beyond a certain size, family labor is not sufficient to handle the workload and outside help must be hired.

This analysis points out what may be a significant disadvantage for organic farms relative to conventional ones: the labor required to operate them. On diversified organic farms, labor requirements tend to be spread more evenly over the year than on the conventional farms, where labor requirements are high during planting and harvesting seasons and low at other times of the year (from July through September, the conventional farm in the FST required no field operations at all).

Overall, the organic farm, which involved mechanical cultivation and the planting and harvesting of a greater diversity of crops, required about 27% more hours of work than the conventional.

When this higher labor requirement was factored into the economic analysis, and the value of unpaid family labor was subtracted from gross profits, the organic farm returned only \$2.49 per acre more than the conventional one from 1986-90, and was \$4.45 per acre less profitable from 1991-95'.

The high labor requirement of the organic system would make it difficult to hold off-farm employment for much of the year - a disadvantage when many farmers are finding it necessary to supplement income by working off the farm.

How farmers view these two types of costs - the transitional cost of moving to organic production and the value of family labor - is critical to how farmers feel about the relative profitability of organic and conventional systems. Counting these costs favors conventional systems; not counting them favors organic.

Because of the diversity of crops being grown and the need to balance soil fertility needs against income needs, the organic system also required more management skills than the conventional one. This was illustrated by the Farming Systems Trial itself. Rotations and crop mixes changed through the years as researchers experimented with ways to enhance the yields and frequency of cash crops, suppress weeds, and still attend to soil fertility.

The economic studies were limited in their scope. The analyses did not attempt to assess the economic costs of off-farm environmental impacts or the economic benefits of reduced water and air pollution, nor could they go far enough into the future to determine long-term profitability when the expense of investing in soil fertility is fully paid off.

The analyses also were deliberately conservative in assessing profits for the organic farm, because they did not take into account the higher price typically commanded by organically grown crops.

*Readers interested in reading the full 40 page report from which this was excerpted can receive one from Rodale Institute, 611 Siegfriedale Rd., Kutztown, PA 19530-9320, (610) 683-1400, or info@rodaleinst.org*

by Mary-Howell R. Martens

# Seeing the Light

"I wish you didn't have to do that!" I was standing by the kitchen door, several months pregnant with our second child, as I watched my husband, Klaas, leave the house dressed for battle in his white Tyvek 'zoot suit' and special green plastic gloves, ready to attack and subdue the enemy.

"Me too, but what choice do we have?" It was 1991, the first year after we split up the farm partnership with Klaas' two brothers. It was not easy farming over 600 acres, just the two of us. Farm prices are never good, weather is always risky, but at least we had one advantage over many of our neighbors. Weed control was rarely a problem since Klaas was very good at planning herbicide combinations and schedules. In fact, many people called him for advice in his unofficial role of neighborhood pesticide advisor. In my job in the grape breeding program at the New York State Agricultural Experiment Station, I was also responsible for planning the vineyard spray program, so Klaas and I spent numerous romantic hours of our courtship discussing the relative merits of this chemical and that.

Later, after a long and successful day of spraying, Klaas would invariably come in the house with clothes reeking of pesticide despite the Tyvek suit, his head aching and a queasy stomach. We wanted to believe that it was due to 'just a germ' since he had been working such long hours, but we knew better. My husband was slowly being poisoned.

How do two people so apparently committed to the agribusiness ideal of American farming end up operating over 1100 acres organically just 8 years later? We truly believe that we were like many conventional farmers - forced to use the chemical fertilizers and pesticides because we saw no possible alternatives, but hating what it might be doing to us, our family, our land, and our environment. We farmed conventionally because we had been told so often that it was the only way to survive in agriculture today.

Our rebirth came later that year when we read a small classified advertisement in a regional farm paper, a company was seeking organic wheat. Immediately Klaas was on the telephone and we were excited - was there really a market for organic field crops? We quickly decided that we would leap at this new challenge. If there was a way to grow our crops organically, we were going to find it!

Since then, our education has gone into overdrive. Our greatest resource has been other people. We discovered to our surprise a few farmers in our area who had been farming organically for years. Many of them, especially John Myer in Romulus, have been of invaluable help with advice, patience, and encouragement. Transition is a frustrating period for many people and without a support system of other organic farmers who are successful, we might have concluded that organic farming could not work. Our local OCIA organic certification chapter, New York Certified Organic, Inc., provides such a haven of support and information for both new and experienced organic farmers in our area. Frequent chapter meetings offer opportunities to share and learn information on many important topics. Anyone interested in learning how to farm organically is encouraged to attend our chapter meetings and to learn from other farmers about the organic farming system.

We also have benefited greatly from the knowledge of older farmers in the area who remember how they farmed before the advent of chemicals. One neighbor, Cliff Peterson, is a true master at setting and running the cultivator. Without his patient help, our weed control would be much less successful. Early in our transition, we spent several days poking around the Cornell University library, locating books that described old weed control research. Some research done in the pre-chemical days of 1920's and 1930's, especially that by B. Rademacher and E. Korsmo, have provided insights and ideas on weed control that we have found extremely valuable today.

As farmers learn organic practices, the first two questions invariably seem to be: what materials do I buy for soil fertility and what machinery do I buy to

control weeds? This is not the best way to approach organic farm management. An organic farmer can not merely substitute an 'organic' input directly for a 'conventional' input. Indeed, we will be the first to tell you that this type of farming won't work, agronomically nor economically, nor does it satisfy the long term requirements of organic certification standards. When this input substitution approach is adopted, the focus becomes far too narrow and expensive, seeking only replacements for conventional inputs without changing the total approach to farm management. Looking at only one factor in isolation can often result in missing subtle but critical effects and drawing incorrect conclusions. One must look at a much broader picture, for every factor is interrelated and can not be isolated from any other factor

Many transitioning organic farmers worry about having sufficient nitrogen in the soil. In a true organic system, we depend on the biological activity of the soil for our main source of fertility. It is important to think of the soil/crop relationship as a living system where different inputs are closely related. Every change you make affects everything else. Most of the cultural weed control techniques also increase soil biological activity and therefore also improve soil tilth and fertility. We make frequent use of cover crops, either interseeded with a winter grain or planted after an early-harvested crop is removed. Legume cover crops particularly add valuable levels of nitrogen to the soil, thereby reducing need for purchased inputs. Cover crops also improve soil tilth, increase soil organic matter, increase soil microbial diversity and activity, and protect the soil from erosion. We also use moderate amounts of composted leaves, gypsum, composted poultry manure, and other approved organic fertilizers but we try to use as little purchased fertility materials as possible. Transitioning farmers should be very careful about using uncomposted manure, since it tends to increase weed pressure, especially when used at high rates. Raw manure and rock dusts, such as rock phosphate, are best applied to a cover crop. This allows time for the nutrients to be converted into a stable, available form before the main crop is planted.

Probably the most valuable 'inputs' that a transitioning farmer can purchase are good quality soil tests and the assistance of someone skilled in organic soil fertility management to help evaluate the results and recommend appropriate amendments. We have found that achieving a good calcium:magnesium ratio is essential for weed management and improving soil structure. When magnesium levels are high relative to calcium levels, weed problems and soil compaction are more likely to result. On soils with a CEC above 8, a 7:1 (% saturation) calcium:magnesium ratio will

probably be optimal for weed control and crop plant growth. Many prevalent weed species in fields throughout the United States, such as foxtail and summer annual grasses, thrive in hard compacted soils, most often soils that are also low in calcium and high in magnesium. We have found that gypsum (calcium sulfate) is a good, inexpensive way to add both valuable calcium and sulfur without increasing magnesium, as some forms of lime will do. Other tough weeds, such as quackgrass and nutsedge, are much less common on fields that are cultivated and where the soil is loose.

Weed control presents THE primary challenge to organic crop farmers. Especially during the three-year transition period before a field is fully organic, keeping the weeds from getting out of control often seems like an insurmountable task. After land becomes fully organic, weed pressure does dramatically decrease and the weed species change. Before any machinery is considered, weed control must start with cultural methods. It is a great deal easier to prevent weed problems than to kill them. Heavy reliance on chemicals in modern agriculture has made the past generation forget that farmers do have much control over the initial weed population in a field.

There are a number of cultural weed control concepts that must be considered. These include basic sanitation, that is, simply preventing new weeds from being introduced onto the farm. The use of clean seed, mowing weeds around the edges of fields or after harvest to prevent them from going to seed, and composting manure before application can greatly reduce the introduction of weed seeds and difficult weed species. Crop plants will become more competitive when soil drainage is improved. Tillage methods that aerate the soil can increase biological soil activity and plant growth. Selection of crop varieties that are vigorous and can shade the soil surface can prevent weeds from 'breaking through' the canopy and growing above the crop. Recent plant breeding has produced chemically dependent crop varieties that are shorter and less competitive. Some older crop varieties are actually much better suited to organic production. One way that plants compete with each other is by releasing chemical substances that inhibit the growth of other plants. This is called allelopathy and should be viewed as one of nature's most effective ways that plants deal with competition. Species of both crops and of weeds exhibit this ability. Allelopathic crops include barley, rye, annual ryegrass, buckwheat, oats, sorghum, sudan-sorghum hybrids, alfalfa, wheat, red clover, and sunflower. Vegetables, such as horseradish, carrot and radish, release particularly powerful allelopathic chemicals from their roots. The allelopathic effect can be used to advantage when oats are sown with a new

photo courtesy Mary-Howell Martens



photo courtesy Mary-Howell Martens

### Red kidney beans grow well in the naturally limed soil around Penn Yan, NY

planting of alfalfa. Allelopathy from both the alfalfa and the oats will prevent the seeding from being choked with weeds in the first year. Buckwheat is also well known for its particularly strong weed suppressive ability. Planting buckwheat on problem weedy fields can be an effective cleanup technique. Some farmers allow the buckwheat to grow for only about 6 weeks before plowing under. This not only suppresses and physically destroys weeds, it also releases phosphorus and loosens the soil.

Crop rotation is essential to break weed and insect cycles. Monoculture and heavy herbicide use over a number of years effectively selects for a large weed population that is very well adapted to those conditions. Every year that such an environment is created, all of those well adapted weeds will produce thousands or even millions of seeds. Within a few years, existing herbicides are no longer effective. In a proper crop rotation, we change the environment each year, denying the weed seeds the previous year's favorable conditions. In general, we try to alternate legumes with grasses, spring planted crops with fall planted crops, row crops with close planted crops, and heavy feeders with light feeders.

A typical rotation on our farm could include alfalfa for 2-3 years, corn for 1 year, 1 year of soybeans, followed by winter wheat interseeded with clover. The clover is then plowed down and planted to red kidney beans. This is followed by a winter grain such as spelt or triticale that is underseeded with clover or could go back to alfalfa. We are still actively learning about rotations that will work well on our farm. Since each crop changes the soil slightly, we always try to plant a crop after its most suitable predecessor. The 'rotation effect' has been documented to increase yield and vigor of the crop, therefore making the crop more competitive and reducing weed pressure. We try to plan rotations several years in advance to optimize soil conditions on each of our fields and to insure we have a diversity of crops on the whole farm each year.

