



The Summer Conference Committee met in May, and by the looks of things we're in for a truly exciting weekend this August. We have 184 adult workshops this year. The most ever! With so much to choose from, we're bound to have something for everyone, and to thin the crowds out considerably as well as making for more intimate gatherings. We have 23 children's workshops, 11 for teens, and 6 intergenerational. We are looking forward to continuing to focus on the development of more intergenerational workshops in years to come. To be able to share and make connections with all age groups is a healthy and important human practice.

Eliot Coleman, our keynote speaker this summer, is quite a resourceful farmer. Our intention as a committee is to be able to bring you speakers of varied backgrounds and/or platforms. In the past we've enlisted spiritual leaders, homesteaders, political activists, and farmers alike. We think a wide range of personalities helps to keep things interesting, and we enjoy hearing your feedback year to year. The keynote address is all set for 7 PM., Friday evening at the Crown Athletic Center.

Breaking some entertainment news, we've got lots of great movies and music this year — and we're trying out some new ideas. First of all, we plan to show our SIX movies EVERYDAY

(and NIGHT) of the Conference. This will enable you all to have more opportunities to catch the flick (or flicks) that interest you. Also, the contradance will be held outside the Red Barn this year during the Get Acquainted Party — a great combination to be sure! Rhubarb Pie, our perennial favorite, will be back in action, as will our delicious, organic beer of choice: Wolavers! Bring your dancing shoes and a healthy thirst!

We're still looking for a few opinionated folk to join us on the debate panel this summer. "Can NOFA (and local, organic everywhere) Feed the World?" It promises to be an interesting evening, so please contact Jack Kittredge at (978) 355-2853, jackkitt@aol.com or Richard Murphy (508) 867-5735, rmurphy@star.net if you'd like to participate.

This year's fair will take place on Saturday from 3-6 PM on the Commons near the registration and exhibit area. Dale Perkins' Horse Show will kick off the festivities, a lively event for adults and children alike. And, back by popular demand, the Interstate Tug of War — Flex your muscles and show your state spirit! We'd like to invite both children and adults to participate in the sack race, egg toss, butter dance, tomato bob, three-legged race, and more. Good old-fashioned fun!

This year NOFA - CT will be raffling off their 'Bounty of Connecticut', a gigantic basket overflowing with beautiful goodies and surprises. Send in your money for chances to win with your registration form, or purchase tickets at the conference.

Organic farmers can display and sell their products and homemade wares at the FARMERS' AND CRAFTERS' MARKET. Interested folks should pre-register by checking the appropriate box on the registration form.

Demonstrations and exhibits of homestead crafts related to rural life (goat milkers, handmade paper makers, etc. - this means you!) will be held in the same area. Demonstrators will receive a 2000 NOFA tee shirt! Please pre-register with Dave Getman at (978) 464-7745. This year we will have a Teacup Auction (similar in format to a Chinese Auction). All proceeds will be going to the 2001 Scholarship Fund. Items will be on display at the auction table under the main tent. Winners can claim their booty on Saturday night between 6:00 and 6:30 PM, or Sunday morning between 7:00 and 7:30 AM.

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Letters to the Editor

Dear Jack,

Congratulations on the Supplement on Food Safety in the Winter issue of Natural Farmer. The whole issue was marvelous but I was particularly enlightened by the articles on Irradiation, Genetic Engineering and Antibiotics and Hormones. You seem to have done your homework on these topics. As a physician, I was impressed by the balanced presentation of the facts and the lack of polemic.

I have made copies for my nine grown children in hopes they will pay closer attention to what they are feeding themselves and their children. I would like to make more copies to distribute at my workplace,

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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:

Autumn 2000 - Transition to Organic
Winter 2000-01 - Feeding the World
Spring 2001 - Home Gardening

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

The Honey Bee - Canary for our Time?

Practically every American kid of my generation was told the story of the canary, brought down into a coal mine in a tiny cage. The canary's sensitivity to poisonous gases meant that she would asphyxiate more quickly than a man. So the miners watched her and knew that, as long as she was breathing, they could work unafraid.

There are some who are comparing today's honey bee to the miner's canary.

Two recent infestations of parasites have decimated honey bees in much of America. *Varroa jacobsoni*, or varroa mites, parasitize bee larvae, particularly the drones. *Acarapis woodi*, or tracheal mites, infest the trachea of adult bees. No effective controls have been found for these mites, and in recent winters up to 90% of the colonies in some parts of the country have been eliminated by these parasites. Honey bee stocks are at their lowest in 50 years.

Now it is perfectly normal for waves of disease and parasitism to sweep over species, decimating them. The survivors are those who have mutated a resistance to the attack. They quickly rebuild the species, this time stronger, and the threat is mitigated. It is quite possible that this is what is happening now among honey bees. But it is also possible that honey bees, which have been inbred for generations to achieve maximum honey production, no longer have the genetic diversity necessary to resist attacks by two strong parasites at once.

The story of the honey bee is the story of American agriculture. When we arrived on this continent it was literally teeming with biological wealth. Colonists talked of schools of fish so thick you could almost walk on them. Turkeys, buffalo, and passenger pigeons numbered in the millions. Midwestern prairie topsoil was so deep you couldn't get below it. But our relentless drive to exploit nature's wealth over almost four centuries has taken its toll. Most of the capital built up over millennia has been spent. Now we spray our fields with poisons, compress them with giant machinery, and plant them with seeds whose genes serve world trade, not life.

In our drive to maximize production we have also placed heavy demands on the honey bee. Bred to produce a large honey surplus, the colonies are now trucked long distances to follow the nectar and pollen flows. The queens are no longer allowed to mate and build a hive naturally, but are bought in from distant breeders. Drone brood are sacrificed to make room for workers, despite the obvious need for genetic variety.

The techniques which we have applied to nature to maximize yield — narrowing of the genetic stock, stressing with demands for high production, ignoring the threat of natural enemies — are now coming back to haunt us. With a certain fatal fascination we watch the outcome of the story of the honey bee — which may also be an early warning sign for the rest

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

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.

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.

Letters
continued from page 2

the Center for MindBody Integration, but feel that I need your permission to do so. Information like this deserves as wide an audience as possible.

I wonder why it is that the European community has been willing to take action to inform and protect its citizens from these health hazards and the US lags behind. It parallels the situation in my own field where "alternative therapies," such as homeopathy and naturopathy, have been widely accepted for decades in Europe. Perhaps they are better able to take the long view of life on this planet.

Thanks for a fine issue. Keep up the good work!

Mark J. Sicherman, MD, Erieville, NY

Dear Doctor Sicherman,

Thanks for the good words about the Winter 1999-2000 issue of The Natural Farmer. I did do a lot of research for it and several people have written for extra copies or said it was particularly helpful to them. Normally I would ask you to buy extra copies rather than duplicate the issue on your own (it would also be a lot cheaper than photocopying it) but that issue is totally sold out. So, in the interests of getting the word out, please feel free to photocopy articles in that issue for free distribution as you see fit. I would ask that you credit the author and source, and not change or delete anything.

I believe that NOFA-NY is reprinting many of the articles in that issue to accompany their 2000 list of certified organic farms. That might be a good way

for you to get multiple copies of the information for distribution at your workplace. Check with NOFA-NY executive director Sarah Johnston at 518-922-7937 to see what their timetable is.

Europe does seem to be pretty consistently ahead of the US on food safety. This may be due to the fact that smaller farms still play a vital part in their agriculture, and people seem willing to subsidize farming through higher prices and tax-dollars (should I say tax-Euros?) Here, cheap food (and its resulting high-priced health care) seems to be the policy of the government, with only a small group of health-conscious consumers realizing there is a way of investing in prevention rather than cure.

Jack Kittredge

Dear Jack: Keep up the good work! I enjoy the paper very much, knowing the amount of time and effort it takes to complete each issue. I wrote the enclosed letter last January and now, finally, am, getting 'round to it'. Put it in the paper if you wish.

Dean Kleckner
National Headquarters
American Farm Bureau Federation
225 Tahy Ave.
Parkridge, IL 60068

Dear Mr. Kleckner,

I have been involved in agriculture all my life: Milking cows, raising potatoes, selling farm machinery, forestry, and market gardening.

In the last quarter century big chemical companies, it seems to me, have gotten USDA, along with many

groups such as the one you lead, completely convinced that successful farming is impossible without them. This is completely false!

With a great deal of interest, I read of your views as printed in the Winter 1999-2000 publication of "The Natural Farmer". According to this article by Mr. Jack Kittredge, you view the organic vegetable market as a rip off!! Further on in the same article, the federation is claiming that the answer is irradiation!!

Does irradiation eliminate the levels of pesticides in the food? What about the sensitive vitamins reduced by irradiation? These foods are already lower in vitamins because of being grown chemically. Have you never tasted the difference between an organically grown food and a chemically grown one? What do you think the population should exist on: irradiated, chemically grown food, supplemented with chemically synthetic vitamins? Shame on you and your organization! I am thankful to no longer being among your membership.

Sincerely, James P. Johnson
Abenaki Springs Farm
Walpole, NH

Dear Mr. Johnson,

Thanks for appreciating the paper, and for sharing your missive to the Farm Bureau. As you will note in this paper, the groundswell from people like yourself challenging their anti-family farm propaganda is having an impact. An internal revolt removed Dean Kleckner as president, and Congress is looking into the group's non-profit status. Keep up the pressure and the independent thinking!

Jack Kittredge

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

News Notes

compiled by Jack Kittredge

Seattle to go renewable, with zero emissions. The City Council of Seattle has unanimously adopted a plan to meet all of its future energy needs with existing hydropower and new wind, geothermal, solar and landfill-gas facilities. A primary motivation for this plan is the desire to emit no net global warming gases. Any such emissions which may result from unavoidable fossil fuel use will be offset by measures such as forest protection which reduce carbon gas emissions, the city said. Seattle has a city-owned utility, Seattle City Light, which makes city policy-setting in this area possible. *source: Environment News Service, April 13, 2000*

World's biggest carbon trade gives Australia new forest. In a deal touted as the world's largest, the government of New South Wales (NSW) in Australia and the Tokyo Electric Power Company (TEPCO - the world's largest private utility) agreed that NSW would get up to 100,000 acres of new forest land as a carbon sink to balance out the carbon emissions from TEPCO emissions over the next 10 years. Recent environmental policy-makers have looked to tradable "pollution rights" as a way to minimize the impact of global warming gas emissions. *source: Acres, Australia, March, 2000*

Federal oversight of gene-altered crops lauded by food industry, disappointing to critics. The Clinton administration has adopted a plan to provide increased oversight of genetically modified crops and set standards for labels which claim foods are free of biotech ingredients. Predictably, the food industry has called it "a good step", and said: "it makes sense". But the plan has disappointed critics of genetic modification who hoped for more when the Food and Drug Administration held hearings about genetic modification of food earlier this year. The plan only requires biotech companies to notify the FDA in advance of releasing new GMO crops, and provide the agency with copies of their research data. The FDA is, in turn, supposed to set standards for labeling of GMO-free food, and the USDA is to begin validating tests designed to detect the presence of biotech ingredients in food. Such tests would be required for a bio-tech free label. Thirteen state governors have joined the federal government in trying to persuade the public of the benefits of genetic engineering of food, and have launched a \$50 million ad campaign to counter adverse criticism. *source: AP release, May 3, 2000*

SCell-phone health effects loom. As mobile-phones grow more popular (some 30% of the US population uses them and up to 60% in Finland do) concern grows about unknown health effects of their radiofrequency (RF) emissions. According to a Scandanavian study of 5000 Norwegian users and 12,000 Swedes, one-quarter feel warmth behind the ear while on the phone and 20% link frequent headaches and recurring fatigue to cell-phone use. It took users an average of 15 milliseconds longer to answer simple questions than non-users (data since confirmed by more recent studies.) A different,

single-blind placebo-controlled study also found elevated blood pressure resulting from RF emissions for 35 minutes, most likely due to pronounced vasoconstriction. *source: Science News, 2/12/2000*

Neem Patent Revoked! In what biotech critics are calling a victory for Third World farmers, the Opposition Division of the European Patent Office revoked a patent which had been granted to the multinational corporation W. R. Grace for a fungicide derived from seeds of the Neem tree. Opposing the patent were Indian scientist Vandana Shiva and European Green Environment Minister of Belgium, Magda Aelvoet. The opposition was based on the widespread historical use of Neem by indigenous Indians. As Shiva said, "How could the United States of W. R. Grace say they invented something which has been in public use for centuries?" *source: The Edmonds Institute press release, May 11, 2000*

Trees New Target of Gene Modifiers. A deal last April between Monsanto, International Paper, Westvaco, and a New Zealand-based group has disturbed consumers and environmentalists concerned about genetic modification of living organisms. The companies will put up 60 million dollars over 5 years to produce and market tree seedlings that will "improve" forest health and productivity. By improve, the consortium apparently means make trees grow faster, produce less lignin (a component of cell walls which must be removed before making paper), and resist high levels of herbicide. Naturalists are concerned that pollen from modified trees will be released into nature and cause pollution of the natural stands of modified trees, including eucalyptus, poplar, sweetgum and various pines. *source: IPS World News report, May 4, 2000*

NOFA Exchange Blow Your Own Horn!

For sale - pure **Vermont maple syrup**, all sizes and grades, free recipes, gift shipping available, the sap is gathered by hand on our family farm and boiled over a wood fire. We take pride in making syrup the old fashioned way! From our trees to your table. Please call ~toll-free~1-888-36-syrup or (802) 888-2881, e-mail: maplesyrup@mt-mansfield.com, sandiwood farm, Schlosser family Bob, Sara, Sandi, and Kyle

Skilled **garden maintenance crew members** PT/FT and supervisor PT/2 days per week. Planting, pruning, soil building and pest controlling with organic substances. Beautiful properties in 128 suburbs, car required. Good pay. April/May through November. Call Natalie Delvaille, 781-944-0568.

FOR SALE: * 1969 1 ton dump, 360 V8, pto dump. Great farm truck for moving compost or firewood, but not for highway use. Starts and runs great. Sold as is - \$600 * WW Grinder: Pto chipper 540 speed, cat 0/1, 3pth. Used very little. Chips up to 3" and grinds leaves and brush. Great compost maker. - \$900 or bo * Allis G attachments: Very rare original attachments. One bottom plow, sickle bar mower (works) and harrows. Sold as set. - \$300 * John Deere 1 row potato digger, needs adjustments. Pto driven - \$250 * 5' scraper blade, category 1, 3 pth. - \$150. Please contact Jacqui or Dick @ 978-874-0244.

Garlic Seedstock: soft and hardneck varieties, extremely hardy, performing well throughout the northeast, certified NOFA-NY. \$5.50 lb + shipping. Doug Bowne, 345 Lynch Rd, Little Falls, NY 13365. (315)866-1403, email: EMBOW@ntcnet.com

Organic Hay - 30 acres. Let's make a deal; you cut, you keep. Two cuttings if enough rain. These beautiful fields need a future! North Oxford, MA (508) 757-1988. P.S. Anyone want to start a CSA in this area?

INDIAN RUNNER DUCK FLOCK, Blue and Black color varieties. MOFGA Certified Organic. 13 birds including 3 males (Blue) and 10 females (4 Black and 6 Blue). \$260. For sale as whole flock only. Flock is from Holderreads' Top Show Quality Ducklings purchased in 1997. Wild Asparagus Farm, P.O. Box 169, Whitefield, Maine 04353, (207) 549-3404.

The Boston School of Herbal Energetics offers two **apprenticeship programs in traditional and clinical herbal medicine**. Sowing The Seeds runs from September 30th, 2000 through May 12th, 2001. Herbal Gestation runs from March 31st through November 17th, 2001. Both series are held one Saturday a month. Mary Pat Palmer, Kwah Wa'adabi and Cindy Hebbard are the teachers. For information visit our web page at www.herbalenergetics.com, email mpatpalm@earthlink.net or call 617-524-5377.

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. (315)866-1403, email: EMBOW@ntcnet.com

Apprenticeship available: CSA seeks full-time workers for garden and other projects. Room and meals provided. Opportunities for learning are numerous. Our activities include organic gardening, nursery culture, greenhouse, horsepower, organically-raised beef and dairy cattle, raising pigs and poultry, cheesemaking and soap making. We also grow our own feed and cut hay, put food by, grow flowers and culinary and medicinal herbs. To be a part of all this, contact Sunny Hill Farm, 4007 NYS Rte. 26, Whitney Point, NY 13862

For Sale: • McCormick-Deering Cream Separator. Electric, all stainless steel with manual. • DeLaval Model 102 Cream Separator table top model. Bowl only stainless. • Two ox yokes - one 12", one 14", new bows • Ox cart - no dump • Hammer Mill with 3 phase motor, 1 screen. Chris Hopkins, CT 860-672-0261

Mahoning Valley Community Agriculture Project **seeks farmer** willing to farm and work with us to develop a CSA on land in eastern Pennsylvania near Lehigh. Initial goal for 30 - 40 families but with potential for larger. Barn, small pond, otherwise from scratch. Would like to incorporate permaculture concepts. Send resume and goals and interests to: Stephen Hoog, RD #1, Box 332A Effort, PA 18330.

Established organic dairy farmers are offering to lease their **dairy barn and 20+ acres of pasture** to owners of an organic dairy herd in need of a facility. Located in the Northeast Kingdom of Vermont, the bright, well-ventilated barn built in 1987 has 64 tie-stalls, 2 box stalls, pasture mats throughout, manger liners, a pipeline milking system, and a cutter cleaner. The pasture includes 11 paddocks serviced by a watering system. Housing site provided. Plenty of high quality organic forage available from owners who are continuing to manage the cropland. Contact Vincent Foy, 565 McDowell Rd., Danville, VT, 05828, 802-748-8461

Compost Tea - Have you heard about all the wonderful things it can do for your plants and your soil? Have you wanted to try it but didn't have an efficient way to make it? We just purchased a "Micro Brewer" and can make it for you. Just spray it on to your plants or add it to your soil. Please call for details. Blue Sky Produce, Phillips, ME (207) 684-2172

Cultivators for Sale: Planet Jr. Wheel Hoe with attachments, \$40. Older wheel hoe with 3 duck-foot cultivators, \$15. Contact Luis in RI (401) 253-7537 (after 8 pm)

Long term opportunity available for **organic farmer to develop 20 acre farm** 50 miles north of NYC. Mineral rich soils with plentiful source of manure from our horses, chickens and sheep. New Ford tractor with front-end loader, back hoe, misc. implements. We can provide room, organic meat, eggs, vegetables and fruit. Terms negotiable. Call Mary Finger, 914-265-2665

Volunteer Opportunity at Waltham Fields Community Farm to plant, cultivate and harvest produce for meal programs and food pantries. For more info call 781-891-0650 or 648-5117

Mini-Supplement on the National Organic Program

As most TNF readers know, in March the United States Department of Agriculture published a new proposed National Organic Rule which would govern the sale of food labeled as "organic" in the US. This rule is far more friendly to organic farmers and consumers than the previous proposal, published in 1997. There are, however, various provi-

sions which are of concern to Northeast farmers, certifiers, and consumers. In the interests of encouraging readers to submit comments on the rule, we are publishing a number of comments on the proposal. If you would like to participate in this process, besides these comments, check with your local chapter for their statement on the program.

Then write the USDA at: Keith Jones, Program Manager, National Organic Program, USDA-AMS-TMP-NOP, Room 2945-So, Ag Stop 0275, P.O. Box 96456, Washington, D.C. 20090-6456. Comments may also be sent by fax to 703-365-0760 or via the Internet at: www.ams.usda.gov/nop/. Be sure to refer to **Docket Number TMD-00-02-DR**

Remarks of Kathleen Merrigan to the National Organic Standards Board March 22, 2000 Buena Park, California

March 22, 2000

Hard work and the democratic process have paid off. The new proposed organic standards rule, published in the Federal Register on March 13, benefitted greatly from all the hard work of the USDA staff and from the thousands of comments we received from the organic industry and consumers. Not only is the new proposal a significant improvement, but we will also all benefit from a much more educated consuming public. And consumers are not just educated about the "Big 3" or the other highly visible public issues, but have come away with a deeper understanding about what "organic" really means.

This is a big - no, a massive - rule. We worked hard to get it right, and think we've done a pretty good job. But we know it's not perfect. That is why we have again provided for a 90 day public comment period, so that we can benefit from the same kind of close scrutiny that we had before.

We have already begun to get comments. As of March 21, we had 23,744 hits on our web site and received 175 public comments via email.

Given that the public comment period started just last week, I would like to take this opportunity to outline some of the issues that we know will be of interest, in hopes that it will help to stimulate a constructive public dialogue.

"Genetic" Drift

One issue that has already been raised is that of drift of prohibited substances onto organic farms, particularly drift from the products of genetic engineering, or "excluded methods."

Drift has been a difficult issue in the organic community from the beginning. Organic operations have always had to worry about the potential for drift from neighboring operations that use conventional farming practices. As the number of organic farms increases, so does the potential for conflict between organic and conventional operations.

In most certification programs, these issues are addressed through the organic system plan. It has always been the responsibility of organic operations to manage potential contact with prohibited substances, whether from the non-organic portions of a mixed operation or from neighboring farms. The organic plan must outline the steps that an organic operation will take to avoid unintentional contamination with prohibited substances.