Many farmers successfully take new land through transition by growing hay, especially legume hay. This helps restore soil biological activity, reduce weed pressure, and increases residual soil nitrogen. Harvest the hay judiciously though, it is possible to 'mine' essential nutrients out of long term hay fields. If a farmer intends to grow a fairly small acreage of high value crops, such as vegetables, it would be well worth transitioning approximately twice the land they think they will eventually need for production. This will insure that some of the land can be planted to soil building crops each year, such as small grains and clover, thereby maintaining long term soil fertility and tilth.

We have found that planting soybeans during the first year of transition can be successful. Soybeans are not dependent on chemical fertilizer as other crops because they have the ability to fix their own nitrogen if the seed is inoculated with an appropriate strain of Rhizobium bacteria. It is possible to

cultivate soybeans repeatedly if weed pressure is especially heavy. We have had no yield reduction growing first year transitional soybeans. Corn, however, is a poor choice during transition. We try to plant a winter grain after the soybeans, seeded down to clover.

We have tested a number of different weed control tools. Best control has come from a combination of tools and cultural techniques. An initial tillage of fields a week or ten days before planting will allow one flush of germinating weeds to be killed during final field preparation. In heavily infested fields, late spring plowing will reduce weed pressure by burying large populations of germinating weed seeds. After planting, a number of tools are used for 'blind cultivation' before the crop emerges. At the time when conventional farmers would be out spraying their fields, we are 'blind cultivating' with a Kovar coil tine harrow, a Lely weeder or a rotary hoe, depending on conditions.

A second blind cultivation follows a week later after the crop has emerged. Surprisingly this does little damage to the young crop seedlings, but destroys the second flush of weeds effectively. In about another week, it is time for cultivation. A tractor equipped with both a front and rear mounted cultivator goes over the fields carefully. If timing, techniques and weather have been favorable, the crop grows rapidly and no further weed control is usually necessary. If time permits, we may cultivate a second time, especially in soybeans.

The marketing of organic crops is fun, extremely demanding, frustrating at times and very different from marketing conventional crops. Our buyers visit us at home and call all hours of the day, for, on a very fundamental level, we are in partnership with them. There do seem to be many companies getting into the marketing of organic products right now and it is important to establish an on-going relationship with a reputable company that will pay on time. Going for the highest price is not always the most profitable. We have found that when a price sounds too good to be true, it probably is. Getting greedy in today's organic market is asking for trouble. While it is tempting to try to grow as many acres of high value crops as possible, this is the recipe for disaster. We must change our thinking from the chemical farming model. If you care for the health of the soil first, profits will follow.

Klaas and I have also started an organic feed business. We work with NOFA-NY certified farmer, Norm Wigfield to supply feed for the rapidly expanding organic dairy and chicken business in New York. For the right person, value-added organic businesses such as this can be profitable, but the financial risk is also higher.

In order to see the true cost and profit of farming, we maintain detailed records of all inputs, including any purchased inputs, time and labor, and all harvest and sales data. As certified organic farmers, we are

required to keep these records for our audit trail that we show at each annual inspection but they have a much greater importance than merely that. We analyze our field and harvest records carefully each year to determine which practices worked, where we had weed problems, and whether we have made a profit on each field. From such analysis, we can easily determine that organic farming pays - our cost of production is lower, even including a fair assessment of the value of the additional labor requirements, our yields are equal to what we achieved farming with chemicals, and the organic products bring a premium price. On 1100 acres, such records would be nearly impossible without the assistance of one of our most important pieces of farm equipment, our computer and the computer programs we have written that are specifically designed for conditions on our farm.

The face of organic farming is changing. The traditional 10 acres of organic vegetables still represents an important facet of the organic community, but we with our 1100 acres of field crops are not unique, nor are we the largest organic farm in the area. In New York, there is a rapidly growing number of organic farms such as ours and a barn of 50-60 organic dairy cows not unusual. Organic farming has freed us from bondage to the huge multi-national agribusiness companies. We no longer purchase our inputs from them nor do we have to sell our products to them. Organic farming has also freed us from bitter competition with other farmers and the drive to get bigger and deeper in debt, the usual pattern for agriculture today. We also hope that organic farming will allow the next generation - our children, Peter, Elizabeth and Daniel - a chance to safely be a part of the farm and to eventually join us in the business.

This is possible for other farmers too! Right now there is enough of the organic market to go around. Working together, organic farmers can make significant change in American agriculture today!

# Group Effort Saves Nation's First CSA Farm

The following article first appeared as a cover story for the March/April 2000 issue of *IN BUSINESS: Creating Sustainable Enterprises and Communities*

by Susan Witt

Elizabeth Keen and Alex Thorp farmed at Indian Line Farm for two seasons with the dream of turning a temporary arrangement into a permanent responsibility. The 16.69-acre farm on Jug End Road in South Egremont, Massachusetts, has rich silt loam, ideal for growing vegetables and small fruits. A white house, large red barn, and several sheds overlook the fields. Jug End Mountain on the Appalachian Trail rises in the south and beautiful mountain views are found to the east. The farm fields abut 82 acres of preserved wetlands, a critical part of the Karner Brook ecosystem. Water quality in the brook and wetlands is sustained by public and private efforts which, over the past five years, have protected more than 1,300 acres in the watershed.

Keen and Thorp grew organic vegetables to sell at the nearby Great Barrington Farmers' Market and built up a core group of shareholders who came each week to the farm for their part of the harvest. But the right to farm was dependent on the good will of the owner at the time. When the farm came up for sale, the two could not afford to purchase both the high-priced Berkshire land and the buildings. If the farm were to stay in active vegetable production, it would take community effort.

With the help of the E. F. Schumacher Society, the farmers joined the Community Land Trust in the Southern Berkshires and the Berkshire Taconic Landscape Program of The Nature Conservancy in a partnership to purchase Indian Line and maintain it as an organic farm. In the process they established a model for community involvement in providing small-scale market farmers affordable access to farmland.

## History of Indian Line

Indian Line Farm is located at the northern boundary of a mile-wide strip of land stretching from the Hudson River in Kinderhook, New York, to the Housatonic River in Sheffield, Massachusetts. The corridor was originally deeded to the Housatunnuck Nation in 1736, securing access to both rivers for the tribe. Later the tribe sold the land and for much of the 1900s the farm was an active 125-acre dairy farm.

The late Robyn Van En, farmer and activist, moved there in 1983. Searching for ways to create an economically viable organic farm, Robyn joined with members of her neighborhood and Jan Vandertuin, who had learned about community farming in Switzerland, to create the first Community Supported Agriculture (CSA) farm in North America. Until her sudden death in 1997, Robyn was a passionate advocate of CSA as a way of maintaining viable small-scale farms and strengthening rural communities. Today there are over 1,000 CSA farms in North America.

Van En's son David inherited the farm and encouraged Keen and Thorp to keep it in active vegetable production. But after two years of trying to maintain an old house and make mortgage and tax payments, he realized he would have to sell his mother's farm. That reluctant decision put the community initiative in motion.

The offices and library of the E. F. Schumacher Society are only a mile's walk from Indian Line. Over the years Robyn Van En spent much time discussing land ownership questions with the

Society's president, Robert Swann, founder of the community land trust movement. One of the key questions was: With the high price of land, how could young farmers enter into farming?

In 1990 the Schumacher Society published a concept paper titled "A New Lease on Farmland for the Northeast." The paper argued for a partnership between community land trusts and conservation land trusts to ensure a method for passing on farmland and farm homes in an affordable manner from generation to generation of farmers. Through the careful crafting of a long-term lease, the farmer would have positive incentives for working the land sustainably, improving the soil and adding perennial stock.

Frank Lowenstein, director of the Berkshire Taconic Landscape Program of The Nature Conservancy, read "A New Lease on Farmland" after The Conservancy purchased open fields on Jug End Mountain behind the Schumacher Library. Lowenstein suggested forming the partnership to save Indian Line Farm, which abuts fragile calcium-rich wetlands that are home to more than a dozen rare species. Such wetlands were once more common up and down the eastern seaboard before development consumed so many acres of productive land. Similar wetlands in three nearby towns form one of The Nature Conservancy's national focus areas in an effort to protect our natural heritage. Lowenstein was interested in maintaining the quality of these wetlands through the continued use of wise stewardship practices on the farm.

The Community Land Trust in the Southern Berkshires was a natural ally for the project. The Trust owned two properties with a total of twenty-three leaseholds. Its ten acre Jug End Road site includes the Schumacher Library, four residences, and an apple orchard. The basic achievement of the community land trust legal documentation is to separate the value of the land from the value of buildings and other improvements on the land such as fences, soil fertility, and perennial stock. Land, a limited natural resource, is removed from the market and held in trust by the community land trust while the value created from labor applied to land (buildings, agricultural crops) is the private equity of the person creating the value (the lessee of the land) and is exchangeable in the market place.

The first step of the partnership was to obtain several professional appraisals of Indian Line, which showed a land value of \$100,000 and a building value of \$55,000. Though the farm has less than 17 acres, a building lot on Jug End Road is considered a prime location for vacation home owners from New York City. Since the buildings at Indian Line Farm were all in poor condition, they would probably be taken down by a vacation home owner and a new house built to take in the view down the valley. But to farmers, they were worth repairing.

David Van En entered a contract to sell the farm for the \$155,000 appraised value. Fundraising could begin.

After lengthy inspection of the house, barn, and sheds and a careful examination of potential farm income, Keen and Thorp agreed to purchase the buildings on the site for \$55,000. They planned to spend an additional \$20,000 and a lot of sweat equity to bring the house into reasonable repair. Family and friends signed up for work parties and a local bank approved the mortgage.

The Nature Conservancy staff could justify spending up to \$50,000 for conservation restrictions on the property to assure that building and farming practices did not adversely affect the wetland area. That left \$50,000 for the fee simple title to the land. The Community Land Trust raised it through a general appeal to the local community.

In June of 1999 the Community Land Trust in the Southern Berkshires purchased Indian Line Farm, simultaneously selling the buildings to Keen and Thorp and conservation restrictions to The Nature Conservancy.

## Lease Terms

As a result of the purchase, the Community Land Trust holds title to the land and leases it to Keen and Thorp on a 99-year basis, providing security of tenure. The lease guarantees the lessees ownership of the house, barn, other out-buildings, and farm improvements, enabling the farmers to build equity as a direct result of their work.

In order to raise the \$50,000 the private citizens who donated to the project needed to know that the Community Land Trust would not be coming back next year to refinance the same farm—that their one donation would keep the farm affordable for future farmers and actively farmed. The lease is an effective tool for protecting agreed upon ecological, economic, and social objectives.

The lease requires that the buildings remain owner-occupied and not become rental property or vacation homes. It stipulates that the land be farmed, requiring minimum yearly commercial crop production over and above household self-sufficiency levels. The selection of the crops is left to the farmers, based on their evaluation of local markets.

The lease also ensures that the buildings remain affordable at resale to the next farmer. The Community Land Trust's policy is to retain an option to purchase the buildings and improvements at no more than their replacement cost and to resell them at the same price to another farmer. This provision ensures that the value of the land, purchased with community donations, is not included in any sale price.