When we are considering drift issues, it is particularly important to remember that organic standards are process based. Certifying agents attest to the ability of organic operations to follow a set of production standards and practices that meet the requirements of OFPA and the regulations. The presence of a detectable residue of a prohibited substance alone does not necessarily constitute a violation of those standards.

I realize that concerns about so-called "genetic drift," primarily pollen drift from genetically engineered crop varieties, have highlighted the overall drift issue. Organic farmers are concerned that pollen drifting from a near-by farm will contaminate their crops, and that they may lose the premium for their organic product through no fault of their own. Just as with any other prohibited substance, as long as a farmer takes reasonable steps to avoid contamination as detailed in their organic system plan, this kind of inadvertent, incidental contamination should not affect the status of an organic product or operation.

We recognize that some may find this answer not entirely satisfying - that in the end it doesn't seem quite fair that organic farmers should have the burden of preventing drift from other farms. Many have already argued that we should use this rule to somehow shift the burden to the technology providers and the conventional operations that use their products. The kind of remedies that have been

suggested, however, are outside the scope of OFPA and this regulation.

For example, some have suggested that this regulation should require that conventional farming operations using genetically engineered varieties plant buffer strips or take other steps to avoid drift onto organic farms. While there may be some interest in these kinds of requirements at the State level, the OFPA only provides for regulation of organic operations. We cannot use this regulation to impose planting requirements on farms that are not covered by the underlying law.

Similarly, others have suggested that the regulation could provide for citizen's rights to sue in cases of contamination through drift. Private citizens already have rights to sue under some State tort laws. For example, suits have been brought under State nuisance laws seeking to recover damages from synthetic chemical pesticide drift. To provide for a specific right to sue as a Federal cause of action here, however, would require a change in the law. Nothing in the OFPA provides for that kind of right, and we could not grant it through regulation.

Issues of pollen drift, however, are not confined solely to the world of organic agriculture. Concerns about the potential impacts of the use of Bt corn hybrids, for example, recently led to new restrictions on the planting of such crops. New requirements are designed to help mitigate the potential impacts of Bt hybrids on other operations, including organic and sustainable farms that depend on foliar Bt applications as an important pest control tool.

The conventional agriculture marketplace is also beginning to differentiate GMO and non-GMO products in a limited way. Conventional farmers who chose to plant non-GMO varieties, either to satisfy particular contract conditions or simply out of choice, are also facing the same kinds of questions about incidental contamination that organic farmers face. Given the growing interest in these issues throughout the food and agriculture sector, it is clear that this proposed regulation will not be the last word on these issues.

PDP Mean

Issues of drift and unintentional contamination are not limited to concerns about genetically engineered crop varieties. Drift of synthetic chemical pesticides has been of historical concern as well. This proposal would establish a new kind of "benchmark" for assessing levels of pesticide contamination. The concept - that we should establish some sort of action level or threshold for pesticide residues - is not new. But because we are proposing a new measure, I thought it would be useful to describe what it is and our thinking behind it.

We are proposing to use the national mean of pesticide residue detections calculated from residue testing in the Pesticide Data Program (PDP). PDP is the premier national pesticide residue testing program. It provides statistically reliable data on pesticide residues for a number of chemical/commodity pairs, focusing particularly on those foods most heavily consumed by infants and children. The results of this testing are used by the Environmental Protection Agency in their dietary risk assessments.

Continued on next page

Merrigan*continued from previous page*

The "national mean" is the average of the pesticide residues detected for a given commodity/chemical pair. We have chosen this benchmark for a number of reasons. First of all, we know that the PDP data are statistically valid and provide a highly reliable picture of real world pesticide residues. Second, because these residue detections are the result of pesticide use, we know that residue levels that fall above the mean are unlikely to be the result of drift or some other unintentional contamination. In other words, residue levels that fall above the average value found after pesticide use just simply should not be considered acceptable in an organic production system.

Some commenters on the first proposal recommended that we use a percentage of the EPA tolerance, for example 5%, as our benchmark. While this is a relatively straightforward approach, we were concerned that it is essentially a randomly chosen value and may, in fact, be too high in many cases. We have compared PDP mean values to 5% of EPA tolerance for a number of chemicals. While there are a very limited number of cases where the PDP mean value is slightly higher than 5% of the EPA tolerance, in the vast majority of cases the PDP mean value is significantly lower.

For example, the PDP mean for Captan on apples is about 45 times lower than 5% of the EPA tolerance (0.47 ppm vs. 1.25 ppm). Similarly, the PDP mean for Malathion on soybean grain is about 65 times lower than 5% of the EPA tolerance (0.006 ppm vs. 0.4 ppm). Electronic copies of published annual summaries and database files can be found on AMS' web site at: <http://www.ams.usda.gov/science/pdp>.

Fees/Impacts on Small Businesses

Pesticide residue testing also brings up another issue, concerns about testing costs specifically and the implications of this proposal for small businesses in general.

With regard to pesticide residue testing, those costs will be borne by the certifying agent. We realize that those costs will ultimately be factored into the overall costs of certification. Some have suggested that the cost and responsibility of residue testing be assumed by the Federal government. I have to tell you, we simply do not have the funds for a large scale, national residue testing program of this sort.

We also realize that, to the extent the testing requirements in our proposal add to costs of certification, the impacts could be more significant on smaller organic operations. This is true of other costs as well. A federal regulatory program invariably brings with it some costs. We know that organic farms are predominantly small businesses and we believe that organic farming may give those small agricultural operations a chance to bring home a greater percentage of the consumer dollar. We have, as a result, worked hard throughout the development of this proposal to mitigate the potential impacts on small businesses wherever possible.

For example, operations bringing in less than \$5,000 annually in organic sales would be exempt from the certification requirements. This represents a significant savings to the smallest producers. We have also asked for comment on how products from these small operations should be labeled in certain processed products. Specifically - should the products of an exempt operation be labeled as organic ingredients in processed products with less than 50% organic content? We understand that the benefits of the exemption could be mitigated by labeling restrictions, and we have specifically asked for public comment on this issue.

The rule also eliminated all direct USDA fees to farmers and handlers. We argued, and won, that part of the cost of this program should be covered by appropriated funds and not, as is the case with most other AMS programs, fully recovered through user fees.

The only fees charged by USDA would be for accreditation of certifying agents. Those fees will primarily be based on the actual costs of the accreditation work done by USDA staff so that certifying agents with smaller and less complex programs would pay lower fees. The proposal also provides for a significant reduction in the accreditation fees during the first 18 months of the program, with the balance of the actual costs of accreditation work covered through appropriated funds. Because this is a new program and the accreditation costs during the early implementation phase will depend in part on how quickly USDA is able to get the program up to full speed, we argued that the organic industry should not have to bear the full costs through user fees.

USDA efforts to enhance small organic business opportunities are not limited to provisions of the rule alone. At the same time the proposed rule was released, Secretary Glickman also announced a number of other initiatives aimed at helping the organic industry. The President's budget request for fiscal year 2001 asks for \$5 million for organic research, marketing and education projects in USDA's Sustainable Research and Education Program (SARE). The Agricultural Marketing Service is also entering into a cooperative agreement with the University of California at Davis and the Organic Research Foundation to research organic production and marketing under the USDA marketing order system. Much needed organic market information would come from the fiscal year 2001 request for funds to begin collecting and reporting data on volume and prices for organically grown fruits and vegetables through AMS' Market News Service. And finally, USDA's Risk Management Agency is developing a crop insurance pilot project which would pave the way for organic farmers to get full insurance coverage, providing much needed protection, particularly for smaller producers who are the least able to absorb significant losses in a given year.

We know that small businesses are the heart of the organic industry. We are actively seeking creative suggestions that will further improve our efforts to help small organic farmers and handlers.

Budget

This last discussion highlights the importance of the NOP budget. This proposal is predicated in part on the idea that Congress will appropriate money to offset the costs of accreditation in the early implementation phase. The President's budget proposal for fiscal year 2001, for example, contains a \$639,000 one time item to offset the first round of accreditation.

If these funds are not appropriated, we would have to recover the full costs of accreditation through fees to certifying agents. And we recognize that those costs would ultimately be passed on to certified organic farmers and handlers.

We could potentially make that change in the final rule if it were necessary, although a change of that magnitude would undoubtedly raise deep concerns within the industry. Alternatively, it may be necessary to repropose the fees portions of the rule to give affected parties a chance to comment on the proposal and its potential impacts on the organic industry. It is clear that such a course of action would delay the final rule even further.

Conclusion

I would like to end as I began - we know this proposal isn't perfect. We will be looking to the NOSB to again play a key role in helping us to make it even better. The NOSB has played such an important part in all this, and not just because of the central role given to you in the OFPA but also by acting as a constructive conduit for comments from all parts of the industry and the consuming public. I know we have all worked hard to get to where we are now, and I want to thank you for your efforts. But the proposal is really just the beginning of a long process. We need your help still, and we look forward to working with you.

National Organic Standards Board Meeting March 21-22, 2000

Please note: This report from OMRI staff reflects what was said during the meeting and may not represent an accurate analysis of the proposed rule.

The NOSB held a two-day meeting in Buena Park, California, with the primary agenda item being a detailed briefing on the new Proposed Rule, published March 13 in the *Federal Register*.

Board members in attendance included Rod Crossley, Steven Harper, Marvin Hollen, Fred Kirschenman, Steve Pavich, Eric Sideman, Bill Welsh, and Margaret Wittenberg, who chaired the meeting. Karen Anderson, NOFA-New Jersey, and Margaret Misner, Idaho Dept of Agriculture, represented certifiers.

Keith Jones, NOP Program Director, led the USDA staff. Other USDA staff attending included Rick Matthews, Bob Pooler, Mark Keating, Beth Hayden, Toni Strother, Arthur Neal, and Tom Tichenor. The meeting was attended by about 20 individuals, including representatives from at least 7 state programs on March 21.

Keith Jones opened the meeting and made introductory remarks. The NOP staff is now in an “*ex parte*” mode because of rule publication. Kathleen Merrigan also addressed the NOSB later in the meeting. The full text of her prepared comments is on the NOP website. She noted that with the need for quick turn around, the NOP will monitor the comments as they come in and start to address the issues raised. There is no benefit to holding comments for the last minute.

Merrigan stated that it will be critical to achieve the budget request as is included in the President’s budget that allows for the first round of accreditation to be free. The retail issues are not totally resolved; the door is open to future development of standards. They are looking to the NOSB for ideas.

Regarding fish and aquatic standards: the NOSB can make comments any time, not just in the current comment period. When asked if AMS would develop standards in the absence of NOSB support, Merrigan said maybe. She is not fully in control of this situation, though trying her best. It is important to raise all sides of the issues at the public meetings.

Honey standards were postponed for lack of consensus; she anticipated publishing them separately before the proposed rule is finalized. The appointment of new NOSB members is anticipated in April.

Committee Reports

Livestock

Fred Kirschenman reported that the small dairy producers provided comments to the livestock committee regarding the lack of an NOSB recommendation to support a one-time new herd dairy conversion policy. The producers want a provision that specifically allows less than 100% organic feed during the conversion year. The committee is on the agenda to present a position on new herd dairy conversion at the June meeting. The committee tabled a recommendation on biodiversity and the definitions of feed supplements and additives as relating to the requirement for 100% organic feed.

Fish

Mark Keating reported that the AMS plans hearings to develop standards for organic “aquatic animals.” He described the notice in the *Federal Register* (appeared March 23) that announced dates for three hearings: April 10, Mobile, Alabama; April 12, Anchorage, Alaska;

and May 3, Providence, Rhode Island. The *Federal Register* notice also seeks comments about the concepts, rationale, and methods for certifying fish, as well as the use of fish products as organic livestock feed. The due date is May 17, 2000. At least one NOSB member will be present at each hearing. The Board supported a resolution to commend the NOP for conducting hearings, and asked that the information gathered be disseminated as widely as possible.

Crops

Chairperson Eric Sideman reported on the committee’s actions to review the material ethylene for use in flower induction of pineapple. At the October meeting, the Board approved the post harvest handling use of post harvest ethylene on tropical fruit and citrus, but tabled the discussion on crop production use for pineapple. OMRI provided information about formulation and application methods to supplement the original TAP review considered in October 1999. The committee recommended that ethylene gas be permitted with a temporary allowance and phase out period to allow for development of natural materials. Keith Jones stated that deadlines for phase out would not be feasible, that all items on the list are subject to a 5 year sunset. Otherwise this would require a policy decision that would affect all materials. The board tabled ethylene to have more comment on the issue. There was discussion about the timing of a board vote and the impact on the final rule: Jones said that if the board voted to add a material at the June meeting, it could be added to the Final Rule. Matthews stated that as long as the issue was discussed at a public meeting during the comment period, it could be included in the Final Rule.

Materials

Keith Jones presented a draft *Federal Register* notice for petitions to amend the National List. Jones stressed that the process is open to all petitioners, with no closing date. The notice states that only generic, single ingredient substances may be petitioned. The draft petition also

provides a detailed list of required information for petitioners to supply.

One of the more controversial provisions of the draft petition notice is the allowance for petitioners to withhold confidential information. OMRI testified in favor of a more transparent process allowing greater and public access to information regarding materials petitioned for inclusion on the National List. Instead of requesting greater transparency, however, the NOSB amended the clause to broaden the coverage of confidential information.

NOP staff will be reviewing petitions as received, and determine completeness before they are referred to the NOSB. If incomplete, they will notify the petitioners to supply more information. An appeals process needs to be developed. Jones explained that, because a fee would have required further authorization and delay, none will be required to process a petition.

Briefing on the Proposed Rule

USDA staff presented an overview and answered NOSB questions on each subpart of the proposed rule. OMRI has prepared a side-by-side comparison of NOSB recommendations and the NOP’s proposal for the National List. OMRI has also identified some of the issues that require more study and comments. These two tables will be presented with references to the appropriate sections of the proposed rule and will be posted on the OMRI website.

Subpart A – Definitions

Excluded methods

Keith Jones explained the evolution of the term “excluded methods” to replace genetically engineered organisms. He characterized the prohibition of GMOs in the rule as “old news” as stated by the Secretary in May of 1998. The new term was coined due to lack of a consistent definition between various agencies, including APHIS, EPA and FDA and the desire for a term that AMS can call their own. NOP feels that the definition captures the essential NOSB definition.

Jones stated that USDA scientists considered the terms gene doubling, gene deletion, and introduction of a foreign gene to be redundant, and were removed from the definition. He specifically said that it was not done to allow genetically modified enzymes.

Estimated National Mean

The rule proposes to set the upper threshold for pesticide residues in organic crops at the Estimated National Mean (ENM) of the detected residues identified in crop-pesticide pairs from samples collected by the Pesticide Data Program (PDP). This replaces NOSB's recommendation to set levels for unintentional pesticide residues at 5% of EPA tolerance levels. AMS uses the PDP to collect data to evaluate risk of pesticide residues in food at a level closest to consumers, and targets the impact of pesticides on infants and children. Merrigan defended the PDP data as the "premier pesticide residue testing program in the world" and gave examples of some of the ENM levels on crops as being 45 to 65 times lower than 5% of EPA tolerance. OMB and FSIS approved the use of this system, and AMS is open to suggestions for improvement. In addition to the use of ENM for pesticide residues on crops, the Administrator will establish levels for Unavoidable Residual Environmental Contamination (UREC) to deal with issues of persistent prohibited materials not covered under PDP data collection, including such items as residual chlorinated hydrocarbons, or high native levels of heavy metals. These will probably be set on a national basis, but the basis for determining UREC was not described.

Jones acknowledged the gaps in the database. NOP will publish ENM data for certifiers to use.

The USDA is in the process of establishing an accreditation program to establish standard protocols for laboratories that perform pesticide residue testing in food. This will likely include all labs participating in the PDP data collection. Certifiers may test for pesticide residues if they have a reason to believe there has been contact with prohibited materials. Costs of pesticide residue testing will be borne by certifiers, most likely through program fees.

OMRI is analyzing the PDP data and will share the results of that analysis with subscribers.

Subpart B – Applicability

This section identifies exemptions and exclusions for the certification requirement. The exemption for retailers has been enlarged to allow in store processing of retail foods. The \$5000 exemption for small farms has been extended to handlers as well and limited to gross organic sales. States can have additional requirements for retailers and distributors to be certified.

A product that claims organic only on the ingredient panel and makes no principal display panel organic claim is exempt from certification. This is true for all products—those composed of less than 50% organic ingredients as well as 100% organic ingredient products. These claims would still be subject to enforcement and fines up to \$10,000.

Subpart C – Production and Handling

The proposed rule deleted most of the discretionary language ("if necessary") that was throughout the previous proposed rule. Instead, certifiers may request and the AMS Administrator may grant limited allowances for temporary variances for disaster and research.

Raw manure standards are based on NOSB recommendations made at the June 1999 meeting, and compost must be produced in compliance with NRCS practice standards. While sewage sludge is prohibited, ash from sewage sludge is excluded from the definition and appears to be allowed. Vermiculture is not addressed, and may not be considered as in compliance with the compost requirements.

All synthetic materials must be on the national list, including seed treatments, additives in processed food, etc.

Producers will be required to "evaluate and mitigate the effects of repetitive use of the same or similar materials on pest resistance." This is in recognition of possible resistance problems and not meant to be burdensome.

The rule proposed allowing Chilean nitrate and potassium chloride as minerals of high solubility. There are no restrictions on use other than soil or tissue tests. Staff stated the NOSB limitations would be included in the program manual.

Livestock

The proposed rule does not allow for one time dairy herd conversion. The rule does not reflect the NOSB's recommendation from 1998 to allow the transitioning of animals along with the farm. Temporary variance from outside access for "stage of production" will not allow milking cows to be confined.

Handling

Materials used for facility pest control are not required to be on the National List. Prohibition of commingling is meant to prevent physical contact with prohibited substances.

Subpart D – Labeling

The proposed rule allows for up to 5% of any non-organic agricultural ingredients in a processed product labeled as "organic" even when that ingredient is commercially available from an organic source. NOP staff pointed out that OFPA contains no provision for commercial availability. NOP staff could not answer whether FSIS would agree to the proposed labeling during the implementation period. NOSB members pointed out that the 100% organic category could be interpreted to not allow the use of any processing aids, even if they were organically produced agricultural products. A "100% organic" food obviously could not contain any non-organic ingredient, including vitamins and minerals.

Products making a principle display panel claim of "made with organic (specified ingredients)" also must be made under different requirements than the previous proposed rule or the NOSB's recommendations. However, NOP staff recognized the need for further refinement and clarification, particularly prohibited practices and materials. The staff clarified that the proposed rule prohibits: use of excluded methods; sewage sludge; ionizing radiation; sulfites, nitrates, and nitrites; non-organic ingredients when organic ingredients were available; and the same ingredient from both an organic and non-organic source.

Subparts E & F – Certification and Accreditation

The new rule allows certifiers to deny certification, after issuing notices of non-compliance and providing due process and notice to applicants. Applicants must be given an opportunity to withdraw before being denied certification. Certifiers can suspend or revoke certification of ongoing certification, but there is no provision for stop sale.

The NOP will handle all appeals of certification decisions. In the case of decertifying a certified operation, the USDA certification continues until after the appeal is resolved. Certifiers may withdraw permission for use of their seal or name while a decertification case is pending appeal. The NOP is examining privacy issues and whether this information is subject to Freedom of Information Act requests.

NOP will develop a password-protected database that will be available to all accredited certifiers. All notices of non-compliance and denials will be listed in this database.

There is no annual renewal and no dates on the certificates.

Certifier conflict of interest and non-discrimination policies are very stringent: certified farmers are barred from serving as members of their certifier's board of directors. Farmers may serve in other

volunteer capacities as long as they are excluded from decision making in cases where they have a conflict.

Other items on accreditation and certification were discussed at the National Association of State Organic Programs (NASOP) meeting held in Anaheim. States programs (detailing additional requirements) do not have to be filed in the *Federal Register*. There is a mistake in the regulatory text that requires this. OGC has ruled that this is not correct, states need only take comments from state residents. States asked if a private certifier that is perceived to have inadequate ability to certify to state requirements could be prevented from operating in a state. States do not accredit private certifiers, only USDA has that authority. USDA will accredit private certifiers to meet additional state requirements. Any complaints about private certifiers should be forwarded to USDA for investigation.

States can make additional administrative requirements of private certifiers, but the Secretary must approve any substantial requirements that affect the state organic program. AMS will evaluate requests in the context of the Paperwork Reduction Act. States can probably add a transitional label as additional requirement provision, although the proposed rule recognizes no such program.

Implementation

Any operation certified before the announcement of first round of accredited certifiers will continue their certification, as long as certifier becomes accredited. If rule is finalized December 2000, the NOP will announce first round of accredited certifiers in December 2001. The rule becomes fully implemented 18 months after final publication, allowing 6 months for producers to become certified by an accredited agent. Prior use of any prohibited materials formerly permitted will not be grounds for decertification.

Subpart G – National List

The NOP revised the National List to conform to most NOSB recommendations. All synthetics used in organic production, handling, and processing must appear on the National List. The NOP did not propose to add any synthetics that the NOSB did not recommend. Four materials that the NOSB recommended for addition were not proposed by the NOP: two antibiotics for crop use (streptomycin and terramycin), sulfur dioxide in wine, and oxytocin for livestock. The NOSB recommendation to allow natural flavors was also not adopted. Only EPA List 4 inerts are permitted for use in pesticide formulations without any phase-out for List 2 or 3 inerts. The proposed rule also recognized the need for a section on synthetic fillers and excipients for livestock production, but does not list any synthetics in that category.