In addition the farmers must employ organic practices according to standards developed by the Northeast Organic Farming Association/Mass Chapter. Although the farmers are not required to be NOFA-certified, an inspection clause is included if there is any doubt regarding compliance.

Because the community, working through the Community Land Trust and The Nature Conservancy, has assumed responsibility for financing the land, Keen and Thorp will not be burdened with land debt. They can continue managing the farm business—building soil fertility, planting, cultivating, harvesting, and marketing—without forcing crop production to pay for a mortgage on the land itself. Under such an arrangement, Indian Line Farm remains an economically viable entity and an important part of a network of small regional enterprises.

Each farm is different; the characteristics of the land and the culture of the community require individual considerations when writing the lease and developing a land use plan. At Indian Line Farm, because of the abutting wetlands, The Nature Conservancy wanted the buildings to be limited to their current footprints to prevent more intense use of the site. Lowenstein, a consummate scientist, was also

concerned about placing farm animals on the land because of proximity to wetlands. Keen and Thorp argued that as organic farmers they would need to use manure and that it was best to have a source of it on the farm. Swayed by the argument of farm viability, The Nature Conservancy agreed to animals, with limits.

And so began an interesting discussion. Should the lease restrict the number of animals to four sheep and two cows? What if the farmers later wanted one pig and eight sheep? It would be cumbersome to renegotiate with every change of season. The problem was resolved by placing a limit on the number of animal units in pounds.

Another negotiation dealt with aesthetics. Indian Line Farm is in a vacation-home neighborhood. The neighbors who donated to the farm's purchase would like to see the exterior of the house painted to

meet neighborhood standards; however, painting the house is low on the farmers' list of things to do. The falling ceiling, plumbing, sagging porch, and interior walls all take priority. The Community Land Trust was able to accommodate the donors because the fundraising appeal brought in enough extra money for painting.

Since then, the farm couple has worked hard to clean, repair, and renovate the main house, clear brush on the land, dig a new well, repair the roof of the barn, improve the driveway, and do all the many tasks necessary to raise organic vegetables for local sale. The small CSA group grows as word of the high quality produce spreads around the area. The lease on the land provides all the security and incentives of ownership including the right to pass on the farm to heirs through transfer of the lease. By taking away the burden of land debt, the community land trust arrangement has given Keen and Thorp the opportunity to ply their craft in a manner responsible to the ecological conditions of the site.

The success of this effort has meant that the Berkshire community was able to honor the first Community Supported Agriculture farm in North America, to preserve Indian Line Farm as a working farm, to encourage and make it possible for young people to enter agriculture in the Berkshires, and to serve as a model of community support for small-scale, organic farming.

In October the community of individuals and organizations that worked so hard to save Indian Line will gather together again on the farm, in sight of Jug End Mountain, this time to celebrate the wedding of Elizabeth Keen and Alex Thorp.

# Land View Farms: Making the Transition to Organic Soybeans

by Jack Kittredge

The pinelands of southern New Jersey is an environmentally sensitive area. The soils are sandy and ideal for cranberries. The naturally low pH of 3.5 to 4.5 also makes it an exceptional locale for blueberries. Through those sandy soils filters rainwater which recharges aquifers helping supply drinking water to major metropolitan areas on the east coast. Development is thus restricted by an independent Pinelands Commission, and the historic land use has been farming.

Mark Potts, of Pemberton, is a NOFA-NJ certified soybean grower who farms with his father, Herb. Herb recalls the farm he grew up on, which used to be what was called a 'general farm': "We would plant maybe a few acres of tomatoes for a local processor, 30 acres of corn for silage for our cows, and most of the land would be in pasture for alfalfa and hay. Every spring we'd get 500 baby chicks. Mother took care of them. That was her egg money. We'd have fried chicken by the Fourth of July, eggs all winter, and then when the new batch started laying the next September, the old ones were stewing chickens. Dad would buy 12 weaned pigs in the spring and that was the job of us kids. We'd mix wheat middlings with water and feed them. When you'd mix that up it looked just like chocolate milk. I never got up the nerve to drink it, but I thought about it! They were ready to kill by late fall. Dad would call this Hungarian friend of his and he'd come out with a couple of friends. He'd slit their throat (saving the blood for blood pudding), burn the hair off them, take the guts out, and then take them back to his butcher shop to cut up and sell. I remember him taking straw, piling it around the pig, and burning the hair off."

General farms used to dominate here, but even in Herb's day some had 30 to 60 acres in specialized vegetables. They'd sell them to brokers in Philadelphia. Mark's grandfather had a stroke in his mid fifties and sold the farm for house lots. Herb has owned several farms since then, mostly doing grain farming. In the 1960s, however, prices got so low he stopped and got off-farm work. Unable to stay away, however, he still did custom farm work. In the late 1970s, Mark bought a combine from his father and began doing custom harvesting himself. His father would help him out after work. It wasn't much later that the price of soybeans went up to \$7, \$8, and then even \$9 a bushel. Barley was high, too. Mark and his father decided to try farming again. They did well and pretty soon they were farming 800 acres of rented land. Six years ago Mark bought the farm they are on now. Less than a year ago he sold the farm's development rights under the state's farmland preservation program, and now the place is assured of an agricultural future.

Mark's soil is a little heavier than traditional pinelands soil. It will produce 200 bushels of corn to the acre, but there is a fine silt layer on top that Mark says tends to pack down real hard. Then, when you have rain, the water lays on top of the soil and if you dig down a foot it's as dry as a bone. So a year and a half ago they bought a subsoiler and subsoiled the whole farm to improve its drainage. Mark also spreads horse manure from local stables at about a ton and a half per acre. While there is a high level of phosphorus naturally in the soil, potash has to be added regularly.

The high grain prices of the late 1970s and early 1980s that got Mark and Herb into farming didn't last forever. In 1985 the price of beans dropped down to \$5.06. But the price of spray material and equipment kept going up and up. Mark bought a John Deere 4430 tractor, in pretty good shape, for which he paid \$14,500. When he got rid of it 12 years later he got the same price for it! The price of new equipment kept going up, too. After a couple of years Potts bought a brand new New Holland twin rotor combine for \$60,000. He thought that was a lot



photo by Jack Kittredge

**Mark examines a soy plant's roots. They are well nodulated with nitrogen-fixing bacteria, and there is only a short space between each trifoliate branch so that the plant, while short, is fully leafed out.**

of money, and says it felt like those \$10,000 per year payments were never going to go away. Now a new combine, to replace it, would cost \$140,000 to \$150,000! There just isn't that kind of money in farming, Mark asserts.

Herb agrees: "I've got papers from the early 70's showing soybeans were \$7 or \$8 a bushel. Last year I don't think we averaged \$4.35 a bushel. How can you stand that? Thirty years later, everything we buy is five times what it used to be. Here we are selling for half of what we used to get. It's bad enough if the prices aren't going up. But for them to go backwards, how can we stand that?"

He blames the government for a double standard when it comes to farm prices and farm income: "Look at what's happened to gas prices! The government doesn't seem to mind when gas goes up. But as soon as farm products go up they release the reserves to keep the prices down. They don't do that with gas!"

"I understand that in France," he continues, "they get \$17 a bushel for soybeans. They protect their farmers in France! They realize the value of their farmers. Not in this country! They'll be sorry one of these days when they have to import their food like they do their fuel. Then these other countries will tell them how much to pay!"

## Making the Transition to Organic

What finally pushed Mark into starting the transition to organic farming was economics. He says the spray materials used on conventional crops don't work the way they're supposed to, so he ends up respraying and it costs him forty dollars an acre just for materials, not counting the spray equipment and getting all the permits. Then if he wants to get good yields, he ends up applying a lot of fertilizer — which can cost up to \$100 an acre. But the droughts of recent years held yields down anyway, and Mark just hasn't been getting back out the money he puts into farming.





photo by Jack Kittredge

### Mark and his father, Herb, trade stories about the good old days of New Jersey farming.

Potts says he thought about going organic for years and hates the idea of putting chemicals on crops. He reads the labels in stores listing the chemicals used in food processing and feels bad about starting the process before a crop is even growing. The big problems, though, are to find organic sources of fertility and ways to control weeds without using herbicides.

The break in Mark's thinking came because he and Herb have been renting land for several years on which the owner didn't want any chemical fertilizers or spray materials used. So the pair plowed down rye and planted cover crops to build up the soil. That worked well, but they had to delay planting until some of the plowed-down material rotted. They found that in dry years this enabled them to get ahead of the weeds. If the beans went into warm soil, they took right off and grew rapidly enough to shade out the weeds.

As Mark relates it: "The county agent started encouraging us to contact NOFA. 'You guys are growing this organically anyway. You should get it certified and get more for it,' he told us. I didn't think much about it, but I was talking to a local dairy farmer and he mentioned a dairy farmer in Maryland who was looking for organic soybeans. We called him and he said if we had a trailerload of certified organic soy, he'd double whatever was the current price of conventional beans. That sounded pretty good to us!

"So I called NOFA," he continues, "and they sent me the forms and papers. We have several fields that are in their first and second years of transition now, but we had that one farm that could be certified organic right away last year. As it turned out, however, we had a bad drought last year and got only 600 bushels off that farm. That wasn't enough for a trailerload, so I saved it for seed for this year."

Mark figures an average yield for soy in his area, using sprays, is about 35 bushels per acre. But if he gets 20 or 25 bushels to the acre and does it organically without the cost of sprays, he says, he'll make out better in the long run even at conventional bean prices. If he can get an organic premium, of course, that changes the whole equation. Especially if he gets out of growing soy for animal feed. He plans to get changed over to higher protein beans and sell them off for tofu, for which you can get three times the going rate.

"But it's hard to always count on it," he admits. "Sometimes there's a good market, sometimes not. And they like the protein from 33% to 38% for tofu. It needs to be up in that range to be acceptable. And beans for tofu have to be recleaned, bagged, and palleted. The feed soy we just ship bulk in a truck, without cleaning. But the tofu beans, they're field dried, harvested onto a dump truck, run through a seed cleaner, and bagged and put on pallets. It's just like cleaning it for seed. It has to be really clean —

no weed seeds. The higher protein beans also have the lighter colored germ spot on them, not the dark one. They have to be pretty."

Although he is not growing any corn this year, Mark plans to put half his land into corn next year and begin a rotation. The corn will need cultivation, which will help control overall weed pressure, and the rotation will also serve to cut into pest problems he is having with deer and groundhogs. He and his father have already shot 17 groundhogs that were destroying the soy.

"I come out in the evening and drive around," he recounts, "and they'll stand up and look at you. You get your rifle ready and when they start to run or pop up again, you shoot them. When the beans are first coming up you can see them with the bean leaves hanging right out of their mouths. It makes you sick. They'll just clear off an area that gets bigger and bigger every day. We have some real healthy, well-fed animals here - we figured last year they ate about 20% of the crop! They ate the headlands right off. That outside perimeter of each field is a big chunk of each field."