Materials approved for one use could not be used for another, according to Keith Jones. Some annotations may be difficult to enforce and comments may affect some changes. Comments may result in more materials being removed from the list but any additions to the National List will need to be added through the notice and petition process to be published in the *Federal Register*. Merrigan stated that materials added to the List must be posted in the *Federal Register*, and she thinks there should be a 5-year moratorium on re-examining materials unless there is compelling evidence.

Jones noted that the NOP did not intend to eliminate critical materials or cripple the organic industry. He said they are looking for Board and industry guidance to provide input to review, prioritize, and expedite the list process. OMRI has sent a survey to subscribing certifiers and state programs to facilitate this process.

June Agenda

The Board made tentative plans for the meeting, scheduled for June 6-8 in Washington, D.C. Agenda items include new Board orientation, board procedures, election of officers and committees, seafood report and vote, livestock issues, ethylene decision, amino acids (carried forward as tabled), review of petitions, and materials list prioritization.

Special Supplement on Bees

Is the Honeybee Worth Saving?

by Gunther Hauk

With over 65% of our nation's honeybees having died in the last few years, more and more people are looking toward the other pollinators. All of these are solitary bees like the mason bee, helping to ensure that at least part of the service the honeybee has supplied by pollinating about 3/4 of our vegetables is accomplished.

Could this be a trait deeply ingrained in our American culture: to exploit a piece of land, a plant, or an animal until it no longer renders any profit or simply gives up its life, and then go on to the next piece of land, plant, or animal? The pioneers did exactly that to the land, and this resulted in the dust bowls. Many of our cultured plants have been forced to 'yield' so much, and in the process have become so degenerate that they cannot produce a crop without the artificial protection of pesticides, fungicides, and insecticides, in addition to receiving loads of artificially produced fertilizers.

The vanishing of the honeybee population is generally attributed to the activity of two kinds of parasitic mites, the varroa and the tracheal mites, as well as to the bacterial disease called American foulbrood. Not only scientists but many beekeepers believe that when we have found effective remedies against these culprits we shall be able to breathe a sigh of relief and go on breeding, raising, and keeping bees, having perfected it so wonderfully in the last 100 years.

To put our hopes in this approach is a great illusion since we can never cure an ill by just getting rid of the symptoms. Fungi, bacteria, and parasites have a deeper meaning in the complex interrelations within nature than just to be a nuisance or a threat. Their task is to deal with what has been weakened and therefore needs to be eliminated.

In the case of the honeybee, we have done just about everything possible in manipulating this animal to serve our comfort and greed. We have suppressed or manipulated basic life expressions like swarming, building fresh honeycomb, and raising as many drones as a colony sees fit. All this and much more has been and is being done without asking what long-range effects this could have on the vitality and health of the bee. Seen altogether, we can say that we have introduced into the realm of life the kind of thinking appropriate to running a factory, where the whole is determined by the cumulative effect of the individual parts along guidelines of rational thought. The efficiency of the single component determines the outcome. Henry Ford knew this and rationalized production in wonderful way, thereby making the product cheaper and 'af-Ford-able' to the general public.

A living organism, however, is just the opposite: the individual part, the organ, is determined by the entire organism, and functions well when resting on this initial 'wholeness'. The complex interaction and interdependence of the individual organs are governed by the living entity, whether that be a plant, an animal, the human being, or the earth.

In the case of living beings the cause-and-effect relation is not limited to the readily visible and logically interacting parts which make a machine or a factory work, but depends on interrelations involving the entire cosmos. Just as the moon determines the hatching of eggs of certain worms living in the ocean, just as the sunspot activity has its effects on our social life, so the life of the entire bee colony is governed and directed by factors that go beyond the physical sphere of this earth. We are still discovering some of these mysteries and secrets as the years go by. Whenever our decisions are determined mainly by economic motives, by factors having to do with our ease and comfort, we tend to by-pass this greater reality. The results are sometimes astounding: a colony can 'pro-



duce' hundreds of pounds of honey, a cow can give twice the amount of milk, a pig can grow an extra pair of ribs (spare ribs?), the hens can lay more eggs, or the acre of land can produce three times the tonnage of grain.

But the joy is short-lived: the land loses its humus, its vitality, and becomes 'dead'; the boar can't reproduce without artificial help; the cow's life expectancy is now between 6 and 7 years instead of 25-28 years; the hens can't hatch their own eggs anymore. And the bee? It is so run down and sick that it can't protect itself against one or the other parasite or bacterium, and it can only survive with lots of medical care.

The bee is our sick patient, and no medication against mites, foul brood spores, against anything, will raise her natural immunity, vitality, and health until we consider her in her own right and ask ourselves what she needs. Does she need a home that's not all plastic, a wax comb that she can call her own, a food supply that is not poisoned by all kinds of '-cides', or made up of substitutes, whether sugar or pollen? Does she need to swarm just as we need a natural act of procreation? Or will a 'virtual reality' substitute do just as well?

But most of all, does she need a friend in us who respects her, cares for her — not only in the form of \$\$\$\$ signs — someone who will show gratitude for all she does for us? Will we go out of our way to nurture her just as we nurture a sick friend without making demands on performance: so many pounds of honey a year.

Unfortunately, the first or second question even 'friendly' beekeepers still ask you is: how many pounds per hive did you get last year? A bit like: how much mileage do you get out of your car? Unless our basic attitude is changed toward all of nature, toward all living beings on Earth, we are bound to create more environmental disasters, killing off those friends and benefactors who enable and guarantee our life and well-being here. Already in 1923 Rudolf Steiner predicted in his lectures on bees that unless we change our ways the honeybee might not survive the end of the twentieth century. At the beginning of the 21st century it is high time to realize what we are doing and not simply put the blame on a virus, bacterium, or parasite.

Even if we had a completely vital and 'new' bee, in due time we would ruin that one, too, if we would continue in our haughty, selfish, and irreverent ways. So, let's learn the lesson and have the courage to enter into a new and rewarding relation with the bee and other beings. It is really the essential question: To be(e) or not to be(e)?

Gunther Hauk teaches a number of courses about Biodynamic farming and gardening at the Pfeiffer Center in Chestnut Ridge, NY. To receive a brochure listing courses and dates, call (914) 352-5020 or Email info@pfeiffercenter.org.

Using Essential Oils and Organic Acids to Control Honey Bee Mites

by Robert C. Noel, Teacher, Fort Hill High School
& Dr. Jim Amrine, Prof. of Entomology,
Division of Plant & Soil Sciences
West Virginia University

Varroa mites *Varroa jacobsoni* and tracheal mites *Acarapis woodi* have wiped out European honey bee colonies world-wide. The varroa mite is the most devastating pest of honey bees to date, and has caused widespread epidemics of Varroosis Parasitic Mite Syndrome (PMS) in the USA and Europe. This dangerous mite pest has the potential to cause the extinction of the European Honey Bee, *Apis mellifera*, especially if beekeepers become weary of making treatments, or if the mites become resistant to all available acaricides. Since July, 1995, Bob Noel (Cumberland MD) and Amrine (WVU, Morgantown, WV) have been conducting trials using natural essential oils (EOs) and low concentration organic acids to reduce mites in bee hives. Essential oils were chosen for tests against bee mites because plants produce many essential oils as natural acaricides and/or insecticides to repel and kill pests that attack them. Honey bees are relatively immune to the effect of essential oils since they have been collecting nectars containing essential oils for millions of years and have developed resistance to them. In 1998, Amrine and Noel obtained a USDA, SARE grant in the amount of \$80,000 to conduct this research. Several techniques have been employed to reduce the mites.

Syrups. Feeding in 1:1 sugar syrup was the first method tried, and this was done using about 1 cc of natural wintergreen oil per quart. The major problem of this technique became apparent immediately: the oils would not mix with water. Bob, Jim, Attila Kovacs (a chemistry teacher at Fort Hill High School) and Tony Delia (Anpak Associates, Connecticut) began attempts to find ways to mix the oils with the syrup. Eventually, a mixture of lecithins and essential oils proved capable of making a stable concentrate that disperses evenly in the sugar syrups and would not separate or allow fermentation/degradation of the substance. Noel began marketing this product as Honey-B-Healthy (R) in spring 2000. Repetitive trials showed that the blend of spearmint and lemongrass oils (1cc per quart), when fed as a syrup to colonies during brood build up (and in the absence of a honey flow) had a detrimental effect on mites, preventing development of immature mites and sometimes killing adult female mites in brood cells containing the EOs in bee food. This approach works best during early spring buildup and during periods of dearth when no natural nectar is available to the bees. When nectar is plentiful and brought in by foragers, the bees stop taking the syrup, essentially stopping the treatment.

Tracking Strips. In 1996, Noel and Amrine developed tracking strips as a method to treat the bees when they were actively foraging. They made a slurry of melted beeswax, canola oil and wintergreen oil which was then placed on a piece of plexiglass (1/8" x 4"x14") and positioned at the entrance of the hive so that bees crawled over it when exiting or entering the hive. The bees helped each other to clean off the slurry from their legs and body and spread a thin layer over each other and throughout the hive. The essential oil in this slurry was irritating and toxic to the mites, but not to the honey bees. When freshly applied, mites retreated in large numbers into brood cells that were about to be capped; one cell containing a recently capped drone larva contained over 25 female varroa mites attempting to escape the wintergreen oil. If more than 4 or 5 female mites enter a single brood cell, the overcrowding disrupts their natural reproduction. Obviously, with 25 mites in a brood cell, no reproduction could have occurred. Mites that could not find shelter were killed by the contact of the essential oil on their body (possibly by blockage of their protruberant and movable, snorkle-like peritremes and stigmata). We believe that the wintergreen also blocked their olfactory senses, making it difficult for

them to find the appropriate cells to invade. Also, video tapes (see Noel's website) showed how treated mites were irritated by the oils: they ran rapidly in tight circles, changing direction often. Although the tracking strips worked well when freshly applied, they were labor intensive: strips had to be replaced every 4 or 5 days, making it too tedious and time consuming for the majority of beekeepers to efficiently employ. Also, the wintergreen evaporated fairly rapidly from the slurry on the tracking strips. We are still experimenting with the slurries and have replaced the slurry of melted beeswax and canola oil with vaseline. We mix the essential oil directly into a jar of heated vaseline, using about 45cc of wintergreen per 1 lb. jar.

Grease Patties: In winter of 1995-1996 Noel and Amrine developed wintergreen-grease patties, made by mixing 1.5 lbs of shortening (solid hydrogenated vegetable oil for British and European readers) with 4 lbs. sugar, 1lb. honey and 45 cc of natural wintergreen oil. We initially used the patties by shaping them into three inch diameter patties (like a hamburger patty) and placing them onto the tops of brood boxes in the hives during the late fall and winter months. But, many beekeepers have gotten good results by using them year round. It is very important to place the patties near the cluster or near the brood. Bees tend to ignore patties on top of supers, far from brood. Our most recent research shows that more numerous, smaller, golf-ball size patties are superior to the larger, three-inch ones.

Wick Device. Last year, Noel developed a wick device to allow a mixture of mineral oil plus wintergreen to wick up 3 paper wicks into the central brood area in the brood box on the hive. The bees moved against the wicks in the brood nest and the mineral oil plus wintergreen got onto all nurse bees and killed varroa mites on contact. Many dead mites were found on the bottom of the hive using a modified detector board made by Noel. A modification of this wick device was to use a mixture of weak organic acids in place of the mineral oil wintergreen. Noel experimented with various concentrations of acetic and formic acid, finding that the best ratio was 18% formic and 4% acetic acid mixed together. This level of weak organic acids was not harmful to the skin or caustic to the breath of the beekeeper, but was deadly to the mites. It did not harm adult bees but did kill open brood located adjacent to the wicks. The rest of the brood, — sealed and unsealed — was not harmed. An outstanding result was that the weak organic acids penetrated the sealed brood cells, killing the mites

inside, but not the honey bee brood. We have modified this device for additional tests this summer.

Research planned for 2000: Amrine has 82 colonies at WVU and will test them using the various methods above as a preventative against mite infestation. Once mite populations reach a sufficient level, each colony will be challenged by introducing drone brood infested with mites. At the end of the test, 100 drone cells per hive will be examined for the presence of varroa mites and the resulting numbers of infested cells will be used to evaluate the efficacy of each test. The above methods will be compared to the typical Apistan treatment. Resistant varroa mites have not been found in the Morgantown area to date. Noel has 70 hives and will conduct trials parallel to those of Amrine. He will especially prepare and test novel methods for controlling honey bee mites. Noel has Apistan resistant mites to contend with in addition to resisting mite infestations.

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Bees on The Kurtz Farm

by Jack Kittredge

Spreading east from New York City for over a hundred miles is the flat fertile ground of Long Island. For many years a prime agricultural site, in recent years the island has sprouted houses instead of field crops. But between the developed areas, farming uses still linger. In one community, Mount Sinai, a peach orchard continues in business. Next door, on their large lot, Richard and Melissa Kurtz have been raising bees.

Richard teaches biology at a local public high school. Melissa works at an educational farm sponsored by Cornell's Cooperative Extension. She grew up in New York City and decided she wanted to be a farmer. After taking a 2-year ag program and apprenticing at organic farms in Pennsylvania, she got interested in beekeeping. Melissa got a job as the local bee inspector looking for cases of foul brood. Richard went on some of her inspections with her and also got interested in bees. They joined the Long Island Beekeepers Association and found a man who gave them a couple of hives and became a mentor. After a few years they built their operation up its current 7 hives. They take off 2 harvests a year.

"Our honey is very light in the spring," says Melissa. "We think it's because the bees go over to the peach farm next door. The fall honey is dark and made from ragweed and goldenrod and other local flowers. People like to take local honey for allergies. They say if you eat honey made by bees from local flowers, it gives you a little immunity to their pollen."

The couple sell to a farm stand and a health food store. But most of their business is people who come to the house and bring their 2 pound jars back for a \$6 refill. They filter their honey, but don't cook it — feeling that although heating provides a faster and finer filtration, many honey enzymes would be killed. There is a good market for bee pollen - the pellets of compressed flower pollen they bring back to the hive to be mixed with honey into 'bee bread' which is fed to larvae for the proteins they need. But the Kurtzes don't sell it, feeling that there is no way for them to assure their buyers that the pollen hasn't come from flowers exposed to pesticides. Propolis - the sticky substance bees secrete to fill gaps in the hive - is also a marketable product. But Melissa feels it is too messy to handle properly.

Nor do they sell royal jelly, although Melissa says it is easy to see why people would buy it: "If you think of the difference between a worker and a queen bee, it's tremendous. The workers live 5 to 6 weeks; the queens can live for 5 years, laying 2000 eggs a day. The only difference is the queen gets royal jelly for about a week. The workers get it for only a day. It's no wonder people take royal jelly themselves."

For the Kurtzes beekeeping is mostly a hobby. The price of honey is depressed by imports and not high enough to pay for the time and equipment involved in small production. But they love it and Richard uses the hives in his biology teaching — he has a portable one he fills with a brood frame which the kids can observe — emphasizing the importance of bees for pollination. They do not support organic certification for honey, feeling that bees forage too far away and you cannot be sure of what they are feeding on.

The key to a successful hive, Melissa stresses, is the queen. "The queen gives off a chemical odor which governs hive activity. If she is missing, or if the workers feel she is getting weak, or the hive is too crowded, they will make new queens. The first one to emerge will kill the others and the existing queen, unless she takes off with a swarm. If two emerge at the same time they'll fight it out."

A queen will live from 2 to 5 years. The Kurtzes tend to replace them every 2 years because after that they lose vigor and aren't as hardy. The younger ones tend to lay a lot more eggs. Richard buys replacement queens from beekeepers in the south. The season is longer there and bees are a month or two more advanced. A whole southern industry has developed around making queens. Larvae of a certain size are removed from frames and put in queen cups. They are fed with royal jelly and then implanted in a special frame with lots of queen cells. The queens are taken out at a certain time so they don't all emerge at the same time and kill each other.

The timing of queening is important, Richard adds. "If you are thinking about buying queens you decide at the end of the winter. You look at the brood pattern of your hive - are they filling all the cells? If the pattern is thick you have a good queen. If you see spotty brood, it's time to replace the queen. Sometimes the bees will replace her themselves. If they think she isn't working they'll make a new one. If you requeen you have to take out the old queen. You have to find her - which is hard - and kill her. Then you put the new queen in. But you don't want to requeen too early, before the honey flow, because the brood will build up to quickly, they'll get cramped and the bees will swarm on you. You need to manage the build-up and the space you provide by adding supers with more frames."

The technology of beekeeping is simple but clever, he notes. "The queen comes in this little cage with 4 or 5 other bees, screened on both sides. There's a big wad of candy in there. You take the cork out and you put a small hole in the candy. Then you insert the cage in the hive. You don't want the queen to come



photo by Jack Kittredge

Richard starts the bee inspection by burning leaves or pine needles in his smoker.

out right away because the bees aren't used to her yet. So the bees are in smelling her and getting used to her. They start eating the candy and after a few days the hole is big enough for the queen to get out. By then they are used to her and she to them. So that's a queen cage. The ingenuity of beekeepers is amazing! They're an incredible bunch of people."

Bee biology is also quite fascinating. Every bee in a hive is a descendant of the queen. She goes out on a mating flight, gets inseminated by a drone, and returns to the hive, mated. All the males come from unfertilized eggs she produces — they are haploid, with only a half a full set of chromosomes. The fertilized eggs are all females, normally destined to be worker bees. If something happens to the queen, however, the workers will start feeding royal jelly to some of the eggs and make some more queens. A bee makes a complete metamorphosis from egg to larva to pupa to adult right in the comb. The workers feed and clean them during this process. They cap the cell over with wax when it's in the pupa stage. Then when the adult is ready to emerge it eats its way through.

Males are useless after the queen is bred. Most males are kicked out of the hive before winter. Queens are usually artificially inseminated before they are sold. So if you buy in your queens, you don't ever need drones. If you are trying to breed a strain of bees with resistance to any of the many pests and diseases which beset them, however, drones are the key. Currently there is a lot of interest in breeding bees which can better withstand infestation by varroa mites.

"Their latest breeding hope," Richard explains, "is to select for hygienic behavior - bees that are really good at cleaning out the hive. Researchers figure such bees will remove brood that are infected with varroa or groom each other more readily. So they insert a section of dead brood into a hive to see how readily the bees clean it out. If they find a good hive, they will take larvae from that one and turn them into queens, and take males from that hive and use their sperm to inseminate the queens."

The actual process of making honey is not fully understood, Richard admits. The worker bees make it by gathering nectar from flowers and processing it with certain enzymes secreted by specialized glands. They deposit it in a moist state in cells, and fan it to evaporate the moisture. When cured, the honey cell is capped with wax.

To facilitate this process the beekeeper provides a frame containing a sheet of plastic sandwiched between wax sheets on both sides. The sheets are stamped into the exact honeycomb shape that bees would use to build cells. Once you put it in the hive, the bees pull the wax out into cells. Some older frames used wire instead of plastic. The plastic or wire is needed for strength while centrifuging to extract the honey.

The Kurtzes have a small centrifuge which holds 6 frames at a time. Richard uncaps the honey cells with a special fork and places them in the machine. Once turned on, the frames are spun around at a high speed and the honey is expelled from the cells by centrifugal force. It then falls to the bottom of the extractor where it is drawn off and filtered before being bottled. In July of 1999 they harvested about 500 pounds from their 7 hives — a very good yield. The frames are reused if in good condition, the wax capping melted down for candles.

Richard call theirs a wildflower honey: “ You don’t really know everywhere the bees go to feed. A lot of people say ours in a unique taste - very fruity — and we think they make a lot of honey from the peach farm next door. But we don’t really know. I get two crops - my spring honey which I take off in early July, and then the fall crop which I take off in September. That has a different taste and is a much darker honey. My fall honey comes from goldenrod and things like that. But it was so dry in 1999 that the crop was off. Bees need tons of water to make honey, to cool their hive down.”

“The bees work so hard making honey,” he explains, “to have enough food to get through the winter. You need to leave about 2 supers of honey in the hive for them. They cluster around the queen for warmth and generate heat by burning honey. If it’s cold they need more honey, but the worst for them is a cold winter with warm spells. When it warms up their metabolism picks up and they use a lot. Sometimes you have to supplement their honey at the end of the winter. You can use excess honey or sugar water. Sometimes they will even die because the cluster didn’t get to where the honey is. You open it up and see thousands of bees, dead. Right on the next frame is a lot of honey. That’s rare, but it happens.”

The 1999 drought was tough on the bees, Richard feels. Honey production in the late summer was down, and the bees were visiting neighbors’ swimming pools for water. This led to a few stinging incidents. Richard built a few small ponds on his property with the characteristics bees like - wet mushy soil to land on.

The biggest problem facing beekeepers now, Richard condends, is the threat posed by parasites: “There are two predominant mites which cause problems. The tracheal mites go into the bee’s tracheal tubes and breed in there. The varroa mites are external pests. They end up on the bee’s surface and end up sucking the juices out of their bodies. I don’t think the mites kill the bees, but the bees become weakened so that they are more susceptible to other problems.