But the biggest problem Mark has with organic management is weeds. He has developed several systems to try to control their relentless competition with his crop for sun and moisture. On the farm with the certified acreage he has a lot of wild turnips. They don't get too large and the beans can coexist with them. In the fall their leaves cut off and go right on through the combine, and Mark doesn't have a lot of trouble separating the beans from them. But he would like to control them better. So in the fall after harvest he spreads rye on the fields. The next spring, after the turnips bolt, send up long

stems and their flowers fade and go to seed, the rye will come up. Then when the rye is ready to go to seed in mid to late June, Mark starts plowing and disking the field. Then he immediately plants soy with a grain drill, 7 inches apart. The spacing is too close to cultivate, but the idea with the late planting is that the soil will be warm and the soy will grow quickly, shading any competition.

Mark has also plowed down a planting of rye with horse manure, then late planted to rye and soy together on the same day. His plan is for the rye to come up quick — in three days — and choke out any emerging weeds. Then in another five days the beans will come up and grow as fast as the rye. As the weather gets hotter, the rye dies off. This is particularly attractive if it looks like a wet year, however if Mark thinks it will be dry he doesn't want the rye competing for water with his soy crop.

A third option is no-till planting in May right in the growing rye, and then mowing the rye off several times until the beans get up about 6 inches. By then the rye has died off enough and doesn't bother the beans. This seems to work pretty well as long as it's not too wet. If it's too wet, however, then it's also too cold for the beans to come up. The earlier beans give Mark a bigger yield, but he has to mechanically cultivate. When planting late he plants them close together to shade the ground against weeds and, since the soil is hotter, he has less chance of weeds coming up. When the soil temperature gets 65 to 75 degrees, he figures, the weed seeds germinate best. Once the soils get up above 75 degrees, then the weed seed doesn't sprout as well. Soybeans, however, like the temperature 70 or better.

"If you plant later," Mark admits, "you just suck in your pride and don't look at the weeds that do come up. I was a fussy person when it came to not having weeds when I used spray materials. When I looked across the fields I didn't want to see a single weed. It really is hard to go to organic and see weeds popping up. But last year where there were weeds there were still beans. Like I said, you aren't going to get that 45 or 50 bushel per acre yield without sprays. Maybe if you cultivate you can get 35 or 40 bushels. By not cultivating, broadcasting and planting later, you're taking a chance on a maximum yield of 33 or 34 bushels. But if it gets real dry those roots haven't had a chance to get to moister soils so you end up with burnt spots. It's risky."

Irrigation could improve Mark's yield, given the recent droughts. Mark knows vegetable growers who put in soy when they run out of time to plant vegetables. On irrigated land they can get 60 bushels per acre. But they have to cultivate each time after they irrigate, and they say it doesn't pay at \$7 or \$8 bean prices. Mark priced an irrigation system but it cost \$18,000 at the well to get enough water for 25 acres, then the pump was another \$15,000, the piping to go on out was another \$12,000 and the guns and wheels were \$35,000! Mark just figured that was one more of those things he would do when he wins the lottery!



photo by Jack Kittredge

### Mark with a field of soy in the background. He can tolerate a few weeds if the soy has a good start.

# THANK YOU!!

The NOFA Summer Conference Committee would like to thank all the companies who so generously donated food products to the Summer Conference. Their donations help us to provide the delicious food served at the conference in the dining hall and at NOFA Nibbles. We would like to extend a special thank you to:

Northeast Cooperatives for making it possible for companies to donate their products to NOFA, for their own donations and for delivering all the products to the conference;

Stonyfield Farms Yogurt who is extremely generous with their donations – the conference would not be the same without their delicious ice cream; and

Eberly Poultry and Shelton's Poultry who donated all the organically raised chicken served at our Local and Organic Dinner.

Thank you also to the wonderful staff at the Hampshire Dining Hall (Tedexco Marriott) who work with us in planning the menu and in providing the delicious organic meals served. They are always helpful and courteous and make feeding 600+ people at once look easy.

This year we decided to highlight local and organic agriculture by planning Saturday night dinner to feature only those foods grown in New England. I think everyone who ate that meal will agree that it was great! Thank you to the local farms who contributed produce for this meal.

## Brookfield Farm Drumlin Farm Justamere Tree Farm Many Hands Organic Farm Ol' Turtle Farm

**Following is a list of all the companies who supported NOFA Summer Conference 2000 through their generous product donations. Please keep them in mind when you shop though your food coop or at the grocery store:**

Albert's Organics	Edward & Sons	Organic Cow
Alvarado Street Bakery	Equal Exchange	Organic Valley/CROPP Cooperative
American Natural Snacks	Florida Crystals	Quinoa Corporation
American Prairie/Mercantile Foods Co.	Food for Life Baking Company	Salem Baking Company
Annie's Dressings	French Meadow Bakery	Santa Barbara Olive Co.
Apple Hill/Mountain Sun Organic Juices	Frey Vineyards	Sem-chi Rice Products Corp.
Arrowhead Mills	Frontier Cooperative Herbs	Shelton's Poultry Inc.
Associated Buyers	Garden Spot Distributors	Smucker's Quality Beverages
New Mexican Coffee Co. (Avalon Coffee)	Green Mountain Mills	Sno Pak Foods, Inc.
Barbara's Bakery	Honey Garden Apiaries	Soyco Foods/Galaxy Foods Co.
Big Sky Bread Co.	Kauai Organic Farms	Stonyfield Farm Yogurt
Bread and Circus	Kettle Foods	Stretch Island Fruit Inc.
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Butterworks Farm	Lone Pine Enterprises, Inc.	Table and Vine
Caffe Ibis Coffee Roasting Co.	Lundberg Family Farms	Taylor's of Harrogate
California Olive Oil Company	Marty's Organic	The Organic Garden
Cascadian Farms	Mediterranean Delights	Traditional Medicinals
Caudill Seed Co.	Mighty Mo Munchies	Trinity Springs Ltd
Cedarlane Natural Foods	Miguel's Stowe Away	Tumaro's Gourmet Tortillas
Champlain Valley Milling	Nature's Path Foods, Inc.	Turtle Mountain, Inc.
Choice Organic Teas/ Granum	New England Natural Bakers	US Mills
Coombs Vermont Gourmet	New Organics Company	Vermont Bread Company
Country Choice Naturals	Newman's Own Organics	Vermont Gold
Damascus Bakeries, Inc.	Northeast Cooperatives	Village Cannery of Vermont
Eberly Poultry, Inc.	Northeast Cooperative Produce Division	White Wave Vegetarian Cuisine
Echoes of Summer	Once Again Nut Butters	Wholesome Sweeteners

(continued from page 1)

wonderful John Porcino, and the zydaco band. I saw many very happy folks at all these events. And Dave Getman, the master of the coffee house and the fair, pulled off these two relaxed and communal events with great ease.

I need to mention the efforts of Justine Johnson, Barbara Cohen, Dre and Chris Rawlings for a fantastic conference for the children and teens. There were 125 children and 43 teens who had many exciting opportunities with four very energetic leaders, all of whom were new, and all of whom put tremendous effort into upgrading these 2 important aspects of the conference.

Speaking of numbers, there were about 1250 registrants this year. That number has held pretty steady for the past three years now.

I want to thank our food team, Beth Ingham the menu person, Rita Horsey who gets donations of food for all aspects of the conference, and Erin Ames, who coordinated NOFA Nibbles. They kept us happy and well fed all weekend.

Mary Lou Conna deserves extra mention for her now permanent registration signs, her hours of work on the banner that one lucky participant snatched up for \$40 and more and better thought-out signage than ever before.

Dennis and Audrey Cronin have been on the committee 6 years now. Without Dennis we would not be able to keep all the presenters in AV, nor keep the keynote on track. Dennis has become our handyman at the conference also. Audrey, in her soft spoken way, very efficiently carries off her task as NOFA table coordinator and helping hands coordinator.

Penny Pitts was essential in the registration tent; Joanne Duros, Leslie Cox, and Ted Conna served the committee and the conference throughout the year.

For the 4th year, Elaine Peterson has managed the registration process for the conference. Elaine's unflappable composure and eminent patience make her the rock of the conference. Add to that her hours of work on the program book and she has become almost irreplaceable on the Conference committee. Thanks Elaine!

Care to join this marvelous group of people? We will have our wrap-up/start-up meeting on Sunday, October 1 at noon at Elaine Peterson's house. Give me a call if you would like to participate for 2001 (978) 355-2853. We meet 7 times per year on a Sunday. We have paid and unpaid positions available.

(continued on next page)



photo by Jack Kittredge

**The dunk tank was popular with the teens.**



photo by Jack Kittredge

**Soap Sculpture proved to be an attractive way to pass a few minutes time.**



photo by Jack Kittredge

**The Tug-of-War is always an exciting event.**



photo by Jack Kittredge

**Some of the kids, of course, invented their own games.**



photo by Jack Kittredge

**The sack race is also a perennial favorite.**

**(continued from previous page)  
Plans for 2001**

The conference committee has already put in an invitation to William McDonough, eminent ecological architect, to be our keynote for 2001. If he can't make it, our next choice is Cathrine Sneed, prison activist and farmer in San Francisco. The dates for next year are August 10-12 at Hampshire again. If you would like to submit a proposal for the theme and/or logo, please submit something to me so that I have it in hand by October 1 for our conference committee meeting. If we choose your theme and logo, you get a free trip to the conference (all meals, registration and housing) and a free t shirt. If we choose your logo or theme you get half that.

If you haven't yet filled out an evaluation for the conference please get it out of the back of the book and send it in. If you would like to present in 2001 give me a call or write your thoughts. Thanks for letting us do such fun work for our "bread money".



**John Porcino had the kids spellbound on Saturday night.**

photo by Jack Kittredge



**Some excellent performances were given given at the coffeehouse.**

photo by Jack Kittredge



**Speaking of the kids, they had a great time playing at the Children's Conference.**

photo by Jack Kittredge



**A little musical entertainment attracted passers-by during the fair over at the timber-framing exhibit**

photo by Jack Kittredge



**The contradance was inside because of the rain, but it was still packed!**

photo by Jack Kittredge



**Of course the egg toss was also very popular at the fair.**

photo by Jack Kittredge

# A New Lease on Farmland: Assuring a Future for Farming in the Northeast

The following essay written by staff of the E. F. Schumacher Society was first published in 1990. E. F. Schumacher Society, 140 Jug End Road, Great Barrington, MA 01230, 413-528-1737, [www.schumachersociety.org](http://www.schumachersociety.org).

## Farmland Preservation: A First Step

Here in the Northeast, the last several years have seen a tremendous boost in public awareness of the importance of farmland preservation. With public money in short supply, many local communities, like our own, have taken action themselves by instituting non-profit conservation land trusts. As private, locally based organizations they have been able to act quickly and flexibly to purchase large amounts of farmland as it comes to market, preserving it for future generations. This is a major accomplishment.

If you are a member of a land trust, you and your organization are undoubtedly aware that in spite of this effort, farming in the Northeast continues to decline. Probably you have seen that buying development rights or other legal means of preventing building on farmland in your area has not necessarily guaranteed that it is farmed. Preserving farmland is an important first step to encouraging a solid regional agricultural base; but it is only a first step.