“Around here varroa is really bad. The recommended treatment — apistan strips — is not organic and is expensive. And now the mites are becoming resistant to it. Until this spring that was all you could use. Now they let you use an organo-phosphate or formic acid in a gel. If people are using chemicals they can’t use just one thing anymore. The authorities are stressing IPM now. Apistan is a pesticide, a contact poison that kills the mites. You can’t use it during honey flow, but you put it on after you have taken off the honey. The mites get on the larvae and build up with the bee population. If you don’t correct it before the bees go into the winter, chances are your hive isn’t going to make it. The bees are badly stressed by them. The mites are always there, but you want them as a low level population.”

Richard and Melissa have been experimenting with using essential oils — like spearmint — in the sugar water they give the bees in the early spring. Some people report good results with this as a control for mites, although others do not. They look to long term breeding of more resistant varieties for real hope. For now, they realize, mites are going to be a part of beekeeping and must be managed so the level stays low.

Another problem confronting beekeepers is “foul brood”, a bacterial infection. This is a virulent problem and has resulted in the loss of entire hives. Antibiotics can reduce the problem, but if the infection gets out of hand, nothing can be done except to isolate and burn the hive to kill the spores. So far the Kurtzes have not suffered from this, however.

Yet another new difficulty for beekeepers is wax moth, Richard says. They get into the wax in your comb during the winter. People sometimes use moth balls to



photo by Jack Kittredge

The Kurtzes lift a frame out of a super to examine it.

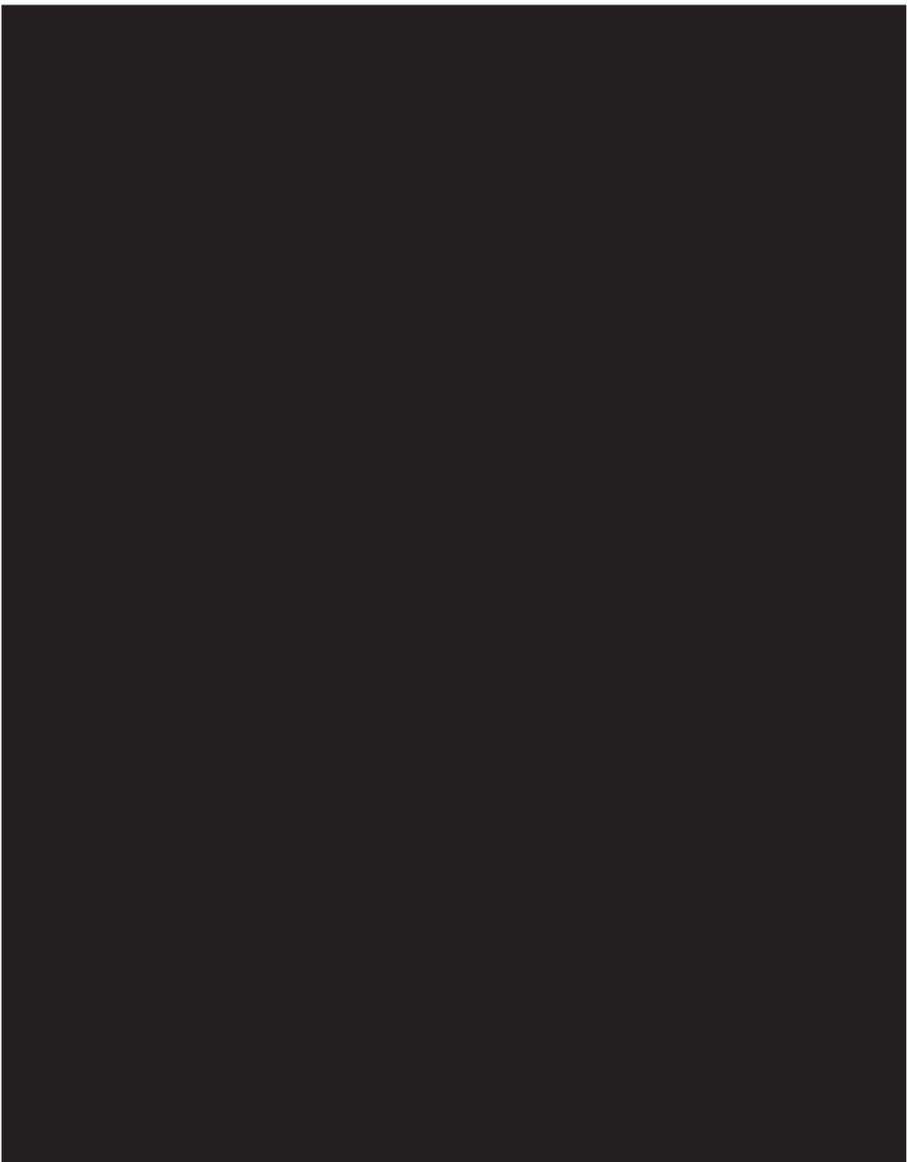


photo by Jack Kittredge

Richard proudly shows what a frame should look like, brimming with honey.

control them. They were illegal for a while, but now they’re legal again. If you can get a lot of air into you equipment you won’t have the problem, supposedly.

Richard has heard of another new pest now in Florida called the small hive beetle. It’s a beetle that loves the smell, taste and nutrition offered by the combination of honey and pollen and wax. They kill the larvae as well as destroy the wax. They migrated in from South Africa. Now many big commercial beekeepers are bringing their hives north on tractor trailers to follow the honey season. The hives are on skids and the trucks have big cranes that drop the hives off in a farmer’s field and come back two weeks later, pick them up, and move further north. This migration is bringing the small hive beetle quickly into the northeast, he worries.

Kurtz says the honeybee used throughout North America was originally from Europe, probably Italy. There are hundreds of species of bees, many of which make some kind of honey from nectar for food storage, but few which make enough excess or are manageable enough for practical beekeeping. The Africanized honeybee which is now so much in the news was brought into Brazil in the 1950s to crossbreed some of their aggressive traits into European honey bees. Some escaped and they began breeding with commercial honeybees. Individually their sting is no different from a honeybee’s, but they just don’t stop coming at you if they’re disturbed, he explains. There are people in South American who manage Africanized honey bees. You just have to be careful to wear protective equipment. All of a sudden in Texas there’s an increase in the number of wild honeybee colonies which might be Africanized bees that are developing resistance to varroa mites.

Richard is very concerned about the threat to American agriculture from the losses beekeepers are experiencing to mites. “About half the fruit crops in this country are pollinated by honey bees”, he stresses. “That’s the big concern — we need bees for pollination. If we lost all our honeybees we’d be in big trouble - what would pollinate our crops? There are wild bees, but the size of our agriculture is such that there are nowhere near enough of them. There are people who are doing research on alternative pollinators like bumble bees. They are much hardier than honey bees. Also, they’re native, whereas the honeybees came over from Europe.

“Honeybees”, Richard continues, “aren’t really the most efficient pollinators here - they didn’t evolve here. But you can get so many of them in one place that they have out-competed any alternatives. They’re manageable; we’ve figured out how to make them work for us. You can get large numbers built up in a box that you can take from one place to another. Most other pollinators are solitary - they don’t live in large hives. In an area you might have a lot of little nests, but probably not enough to equal the 30,000 bees you get in one hive with honeybees. Even honeybees which have escaped into the wild don’t build up big numbers. Their group size is limited by the size of the hollow tree or whatever they are living in. They will just swarm when it gets too crowded. Plus, there aren’t many honeybee colonies left in the wild because of the mites - they’re not being treated and they’re going extinct. I love beekeeping. It’s a lot of fun. But it’s not as much fun as it used to be.”

Apitherapy - Using Bees and Hive Products for Health

by Deb Pouech

Apitherapy is the healthful or medicinal use of the products of the hive of the honeybee. We are normally talking about the European honeybee (*Apis mellifera*). There are other species of *Apis* in other parts of the world that are "farmed". The products we will discuss are honey, beeswax, bee pollen, royal jelly, propolis, and bee venom. The information in this article was gleaned from the Apitherapy Knowledge Review Course given by the American Apitherapy Society in July, 1997 and 1998. For an in depth review of research on honeybee products you can review The Apitherapy Reference Date Base at www.sci.fi/~apither maintained by Dr. Stefan Stangaciu, M.D., L.Ac.

Honey

Honey is the bee product that is familiar to most of us. A unique food, it is the only natural sweetener available that is not manufactured by man. Honey is predigested by the bees (simple sugars fructose and glucose predominate) and goes into the bloodstream within 15 minutes. Sugar, on the other hand, takes 2-4 hours of hard work by the body to change the chemical saccharose, which is indigestible, to simpler digestible glucosides.

Although many of us think of it only as an alternative way to sweeten our tea, honey has been regarded as an invaluable health resource since Biblical times. It's been called "the perfect food" and warrants prominent mention in the sacred literature of the ancient Egyptians, Greeks, and Romans. Juliette de Bairacli Levy in her book *The Complete Herbal handbook for the Dog and Cat* cites that Hippocrates, 'the father of all medicine', used two remedies. One was hydromel or honey and water and the other oxymel or honey and vinegar. Pliny, the ancient Roman originator of the doctrine of signatures, used honey and vinegar to cleanse the system and promote good health. D. C. Jarvis, M.D. in *Folk Medicine* has re-popularized



photo courtesy Deb Pouech

Bee stings administered by the president of the American Apitherapy Society

the use of honey and apple cider vinegar in modern times.

Honey is made when bees gather nectar from particular flowers (They visit up to two million flowers to produce a single pound of honey), mix it with an acid secretion and then deposit it in the hive to 'brew'. The moisture is evaporated from the nectar until it is at 18-20% water, then it is capped with wax and left to ripen. No one has yet been able to produce synthetic honey. It can take 75,000 loads of nectar to produce 1 pound of honey. An active hive can produce 300 pounds of honey a year.

Besides its obvious use as a sweetener (its twice as sweet as sugar with the same caloric content - about 120 calories per tablespoon), honey is a good energy booster and contains riboflavin, thiamin and ascorbic acid along with varying amounts of minerals. Raw honey contains Vitamin A, all the B Vitamins, and Vitamin C, D, E and K. It also contains the minerals potassium, iodine, calcium, phosphorous, iron, chlorine, copper, sodium and manganese. As a rule, the darker honey, the more minerals it contains. Raw honey also has live enzymes, proteins, organic acids, carbohydrates and antibiotic qualities. Commercially processed honey loses up to half its original vitamin content and the enzymes begin to die at 105°F and are all killed at 120°F, well below the pasteurization temperature of 180-200°F.

Raw honey is good internally for allergies, asthma, bronchitis, and sinusitis. Apple cider vinegar and honey (Dr. Jarvis' Vermont Folk cure) is good for colds and cleansing the body. Honey is also used topically on minor skin irritations, burns, wounds and bedsores. Its anti-fungal properties make it helpful for athlete's foot. Honey and warm water is a good wash for conjunctivitis. Reportedly, a drop of honey in the eye at bedtime can be used to treat cataracts.

Honey is hygroscopic, drawing moisture from its environment, dehydrating bacteria and contains

hydrogen peroxide that further inhibits bacterial growth. For these reasons, honey makes an effective barrier against infection on wounds and burns. I keep a jar of honey right next to my aloe vera plant in the kitchen to use for burns and minor cuts.

Three years ago, Dr. T. V. Rajan, chairman of the Department of Pathology at the University of Connecticut, conducted a small study on the effect of honey for allergy relief. Of the thirty people in the study, only one reported no improvement. In theory, Dr. Rajan believes that the pollen that irritates the mucus membranes and produces the allergy symptoms is also found in raw honey. Taken orally, in small doses, the body comes to know honey as good for it and stops the immune system's allergic response. Dr. Rajan is writing up his findings and hopes to do a larger study in the future. Most beekeepers have customers who swear by local, raw honey for their allergies and we see these people early each spring getting their honey supply for the upcoming season.

Honey can be stored indefinitely without refrigeration. All honey crystallizes over time, but it is not bad. Just warm slowly in a pan of water. Remember that the enzymes begin to die off at 105°F, so be patient and it will liquefy.

Beeswax

Beeswax is secreted from glands on the underside of the bee's abdomen. The bees use honey to produce the wax. It takes between 8 and 16 pounds of honey or sugar to produce one pound of beeswax. No one has been able to force bees to produce wax nor can it be made synthetically. Beeswax is made up of over 300 components. A colony of 50,000 bees should be able to produce 1/2 pound of wax a day. Bees approximately 2-3 weeks old digest the sugars in honey and are stimulated to produce wax. It is chewed and mixed with salivary secretions then attached to the hive to form 6-sided cells or honeycomb or it is used to cap the storage cells. The wax that is secreted is almost pure white in color. The yellow wax we know is due to the addition of pollen, honey and propolis from the hive. Wax is safe to eat, though it is not digested or absorbed by the body, and is relished by those who prefer comb honey.

For over 2,000 years, beeswax has been used in cosmetics and pharmaceuticals. It is hypoallergenic



photo courtesy Deb Pouech

Uncapping a Honey Frame

A Swarm of Bees

photo courtesy Deb Pouech

Bee Venom

Bee venom is used for treatment of many conditions from tennis elbow and scar tissue reduction to eczema and depression. Lately, the news has been about the use of bee stings to help manage Multiple Sclerosis, a chronic, disabling central nervous system disease.

Charles Mraz, who is known as the father of bee venom therapy, started keeping bees in 1919 in Queens, NY. He established the Champlain Valley Apiary in Middlebury, VT in 1931. Charlie began using bee stings to treat himself for severely painful arthritis from a bout of rheumatic fever when he was 28 years old. He experienced immediate relief and he was inspired to bring the benefit of bee stings to others suffering from arthritis and to the attention of the medical community. In the past 60+ years, Charlie became the world authority on the subject and was sought out by doctors, researchers and laypeople for his expertise. Charlie's work with arthritis and multiple sclerosis had been spotlighted in TV, in magazines and new articles. He never charged for his work, nor do others administering bee venom therapy. Charlie passed away last fall and we miss his warm presence.

Bee sting therapy works to make a chronic condition acute and gives the immune system a jog to work to heal the problem. Along with bee stings, a healthy, low protein, high fiber diet should be followed. Extra vitamin C should be taken to support the production of cortisol by the adrenal glands and other bee products; honey, pollen, propolis and royal jelly can help give the body enough protein, minerals and vitamins to supplement the bee venom therapy.

While not for everyone, if you wish to look further into bee venom therapy, contact the American Apitherapy Society, 5390 Grande Road, Hillsboro, Ohio 45133, Phone 937-364-1108 or e-mail aas_office@apitherapy.org Their web site is www.apitherapy.org/aas

The honeybee gives us a wonderful bounty of healthful products. Her foods honey, pollen, royal jelly and propolis can all be used to keep us healthier, stronger and more energetic. Beeswax can make the medicine go down more easily and helps to keep us beautiful on the outside. The bee venom can be used to help our bodies heal. During her flight to collect nectar and pollen, the bee also helps mankind by pollinating 25% of all his crops (almonds, apples, apricots, blueberries, cranberries, cucumbers, pears, raspberries, strawberries, squash, sweet clover, alfalfa, broccoli, cabbage). We must be thankful and do our part to keep her safe. Stop indiscriminate pesticide, fertilizer, and herbicide usage. Don't be greedy when consuming her products, they are very potent and she has to work very hard to produce a drop of honey or a flake of wax. Support your local beekeepers. They are helping her survive the varroa and tracheal mite infestations that have devastated feral colonies. Think about keeping a beehive or two if you have space and forage for her. Remember that honeybees are the only insects that make food for man...protect her.

Deb teaches Apitherapy Class at NOFA-NY Winter Conference in 1999

photo courtesy Deb Pouech

and does not cause allergies in humans when applied to the skin. When making a salve, I used a 1:4 ratio, wax to oil, adjusting when necessary. This makes a salve about the consistency of petroleum jelly.

Bee Pollen

The pollen-collecting bee gorges on honey before leaving the hive. She settles on the flower stamen and begins to collect the pollen, moistening it with honey and packing it into the pollen baskets on her hind legs. It is this 'pollen grain' that is collected in pollen traps and harvested by the beekeeper.

Pollen is rich in vitamins, especially Vitamins B12 and E, and is a good source of amino acids and enzymes. It contains a higher percentage of protein than beef. This food gives the honeybee the incredible energy to fly 15 miles an hour and visit 1200 flowers in one flight from the hive. No other food on earth offers such a broad spectrum of nutrition so naturally. "Ambrosia", a mixture of pollen and virgin comb honey was the beverage of immortality of the ancient Greek Gods. In recent years, increasing numbers of athletes have begun to take bee pollen as a dietary supplement due to its ability to consistently and noticeably increase energy levels.

Bee pollen differs from the pollen blown about by the wind. Many people with hay fever or asthma have shown a great improvement using bee pollen orally. Quercetin in bee pollen inhibits the release of histamine in the body and may be a contributing factor in reducing the hay fever and allergic responses. The best improvements are shown when pollen treatment is begun pre-seasonally.

Start using pollen gradually, 1/8 to 1/4 tsp. per day, building to 1 - 2 tsp. one to three times a day...those with allergies might start with 1 or 2 grains per day, building up over a month or so. Remember that the bee collects from 1,000,000 to 5,000,000 pollen spores to make one pollen granule. Do not be greedy, use only what you need.

Royal Jelly

Royal Jelly or 'bee's milk' is a substance produced by nurse bees as a food for the bee larva. Nurse bees make royal jelly by blending pollen, honey and special nectar secreted from the glands on the tops of their heads. The queen bee eats royal jelly for her whole life. A normal worker bee lives about 35-40 days, while a queen bee can live 5-6 years. She is also double in weight to the working bee and once fertilized, can lay around 2,000 eggs per day. She must have lots of energy and vitality to keep up that pace.

Long prized in Asia and Eastern Europe, royal jelly contains all the B complex, including pantothenic acid known to reduce stress, and related vitamins. It also is rich in minerals, Vitamin A, C, D, and E, enzymes, hormones and amino acids.

Antibacterial and antibiotic, royal jelly has about 1/4 the activity and potency of penicillin as shown in studies at Louisiana State University. Research in the Czech Republic showed anti-viral and antibacterial activities against streptococcus, E-Coli and staphylococcus. Research is being done testing royal jelly and its effects on aging. It contains gelatin, a precursor to collagen, a basic protein component of the skin. A Canadian study indicates that royal jelly has a tumor blocking effect. Mice inoculated with royal jelly and cancer cells were tumor free while those mice without royal jelly succumbed to the cancer.

Royal jelly should be kept refrigerated if in the pure jelly-like state. It can be purchased preserved in honey or freeze-dried.

Propolis

One of the last jobs a worker bee may have is collecting propolis or 'bee glue' for the hive. It is gathered from the buds of trees such as poplar and from the cracks and wounds in the bark of conifers. The plants produce this resin to waterproof the area and to protect it from attack from bacterial, molds, yeasts, fungi, insects and pests. The worker gathers the resin, packing it in its pollen baskets and carries it back to the hive where house bees add enzymes, pollen and wax. The propolis is used to protect and strengthen the hive. In an environment housing 40,000-50,000 bees, 95°F and 90% humidity, beehives are the most sterile environments in nature and bees are the only insects free from bacteria.

Though it is probably the least-known bee product in the United States, propolis just may be the best of the honeybee's gifts to humans. Propolis has distinct antibacterial and antiviral properties—it is sometimes called 'Russian penicillin', and it has been used by many for thousands of years as a healing agent, both internally and externally. International symposia on propolis have presented lectures on propolis use for oral cavity diseases, ear, nose and throat diseases, vaginal and womb inflammation and intestinal inflammation. Propolis consists of approximately 55% resinous compounds and balsams, 30% wax, 10% aromatic oils and 5% bee pollen. 'Nature's penicillin' has been found to increase the effectiveness of other antibiotics like penicillin and the mycins. Rich in amino acids, minerals, and vitamins, especially bioflavonoids in a concentration 500 times that of oranges, propolis is also anti-fungal and antiseptic.

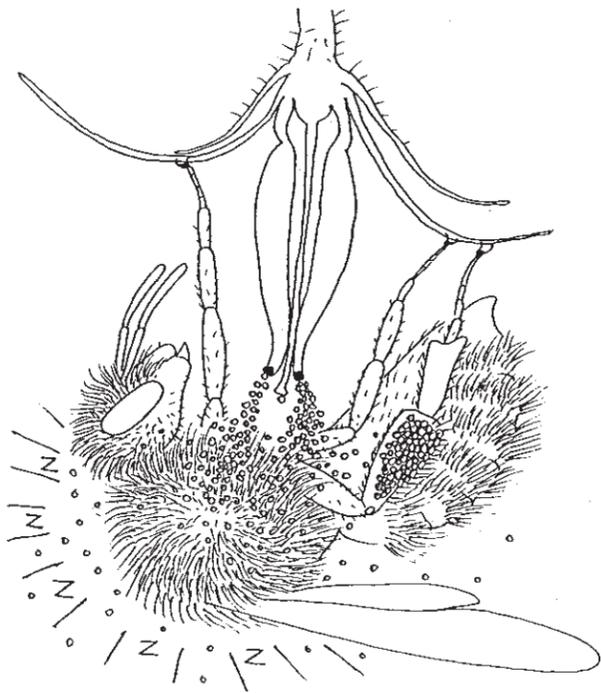
Propolis has an affinity to the mucus membranes in the mouth and throat. You will find propolis in your 'natural' toothpaste and mouthwashes. It makes a great sore-throat spray. No side effects of propolis have been reported, but perhaps a small percentage of people may be allergic. As with all other bee products, use in small doses until you are certain of no reaction.

Pollination with Non-Honey Bees

by Dr. Suzanne Batra
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The term "honey bees" includes bees that store liquid honey and make waxen combs that people can harvest. There are 7 species of true honey bees, all in the genus *Apis*, including the two domesticated or managed species that are used for crop pollination. In addition there are over a hundred species of tropical stingless honey bees, which are closely related to *Apis*. Honey bee societies are unusual among social insects, however, because honey bee queens cannot survive or start new nests without the aid of a swarm of daughter workers. Such "hypersocial" queens are too specialized to ever succeed on their own, unlike other bees.

All of the rest of the bees (Apoidea) are called "pollen bees", because they are valued only for their services as pollinators. Before Europeans brought honey bees to North America, pollen bees did all of the bee pollination work here. Pollen bees do make honey from nectar, but they make only a little of it, and it is mixed up with pollen and other substances, such as glandular secretions and plant oils, to make the bee bread used to feed their brood. Thus, it is not palatable for humans.

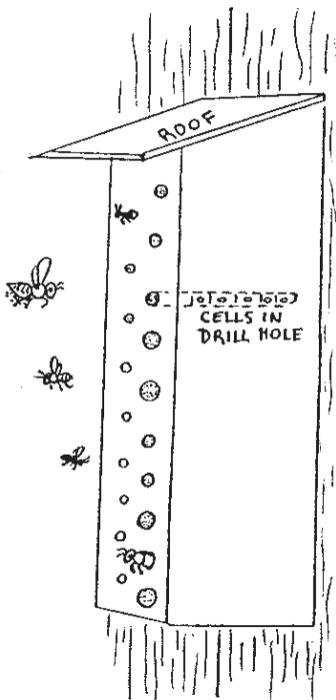


drawing by S. Batra

Bumble bee buzzes tomato

A few kinds of pollen bees, such as bumble bees and some sweat bees, are "eusocial" — the mother bee lives long enough to become a queen and have the assistance of her worker daughters. Usually, however, solitary pollen bees have only one generation annually and are active as adults for only a few weeks. The rest of the year, they live in their nests as larvae, pupae and dormant adults. Their active periods coincide with the times during which their preferred floral hosts bloom. Thus, during the course of every growing season, a series of different bee species appears and vanishes seasonally. Most of these bees are solitary. This means that every female bee mates, makes a nest with about 10 brood cells, stocks each cell with a nectar and pollen mixture as food for her larvae, lays an egg in each, and dies before her young emerge.

Although individual bees are solitary, nesting females may make their nests close together, forming aggregations that can include millions of nests and bees. Most species of bees dig nests and cells underground, and waterproof their brood cells with secretions from abdominal glands, including



Drilled nest block

drawing by S. Batra

polyesters. Others make cells of mud, neatly-cut bits of leaves, resin, plant hairs, wood dust, or silk secreted from thoracic glands. They are placed in hollows in reeds, bamboo, logs, pithy stems, soft-wood structures, dry adobe, and other materials.

Species of gregarious solitary bees that will nest in vast aggregations, are naturally active at the time that a crop blooms, favor this crop's flowers, and can reproduce on a diet of nectar and pollen from the crop, are ideal candidates for management as pollinators, to augment our rapidly declining honey bees, on which we have become dependent. Beekeepers and growers are becoming enthusiastic about using solitary bees, which are resistant to parasites and diseases of honey bees, are gentle, easy to manage, and cannot breed with Africanized bees.

Although the versatile honey bee is a satisfactory pollinator for many crops, other bee species can be used in orchards. Selected solitary bees are easy to keep because they are far gentler than honey bees or bumble bees, and their period of adult activity coincides with bloom. After the flowers have been pollinated the adult bees die and manageable species of bees (as dormant brood) can be put away into storage, until the next year's pollination season when the next generation of adult bees emerges. This contrasts with the social honey bees, which need more attention because they must feed from flowers and honey stores, in order to stay warm and active year-round.

Natural, unmanaged pollination may be adequate in small orchards that are surrounded by forests and meadows, if native pollinators are protected from pesticides, and suitable nesting sites for underground nesters, such as bare, south-facing, sun-catching, sandy, dry banks or slopes, are available. Shelter belts of trees to break the cold northwest wind would also encourage native bees to nest, since they prefer warm soil. Bees that belong to the genera *Andrena*, *Colletes*, and *Dialictus* are major pollinators under these conditions. Because these bees fly only short distances from their nests to forage, they don't provide adequate pollination in large, intensively managed orchards, thus honey bees and other pollinators must be used.



drawing by S. Batra

Hornfaced bee on apple

Manageable orchard pollinators

Several species of mason bees (genus *Osmia*) have been used for orchard pollination worldwide. In Europe, *O. rufa* and *O. cornuta* are used. The orchard mason bee, *Osmia lignaria*, is used in North America. The hornfaced bee, *Osmia cornifrons*, is the first solitary bee to be used on a large commercial scale to pollinate crops. Techniques to manage it were developed by Japanese apple growers about 50 years ago, because it is an efficient pollinator and is easy for growers to maintain. These bees were first imported from Japan to Utah in 1965, but they did not survive there. In 1976, they were imported into Maryland, where they thrived in a climate that resembles that of central Japan.

For the past 15 years, in late winter, I have sent 'starter kits' of hornfaced bees, including instructions and materials for nests, to growers, beekeepers, scientists, extension agents, schools, and nature study centers in many States. The bees have survived best in humid parts of USDA Plant Hardiness Zones 5 to 8. Because these bees are so efficient, only about 600 female bees are needed per hectare of orchard; this compares favorably with the usually recommended two hives of honey bees (with tens of thousand of workers) per hectare. Hornfaced bees strongly prefer the flowers of Rosaceae, and, unlike honey bees, they are not readily distracted by dandelions and other weeds. An individual hornfaced bee is 80 times more effective than an individual worker honey bee for pollination of apples.

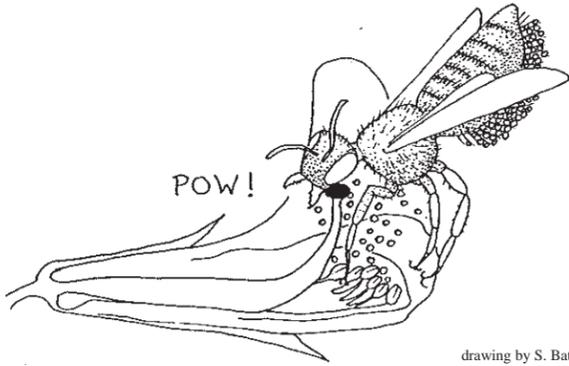


drawing by S. Batra

Hornfaced bee

The native orchard mason bee, *Osmia lignaria*, can be used to pollinate fruit trees. These dark blue bees can survive colder and drier climates than can hornfaced bees. Orchard mason bees are commercially available, but it is important to obtain bees from suppliers that are located in climatic zones where the bees are to be used. These bees also can be collected locally by placing 'trap nests' where the bees already live. Some bees will eventually move into the trap nests, which can be placed into orchards the following year. Trap nests are dry wooden blocks, posts, or logs that have been drilled with smooth-walled, 5/16" x 4-6" holes. Orchard mason bees can be kept together with hornfaced bees for pollination.

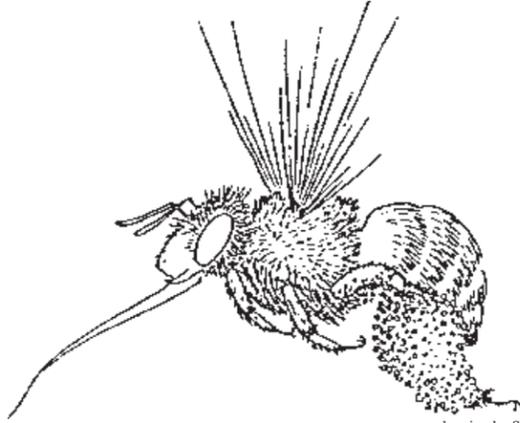
Following the usual precedents and procedures involving the importation of exotic solitary bees for pollinating our exotic crops, a Japanese solitary bee, *Anthophora pilipes villosula*, (the shaggy fuzzyfoot bee) was introduced at Beltsville, where it was tested on several crops. It is a superior pollinator of blueberries in Japan, and the European subspecies of this bee has been managed to pollinate fruit trees. The period when adult bees are active naturally coincides with the bloom of blueberries, peaches, apples, pears, plums and cherries, all of which this bee visits. The fast-flying, long-tongued, solitary bee is active from dawn to dusk, and during cool, rainy weather when other bees don't fly. Like bumblebees, it generates body heat. A single female can visit some 337,000 flowers during her lifetime, to obtain enough nectar and pollen to stock her brood cells; for her own energy needs; to make the oily secretion that she uses to line her brood cells and feed her larvae; also to drink the nectar that she spits out to soften the dry adobe where she digs her nest and brood cells. It is easy to manage this species, because it will nest in portable and stackable dry adobe blocks. The bees have a strong homing instinct, thus they do not tend to leave the area or 'drift'.



drawing by S. Batra

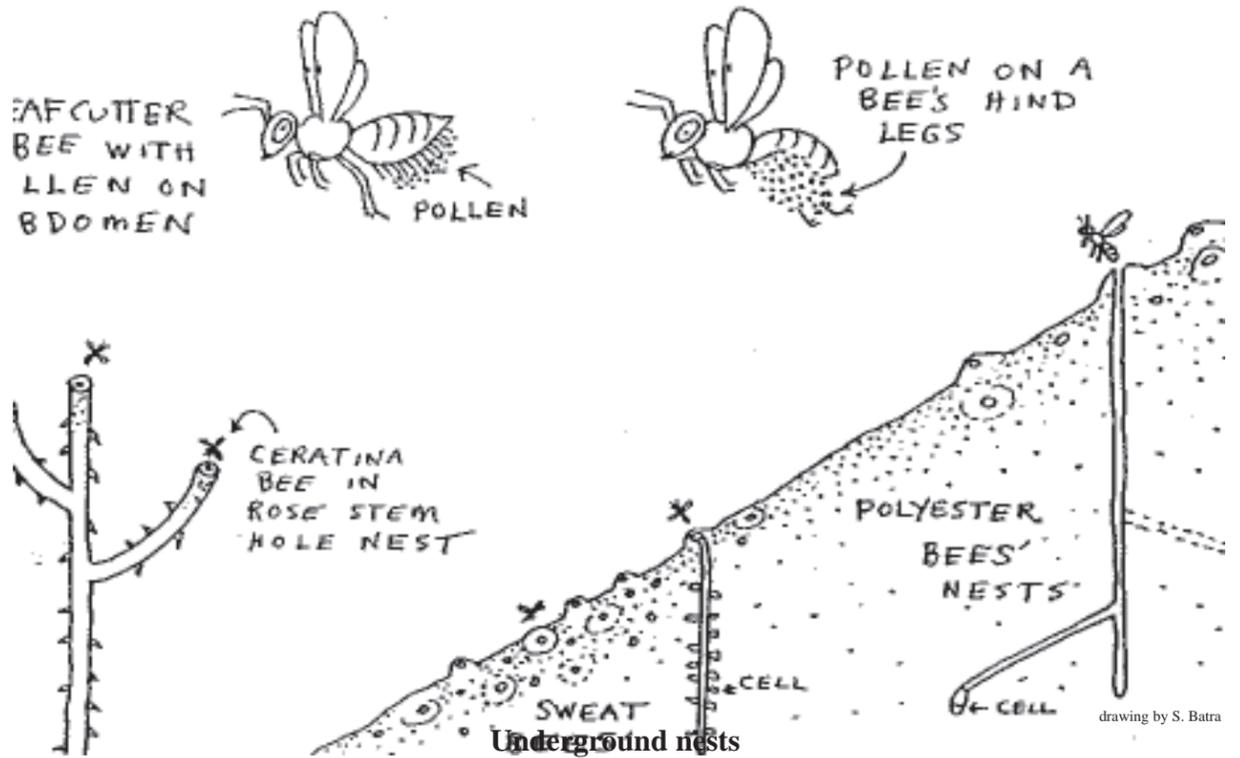
Leafcutter bee

Two approaches can be taken to enhance the pollination of orchards by solitary bees. The first approach would be to manage the habitat in and around them to provide nesting sites for whatever native pollinators reside in the area. Small or narrow plots are preferable to large, wide ones, because they allow bees to reach their centers. If



drawing by S. Batra

Pollen bee



drawing by S. Batra

Underground nests

Andrena and Colletes are present, populations of most species may be increased by making sunny, south-facing sand banks and removing shady vegetation from any existing nest aggregations. Bees that nest in holes in wood would benefit from brush piles and wooden blocks or structures with suitably sized pre-drilled holes, placed in sunny areas around the orchards. Habitat management may take up too much space, thus be too costly, it may interfere with mechanized operations, or it may provide refuges for crop pests.

The second approach would be to maintain populations of selected species in bee shelters that are strategically placed in or near the orchards. Solitary bees can be kept in shelters, using inexpensive man-made nesting materials, do not need much space, will not interfere with most operations, and will not harbor crop pests. After bloom, such bees can be removed from the orchards and put into storage for the rest of the year.

The Healing Aspects of Honey

By Ross Conrad

The healing qualities of honey (unheated and not filtered) are many. In fact, honey's medicinal aspects have been recognized for thousands of years and can be traced back to ancient Greece and to Egypt during the time of the Pharaohs. Honey is even mentioned in the Holy Bible. Proverbs 16:24, "Pleasant words are like a honeycomb, sweetness to the soul and health to the body (healing to the bones)."

Honey primarily consists of two inverted sugars, aromatic volatile oils that bestow its flavor, minerals, some proteins (amino acids), various enzymes and vitamins. The darker the color of the honey, the higher the mineral content - making it especially useful for medicinal purposes. When heated, the chemical structures of the amino acids contained in the honey are changed. This reduces the honey's nutritional value. Heating also changes honey's taste. Honey that has been heated and liquefied is also typically filtered, removing the trace amounts of pollen normally found in raw honey and further reducing the honey's nutritional value. However, although heated honey is less nutritive than raw honey, it is far better than white sugar.

White sugar (sucrose) is a disaccharide which means it is more difficult for the body to digest. In order for the disaccharide to be used by the body, it must be inverted and broken down into two monosaccharides, dextrose (glucose) and levulose (fructose). If sucrose is eaten faster or in greater quantities than it can be digested (as in the case of most American households) it becomes toxic and has been shown to lead to atherosclerosis and to cause ulcerations of the kidneys.¹ Raw honey is made from plant nectar mingled with honeybee digestive enzymes and is composed of two monosaccharides glucose and fructose in nearly equal proportions. As noted above, these are simple sugar forms that are easily assimilated without requiring the assistance of the salivary, gastric or intestinal secretions. Typically, diabetics tolerate honey far better than white sugar.

The medicinal use of honeybee products is called Apitherapy (Apis is Latin for bee). These products include pollen, royal jelly, propolis, beeswax, bee venom and honey. Raw honey is a powerful medicine for both internal and topical uses. Constipation, insomnia and obesity are a few of its internal applications.² More impressive however, is honey's topical use as a sterile and painless wound dressing.

In 1990, both Time and Newsweek reported a Chinese burn cure made from honey. They reported that fifty thousand Chinese burn patients have been treated with a honey salve in China's national burn center. "Photographs document the progress of patients who have come with deep second-degree and superficial third-degree burns covering up to 94% of their bodies. Within months the same patients appear not only healed but virtually unscarred."³

An American surgeon, Dr. Anthony Barbara, from the Hackensack Medical Center Burn Unit traveled to China to meet many of the patients. There he saw and compared, on the same patient, parts of the

body treated with conventional care versus parts treated with the honey salve. By his report, the conventional treatment left the skin "rough, scarred and marked with patches of excessive or reduced pigmentation." This is in marked contrast to the honey treated skin, which, though just as charred in the original photographs, appeared "supple and unblemished." Seven months later, the American Burn Association and other organizations dismissed the ointment claiming "a few patients have healed surprisingly well under any circumstances."⁴ We ought not to be surprised to learn that most of the nay-sayers have received significant funding from Marion Co., the maker of Silvadene (silver sulfadiazine) which is the current standard of treatment for burns in the USA.

There are many remarkable advantages for using honey instead of conventional salves on burnt tissue. One advantage involves dressing changes. Typically with salves other than honey, each time the dressing is changed, the salve must be scraped off. This is horrendously painful for the patient. Experienced trauma nurses claim that changing dressings on child burn patients is the most heart-wrenching work they do. In contrast, changing the honey dressing is relatively painless because it simply lifts off effortlessly. This is because raw honey converts slowly to hydrogen peroxide and water, neither of which sticks to tissue. Because there is no scraping, patients clearly prefer honey to other salves.

Raw honey has a long history of being used for the topical care of burns, ulcers and a great variety of skin problems. A coating of honey is deceptively complex, but this type of salve has been thoroughly studied. White wrote about the biochemistry of honey and explained its analgesic, anti-bacterial and tissue nutritive factors.⁵ Coating a wound with honey retards tissue oxygenation by sealing the wound off from air (oxygen). This dampens the pain within 30 seconds after application. In addition, the antibacterial factors in raw honey sterilize the wound. These factors include:

1. The hygroscopic nature of honey (steals water from surrounding bacteria that then dry up).
2. Making the local pH too acidic for bacteria to grow.
3. Inhibine (a.k.a. hydrogen peroxide) converted from glucose by glucose oxidase and gluconic acid.
4. Enzymes and tissue-nutritive minerals and vitamins from honey help repair the tissue directly.

The ingredients of a Moist Burn Ointment (MBO) remain secret while the "inventor", Dr. Xu Rongxiang, seeks an international patent. He claims it contains "honey, sesame oil, and herbal ingredients." Any beekeeper can see right through Dr. Rongxiang's ointment. Make no mistake; it's the raw honey that is the medicine here.

Closer to home, Dr. Denis Cavanaugh, Chairman of the Department of Gynecology and Obstetrics at St. Louis University School of Medicine, used honey to accelerate the time required for wound healing after common surgical procedures.⁶ He has first performed in vitro (test tube) studies of honey's antibacterial effects. Bacterial pathogens that are destroyed by raw honey include many common troublemakers, including E. Coli.

Dr. Cavanaugh then proceeded to treat 12 patients. He reports: "All wound infections responded promptly. Wounds were bacteriologically sterile within three to six days and remained so until completely united."

He concluded: "Undiluted (raw) honey is bactericidal and will not support the growth of pathogenic bacteria commonly encountered in wound healing.

Moreover, its application is followed by considerable chemical debridement that reduces the necessity for surgical debridement. Honey appears to be a non-irritant and its use promotes the rapid growth of healthy granulation tissue . . . In our experience, honey is much more effective than the expensive topical antibiotics which we used previously . . . With this technique the modal time patients have remained in the hospital has been reduced from seven to eight to three to four weeks."⁷

Of course, it should not surprise us that lots of beekeepers the world over treat cuts, burns and skin problems (acne, eczema, dandruff) with raw honey. Doctors from Canada to Switzerland to South America advocate the use of honey as a surgical dressing. So why isn't honey utilized more often for medical uses in the United States?

According to the Food and Drug Administration and a Tufts University survey, it takes an average of seven years and \$230 million dollars to bring a new drug to market. Small wonder that drug companies need to select not necessarily the best drug, but the most profitable drug in order to recapture the tremendous up-front expenditures. Unfortunately, natural products like herbs or raw honey are ignored and in some cases suppressed because they are freely available natural products and therefore difficult to patent, making them poor investments. Unfortunately, the economic realities dictate which products come to market. Today, with the help of the political activism expressed by some of the more vocal health related organizations, reforms are afoot to evaluate the worth of many natural healing techniques. How this will effect Apitherapy remains to be seen.

Today we are regularly confronted with the mounting cost of health care, the technological oppression of patient by machine, the high cost of drugs borne mostly by the elderly and now you are reading about honey. Raw honey. It is commonly available and it is relatively inexpensive. Never mind that it takes the nectar from over a million flowers to make one pound of honey; that pound sells for approximately \$3.50.

Next time you get a cut or a burn, think about raw honey. Remember that long ago the Greeks used a honey ointment "epomphalia", to prevent infection when they cut their newborn's umbilical cords. Ask yourself, "What did they know that we don't?"

For more information about Apitherapy contact:

The American Apitherapy Society
5390 Grande Road
Hillsboro, OH 45133
(937) 364-1108

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Ross Conrad is a beekeeper and lives in Cornwall, Vermont.

On the Trail of Organic Honey with Jeff Cunningham

by Jack Kittredge

The fields and pastures of southern Vermont seem like an ideal place for honeybees. It is rural, relatively undisturbed, and shows green growth everywhere instead of pavement. Population density is sparse so bees can forage and not encounter nervous neighbors, and a variety of wild and cultivated plants flourish which will flower over many weeks. In fact, Vermont is the largest producer of honey per hive among the New England states.

But look a little closer, says beekeeper Jeff Cunningham, and you will realize that southern Vermont is a poor region of the state to keep bees. The primary agriculture in his region has moved from crops to sheep raising. Grasses mostly wind-pollinate and do not require bees. The area has a high elevation and thus is significantly colder than the Connecticut or Champlain Valleys. The environment is wilder and more liable than settled areas to support predators such as bears — which can quickly wreak havoc in a beeyard. Agricultural practices, also, favor keeping bees down in the rich floodplains. There you have clovers and other crops which provide a nectar source throughout July — when wild sources aren't large enough to support bees. But Jeff is an organic beekeeper and the widespread use of pesticides makes it impossible for him to produce honey in agricultural areas.