As organizations actively working with ecologically conscious farmers here in the Northeast we are concerned about this decline. We have considered the problems associated with preserving farming and would like to share some ideas for ensuring the full productive and responsible use of farmland that you have helped and are helping to conserve.

## Farming's Changing Nature in the Northeast

To preserve farming is not necessarily to preserve farming as it has existed over the last half-century in this region. Changing demographics and new understanding of the needs of people and the soil have created constraints and opportunities that will determine the complexion of our farm population and our farmland into the next century. What might a sustainable agricultural community look like in the near future?

## Resource Conservation

Clearly, agriculture in the Northeast will have to continue to protect and enhance the soil, water and human resources that make food production possible. Farming methods that do not result in ground water contamination or soil erosion, but improve soil fertility and water-holding capacity over time, require large investments of time, material, and husbandry on the part of a good farmer.

## Diversity

A farmer dependent on one crop may be forced economically to take drastic measures to save the crop from pest infestation or weather conditions, even at the expense of sound stewardship of the land and natural resources. Sound resource conservation, on the other hand, will require diversity. Crop diversity can sustain partial failures of some crops in order to preserve the integrity of sustainable farming practices.

Diversity means smaller yields of multiple crops rather than large volume in one crop. The milk truck cannot afford to make its way along a long bumpy dirt road for only a few hundred pounds of milk. The new Northeast farmer will have to identify varied, smaller markets, close to the farm.

## Smaller Scale Farms

In the more urban areas of the Northeast, populations continue to grow. The results of this growth are that in some areas, more land will be needed for housing, manufacturing and recreation and less will be available to the farmer. The neighbor's pasture where the heifers have always been kept may be sold to the condominium developer.

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The need for farmland preservation efforts in these areas will be acute. Even after the purchase of development rights or other forms of restriction the cost of land purchase may remain high, perhaps prohibitively so for a farmer requiring large amounts of acreage.

### New Markets

On the other hand, growing Northeast population centers also promise new opportunities for direct marketing of crops, which for many farmers is the critical edge that sustains an agricultural enterprise. The smaller grower using little or no dangerous chemicals can produce a high quality product on few acres with minimum adverse impact on non-farming neighbors.

Already a newly health conscious public is demanding more healthful, higher-quality food. They want to know that it was grown without polluting the environment. They want to know that it is fresh, and that non-renewable fossil fuels have not been extracted and burned in order to transport it over a large distance.

Perhaps most importantly, it is clear to the public that buying food locally can have a direct effect on the quality of the scenery in the area. They understand that when they buy from a local farmer, they are helping to preserve the rural character of the landscape and the neighborhood.

### A Longer Vision

The requirements for producing food for these new markets are the same as those for producing food in an ecologically sensitive manner that conserves land and natural resources. The new Northeast farmers will run smaller, more diverse, more labor intensive farms. They will pay careful attention to the health of available soil and water resources.

This kind of farming requires longer-term planning than that to which we are accustomed in other business plans, even in most farm business plans. A five year agreement is a significant commitment in

some kinds of enterprises, but to a true steward intent on bringing the land to full health, a process that might last a lifetime or several lifetimes, five years is merely a beginning.

### Farmers' Changing Nature in the Northeast Their Background

Many of the young farmers in the Northeast today will not take over the family farm from their parents. They may not have grown up in a town in which they farm. Many will not have grown up on farms at all.

Today's ecologically conscious farmers are often a generation or more removed from the farm. They read the work of Wendell Berry, are active members of the Northeast Organic Farming Association, or have trained in sustainable agriculture techniques at such places as Wes and Dana Jackson's Land Institute or the New Alchemy Institute. They are thinking globally and acting locally by producing food in the best way they know how.

Like the individuals and institutions working at the cutting edge of today's agricultural issues, the new farmers are broadly educated and have non-farming career options. They have chosen farming, and they therefore can and must be choosy when they embark on an agricultural enterprise. They will only commit themselves if they feel they can succeed both ecologically and economically.

### Their Situation

Today's new farmers are likely to be in their thirties and looking to establish a home and a family. They need security in their home and on the land in order to build a livelihood and a life.

Part of their security is in their own skills and expertise. In order to run a business, they need the independence to operate as they see fit, within a structure that secures the land from damage by ill use. Often they have capital, and are looking to invest it in their future. As business persons they expect a return on that investment.

If we in the Northeast are to preserve farmland for future generations, we need to satisfy the needs of these farmers. They have the skills, the knowledge, and the passion both to farm well and to make a living at it. They are the people who can maintain and improve the farmland you preserve, but they need help.

### A New Lease on Farmland: Responding To Change

Conservation land trusts in the Northeast have been eager to attract such environmentally concerned farmers for their farmland. As organizations depending on volunteers they frequently resort to a simple short term lease and expect that one of their members will drive by and see that the field has been cut.

Short term leases can invite short-sighted farming practices. Without incentive to plan for future generations, a farmer as a businessperson in a highly regulated market environment may have to force the highest quick yield without adequate attention to the health of the soil.

If owners of farmland in the Northeast are to attract and retain the ecologically committed farmer, they must be prepared to offer farm leases that incorporate long range concerns.

### Partnership

The land, the farmer and the community (represented by a conservation land trust) all can be equal partners in a carefully developed long term lease of farmland. By taking the time to prepare a thorough land use plan for a farm and clarifying such use in the written lease, the conservation land trust can retain enough control to assure that the land is improved instead of degraded or left fallow, and the farmer can be given enough flexibility, independence and security to make crucial business decisions while farming in a sustainable manner. There are several critical elements to a farmland lease that will make it possible for a farmer to farm responsibly.

### Land Use Plan

The land use plan includes a careful analysis of the soils and terrain and possible water sources on a piece of farmland, as well as existing farm and residential buildings. It would most likely divide the land into different sections depending on these natural conditions and would suggest upper and lower limits to the intensity with which the lease would allow each of these sections to be farmed.

Most intensive might include an organic market garden, while least intensive use might require that a field be mowed at least once a year. Permitted tillage methods might also be delineated in a land use plan.

The land use plan would also specify where residential and farm buildings could be located. The placement of buildings must serve the residential and farm needs of the farmer in a way that minimizes their adverse impact on the agricultural land and on neighbors as well. Buffer zones designed to minimize the impact of all farm activity on neighbors would be designated in the land use plan.

The land use plan is not a farm plan, which is the business of the farmer and the investors in the farm enterprise. It is a statement by the farmland owner of the conditions under which the land can be used. If a conservation land trust is working with a farmer regarding a piece of farmland, it is important that the farmer's input is included in the land use plan. But the prime responsibility of developing a land use plan rests with the lessor. A farmer considering a lease can then quickly evaluate whether or not the land's potential, as defined by the land's owner, will address the farmer's interest.

Once committed, the farmer is free to change a business plan as local markets change without renegotiating with the land owner. The framework is provided by the land use plan to protect the natural resources of the land, but the farmer is independent within that framework.

### Security

A long-term lease gives the farmer the security on the land over time usually associated with ownership of land. Improvements in soil fertility and productivity occur very slowly, and farmers need to know that they will be able to reap the benefits of improvements that may take them ten or more years to make.

For many kinds of enterprises, a farmer needs the security of a lifetime lease. For example, community land trusts use leases of 99 years with the rights of transfer and renewal. This leaves no ambiguity as to the intent of the landowner. In addition, it provides security for the investor in the farm enterprise. A bank, for instance, would be unlikely to consider a 15 year investment in farm equipment, if the lease of the farmland ended after 10 years.

### Ownership of Improvements

Unforeseen circumstances do occur, however, and farmers need to know that should they have to leave at any given time, they can take away the value of the improvements they have made in the farm. A barn and an orchard represent investments that a farmer must be able to recapture through resale. A properly written lease can allow farmers to sell the assets that are a result of the skill and the capital they have applied to the land.

Only with ownership of the improvements can farmers afford to invest themselves and their capital in a piece of land. Without these investments, farmland will not be preserved as farmland.

### Continued Affordability

While it is of the greatest importance the farmers be able to sell the improvements they have made in and on the land, it is equally important that they not sell them at a speculative price that prohibits another farmer from buying them. The land can only remain productive if the improvements on the land remain affordable.

A thoughtfully written lease can limit the price of improvements at resale. A non-profit could accomplish this by holding a first option to repurchase buildings and improvements at a formula price. One formula, for instance, requires that the buildings and the improvements be assessed independently of the land at current replacement cost at the time of sale. The average of three such assessments could be the agreed upon price.

In this way, the exchange is of the improvements' true value to another farmer. Assessors can be local farmers, extension agents, real estate salespeople, contractors, Soil Conservation Service soil scientists, or other suitable expertise.

### Low Land Cost

Land prices in the Northeast make starting a profitable farm difficult. Even a small-scale, intensive operation complete with nearby markets cannot carry the cost of land purchase. A lease at a low monthly cost will allow farmers to invest their capital in equipment and supplies that will make the farm more productive, rather than in land payments.

Initially the monthly lease fee at least should cover any local taxes on the land and the cost of establishment and management of the lease. Eventually it may include the capitalization of its local farmland potential. In time, lease fees could accumulate in a pool for the purchase of additional conserved farmland.

### In Summary

By offering long term, low cost leases of protected farmland, under which ownership of improvements rest with the farmer, conservation land trusts can take an active role in encouraging the preservation of farmland in the Northeast.

### Organizational Implications For Land Trusts

Conservation land trusts traditionally have been volunteer organizations. Long term leases will require a long term commitment to management. Your organization may need to establish a management group or arm that oversees the fulfillment of the terms of the leases. Or you may want to work closely with another non-profit organization in the area with similar experience.

### Community Land Trusts and Lease Management

Community land trusts can be an important resource for conservation land trusts in their role as lease managers. Community land trusts throughout the Northeast are experienced in management of long-term leases that provide for ownership of improvements. They hold first option to repurchase those improvements (primarily housing) at a non-speculative price that will make them affordable for the next buyer. As a non-profit, locally based membership organizations they serve geographical areas similar to those of conservation land trusts. They work with land use planners, lawyers, and investors in preparing lease agreements. They work with lease holder to encourage as much self-management as is appropriate in order to lower costs for and maintain the independence of those leaseholds.

Alternatively, a conservation land trust might consider forming its own community land trust as a separate but related management organization should the number of productive farm leases represent a significant part of the income and activity of the land trust. Those parts of the land donated to the conservation land trust that are productive farm land could be turned over directly to the community land trust for management. Any lease income on the land over and above expenses would be returned to the conservation land trust to establish a pool for purchase of additional land.

The Community Land Trust in the Southern Berkshires in Great Barrington, Massachusetts and the New England Small Farm Institute in Belchertown, Massachusetts both have written and continue to refine lease agreements particularly for agricultural land. Either of these organizations may be contacted for information or consultation.

### Repurchase of Improvements

Whatever the management group, it would collect lease fees and monitor the fulfillment of the terms of the lease. This includes the use of its first option to repurchase the farmer's home and farm improvements at a formula price in order to keep them affordable for the next farmer. In order to exercise this option, the management group must actively seek possible farmers and maintain a list of those interested in purchasing improvements and leasing the land for farming. It can then proceed to resell the improvements immediately to another farmer at an affordable price.

### In Summary

The preservation of farmland for productive agricultural use will require an active commitment and responsibility to long term land management. It will mean working with leaseholding farmers through changes in farm practices, changes in farm markets, changes in human circumstances.

As a local membership organization, a land trust has the resources, knowledge and capability to best provide the continuity over time necessary for land management. It may be a new role to you as a volunteer organization, but it is a critical role to the future of farming in your region.

### It Takes More Than Land

Your responsibilities for farmland preservation do not end with the lease arrangements. A conservation land trust through its management group or in cooperation with other non-profit groups in the region, may have to take additional steps to support the farm activity on its land.

Low cost capital and secure markets are two important factors in a successful farm operation. Federal loan programs at one time provided the best source of low cost financing for farmers, but were geared to large conventional farm practices with land as security. In the past secure markets meant a large supply of a single crop.

It may well be up to you to help develop anew form of financing and marketing for this new kind of farm and farmer if your farmland is to be actively farmland. Your members, already committed to farmland preservation, may at the same time be interested in an investment in their own food supply through the lending of capital or the guaranteeing to purchase a percentage of the farm's produce.

### Revolving Loan Fund

The Fund for Affordable Housing in Great Barrington, Massachusetts, for example, is a low-interest loan fund that accepts investments from local investors, paying them interest equal to the rates of simple passbook savings accounts. It loans these funds to first home buyers at a rate just above the interest paid in investors. Many of the investors in this case are vacation home owners (an important but often neglected resource). In the same manner, local farming could attract investors to such a fund for affordable housing.

### Loan Collateralization Fund

The Self Help Association for a Regional Economy in Great Barrington, Massachusetts pools small investors in individually-owned passbook savings accounts at a local bank. The owners of these accounts-SHARE's members-agree that the funds be used to collateralize loans to start-up businesses that cannot otherwise obtain financing. Members form committees to review and accept or reject collateralization applications. The bank charges 4% for administering the loan, but takes no risk. Members earn 6% on their accounts. The total cost of the loan to the borrower is 10%, about half the cost of conventional financing.

SHARE has collateralized loans to farmers for equipment, seed and building improvements.

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### Self-Financing Mechanisms

With the help of SHARE, two farm stands in Great Barrington, Massachusetts have jointly issued a voucher or coupon which they sell in the late fall when cash is short and redeem in the summer when cash flow is greater. Called a "Berkshire Farm Preserve Note," it is redeemable for \$10 worth of farm produce at either stand redeemable for \$9, effecting a low-interest short-term loan from the customers to the farmers.

When a similar self-financing program began at a local restaurant, the notes were accepted as cash at a Main Street record store, and by several non-profit organizations in payment for membership fees, adding to the incentive to buy them.

### Community Supported Agriculture

In the Community Supported Agricultural model, a committed consumer group takes all of the financial risk of the farm. They calculate a budget in order to divide among the membership and pay in advance the entire cost of production for the season. The farmer is paid a salary, and the consumer group takes home the harvest each week, whether bumper crop or failed crop.

### The Return to You

The success of these local financing and marketing programs will depend on the success with which the local community feels identified with its farms and farmers. You can build that identification through articles in your newsletters to members, through the sponsoring of farm celebration days, through work days at planting and harvest times. This kind of participation and celebration will in turn make your farmland preservation efforts even more effective. At the same time it can introduce a community awareness and camaraderie that goes beyond good public relations to fostering real community.

### People, Land, and Community

Your group knows that the health and character of the community is inextricably associated with the health and character of the land. Restricting the use of certain scenic or environmentally sensitive parcels is critical to maintaining the quality of life in rural areas.

But true farmland preservation implies active use of the land, use in the best sense. The land must be farmed in an intelligent and ecologically sensitive manner that improves the quality of the soil and water and maintains open space in a non-polluting, productive working landscape. To insure such use requires more than restrictions. It takes positive encouragement in the form of affordability and long term security of tenure and investment.

Perhaps most importantly, farmland preservation requires the patterns of mutual responsibility that constitute local culture. Ultimately, preserving farmland is about preserving community. The social and economic forces that affect both must be taken into account. Only in this way can we maintain the complex web of connections between people and the land that sustains both.

"If we conceive of a culture as one body, which it is, we see that all of its disciplines are everybody's business...To such a mind it would be clear that there are agricultural disciplines that have nothing to do with crop production, just as there are agricultural obligations that belong to people not farmers.

A culture is not a collection of relics or ornaments, but a practical necessity, and its corruption invokes calamity. A healthy culture is a communal order of memory, insight, value, work, conviviality, reverence, aspiration. It reveals the human necessities and the human lives. It clarifies our inescapable bonds to the earth and to each other. It assures that the necessary work is done, and that it is done well. A healthy farm culture can be based only upon familiarity and can grow only among a people soundly established upon the land; it nourishes and safeguards the human intelligence of the earth that no amount of technology can satisfactorily replace...."

-Wendell Berry

The Unsettling of America: Culture and Agriculture

# Book Reviews

## Nutrition and Physical Degeneration

by Weston A. Price, D. D. S.

published by the Price-Pottinger Nutrition Foundation, 5871 Cajon Blvd., San Diego, CA 92115

431 pages, \$39.95 plus \$6 s&h (California residents add \$3.10 tax)

reviewed by Mary Paulson

After spending many years fixing bad teeth and wondering why they were bad, Dr. Price traveled the world looking for isolated people who had good teeth and found out why they were good. With the help of local governments and schools, he examined the teeth of the people. He found that wherever isolated groups ate native foods, they had a high degree of dental health as well as general health. In the first generation after adopting commercial, refined food, less isolated groups had bad teeth and other degenerative diseases.

In the Leutschental Valley in Switzerland, the people ate cheese and rye bread, meat once a week, and fresh milk of goats and cows. While the men and boys harvest the hay and rye, the women and children go with the cows to the high pastures to make and store cheese for winter. They use limited garden products. Dr. Price arranged to have samples of food and hay sent to him winter and summer for analysis. They were found to be much higher in vitamins and minerals than in Europe and the United States.

In the Outer Hebrides, Northwest of Scotland, iso-lated people ate fish, oats and barley. They had ex-cellent health. Those less isolated, who had access to refined food products, had much tooth decay and TB.

The primitive Eskimos had excellent health as long as they remained on native foods including large sea animals, salmon, seal oil, fish eggs, caribou, ground nuts, kelp, berries, and certain inner layers of whale skin (high in vitamin C.) But again, in the first generation after adopting store food, there was tooth decay and other diseases.

Dr. Price also visited and examined South Sea Islanders, North and South American Indians, Aborigines and several African tribes.

The causes of degeneration are the same everywhere. When Industrialism developed and things were made for profit instead of the common good, the good of the thing was sometimes sacrificed.

Besides the invaluable information for us from the many examinations all over the world, the book contains over 130 photographs of healthy and unhealthy people, especially their teeth.



**Truckpatch: A Farmer's Odyssey**

by Ward Sinclair

published by **The American Botanist, Chillicothe, IL (309) 274-5254****145 pages, \$14.95 plus \$4 for shipping**

reviewed by Jack Kittredge

Ward Sinclair was a respected newspaperman who retired to his dream of owning a small organic farm. This is a compilation of the stories he wrote about his place, "Flickerville Mountain Farm & Groundhog Ranch" in Pennsylvania, as an occasional column in the Washington Post from 1989 through 1992. Many NOFA members will recognize themselves in him — searching after a less stressful life, willing to work hard and learn, most satisfied when simply present in Nature's workshop.

The essays are short and reflective, usually focused on one aspect of running a farm. Although I was somewhat put off by his way of referring to himself in the third person as "the farmer", I was too captivated by his prose not to browse through many pages. Here are a few samples of his style.

**On getting help:** "In the beginning, when the truckpatch wasn't much more than an oversized garden, life was simple. The farmer and his trusty accomplice, Peterson, divided the labors according to interest and ability, and worked until the chores were done.

But in time, it became too much. Too many weeds to pull, too many beans to pick, too many lettuce seedlings to transplant, and it was clear that help was needed. Thus came their introduction to the mystical world of personnel management.

Peterson [*Sinclair's partner Cass Peterson*] and the farmer agreed on some basic points. The pay would be competitive or better; no worker would be asked to do a task that the farmers themselves would not do; ample breaks and rests would be insisted upon; the most onerous jobs would be reserved for the farmers; assignments would be varied constantly to avert boredom.

However reasonable that might appear on paper, the reality turned out to be different. A parade of workers - some excellent, some not - has come and gone through the truckpatch and the thought of a farm suddenly without a work force nags the farmer constantly.

A well-recommended young housewife in need of money came to work one day and performed capably and with promise. Then she vanished, sending word through a third party that since she lived four miles away, she could not afford the gas to continue here.

A strapping young man knocked on the door another day, begging for a job and bragging about his industriousness. He missed his first day of work because he "misunderstood" the starting time. On the second day, despite rigorous instruction in hoeing, he whacked off scores of valuable lettuces painstakingly transplanted by hand. He missed his third day because of a pimple behind his ear that he feared to be cancerous. He missed his fifth day because his car had to be inspected. He missed his seventh day because he had to pick up his prom tuxedo. He couldn't work Fridays because they were reserved for his girlfriend. For one reason or another he missed a string of Saturdays and the farmer finally let him go.

A teenage girl worked all one summer and looked eagerly to weekend duty in the fall, a time when more hands are vital in the truckpatch. Her fall work plans were squelched by an unanticipated pregnancy.

Another longtime helper, an industrious and uncomplaining sort, had trouble with judgments, amounts, plant names, and details. When asked how many beans she picked, the answer was usually "a goodly amount." When told to pick spinach, she ravaged the Chinese cabbage. Plant names could not be remembered and thus came to be known as the "brainy" flower or "that purple flower" or some such."

**On gamesmanship at the farmer's market:**

"Spring training, so to speak, was complete and

the farmer was psyched up and ready for Opening Day, a ritual April event in which he envisioned himself being very impressive in his first turn at the plate.

Opening Day in this context was the first day at a farmers' market in the city, an event as important for renewing old friendships with customers as it was for again seeing farmer friends and stoking the old rivalries.

The farmer may make too much of this, but the race to have the earliest lettuce or the first ripe tomato is one of the things that drives him. It makes him take too many risks in cool weather, but the pride swells when he can best a rival from warmer Maryland or Virginia.

So the farmer this time picked his target - an expert grower named Francis Roland, who also is driven by the same desire to be first, even though he doesn't like to admit it. The farmer knew that Roland's goat would be gotten when lettuce from Dott, Pa., showed up before lettuce from Friendly, Md.

Roland took this humiliation with his customary good grace, but there was a glint of revenge in his eye. A couple weeks later, Roland tauntingly called to the farmer from across the market. As customers turned to follow the badinage, Roland held up one of the largest, prettiest, bright-green lettuces the farmer had ever seen.