Jeff got interested in bees when he inherited some beekeeping equipment from his grandfather in 1975. His father helped him get started and an older local beekeeper served as mentor, showing Jeff the basics. Pursuing a career in the arts, beekeeping was just a hobby until Cunningham spent a little time in Uzbekistan on a National Endowment for the Arts cultural exchange program. While there he happened to visit a local beekeeper. The guy showed him his process - a heat treatment - for eliminating mite infestations in honeybee colonies. Fascinated, Jeff came home determined to see if it would work here.

Some simple facts about bees

“There are tens of thousands of species of bees and wasps”, Jeff explains. “With many species, bumblebees, for instance, it is only the queens who winter over. The workers don't make it — they work all year round to build up a good strong queen who then hibernates through the winter. Bumblebees and



Jeff Cunningham smokes one of his bee colonies prior to opening and inspecting the hive.

photo by Jack Kittredge

masonbees are both perceived with increasing interest for pollination. Bumblebees are favored for greenhouse pollination. They tend to fly close to the

ground whereas honeybees orient to the sky and in a greenhouse tend to fly right into the glazing. Other species of bees are the hornfaced bee, leafcutter bee, and carpenter bee. These are all useful for pollinating certain plants. As far as commercial production of honey, however, the honeybee is tops.

“Native Americans here never kept bees. When the Europeans brought *Apis mellifera*, the European honeybees, over along with their apples trees, the natives called them “white man's flies”. True honeybees — and there are several species of them — don't go dormant during the winter. They store honey for periods of dearth. Some are stingless, some sting, but they all have a queen, workers and drones.

“Bee colonies are connected to each other through overlapping ranges”, he continues. “It reminds me of the way that, before Columbus, a squirrel could travel from Boston to the West Coast without ever touching the ground. Drones can drift that way from one colony to another, as do many workers — depending on how close they are to each other. Bees recognize their colonies through a special gland that emits a unique scent. Each worker can emit it and recognize it. The queen regulates the hive through her pheromones. In situations where the queen is damaged or missing and the pheromone is absent, the workers can lay eggs by parthenogenesis. But their eggs will only be drones.”

photo by Jack Kittredge

Jeff shows a frame of well filled-out cells.

continued on next page

*Cunningham**continued from previous page***Reproduction and health**

Cunningham feels that the importance of drones isn't fully understood by man. A queen mates with many drones - a dozen or more - on a single flight, and there may be several flights. Apparently there are drone concentration sites where drones fly every day and queens go to mate. In Europe many such sites have been mapped, and one has been documented as a drone concentration site for over 100 years.

The queen is a perfect bee, with sex organs intact, as opposed to the worker who cannot mate and reproduce. A queen is produced by workers feeding bee larva special, optimum foods. It takes 16 days for a queen to develop given this special diet, as opposed to 21 days for a worker. A good colony is characterized by plenty of brood coming into the system as workers when needed to make honey, but not so many when the flowering period is over and there is less work to be done. A good queen will keep it all in balance.

According to Jeff, a little-known fact is that honeybees have a broodless period each year. During his research on mites, he found that queens didn't lay eggs for significant periods from November through March. The bees, he reasoned, want to conserve energy. A worker bee in the summer will live for about 6 weeks. She will emerge, be a nurse bee, get recruited for foraging flights, become a forager and wear herself out and die in several weeks. In the winter, however, she might live for months. She will have a different diet as an adult — she'll eat more pollen-rich food, and she'll have different behavior — she'll be inside the hive, not flying and expending herself, exposed to the outdoor elements. So bees don't need to lay eggs and breed in the winter to the extent they have to in the summer.

Bee pollen, up to 30% protein, is used as a food for the bees. The workers eat it and use it to produce worker jelly and royal jelly from glands in their bodies. Each worker on a trip seeking pollen will go after just one type, and return with an accumulation of it as a pellet on each leg. A pollen trap can be installed on a hive to collect the pellets. The trap is a small mesh through which the bee can just fit, but the pollen pellets cannot — so they are brushed off her legs and fall into a tray. Cunningham eats pollen regularly and believes it has exceptionally healthful properties. He says he can survive quite well for a day on a couple of ounces of fresh pollen.

"Bees are the ultimate form of local agriculture", he feels. "We'll go over there and pull open a pollen trap. That trap will be a color-coded window on the floral phenomena within a 5-mile radius. Two days ago it was a totally different color! You find different species flowering every day. Bees have been used to range and bring back materials to test for the level of residue in the environment in very local areas. Bees are even used to test for land mines — they pick up traces of explosive chemicals."

Honey

To make honey, worker bees deposit nectar in the cells. The nectar is made from flower sugars, changed by the bees' enzymes into more digestible sugars, with pollen added. Once deposited, the bees fan the nectar and evaporate off excess water. It needs to get it down to 18% moisture or less to avoid fermenting. Once the honey is at the proper moisture, the bees cap the cell.

"The American consumer," Jeff believes, "needs to be better educated about honey: They don't appreciate honey as a medicine and a real fine food. It's considered a commodity! It's a sticky gooey alternative to sugar. Why bother? I guess some of the pasteurized, over-processed stuff might not be a whole lot better than sugar. But honest honey is a fine medicinal substance with great qualities to treat intestinal upsets, to treat burns, wounds and skin-grafts, to preserve food. It seems to prevent infection, to clean out wounds. It's great stuff. As a food in other parts of the world, honey sells for a much higher price than here. In the Middle East I saw it



photo by Jack Kittredge

In order to check for mites, Jeff uncaps a few drone cells, sacrificing the larvae.

selling between 7 and 150 dollars per kilo. In America at that time it wasn't over \$4 per kilo.

"The term raw honey has no definition, yet people think it has value. They think if it has crystals it's raw. But that's not necessarily true. Honey is heated to move it more easily - to bottle it, to get it out of frames. But most standards allow temperatures up to about 90½ F. Inside a colony naturally the temperature can get up to 99½. That temperature is sufficient for short periods of time to extract it. But even 70 or 80½ for long periods can degrade it. While it is in the hive the bees are constantly moving it around and processing it. It won't degrade under their management. Plus the bees control temperature by evaporation - they collect water, bring it into cells and evaporate it. They move air around constantly - they are masters of ventilation and controlling air movement in the hive. They can make it go out the bottom and in through the top, in from the bottom and out a hole in the side, anywhere they want. It's called "social breathing"."

The art of beekeeping

If you are going to start a bee colony Cunningham suggest that you find a position where there is sunlight in the morning and most of the day. You also need air drainage below the bee yard, a wind break to protect them from harsh winds, and to position the hives where human and animal traffic won't be at risk. You also need to protect them from the danger of being tipped over by large animals.

Jeff tries to inspect each of his hives at least every

two weeks to see if it is producing or if there are any signs of disease. The first thing he does is look at the entrance and try to sense how the bees are doing. He watches them, listens to them, smells the colony, smells the pollens, feels the moisture. He gets a sense of the mood of the colony before opening it up. He says a colony will actually 'sound right' if it is in good shape.

He scorches his hive tools in a smoker before using them to open a hive, and tries to get the smoke to permeate it. The smoke, Cunningham says, gives bees an instinctive reaction to fill their honey stomach. A bee with a full honey stomach is more serene.

Once the hive has been smoked, he opens it. Each hive has its own anatomy, Jeff feels. He locates the brood, the queen, the honey — dissecting the life of the colony. He is looking not only at production, but at the general health. He checks for foul brood - a particularly deadly disease which has shown up in southern Vermont recently for the first time in a while. To track it down he examines the areas full of brood cells. Are they healthy areas where bees have emerged, or have bees died in those cells?

Another threat to Cunningham's hives comes from wild animals. To illustrate his point he showed me a hive bottom board — the one which holds up the whole hive — which had been broken and bore numerous tooth marks.

"Bears", he frowned. "It's increasingly a problem throughout New England. Most of the damage is to



photo by Jack Kittredge

Pollen caught in a pollen trap falls into this tray, enabling Jeff to inventory the flowering species the bees currently visit.

the frames and comb. It takes me about 25 minutes to assemble a frame, so multiply that by 10 per box and three boxes, on average, to rebuild after an attack by a bear. There's my time and effort, plus that of the bees, which is destroyed. I had \$2000 worth of bear damage last year. I just got a notice from my insurance company canceling me."

Jeff has about 30 hives in several locations around Putney. About a dozen were damaged last year by bears, mostly in June and July. He feels it is an increasing problem as meadows fill in with trees — the bears are returning to his area from the hilly parts of Massachusetts. They don't seem to care if people are around, he feels. He has observed them coming right up to a house. What they need, however, is cover. They won't come up if there is an open area around the hive.

"In theory, electric fence is 100% effective as a protection", he says. "I use a flexinet fence and a charger, which can run off D-cell batteries for months. But each bee yard needs a fence, so that's an investment of a couple of hundred bucks per yard. Plus each time I go in I have to bring a hand scythe to keep the growth down around the fence. When the bears come up to it and put their nose to it they leave quickly. I use honeycomb to bait the fence to educate the bees."

A brief history of mites

Varroa mites are taking a major toll of bee colonies throughout the northeast. The mites reproduce by infesting the bee brood. The female will walk into a bee cell before it is capped and lay a number of eggs while the bee is in the larval stage. The eggs produce and mate so that the emerging mites are already bred. They will parasitize the larva and the damaged worker bee will emerge with the reddish mites on her body. The varroa pulls hemolymph, the bee's blood, out of her. This results in reducing the bee's life span by about one-third.

The mites co-evolved in Java on a different species of bee. They made their way up through Asia and then jumped species to our bees somewhere in Russia. Another strain came in through Africanized bees in South America. Jeff notes that the species of Java bee with which the mites co-evolved developed methods of controlling them by begging grooming from each other. They would remove mites from each other and chew their legs so they couldn't reattach themselves.

So he feels that any methods used to control varroa mites will work best when you start with hygienic bees - ones that try to rid themselves of mites. Mite populations build up in August and September, as the bee population does. Then they start tapering down in October and November.

Help comes from Central Asia

The system Jeff saw in Uzbekistan in 1993 to control mites was a low-tech heat treatment which had evolved locally. He was excited about it, however, because he realized that varroa mites had infested bees in that part of the world for a lot longer than they have here. He felt that anything which beekeepers had created there was worth serious study. So when he got back to the states, Cunningham contacted John Harlow, with the Agricultural Research Service in Baton Rouge, Louisiana. He had experimented with heat treatment and was involved in a long term breeding program to get more resistant strains of bees.

Jeff ended up getting an institutional research grant from SARE to follow up on his heat treatment insights, which has been the center of his life for the last couple of years. He has developed a device that is up to 91% effective to use heat to expel varroa mites from hives. There are other, more complicated devices sold to heat bees, but this uses very simple inputs which he calculates can be acquired for \$150..

"You need a source of electricity for the heater," he says, "but that can be a generator you bring onsite. It uses an old milk house heater that you can get for \$25 or \$30 new. Rudimentary woodworking skills are all that are needed to build one. This size of

apparatus can accommodate about three pounds of bees, which is about 10,500 individuals. In March three pounds of bees might be an entire colony. Later in the year a colony may be more and you would need two cages. I prep the colony in advance by caging the queen and removing her into my pocket to keep her warm. Then I consolidate the frames covered with bees into one or two boxes by normal means - shaking the bees down or a few days earlier inserting a device which allows the bees to leave a box but not re-enter. Once the bees are consolidated, I take the frame and shake or blow the bees from it into a cone, which fills a cylindrical cage. It is done nocturnally, when the bees don't fly and are all in the hive."

Once you have a cage full of bees you insert it into a pre-heated box and bring that up to 122½F, maximum. You stay at that temperature about 15 minutes. The critical time, Cunningham says, is when the mites start to fall onto a sheet of white paper lining the bottom of the box. You should watch very closely and monitor how fast the mite fall is going. The time it takes has a lot to do with humidity. When the mite fall starts to taper off, you taper off the temperature. You don't even have to bother killing the mites. They won't survive off their hosts."

You do this once per year per hive, during a broodless period. It takes about 45 minutes. This method actually pulled off a heavy infestation of about 2000 mites from one colony. If you do it right you lose very few bees. The overall study suggests a ten times benefit for heat treatment versus no treatment.

"I know some people have reported success", Jeff says, shaking his head, "but I'm not terribly impressed with essential oils for controlling mites. I've tried introducing herbal flowers into hives, but I'm also concerned about creating tastes and smells in the honey. I don't know about anecdotal evidence. I've heard of a colony producing an exceptional amount of honey in August and a month later it is dead. Untrained people aren't always good judges about how well their bees are doing.

If you want to avoid using miticides in the hive, try first to find bees that are hygienic — ones which naturally solicit grooming and expel parasitized larvae. Start there. Then start using things like a stickyboard (a board coated with Crisco at the bottom of the hive which can collect and hold fallen mites) to detect your mite population. Tobacco smoke can knock down a bunch of mites, so test how bad your situation is with a puff. If you knock down 50 to 100 mites at a time, you may have to face treating or losing the hive. You can heat treat, or go with the conventional mite controls the USDA recommends: synthetic pyrethroids. That's the only approved control for varroa mites in most states."

Organic beekeeping?

Cunningham has been working on developing organic honey standards for NOFA/VT, as well as Quality Assurance International and Oregon Tilth, which he feels will be more comprehensive than the existing OCIA standards. Organic mite control standards start with a coherent IPM program — good hygienic stock, methods of detecting the level of infestation, stickyboards to keep out fallen mites, and heat treatment if you have to treat. If you can't do that, tobacco smoke or organic acids like lactic acid and formic acid are permitted. These are almost ready to come on the market in a gel form. While lethal acids, they are organic and do break down quickly. There is also a method called drone-trapping. Since mites prefer drones and drones aren't useful in hives, you encourage a section of cells to be made for drones. When the queen deposits drone eggs there, a lot of mites will be attracted. You then take that section of cells out before the drones emerge, and freeze it. That will kill the mites along with the drones. Tracheal mites, while a problem back in the '80s when people lost 50% of their bees to them, now seem under control — largely because today's bees were bred from survivors and seem to be fairly tolerant of the pests.

Foul brood is a devastating disease not yet well managed by organic methods. The conventional

treatment is to kill the spores by burning the hive, and the laws in America around inspecting hives have a lot to do with the prevalence of this disease in the teens and twenties of this century. Antibiotics have managed to control foul brood recently, but also stopped progress on breeding resistance. Jeff feels the challenge now is to control foul brood and varroa by organic means.

The organic standards that Cunningham is working on allow for controlled use of miticides and antibiotics for hives that are pulled out of production. He feels strongly about allowing beekeepers to use these methods, as long as there is no chance the honey will reach consumers.

"I'm not certified", he states. "I don't have to be because my consumers deal with me directly at farmers' markets and can ask me about my practices. But I do keep my bees, as an inspector, as I would expect someone to whom I was inspecting. This year for the first time I am considering having a hospital yard where I can keep diseased bees and keep the problem from spreading. Those bees wouldn't be in production. The standards don't allow you to sell honey from treated hives, even in conventional markets."

According to NOFA Vermont standards, no bee yard may be located within 2 miles of a landfill or town center, or within 2 miles of a farm or other location greater than 2 acres in size which regularly uses pesticides. This includes forests, fields, golf courses, etc. So an organic beekeeper has to be aware of all the potential sources of pesticide in your area. Oregon Tilth standards require five miles, but break the standards into prescriptive and descriptive parts. An inspector would have a topographic map showing what is going on within a 5 mile radius - where are the orchards, the various agricultural activities? They try to minimize what's happening in pesticide application within the common bee range. Jeff likes this approach, saying we don't know enough yet about how bees take up and metabolize pesticides.

"There is a lot of pat information about bees", he sighs. "'If you don't apply pesticides to the flowers of a plant, there is no danger to bees.' Well, bees gather a lot of things from their environment, including dew. If you apply rotenone to leaves and bees gather dew there later, why can't they take up rotenone? I'd like to research that. Bees do develop tolerance to pesticides, so perhaps they pick them up and pass them along in their honey. It's a sensitive subject!"

Cunningham is not optimistic about the future of organic beekeeping in the northeast. He sees the methods necessary to assure that the hive is organically managed as unrealistic on a commercial scale. The success of organic honey, should it happen, will be based on the participation of hobbyists who have the energy and resources to experiment on a small scale. Commercial beekeepers, who know how to keep bees in a cost-effective way, will go with what is cost effective for them.

"If you have a way of producing honey", he says, "which is not a way of making a living, who is going to do it? You probably need one or two hundred colonies to make a living with bees. With organic production I can't handle more than 50, and I don't make enough off of them to hire help. Organic production requires so much more time — look at heat treating each hive instead of slipping a couple of pesticide strips into each one! If people are buying organic honey, they're getting their money's worth. There just isn't much on the market because you can't produce it cheaply enough. I believe there is one certified honey producer in Maine — the only one I know about in New England. He's small scale, not making a living off of it."

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Joys of a Small Beekeeper

by Bruce Bickford

I started beekeeping fourteen years ago with a single colony and no mentor. My brother and I went to pick up my colony in Dover, NH one evening after the late show. We used what seemed to be a whole roll of duct tape to ensure that no bees would get out of the hive. Still skeptical that we got all the holes covered, we moved the hive into the pick up and drove home, where it all began. Now, after reading many books, a couple of magazine subscriptions, and meeting (then partnering) with Kevin Morrissey, we presently have over 20 colonies.

Beekeeping for me has remained a part time endeavor. There has been quite a learning curve, and there have been many highs and lows. That first hive was productive for almost five years without much strict attention. I started using apistan strips for varroa mites once they were available. I was advised to use menthol crystals for tracheal mite control. I read and was told to use fumidil and other commercial concoctions to ensure a healthy and productive hive. After a few years of getting to know some other beekeepers, finding abandoned hives, and making all sorts of deals for more colonies and equipment, I got up to 13 colonies and was pretty proud of myself. That November I discovered that all but two hives were empty or dead. One barely made it 'til spring.

Around this time, I met Kevin Morrissey who worked at Hutchins Farm for a season before starting his own market garden. We both have a similar organic, low input, sustainable sort of approach to farming, so our ever-evolving approach to beekeeping basically tries to work with the biology of bees instead of against their nature. After listening to Gunther Hauk speak, and talking with people like Kirk Webster in Vermont (where we buy replacement nucleus colonies and queens — Champlain Valley Bees and Queens), we think we

are heading in the right direction with our management.

First, we don't discourage swarming. Swarming is a natural part of a bee's life. If you look at the positives of swarming they will out-weigh the negatives. Swarming, if you are on top of it, will provide more colonies at only the cost of housing. Better yet, it seems to provide a natural control of the varroa mite since there is a period of brood interruption when swarming occurs. Varroa mites need brood to rapidly expand their population. We have seen the strongest, largest hives die off the fastest in the fall, where the smaller, less productive hives survive the winter and produce another crop. This is a fairly consistent observation. (This would also be a reason to create your own splits each season.)

Second, we have started to do more of our own splits. Kevin has experimented with raising queens and we have bought queens from Kirk Webster. We are also presently splitting by just taking out frames of eggs at brood, placing them in a nuc (nucleus) box with a couple of frames of honey and letting the bees raise their own queen and form a colony. We feel that making up your own splits/nucs will have to be part of a sustainable management scheme in the future. If you can produce replacement colonies from your own stock and occasionally buy a queen for better genetics, and gradually add some equipment, the monetary investment over time won't be so daunting. Compare that with replacing colonies every year from far away places and buying additives (apistan, fumidil, etc.) and the only down side is the increased investment in time.

Third, we have not used apistan or any other commercially available miticide or pesticide. We have been experimenting with a product made from plant extracts from Washington State called Mite Solution (they have a patent pending). Kevin has also, from

time to time, made up our own concoction from a recipe he found in a magazine. The basic ingredients include honey, beeswax, canola oil, and a mint oil or extract. By using Kirk Webster's bees as a base source, we already have some built-in genetic resistance to tracheal mites, as Kirk has already done work in this area, and is about to embark on varroa mite resistance in his bees.

In all of our approaches we attempt to look at the biology of the bees and what it can tell us about how best to serve them. That service will hopefully end in a sweet flowing harvest. There are other things that we do to help save money and keep foreign inputs as low as possible. We only feed out honey if supplemental feeding is necessary in the spring, which isn't very often, and we try not to take much honey off after September 1st. This year Kevin built stands for the hives, so that two will fit on each and can be pushed together for the winter for added warmth. You could also wrap them if you wanted to do so. There are many things to work on. It would appear that one would not be bored for many lifetimes with all that there is to discover about the honey bee.

Our honey, which the bees have produced, is extracted regularly. Our honey is raw and it is strained through a mesh screen only to take out the large chunks of wax. To this point we have never heated our honey before sale. We are fortunate to be able to market all of our honey through the Hutchins Farm farmstand in Concord, MA. Our customers can experience the seasonal changes in the honey as it starts out very light and very sweet and almost fruity, to the end of the summer when it is much darker and has a more robust flavor. The light honey is good for light desserts and cooling beverages, and the stronger, hearty flavor of the fall and winter honey goes well in oatmeal in the morning and when it is baked in to breads and desserts. The bees and nature really do provide for us in very appropriate ways if we just let them.