"What in the world is that?" the farmer asked, now trying to hide his chagrin. "It's a Tango variety," Roland said. It took the farmer a while to realize that he'd just been put down twice - not only did he not recognize the variety, he'd just been taught that one does not harvest a lettuce before its time."

**On the rewards of farming:** "As the chill deepens and the outside work slows, the farmer turns to his ledger books, which axe deceiving; they confirm that his financial rewards are small, but fail to reveal that he has acquired immense wealth.

Looking back over the year, the farmer realizes that he has become part of a family that somehow seems to count on him, that supports and encourages him and justifies the workaday drudgery, which in the truckpatch means much time on hands and knees.

In the formal sense, the farmer is not a man of religion. But the year has revealed new insights and so at this time of giving thanks, the farmer bows in considerable awe to the combination of forces of man and nature that have led him to his new wealth.

This has been a year of revelation, for the farmer has learned the folly of counting bottom lines in dollars and cents. How can he place a value on nature's teaching, which has helped and hindered his best efforts to husband soil and plants? How to price the proliferation of earthworms that have brought health to his soil? Or the invasion of protective barn swallows and ladybugs and praying mantises? Or the seductive aroma of fresh-turned soil?

All of this counts as part of the wealth and profit, just as does the acquisition of family. The people of this family, most of whose full names are not known to the farmer, are the customers who come to his markets to buy his produce and to share the intimacies of family and friendship.

Thanks are given to these people, especially the children, who seem to somehow know intuitively that life springs from the soil and that good things come to those who protect and nurture it. A freckle-faced second-grader named Flannery, unhappily dependent on her mother for a ride to the market, comes early to help the farmer place signs around his stand. She has confided to her mother that perhaps if she does a good job the farmer will invite her to work on the farm next year. He will."

**On being a manager:** "One time the farmer blithely went to market, leaving behind a mountain of sugar snap peas that had taken hours to harvest. Another time, the farmer failed to stash his broccoli in the cooler overnight. When the boxes were opened the next day, the farmer found

that once-lovely heads had turned to flower in the heat.

These oversights are almost inevitable, for the day prior to market always is a day of dizzying activity. Too much to pick, not enough help, too much to remember, too little time in which to do it. Sometimes, when the bounty is at its fullest, the farmer must complete the day's work with the help of the lights on his pickup or his tractor. The basil must go through.

To the tens of thousands of customers who flock to the markets in the Washington-Baltimore area, the sudden appearance of elaborate stands with fancy sun-screens and counters overflowing with farm-fresh produce may be viewed as just one of those things that magically happens.

In reality, it isn't that way at all. It happens because most of these small-scale capitalists, no matter their education levels or their experience, are consummate planners who soon learn that an overlooked detail can mean a disastrous day at market.

They learn to schedule their harvesting so the produce will be just right on the stand. They make long lists of things to do and they write reminders to themselves. When the pickings are slim, they come up with new things to sell - ravage that lilac bush for fresh flowers, harvest that dried pigweed and peddle it as a decorative "amaranthus."

They learn that packing a truck is an art. They read newspapers to divine the price trends', they read the food pages to find out what titillates the cooks these days. They learn to improve their lettering, the better to make appealing signs. Some go so far as to study the path of the sun to pick their place in the market — a step aimed at protecting tender veggies from the hot glare."

**On the farmer as jack-of-all-trades:** "The thought probably lurked deep in his mind anyway, but it wasn't until the farmer fiercely clobbered his left thumb with a hammer, trying to drive a nail, that he finally made the connection between a piece of lumber and a sprightly head of lettuce.

The lettuce, you see, would grow from a seed planted in this greenhouse the farmer was trying to erect. But if he couldn't drive his nails straight and square the cuts of his lumber, the greenhouse would be unstable and the lettuce seedling might never reach the field.

Thus, the farmer began to fully realize what other farmers have known for centuries. In order to survive, the farmer must have skills that go well beyond knowing the soil and all the tricks of nurturing a plant to lush maturity.

He must be, among other things, carpenter, plumber, electrician, roofer, engineer, architect, engine mechanic, cement finisher, and drainage designer to make the farm run smoothly and to provide all the accouterments required by his lettuce seedling.

It can be reported that the new greenhouse, after many clobbered thumbs and mis-cut 2-by-4s, rose to completion in time to receive the first seeds of early lettuce, broccoli, and cabbage. It may turn out to be airtight and possibly stable enough to endure fierce wind."

If you enjoy reading about the realities of farming in the northeast, both embarrassing and ennobling, Ward Sinclair's honest observations in *Truckpatch* will transport you — down to earth!

# NOFA

## Contact People

### Connecticut

**NOFA/CT Office:** P O Box 386, Northford, CT 06472, phone (203) 484-2445, FAX (203) 484-7621, Email: [NOFACT@Connix.com](mailto:NOFACT@Connix.com), [website: http://ct.nofa.org](http://ct.nofa.org)

**President:** Peter Rothenberg, 53 Lanes Pond Rd., Northford, CT 06472-1125 (203) 484-9570 (home)

**Vice President:** Kimberly A. Stoner, 498 Oak Ave. #27, Cheshire, CT 06410-3021, (203) 271-1732 (home), Email: [kstoner@caes.state.ct.us](mailto:kstoner@caes.state.ct.us)  
**Treasurer/Membership:** Johan van Achterberg, 359 Silver Hill Rd., Easton, CT 06612-1134, (203) 261-2156 (home), Email: [vanachj@concentric.net](mailto:vanachj@concentric.net)

**Secretary:** Erin Ames, 662 Reef Road, Fairfield, CT 06430-6576, (203) 319-1525, Email: [femmedeau@aol.com](mailto:femmedeau@aol.com)

**Newsletter & Certification:** Rob Durgy, P O Box 17, Chaplin, CT 06235-0017, (860) 870-6935, Email: [rdurgy@canr1.cag.uconn.edu](mailto:rdurgy@canr1.cag.uconn.edu)  
**Staff:** Marcia Brown, 333 Middletown Ave., North Haven, CT 06473-4029 (203) 239-1944

### Massachusetts

**President:** Lynda Simkins, 117 Eliot, Natick, MA 01760 (508) 655-2204

**Vice President:** Stan Ingram, 27 Little Island Rd., Falmouth, MA 02540 (508) 457-0864  
**Secretary:** Jen Mix, 6 Rowland St., Marblehead, MA 01945 (781) 631-2328, [jmix@hnt.com](mailto:jmix@hnt.com)

**Treasurer and Staff:** Julie Rawson, 411 Sheldon Rd., Barre, MA 01005 (978) 355-2853, Fax: (978) 355-4046, Email: [jackkitt@aol.com](mailto:jackkitt@aol.com), [website: http://ma.nofa.org](http://ma.nofa.org)

**Newsletter:** Jonathan von Ranson, 6 Locks Village Rd., Wendell, MA 01379, (978) 544-3758, Email: [Commonfarm@aol.com](mailto:Commonfarm@aol.com)

**Websmith:** Rich Williams, 35 Turner Rd., Townsend, MA 01469, (978) 597-3005, Email: [richwill@rigorousrecycler.com](mailto:richwill@rigorousrecycler.com)

**Certification Administrator:** Ed McGlew, 140 Chestnut Street, West Hatfield, MA 01088 (413) 247-9264

[website: http://ma.nofa.org](http://ma.nofa.org)

### New Hampshire

**President:** Dan Holmes, The Meeting School, 56 Thomas Rd., Rindge, NH 03461, (603) 899-2806

**Vice President:**

**Treasurer:** Susan MacLeod, RR1 Box 78, Deering, NH 03244-9313, (603) 529-1632

**Membership and Staff:** NOFA/NH Office, White Farm, 150 Clinton St., Concord, NH 03301, (603) 735-8075, [Nofanh@aol.com](mailto:Nofanh@aol.com)  
**Newsletter:** Craig Federhen, 50 Little River Rd., Kingston, NH 03848, (603) 642-5497, [federhen@nh.ultranet.com](mailto:federhen@nh.ultranet.com)

**Organic Certification:** Vickie Smith, NHDA Bureau of Markets, Caller Box 2042, Concord, NH 03301 (603) 271-3685

### New Jersey

**President:** Leonard Pollara, Upper Meadows Farm, RD 5, Box 554, Montague, NJ 07927, (201) 293-7350, [lenpollara@compuserve.com](mailto:lenpollara@compuserve.com)  
**Vice President:** George McNulty, Stone Hollow Farm, 136 Rt 72, Barnegat, NJ 08005, (609) 698-2405

**Newsletter Editor:** Amy Hansen, 60 So. Main St., PO Box 886, Pennington, NJ 08534-0886, (609) 737-6848, Email: [nofanj@aol.com](mailto:nofanj@aol.com)

**Secretary:** Mike Rassweiler, North Slope Farm, 1701 Linvale-Harbourton Rd., Lambertville, NJ 08530 (609) 466-4191, fax: 466-5974, [nsfarm@compuserve.com](mailto:nsfarm@compuserve.com)

**Executive Director:** Karen Anderson, 60 So. Main St., PO Box 886, Pennington, NJ 08534-0886, (609) 737-6848, fax: (609) 737-2366, Email: [nofanj@aol.com](mailto:nofanj@aol.com)

**Certification Administrator:** 60 So. Main St., PO Box 886, Pennington, NJ 08534-0886, (609) 737-6848

**Technical Resources Director:** Emily Brown Rosen, 60 So. Main St., PO Box 886, Pennington, NJ 08534-0886, (609) 737-6848, Email: [nofanj@aol.com](mailto:nofanj@aol.com)

### New York

**President:** Richard de Graff, Grindstone Farm, 780 County Route 28, Pulaski, NY 13142 (315) 298-4139, fax: (315) 298-2119, [dickgrind@aol.com](mailto:dickgrind@aol.com)

**Vice President:** Gary Skoog, Skoog Garlic Farm, 6142 Lake Road South, Brockport, NY 14420, (716) 637-6586, [skooger@eznet.net](mailto:skooger@eznet.net)

**Secretary:** Judith Roylance, 17 Dogwood St., Sag Harbor, NY 11963 (631) 725-1009

**Treasurer:** Alton Earnhart, Lightning Tree Farm, 515 N. Mabbittsville Rd., Millbrook, NY 12545-9744 (914) 677-9507, fax: (914) 677-8352, [altone@ibm.net](mailto:altone@ibm.net)

**Newsletter Editor:** Stu McCarty, PO Box 70, 632 Tunnel Rd., Tunnel, NY 13848 (607) 693-1572, fax: (607) 693-4415, [whistop@ny.tds.net](mailto:whistop@ny.tds.net)

**Executive Director:** Sarah Johnston, 661 Lansing Rd. #A, Fultonville, NY 12072-2630, (518) 922-7937, fax: (518) 922-7646, [sjds@wizvax.net](mailto:sjds@wizvax.net)

**Administrative Secretary:** Bob Hooper, P O Box 880, Cobleskill, NY 12043, voice: (518) 827-8495, fax: (518) 827-8496

**Certification Administrator:** Patricia Kane, NOFA-NY Certification Program, 26 Towpath Rd., Binghamton, NY 13904 (607) 724-9851 [website: http://ny.nofa.org](http://ny.nofa.org)

### Rhode Island

**President:** Jeanne Chapman, 17 Station St., Apt. #4, Coventry, RI 02816 (401) 828-3229, [alfalfac@mindspring.com](mailto:alfalfac@mindspring.com)

## In Memoriam...

### NOFA-NH member Susanne Clements died of cancer on May 8, 2000.

Susanne had raised her two daughters as a single parent, saw them settled with families of their own, and then, satisfied, looked for other challenges. It was NOFA-NH's great good fortune that she found us. Susanne came on the Board of Directors at a difficult time. When some were starting to fade and others were bogged down with personal issues, she came with enthusiasm, needed skills, and good advice. Her ability and comfort with computers and her organizational abilities were invaluable to NOFA-NH. Susanne was also a skilled gardener who was absolutely committed to organics. She had just begun to clear land for a market garden on her property in Epsom — I'm sure it would have been wonderful. Please join me with blessings and thanks to Susanne. Hold her and her family in the light.

Dan Holmes, president, NOFA-NH

**Vice-President:** Dave Peterson, 405 New Meadow Rd., Barrington, RI 02806 (401) 245-4068

**Secretary:** Kurt Van Dexter, 1740 Stony Lane, No. Kingstown, RI 02852 (401) 294-7994

**Treasurer:** Gayle Anderson, 9 Diamond St., No. Attleboro, MA 02760 (508) 643-3500

**Volunteer Coordinator:** Beth Palazzo, 26 Woodmont St., Providence, RI 02907, (401) 467-4848

**Membership:** Elizabeth Jesdale, 64 Harrison St. #11, Providence, RI 02909 (401) 831-9779

**Newsletter:** Susan Samotey, 105 Bartlett Ave., Cranston, RI 02905 (401) 467-3699

**NOFA/RI :** 109 Somerset St., Providence 02907 (401) 828-3229, [website: http://users.ids.net/~nofari/](http://users.ids.net/~nofari/)

### Vermont

**NOFA-VT Office,** P. O. Box 697, Bridge St., Richmond, VT 05477 (802) 434-4122, Fax: 434-4154, [website: www.nofavt.org](http://www.nofavt.org)  
[nofavt@together.net](mailto:nofavt@together.net)

**Executive Director and VOF Administrator:** Enid Wonnacott, 478 Salvias Rd., Huntington, VT 05462 (802) 434-4435 [elila@together.net](mailto:elila@together.net)

**NOFA Office Manager:** Kirsten Novak Bower, 65 Wortheim Rd., Richmond, VT 05477 (802) 434-5420, fax: (802) 434-3030, [kbower@juno.com](mailto:kbower@juno.com)

**Newsletter Editor & Bulk Order Coordinator:** Heidi Racht, 4501 Main Road, Huntington Center, VT 05462 (802) 434-2690, [heidiracht@aol.com](mailto:heidiracht@aol.com)

**Farm Share Coordinator:** Michele Wheeler, 23 Bushey Lane, Westford, VT 05494 (802) 878-9143, [mwheeler@globalnetisp.net](mailto:mwheeler@globalnetisp.net)

**Dairy Tech Coordinator:** Lisa McCrory, RR1 Box 169, Randolph Center, VT 05061 (802) 728-4416, [lmccrory@together.net](mailto:lmccrory@together.net)

**People Grow Coordinator & Agriculture Education Coordinator:** Joshua Brown, 32 Catherine St., Burlington, VT 05401 (802) 864-3329, [joshuab@together.net](mailto:joshuab@together.net)

**VOF Admin. Asst.:** Jessie Schmidt, 121 Calais Rd., Worcester, VT 05682 (802) 224-9193, [zigzag@together.net](mailto:zigzag@together.net)

**Admin. Asst.:** Nicole Raymond, 38 Nelson Farm Rd., Moretown, VT 05660 (802) 496-4331, [nicr@together.net](mailto:nicr@together.net)

# NOFA Interstate Council

Tom Kemble, 581 Thompson St., Glastonbury, CT 06033 (860) 633-4503, tjkemble@erols.com

Steve Gilman, 130 Ruckytucks Road, Stillwater, NY 12170 (518) 583-4613

Ed McGlew, 140 Chestnut St, West Hatfield, MA 01088 (413) 247-9264

Bill Duesing, 153 Bowers Hill Road, Oxford, CT 06478, (203) 888-9280, bduesing@snet.net

Enid Wonnacott, 478 Salvas Rd., Huntington, VT 05462 (802) 434-4435 elila@together.net

Ed Maltby, 593 So. Pleasant, Amherst, MA 01002 (413) 253-8903

Kay Magilavy, 212 18th St., Union City, NJ 07087, (201) 863-1741

Leonard Pollara, RD5 Box 554, Montague, NJ 07827, (201) 293-7350

Mike Hutchison, 2325 Boston Neck Road, Saunterstown, RI 02874 (401) 295-1030

David Baldwin, 26 Edgewood, Barrington, RI 02806 (401) 246-0275

Joe White, 140 Deerhill Road, Brentwood, NH 03833, (603) 679-5718, sunpit@ttlc.com

Jack Kittredge and Julie Rawson, The Natural Farmer, NOFA Summer Conference, 411 Sheldon Rd., Barre, MA 01005 (978) 355-2853

# Northeast Interstate Organic Certification Committee

\* indicates co-chair

Bill Hill, 51 John Read Road, West Redding, CT 06896 (203) 938-9403

Eric Sideman\*, MOFGA, PO Box 2176, Augusta, ME 04330 (207) 622-3118

Judy Gillan, P O Box 31, Belchertown, MA 01007 (413) 323-4531

Ed McGlew, 140 Chestnut St, West Hatfield, MA 01088 (413) 247-9264

Vickie Smith\*, NHDA, Bureau of Markets, Caller Box 2042, Concord, NH 03301 (603) 271-3685

Rick Estes, 145 Mountain Rd., Concord, NH 03301 (603) 224-4469

Emily Brown Rosen, 33 Titus Mill Road, Pennington, NJ 08534 (609) 737-6848

Elizabeth Henderson, 2218 Welcher Rd., Newark, NY 14513 (315) 331-9029

ehendrns@redsuspenders.com

Frank Banner, 1863 Preble Road, Preble, NY 13141 (607) 749-4614

Pat Kane, 26 Towpath Rd., Binghamton, NY 13904 (607) 724-9851

Dan Lawton, RI Division of Agriculture, 235 Promenade St., Providence, RI 02908 (401) 222-2781, ext. 4516, dlawton@dem.state.ri.us

Polly Hutchison, Casey Farm, 2325 Boston Neck Rd., Saunterstown, RI 02874 (401) 295-1030

Enid Wonnacott, 1561 Sherman Hollow Rd., Huntington, VT 05462 (802) 434-4435

Tim Sanford, RR1, Box 224A South Royalton, VT (802) 763-7981

# Calendar

**Friday, Sep 15 - Sunday, Sep 17:** Conference on Community, Nature & Spirit at Antioch NE Graduate School, Keene, NH for more info (603) 357-3122 x300

**Sunday, Sep 17:** NOFA/RI Tour of Baby Greens operation at River Farm, N. Kingston, RI for more info (401) 461-7999

**Friday, Sep 22 - Sunday, Sep 24:** Common Ground Country Fair, Unity, ME. for more info (207) 568-4142

**Saturday, Sep 23 - Sunday, Sep 24:** New England Heritage Breeds Conservancy's 3<sup>rd</sup> Annual Exhibition & Sale of Heritage Breed Livestock, Pittsfield, MA for more info (413) 698-2044

**Sunday, October 1:** Seed Saving Technical Workshop for Farmers, Wolcott, VT for more info (802) 434-4122

**Saturday, Oct 14:** Biodynamic Preparation Workshop with Mac Mead and Gunther Hauk, Chestnut Ridge, NY for more info (845) 352-5020 x20

**Sunday, Oct 15 - Wednesday, Oct 18:** New England Greenhouse Conference, Worcester, MA for more info: (860) 872-6596

**Friday, Nov. 3 - Sunday, Nov. 5:** Carolina Farm Stewardship Association's 15<sup>th</sup> annual Sustainable Ag Conference, Wilmington, NC for more info: (919) 542-2402

**Saturday, Nov 4:** Composting and Soil Science Workshop, Chestnut Ridge, NY for more info (845) 352-5020 x20

**Friday, Nov 10 - Sunday, Nov 12:** Biodynamic Farming and Gardening Association National Conference, Montpelier, VT for more info (888) 516-7797

**Friday, Nov 17 - Sunday, Nov 19:** 16<sup>th</sup> Annual California Farm Conference, Santa Rosa, CA for more info (530) 888-9206

**Wednesday, Jan 24 - Saturday, Jan 27, 2001:** 21<sup>st</sup> Annual Ecological Farming Conference, Asilomar, CA for more info (831) 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. Unless noted, membership includes a subscription to The Natural Farmer.

Give a NOFA Membership! Send dues for a friend or relative to his or her state chapter and give a membership in one of the most active grassroots organizations in the region.

**Connecticut:** Individual or Household: \$35, Business/Institution: \$50, Supporting: \$100, Student (full time, supply name of institution) \$20

**Johan van Achterberg**, 359 Silver Hill Rd., Easton, CT 06612-1134, (203) 261-2156 (home), vanachj@concentric.net

**Massachusetts:** Individual: \$30, Family: \$40, Low income: \$20, Supporting: \$100

**Julie Rawson**, 411 Sheldon Road, Barre, MA 01005, (978) 355-2853

**New Hampshire:** Individual: \$25, Student: \$18, Family: \$35, Supporting: \$100  
c/o White Farm, 150 Clinton Street, Concord, NH 03301

**New Jersey:** Individual: \$35, family/organizational: \$50, Business/Organization: \$100, Low Income: \$15\* \*does not include a subscription to The Natural Farmer  
60 So. Main St., PO Box 886, Pennington, NJ 08534-0886, (609) 737-6848

**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  
**Bob Hooper**, P O Box 880, Cobleskill, NY 12043, voice: (518) 827-8495, fax: (518) 827-8496

**Rhode Island:** Student/Senior: \$20, Individual: \$25, Family: \$35, Business: \$50  
P. O. Box 29174, Providence, RI 02909-9998 [288 Dudley St., Providence 02907] (401) 274-4547, fax: (401) 273-5712

**Vermont:** Individual \$25, Family/Business: \$35, Sponsor: \$75  
**Kirsten Novak Bower**, NOFA/VT, PO Box 697, Richmond, VT 05477, (802) 434-4122, nofavt@together.net

Fall, 2000



photo by Jack Kittredge

Kathie Arnold with some of the cows in her transition herd at Twin Oaks Farm. The older cows are the ones with the docked tails — which was done for convenience while milking when the herd was conventionally managed. The younger ones — those with full tails — were born under organic management which prohibits docking.

**News, features, and articles about organic growing in the Northeast,  
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# Transition to Organic

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