We sell our honey in mason jars. We use 1/2 pint (.6#) and pints (1.3#) jars. This year we are planning to have 2 1/2# and 5# jars available as well. We are anticipating more honey this year due to our large apiary, and we have the demand. I must say that our loyal customers have also been a major part of our evolution with the bees. Their support for the honey has allowed us to continue experimenting with the bees.

Some day we may have to figure out other marketing tactics. (We hope to have this dilemma.) Other bee keepers such as our friend Tom Cronin, who is another organic vegetable grower at Sycamore Farm in Dover, MA, have to find outlets for their honey. Tom sells his honey through his Co-op, at small stores, and at Henrietta's Table in the Charles Hotel in Cambridge, MA., (a restaurant under the guidance of chef Peter Davis who is a long time friend to local agriculture). Henrietta's Table uses Tom's honey in both their store as a bottled retail product and in their food preparation, which comes in 5 gallon pails. Other marketing potentials would include mail order catalogs, fairs and fund raising events.

My hope is that, as small local honey producers, we can continue to educate consumers about the benefits of buying locally produced honey. Hopefully this will ensure the future of small operation beekeepers and bees.

Honey Bees - Agriculture's Unrecognized Giants

by Ira Kettle
State Honey Bee Inspector,
CT Agricultural Experiment Station

Bees native to North America are not sufficiently abundant to pollinate most crops.

Keeping Honey Bees in the U.S.

About eighty million years ago, soon after flowering plants began to appear, bees in all probability evolved from an unknown wasp-like ancestor.

The first bees led solitary lives, mated, and laid eggs in cells built in hollow plant stems, holes excavated in wood or in the ground. Gathering pollen and nectar, the female would place a mixture of both in each cell as a food source.

As the evolutionary clock ticked on, some bees abandoned this solitary life for a social one, of which the honeybees are the most advanced. Colonies are perennial, containing one queen mother, thousands of female workers, and in season, a few hundred drones.

Originally introduced into this country from Europe by the early colonists, honeybee pollination is now attributable for \$14.6 billion in agricultural production.

Of economic importance in present day bee keeping are three races of honeybees, the Italian, Caucasian, and the Carniolan. Of these races, various strains have been developed, and excellent bees may be realized from each.

The importance of honeybees as pollinators of our nation's crops is unquestionable. Intense growing practices of today's farmers demand the honeybee as a pollinator. Honeybees are available throughout the growing season, and colonies can be brought in from a distance of hundreds of miles and in sufficient numbers to pollinate a wide variety of crops.

It is estimated there are 2.9 million colonies of honeybees in the United States today. Their economic value to agriculture demands their continued health and well being. The battle to keep them so has become endless. Today's beekeeper monitors bees for a variety of bacterial, viral, fungal diseases, and parasitic mites. More recently, the small hive beetle from South Africa has caused damage in the southeastern U.S. Controls are effective but are costly and labor intensive. In addition, hives and apiaries need maintenance, swarms should be controlled, and honey needs to be extracted and processed for sale. The work is hot, hard, and heavy. Our worst scourge is the Varroa mite.

Spring is a marvelous season. After a winter's drear cold, one dreams of warming breezes and green pastures exploding yellow in dandelion, clover bloom and apple blossoms. There are childhood memories of honey bees, busily humming in labors sweet, punctuated by the bright black-yellow industry of spring bumble bee queens renewing their species for yet another season. We listen expectantly for honeybees, but in return, we hear the silence of the honeybees.

About a dozen years ago, a new invader, the Varroa mite, appeared in the U.S. Left unchecked, these mites can kill a colony of honeybees in a matter of weeks. Controls are effective in domestic colonies, but our feral, or wild honeybee population has been severely impacted. The home farmer, orchard growers and gardener, who depended on the feral honeybees for pollination, may no longer do so. Inadequate fruit set occurs where the honeybee is absent. It would be wise to conclude that a beekeeper for a neighbor is not a bad thing.

The care and protection of honeybees as pollinators is integral to sustain agriculture, as we know it today. Field crops destined for animal feed, such as soybeans, depend on honeybee pollination. Pollination of wild nuts, berries and seeds harvested by wildlife enhances their survival. Domestic crops pollinated by honeybees are essential for our well-being. Honeybees pollinate a wide variety of fruits and vegetables, which include almond, asparagus, avocado, broccoli, carrot, kiwi, macadamia, olive, onion, cantaloupe, and watermelon. Alfalfa, cotton, peanut, and soybean plants also need honey bee pollination.

So now you have it. And this November, as you sit down to your Thanksgiving table laden with this nation's bounty, from turkey to cranberry, to the aroma of grandmother's pumpkin pie slyly teasing the palate, remember the honey bees clustered tightly in a winters hive awaiting the spring.

180+ Groups Call for Congressional Investigation of Farm Bureau Leadership

In April, 30 million Americans saw a CBS "60 minutes" expose on the American Farm Bureau Federation leadership. Then, on Tuesday April 11th, seven news conferences were held nationally by an alliance of over 180 groups calling for an investigation into the leadership of the Farm Bureau. That News Release follows:

Washington, DC At a press conference here today, Defenders of Wildlife, the National Family Farm Coalition, Friends of the Earth, GREEN and an alliance of more than 180 other groups called for a congressional investigation of the American Farm Bureau Federation, saying that the organization does more to hurt than to help family farmers. A new Defenders report, *Amber Waves of Gain*, highlights many areas of Farm Bureau operations and gives numerous examples of how the Farm Bureau is an organization that may have financial interests in mind rather than the interests of family farmers. The groups also staged press conferences in seven other cities across the country.

"We started taking a close look at the Farm Bureau when it threatened the Yellowstone wolf reintroduction program," said Rodger Schlickeisen, Defenders of Wildlife president. "We found out that the Farm Bureau not only fights every imaginable conservation measure, but it often advocates policies that are detrimental to family farmers. It pushes an extremist right-wing agenda that has nothing to do with farming and it benefits unfairly from its nonprofit tax status. Farm Bureau membership is mostly people who have little to do with agriculture."

Amber Waves of Gain demonstrates that the Farm Bureau is an intricate web of interconnecting business interests, including insurance companies, agribusiness giants and banks, linked with the national federation, the 50 state bureaus and more than 2,800 county bureaus.

During today's press conference, Schlickeisen said the Farm Bureau should be investigated for unfair business practices and for deceptive representation to its own membership. The Farm Bureau avoids paying nearly \$61 million annually in taxes on unrelated business income, he said. In 1996, Congress slipped into law a gift for the Farm Bureau, said Schlickeisen. It exempted the bureau from paying taxes on virtually any kind of membership dues. Since the Farm Bureau collects membership dues from millions of people who aren't involved in agriculture, this translates into tens of millions of tax-free dollars from these unrelated business activities.

Although the bureau claims to be the voice of agriculture, many of its activities support factory farm operations that are putting family farmers out of business.

"Dean Kleckner, the former president of Farm Bureau, gave us a formula to survive," said Chris

Petersen, a county Farm Bureau board member from Iowa. "He told us to adopt new technologies, put our families to work in town and raise more crops and livestock. We've done all this and were still losing thousands of family farmers each year while Farm Bureau and agribusiness giants team up to make billions of dollars."

Bill Christison, president of the National Family Farm Coalition, said the Farm Bureau is rampant with conflicts of interest and misrepresentation in developing its farm policy. "In addition to unwavering support for Freedom to Farm and unfair trade policy, Farm Bureau thinks crop insurance is the fix for our failed farm policy," said Christison. "The truth is that crop insurance is currently not working for the family farmer, the taxpayer or the environment. But it does yield excessive profit for Farm Bureau insurance companies."

Frank Kloucek, a South Dakota state senator, said the Farm Bureau facilitates market concentration through its alliances and corporate partnerships, and this is crushing family farmers.

"Family farmers and ranchers have been robbed by the corporate raiders long enough," said Kloucek. "Farm Bureau must be held accountable for its misrepresentation of independent agriculture producers."

These are just a few of the reasons all of the groups represented today believe Farm Bureau needs to be closely examined, said Schlickeisen. Additionally, Farm Bureau pushes agendas to control markets and pushes corporate-friendly legislation, both of which eliminates family farmers ability to compete. All the while, Farm Bureau leadership is profiting from the suffering of rural America.

Brent Blackwelder, president of Friends of the Earth declared, "Over the past thirty years the Farm Bureau has consistently opposed sound environmental positions to protect the health of our land, air and water. The Farm Bureau has been overtly hostile towards a safe and healthy environment for the American people. The Farm Bureau is not protecting the family farm, the Farm Bureau is presiding over the destruction of the family farm and the destruction of the American environment."

The first county farm bureau was founded in 1911 by the Chamber of Commerce in Binghamton, New York. Today, the Farm Bureau has grown into one of the most powerful lobbying forces in Washington, recently listed by *Fortune Magazine* as the 14th most powerful. Because of the Farm Bureau's intricate web of nonprofit and for-profit businesses, it is hard to estimate the organizations total worth. However, it takes in more than \$200 million annually from membership dues, more than \$12 billion in revenue from its cooperatives and more than \$6.5 billion annually in net insurance premiums.

Some Specific Problems in the New USDA Proposed Regulations on Organic Standards

by Jim Riddle,
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Rt. 3 Box 162C, Winona, MN, 55987
Released March 20, 2000.

Despite major improvements in the proposed rule, there are a number of issues of concern, where comments are needed to create a National Organic Program which meets the needs and expectations of organic farmers and consumers. Among them are the following:

Subpart A - Definitions. Does not provide a definition of "organic agriculture," or contain a statement of "Principles of Organic Production." Definition of "system of organic production and handling" is inadequate.

Subpart A - Definitions. Genetically Manipulated Organisms (GMOs) are defined by a new term "excluded methods" - see preamble discussion. "Excluded methods" needs to cover products and derivatives of GMOs, and needs to be directly linked to the definition of "prohibited substances."

Subpart A - Definitions. Terms defined, including "audit trail," "buffer zone," "compost," "fertilizer," and "inert ingredient," need to be carefully assessed for accuracy and applicability.

Subpart B - Applicability. No transitional labels are defined or recognized.

Subpart B - Applicability. 205.101(a)(1). The \$5000 small farm exemption, which under OFPA applied to total farm sales, is extended to include "organic sales" and handling sales.

Subpart B - Applicability. 205.101(b)(1). Brokers, distributors, warehousemen, and transporters are exempt from certification.

Subpart B - Applicability. 205.101(b)(2). Retail operations, including those with delicatessens, salad bars, bakeries, and juice bars, are exempt from certification.

Subpart B - Applicability. No oversight or certification is required for operations using the word "organic" in the ingredient list only. (<50% organic ingredients.)

Subpart C - Production and Handling. 205.202. Split operations, including those with parallel production, are allowed with no restrictions or additional considerations.

Subpart C - Production and Handling. 205.203(c)(1). No restrictions on the quality, quantity, or potential contaminants in manure from "factory farms" or industrial agriculture operations. (contrary to Codex and EU requirements.)

Subpart C - Production and Handling. 205.203(c)(3). Requires compost to be produced in compliance with NRCS compost practice standard code 317, which may be inappropriate, unreasonable, and inadvertently prohibit vermicomposting.

Subpart C - Production and Handling. 205.203(d)(2). Allows use of Chilean nitrate and potassium chloride. (contrary to EU requirements.)

Subpart C - Production and Handling. 205.204(a)(2). Seed treatments are only allowed if they are on the National List, yet none are listed, meaning that the use of treated seeds will be prohibited.

Subpart C - Production and Handling. 205.236(a)(2). Contains no allowance for new herd dairy clause, seriously inhibiting the ability of small dairy farms to convert to organic production.

Subpart C - Production and Handling. 205.238(b)(1). Breeder stock could receive parasitocides while lactating.

Subpart C - Production and Handling. 205.238(c)(1). Antibiotics are prohibited, but antibiotics in vaccines and semen are not addressed.

Subpart C - Production and Handling. Stocking rates and space requirements per animal are not addressed. Buffers for pastures are not addressed.

Subpart C - Production and Handling. Concept of "commercially available" is applied to organic seeds only - not applied to minor ingredients, processing aids, or livestock inputs.

Subpart D - Labeling. Products with <50% organic ingredients could contain non-organic ingredients from "excluded methods" or produced using prohibited materials.

Subpart D - Labeling. 205.203. Does not address use of the word "organic" as a modifier in a product name when the ingredient modified is not organic - e.g. "organic cherry sweets", where the cherry is a natural flavor, but not an organic ingredient.

Subpart D - Labeling. 205.301. Product composition. Requires that non-organic ingredients must not contain or be created using excluded methods, sewage sludge, or ionizing radiation. This places new burdens on manufacturers, inspectors, and certifying agents.

Subpart D - Labeling. 205.310. Design of seal "USDA Certified Organic" implies certification by USDA, which may violate ISO Guide 61, section 2.4.2, which prohibits the accreditation body's mark from being used to imply certification. Should be changed to "Certified Organic USDA Accredited."

Subpart F - Accreditation. 205.500(c). Foreign equivalency deals only government to government - no provisions are made for recognition of certifiers not under a government program or accredited by the USDA.

Subpart F - Accreditation. 205.501 (a)(11). Measures conflict of interest on a 12 month period. The commonly accepted organic industry standard for conflict of interest is a 24 month period.

Subpart F - Accreditation. 205.501(a)(12). New section needs to be inserted requiring certifying agents to provide certification services to all applicants who comply with USDA regulations. Language also needed requiring certifying agents to provide non-discriminatory services.

Subpart F - Accreditation. 205.501(a)(12). Requires certifier to accept the certification decisions of all other USDA-accredited certifiers

Subpart F - Accreditation. 205.501(b)(2). Needs to integrate allowance for "contract specifications" in order for certifying agents to be able to maintain and control their licensed trademarks.

Subpart F - Accreditation. 205.209. Peer review is weak - peer review "may" be used; reviewers act as individuals; reviewers are prohibited from being compensated.

Subpart F - Accreditation. 205.510(c)(1). Evaluation of certifying agents occurs once every five years - may not be compliant with international norms. (ISO Guide 61, section 3.5.1.)

Subpart F - Accreditation. 205.501(c)(2). An accredited certifier must provide "reasonable security" to the USDA. This amount is unspecified and its affordability is of concern.

Subpart F - Accreditation. 205.508(b). "An initial site evaluation of an accreditation applicant shall be conducted before or within a reasonable period of time after issuance of the applicant's notification of accreditation. " The practice of conducting the site visit after accrediting a certifying agent may violate ISO Guide 61, section 2.3.1.

Subpart G - Administrative. National List. Does not contain NOSB criteria to evaluate materials. Should be inserted per each National List section or at 205.607, "Amending the National List."

Subpart G - Administrative. State Programs. 205.620. Confuses "State organic certification programs" and "State organic programs." e.g.: States can have additional requirements, and take enforcement actions, without establishing certification programs - this is not clear in the text.

Subpart G - Administrative. Compliance. 205.660. Does not address investigation of non-certified operations making "organic" claims.

Subpart G - Administrative. Compliance. 205.662(e). No penalties are assigned other than suspension and de-certification.

Subpart G - Administrative. Compliance. Funding for investigation and enforcement action is not addressed.

Subpart G - Administrative. Inspection and Testing. 205.670(b) states that residue tests must be conducted at the certifier's "own expense".

Subpart G - Administrative. Inspection and Testing. 205.671 sets maximum allowable residue levels at "estimated national mean" without providing information on what those levels are.

Subpart G - Administrative. Inspection and Testing. Provides no protection of organic producers from chemical or genetic trespass; liability for damages is not addressed.

Subpart G - Administrative. Inspection and Testing. Does not set or propose any rejection levels for GMO contamination.

Victory for Organic Consumers & Farmers: The USDA Surrenders

by: Ronnie Cummins
www.purefood.org

It's nice to win a victory once in a while. After being battered in Seattle, bruised by the mass consumer rejection of proposed organic rules in 1998, and unnerved by the growing controversy over genetically engineered foods, the Clinton and Gore administration find themselves on the defensive. Feeling the heat from consumers, the USDA has apparently decided to call off its food fight—at least temporarily—with the nation's 10 million organic consumers, 6,000 retailers, and 10,000 organic farmers. On Wednesday, March 8, the USDA formally surrendered to the organic community by releasing a completely revised proposal for national organic food standards and labels. The new 663-page <<http://www.ams.usda.gov/nop>> proposal incorporates nearly all of the recommendations made by the National Organic Standards Board and organic activists, including a prohibition on genetic engineering, sewage sludge, irradiation, and a variety of other industrial-style agriculture practices.

A massive, unprecedented consumer backlash in 1998 over the USDA's first proposed regulations shook up the USDA and forced them to back off on plans to degrade organic standards and allow biotech and corporate agribusiness to take over the rapidly growing organic food market. US organic food sales this year will likely reach \$8 billion—a sizable bite of the \$350 billion total annual sales of the nation's supermarkets. At current growth rates organic production will constitute 10% of American agriculture by the year 2010.

Besides backing off on the "Big Three" (genetic engineering, sewage sludge, and irradiation) the USDA bureaucrats bowed to grassroots pressure and basically agreed that any product bearing the label "USDA Certified Organic" will have to be produced without toxic pesticides or toxic "inert ingredients"; that antibiotics, growth hormones, and rendered animal protein can not be administered or fed to animals; that factory farm-style intensive confinement of farm animals will not be allowed; and that no synthetics or chemicals will be allowed in organic production without the approval of the National Organic Standards Board. In addition the USDA basically agreed to leave the preexisting system of private and state organic certifiers intact; to allow accredited state and private organic certifiers to uphold higher standards, under certain conditions, than the USDA; and for licensed organic certifiers to be able to display their logos or seals on the front label panel of organic products. Finally the USDA backed off on their previous proposal to outlaw "eco-labels" which might imply that a product was organic.

Despite major improvements in the current proposed USDA organic standards over what was put forth in 1998, there are a number of problems and shortcomings in the lengthy March 8 document. Among the most obvious problems are the following:

* So-called "natural foods" with less than 50% organic ingredients will be allowed to list their organic ingredients on their information panel—usually on the back of the package—even though the non-organic ingredients of these products may be genetically engineered, irradiated, derived from sewage sludge, or produced with pesticides, growth hormones, or antibiotics.

* Manure from factory farms will be allowed to be used as a fertilizer on organic farms.

* Although the proposed regulations on organic animal husbandry require "access to outdoors," no clear definition of what constitutes "pasture" are offered, nor does the USDA delineate exact space or spacing requirements for humane housing and outdoor access for poultry, pigs, cattle, and other animals.

* Although the USDA claim they don't intend to impose economic hardships on organic certifiers and farmers, the added costs of USDA oversight will fall heavily on small certifiers and farmers. The USDA should provide accreditation services to organic certifiers free of charge as well as subsidize the costs of any farmer who wishes to become certified as organic. Beyond this the USDA should allocate funds to pay farmers a premium price for their products during their "transition to organic" phase as an added incentive for the majority of farmers to begin making the transition to sustainable and organic farming practices.

* Although genetic contamination of organic crops by "genetic drift" from farms growing genetically engineered crops is one of the most serious environmental threats to organic agriculture, no residue limits for genetic contamination are delineated in the USDA's proposed federal regulations. The USDA must hold biotechnology patent holders and seed companies accountable and financially liable for the environmental and economic damage inflicted on organic farmers and producers caused by genetic drift.

Proposed Rules Versus Final Rules: Consumer Vigilance & Comments Required

Although organic consumers and farmers should be proud of the fact that our collective grassroots efforts have forced the government to adhere to high standards in these proposed rules, we need to keep in mind that the March proposed rules are not final regulations. After a 90-day official comment period—which ends June 12—the USDA could bow once again to pressure from corporate agribusiness and the biotechnology industry and issue a set of weaker final rules, filled with legal loopholes and exemptions. For this reason it is important once again for us to flood the USDA with thousands of comments—which can be sent either by email (go to the USDA website listed above); by fax (703-365-0760); or regular mail (Keith Jones, National Organic Program, USDA-AMS-TMP-NOP, Room 2945-So., Ag Stop 0275, PO Box 96456, Washington, D.C. 20090-6456). When sending comments by fax or regular mail identify your comments as referring to docket number TMD-00-02-PR. Please demand that the USDA deal with the five problems we've noted above, but stress first and foremost that the USDA should not weaken the provisions outlined in the March proposed rules in any manner whatsoever.

Industrial Agriculture Takes Over the World: Must Organic Remain a Niche Market?

The main problem with "USDA Certified Organic," as outlined in the proposed rules, is not so much what the government says, but rather what they deliberately ignore or fail to say. There's not a word in the new organic standards about the evermore obvious dangers of industrial agriculture and genetic engineering. Not a word about the 80 million cases of food poisoning every year in the US resulting directly from the filth, disease, and chemical contamination inherent in factory farming and industrialized food processing. Not a word about rampant pesticide contamination and hormone-disrupting chemicals in our food supply. Not a word about tons of antibiotic drugs on factory farms being routinely fed to animals to make them grow faster, which end up as residues in non-organic meat, poultry, eggs, and dairy products—giving rise to

dangerous drug-resistant strains of salmonella and campylobacter.

In the USDA proposal there's not a word about billions of pounds of pesticides and nitrate fertilizers contaminating more and more of the nation's municipal water supplies. Not a word about the nation's food and water-related cancer epidemic (48% of all males and 38% of all females in the US can now look forward to getting cancer), or the even deadlier toll resulting from heart disease and obesity—directly related to Americans' overconsumption of junk food, meat, and animal products. Not a word about the growing international call, endorsed by the British Medical Association among others, for a global moratorium on genetically engineered foods and crops. Instead the US Secretary of Agriculture Dan Glickman once more repeated the Big Lie of Biotechnology and Corporate Agribusiness on March 7:

"Organic does not mean it is superior, safer, or more healthy than conventional food. All foods in this country must meet the same high standards of safety regardless of their classification."

On the sustainability front, there's not a word in the proposed organic regulations on reducing "food miles." Not a word on how the average over-processed, over-packaged, chemically and genetically-contaminated food product in the US has traveled 1500 miles (burning up incredible amounts of non-renewable energy and releasing climate disrupting greenhouse gases into the atmosphere) before arriving at your supermarket. There's no mention of the fact that recent statistics indicate that the single greatest cause of global warming and climate destabilization may be industrial (i.e. non-organic, non-sustainable, non-locally produced) agriculture. Likewise there's not a word in the new National Organic Program about the urgent necessity of preserving biodiversity, in terms of food crops, animal breeds, and wild species.

The US and Global Farm Crisis: Organic Niche Markets Are Not Enough

Finally the proposed organic rules have little or nothing to say about the life or death economic crisis currently confronting American farmers and rural communities. Likewise the USDA is silent on the frightening implications of the further industrialization and globalization of agriculture for the world's two billion small farmers and rural villagers. The bottom line is that no one today is making any money in agriculture except for the transnational corporate giants who control farm commodity prices, agricultural input prices, seeds, patents, and retail food sales. In other words Wal-Mart, McDonald's, Monsanto, Dupont, Cargill, Coca-Cola, Tyson, Con-Agra, Kraft, and Archer Daniels Midland are making billions while family farmers in the US and all over the world are going bankrupt. In America today, 94% of the average farm family's income comes from wages earned off the farm. Even as far back as 1990 the USDA admitted that 70% of the nation's two million farmers were not earning enough income to support a family. In the state of Minnesota, for example, it is estimated that 8% of all farmers will be driven into bankruptcy or forced to give up farming in the next 12 months.

The implicit assumption in USDA agricultural policy is that the 10% or so of American small farmers who eventually switch over to organic production over the next decade will probably survive, and even, in some cases, prosper. The remaining 90% of US farmers will either be forced to sell their land or consolidate their operations into giant biotech and chemical intensive factory farms, leaving them the option of becoming tractor drivers or tenant farmers. The implications for public health, biodiversity, and a sustainable climate and environment of having organic and sustainable agriculture remain nothing more than a small "niche

market” alongside a monstrous North American network of biotech and industrial ag factory farms is not reassuring. Applied on a global scale this chemical and genetically engineered driven model of agriculture will be literally catastrophic.

Food Agenda 2000: Transforming American Agriculture

The growing US and global citizens movement against genetic engineering and corporate globalization can draw inspiration from the fact that America’s organic community woke up, got organized, and forced the USDA to maintain strict organic standards, at least for the moment. This is an important and historic victory for citizen action, comparable in significance perhaps to the US anti-nuclear movement stopping the building of new

nuclear plants in the late-1970s. Our common victory in this Save Organic Standards campaign underlines the effectiveness of mass-based public education and mobilization in this new era of computer-based information and global internet communications. But of course this unprecedented rebellion of granola eaters, organic farmers, environmentalists, animal protection advocates, and health conscious soccer moms is just the beginning.

The challenge over the next months and years will be to see if organic consumers, environmental organizations, farm activists, churches, and public interest groups can build upon this tactical victory and begin making headway in the bigger battle—driving genetically engineered crops off the market all over the world, beginning to phase-out the most dangerous practices of industrial agriculture, and

jump-starting the conversion of the majority of the world’s agriculture to organic methods as soon as possible. To do this means we’ll have to organize a mass base of support in every local area and state, form national networks and coalitions, and then link up with our counterparts all over the world. We and our allies, from Greenpeace and Friends of the Earth to the Consumers Union and the National Family Farm Coalition, have already started to do this, but we’ve still got a long road ahead. If we’re going to see 30% of more of American agriculture go organic before the end of the decade we’re going to have to build up a powerful nationwide network of organic consumers. If we’re going to drive Frankenfoods off the market, and clean up the mess of chemical-intensive agriculture we’ll need a lot of political clout.

NATIONAL CAMPAIGN FOR SUSTAINABLE AGRICULTURE

*****DRAFT*****

**SUMMARY OF IMPORTANT ISSUES
PROPOSED ORGANIC RULE**

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**USDA issued a New Proposed Organic Rule to regulate the National Organic Program
Your comments are needed now: Fix the Problems — And make the Rule work!**

This Rule responds to many of the issues raised in the 278,000 comments to the last Rule. However, unlike the last Rule, this time around we must tell USDA what they got right, and must be upheld in the Final Rule, as well as detail those things that are bottom-line dealbreakers that must be fixed in order for the Rule to work.

1. Don’t Penalize the Steward!

The proposed rule holds organic farmers responsible for the polluting actions of others and fails to address the economic consequences of gene pollution, chemical drift, and mandatory spray programs. **A)** Manufacturers of transgenic plants should be held responsible for the consequences, including the economic impacts of genetic pollution on organic farmers. **B)** USDA should seek mechanisms including compensation funds, notification requirements, and buffer zones which would protect organic farmers. **C)** The Rule should also be revised to require compensation for contamination from government mandated spray programs that affect on-farm organic production. **D)** Finally, USDA must formally respond to the many comments submitted in the first Rule calling for the incorporation of fair labor practices in organic certification, which they have so far refused to do. [205.201; 205.202; 205.672]

2. USDA’s message: “Get Big or Get Out?”

The Rule disproportionately harms small farmers, businesses, and certifiers. Three changes must be made to the Rule to level the playing field for small farmers:

A) Addition of a “one-time small dairy herd conversion” provision to enable small family dairy farms to convert to organic, **B)** Development of a Cost-Share program to offset the fee increases for certification of this national program (recommended by the NOSB), and **C)** Farmers (growing coffee, chocolate, and other tropical products) and certifiers from the global south would be barred from US imports if their government doesn’t have an organic program, or they couldn’t afford USDA’s high fees. Restore the NOSB recommendation to assure that NOSB and a peer review panel assist the Secretary in determining third party equivalency. [205.500; 205.621]

3. Keep Animal Factories out of Organic

This Rule actually allows for animal factories. Contrary to its stated goals and international norms, there

are exemptions from the outdoor access and pasture requirements that would allow for animals to be kept without outdoor access for most of their lives. These exemptions would also allow for lactating dairy cows to be kept on dry lots (dirt enclosures void of any grass and without access to pasture). **A)** The “stage of production” exemption and other loopholes should be tightened and a very clear and firm requirement put in place for ruminant systems to be pasture-based and a requirement for outdoor access for all animals. **C)** Physical alterations that are counter to international norms should not be allowed.[205.238; 205.239]

4. Let’s Make Sure the Big 3 are Dead!

The USDA’s proposed rule, for the most part, lives up to its claim of prohibiting the **Big 3 — Genetically Modified Organisms, Irradiation, and Sewage Sludge. Tell them they are on the right path, but need to close the loopholes.** **A)** While GMOs are prohibited in many areas of the Proposed Rule, a general statement prohibiting GMOs (“excluded methods”) from all aspects of organic production should be included in the body of the Rule. The USDA has left open the possibility for future GMO use by narrowing the definition of GMOs and determining that the allowance of future GMO technologies will be decided by the Secretary without any clear public role. Furthermore, the USDA claims that the prohibition on GMOs is based solely on consumer expectation and not health and environmental concerns. Left unchallenged, this may allow the USDA to, on its own accord, include certain GMO technologies in organics if consumer expectations “evolve.” **B)** Unbelievably, while ionizing radiation is prohibited, it is not defined. This creates a potential loophole for its use that must be closed. **C)** Finally, while sewage sludge is prohibited, the Rule would allow the use of burned toxic sewage sludge (toxic sewage sludge ash). [205.271; 205.290; 205.2]

5. Keep the Public/Private partnership

The original intent of the law was for USDA to not “reinvent the wheel” but to work with and equitably build upon the existing system of both private and state certification structures. The National Organic Program was not meant to be biased against, or to usurp the roles of the existing system of private certification. This partnership must include:

- 1) A strong, Independent NOSB with full statutory authorities, including full funding to carry out its responsibilities and a strong public role in developing any NOP program manuals.
- 2) A Strong, functioning Peer Review Panel (PRP) that includes farmers, private certifiers and consumer participation, as recommended by the NOSB.
- 3) The ability for farmers, handlers and processors to drive up standards through continuous innovation.
- 4) Treatment of private certifiers that is equivalent with state certifiers.
- 5) Recognition by USDA of legitimate NGO accreditation systems.

To Restore this Partnership, USDA Must:

- A)** Uphold the authority of the NOSB in the final Rule: Assure a role for both certifiers and the public in developing and assessing program manuals. The NOSB must be fully funded. There must be clear criteria for nomination and selection of NOSB members. Funding for TAP reviews of materials must be assured, and the NOSB material list evaluation criteria be included.
- B)** Restore the (PRP) as recommended by the NOSB.
- C)** Guarantee the continued existence of grower-run and membership-based certifiers — those certifiers who have ensured high standards up to now. Change the Rule’s poorly worded conflict-of-interest provisions that would effectively eliminate these certifiers.
- D)** Restore the rights of farmers to develop and meet additional specific production or handling practices other than those provided in the Act.
- F)** Regulate private certifiers on an equivalent basis with state-run programs.
- G)** Recognize legitimate non-governmental accreditation.
- H)** Clarify the ways the national “floor” on standards can be raised by farmers, handlers, certifiers, consumers and processors. [205.400; 205.501; 205.505; 205.507]

continued on next page

National Campaign
continued from previous page

6. Meet Consumer Expectations for Organic and Consumer Right-to-Know

The Rule fails to meet consumer expectations for consistency and clarity in an organic labels in several ways. The Rule should

- A) Not exclude retailers who process foods on-site from certification requirements;
- B) Require handlers to attempt to source organic minor ingredients prior to being allowed to use non-organic ingredients;
- C) Establish new/consistent national standards for "transitional" products, and
- D) Require more transparency and full public access to fees, standards, and appropriate records to ensure full compliance. [205.101; 205.102; 205.203; 205.301; 205.303; 205.606]

7. Strengthen Enforcement Provisions.

The whole organic enterprise will crumble unless these rules are enforced against those who would fraudulently try to claim the organic premium without meeting the strict requirements of the law. The USDA needs to add provisions describing how it will deal with non-certified and excluded operations that make fraudu-

lent "organic" claims, and present information on how the enforcement program will be funded. [205.400; 205.404; 205.405; 205.660]

8. Great Start — Don't Backslide

The revised Rule is a big improvement over the first proposed version. The NOP is listening to the many voices in the organic community and industry. We also need to make sure that pressures from elsewhere don't weaken these standards in the Final Rule.

Support USDA in the places they Got it Right!:
 ~Detailed percentage labeling, including 100% organic;
 ~NOSB's authority under the law for the National List;
 ~USDA as accrediter, not certifier;
 ~Certifiers' ability to de-certify is recognized;
 ~Ecolabels are allowed;
 ~100% organic feed provisions with no antibiotics or animal parts;
 ~Flexible organic plan format;
 ~Commitment to reduce costs on the first round;
 ~No antibiotics allowed either in animal feed or in fruit production;
 ~Includes mediation in the appeals process, and
 ~Commitment to resource conservation and a process-based approach.

USDA is in the Ballpark - But the price of the ticket is too high!

Finally, while organic agriculture has been the shining example of a successful agricultural system in United States agriculture during the past 50 years, USDA has shown a disproportionate commitment to biotechnology and conventional agriculture. Organic agriculture needs full funding in proportion to its environmental and social benefit.

DEADLINE FOR COMMENTS IS JUNE 13, 2000

Submit written comments to: Keith Jones, Program Manager, National Organic Program, USDA-AMS-TMP-NOP, Room 2945-So, Ag Stop 0275, P.O. Box 96456, Washington, D.C. 20090-6456. Comments may also be sent by fax to 703-365-0760 or via the Internet at: www.ams.usda.gov/nop/. Be sure to refer to **Docket Number TMD-00-02-DR**

The Rule can be viewed in the March 13, 2000 edition of the Federal Register (available at most libraries) or on the web at the National Organic Program web page at www.ams.usda.gov/nop/. For a fact sheet that outlines critical issues needing comment, contact the National Campaign for Sustainable Agriculture at 914-744-8448, email to campaign@magiccarpet.com or go to these websites: www.rafiusa.org; www.ucsususa.org; www.centerforfoodsafety.org; www.hsus.org; www.nofany.org

April 13, 2000

Book Reviews

For the Health of the Land

by Aldo Leopold

published in 1999 by Island Press, 1718 Connecticut Ave, NW, Suite 300, Washington, DC 20009

243 pages, hardcover

reviewed by Jack Kittredge

As most readers of The Natural Farmer know, Aldo Leopold (1886-1948) was an ardent conservationist, taught game management at the University of Wisconsin and authored *A Sand County Almanac*, a bible of the subsequent environmental movement.

At the time of Leopold's youth, conservationists were heavily influenced by Gifford Pinchot's "wise use" school of resource management. Commercial exploitation of nature had resulted in deforestation, wildlife depletion, and soil and water degradation. Pinchot's utilitarian approach ("the greatest good for the greatest number for the longest time") to these excesses imposed public management through such devices as license fees, limitations on cuts, tree nurseries, and replanting programs. This approach is essentially that of the national Forest Service today.

Preservationists like John Muir, on the other hand, held nature sacred and felt any development or extraction should be banned. To their minds, man's proper "use" should be limited to appreciation of nature's intrinsic value. This is closer to the notion behind the national Park Service today.

What Leopold brought to the debate was a particular emphasis on wildlife (which he called game). By the early part of this century commercial exploitation of wildlife had decimated natural stocks (even resulting in extinction in the case of passenger pigeons). Early in Leopold's career, while working for the Forest Service in what was to become Arizona and New Mexico, he advocated the preservation of wilderness areas in sections of the national forests too poor, remote, or rugged for profitable logging or grazing. These, he said, could support game and the "use" (in Pinchot's sense) of hunting and recreation.

Later, after transferring to the midwest, — where virtually all land had been developed into small holdings — he tailored his approach to hardworking farm landscapes by suggesting ways to integrate wildness into the farmstead mosaic of fields, pastures, woodlots and wetlands.

The essays in this volume, many of which have never before been published, were written by Leopold throughout his life. They are divided into three parts by the editors. Those in Part I (Conserving Rural Wildlife) were written in the 1930s and reflect his movement from a narrow view of game to a wider concern for wildlife, irrespective of its value for sport. Those in Part II (A Landowner's Conservation Almanac) were written between 1938 and 1942, intended for publication in a Wisconsin farm paper. They attempt to convince hard-headed farmers of the value of leaving room for nature in their operations. These essays follow the calendar and offer practical conservation ideas for each season. Part III (Conservation and Land Health) contains longer pieces, written from 1939 to 1946, which define Leopold's evolving philosophy. Toward the end of his life he was clearly a preservationist, and one who understood the importance of biotic diversity.

To read Aldo Leopold is to hear a gentle but determined voice in your ear, raising questions. Is not farm life about more than crop yields? Do we really know enough about nature to call some plants weeds and exterminate them? How many functions on our farm really work because of unmentioned inputs from the world of nature? Can you tell anyone the history of your land before you acquired it? Do you know what was on your land 200 years ago?

Leopold's style is agrarian, in the same sense that Wendell Berry's is. He speaks as a neighbor and focuses on an observation he made about wild birds at the pond, or about a clump of plants behind your barn. But somehow his small observations lead to large thoughts and before you know it you are seeing your farm in a new way — wrapped up with values, community, generations, stewardship, honor.

Anyone who enjoys Aldo Leopold, and I think most homesteaders would, should delight that these essays are now easily available.

Organic Apple Production Manual
published in 2000 by the University of California,
Agriculture and Natural Resources publication
3403, 1441 Research Park Dr., Rm. 110, Davis,
CA 95616-4854, 530-754-5065
72 pages, paperback,

reviewed by Jack Kittredge

This manual was produced with SARE funds as a guide to organic conversion for California apple growers. As such, many of the references are geared to in-state growers. But most of the information would also be of use to apple growers anywhere.

California produces 10% - 12% of the nation's apples, second only to Washington state. Following the 1989 alar scare, interest in organic apples shot up, precipitating this study.

About 40% of the manual is devoted to pests and diseases. Among the latter of concern in California are scab, fire blight, powdery mildew, phytophthora root and crown rot, oak root fungus, root rot, sappy bark, southern blight, European canker, bitter pit, water core, internal bark necrosis, and various viruses. Primary pests covered are codling moth, aphids, mites, leafroller, leafminer, rodents, deer and birds. (One wonders what happened to the curculio — is there something about the northeast that keeps them here. I'd be happy if they joined the exodus to that promised land on the Pacific.) In all cases the manual describes the affliction, its cause, and discusses strategies from prevention (resistant stock, cleanliness, life cycle timing) to management (monitoring, traps and lures) to control (biologicals, dormant oil, botanicals.)

While I don't think this manual has the depth of Michael Phillips' recent venture into the world of organic apple information, it does a pretty good job for a land-grant!

This manual covers the standard items for ag manuals: site selection, land preparation, rootstock (dwarf and semi-dwarf are preferred, except for very dry locations) and variety selection (Granny Smith, Fuji and Gala are the top three in the Golden State), fertility, thinning, weed control, disease and pest management, harvest and post harvest operations and marketing.

The section on weeds seems thorough, covering cultivation, mulches, flammables and the pros and cons of a wide variety of cover crops (including a table listing the nitrogen input of a number of legume covers.)

Summer Conference*continued from page 1*

This year's Children's Conference will kick off with a Get Acquainted Open House on Friday at noon in the Greenwich Dorms - otherwise known as homebase for the whole Kiddie Caboodle! During this time children, parents, and friends will have an opportunity to meet teachers and the children's conference coordinators, Justine Johnson and Barbara Cohen. Questions and/or concerns can be addressed then or feel free to call Justine at (413) 527-1920 or Barbara (508) 797-3389 anytime! We're all looking forward to a wonderful conference!

We are very enthusiastic about having NOFA - CT run our Nibbles booth this year. Erin Ames is heading up the team, and she has put together a menu to please any gourmet! The delicacies include: curried quinoa, white beans a la

vinaigrette, good-wich roll-ups (chopped, sautéed veggies dressed with barbecue sauce and twisted in a pita), fruit and cheese plate, roasted corn, and of course, spicy noodles! There will also be good 'ole PB & J for the kids. What a spread!

This year's prepared meals feature delicious meat vegetarian and vegan main courses, seasonal vegetables and lacto-fermented condiments. To the extent the excellent staff at Hampshire College is able, the meals and the breakfast and salad bars will be LOCAL and ORGANIC. But as we shall see with Saturday night's LOCAL ORGANIC ONLY dinner, there are many ingredients used daily in all our diets that are not available in the NOFA Region. We hope that you find these meals satisfying and are inspired to learn more about feeding ourselves and our families well for long term health and the long term health of this beautiful Earth.

We heartily encourage everyone to bring their own cups, plates and silverware to the Conference this

year. Let's walk our talk, and take charge of our trash! Washing stations will be conveniently set-up under the main tent. See you there!

NOFA is looking for a videographer for the Conference. You must be available for all three days and have a car. Compensation is \$300. If you're willing and able please contact Jack Kittredge at (978) 355-2853.

You've all received your registration forms in the mail by now. We'd love your help spreading the word of our fine Conference if you've got some time. If you'd like some extra forms for your local libraries, stores, or schools, please feel free to contact Julie Rawson at (978) 355-2853. And don't forget the early bird deadline of July 10th — save some cash and get psyched for August!

Looking forward to an enlightening organic experience — we'll see you there!

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Remember:

Contact the USDA with your feelings about the new National Organic Program!

Submit written comments to: Keith Jones, Program Manager, National Organic Program, USDA-AMS-TMP-NOP, Room 2945-So, Ag Stop 0275, P.O. Box 96456, Washington, D.C. 20090-6456. Comments may also be sent by fax to 703-365-0760 or via the Internet at: www.ams.usda.gov/nop/. Be sure to refer to **Docket Number TMD-00-02-DR**

Calendar

Friday, June 23 - Sunday, June 25: 5th International Herb Symposium, Wheaton College for more info: 802-479-9825

Tuesday, June 6 - Sheep Pasture Management, Stowe, VT

Thursday, June 8 - Low Tech Low Cost Dairy Grazing, Panton, VT

Tuesday, June 20 - Making and Using Compost on Pastures. Shelburne, VT

Friday, July 7 - Pasture Management for Sheep, Poultney, VT

Sunday, July 9 - Chicken Feed Formulation, South Royalton, VT

Tuesday, July 25 - Grazing Dairy Cows and Dairy Beef, Derby Line, VT

Tuesday, August 1 - Intensive Grazing to Improve Pastures, Brattleboro, VT

Tuesday, August 22 - Grazing Warm Season Annual Grasses, Randolph Ctr, VT

Thursday, August 31 - Dairy Cow Pasture Management, Alburg Springs, VT

Tuesday, September 12 - What IS That Plant in my Pasture? So. Burlington, VT

All workshops coordinated by UVM and the Vermont Grass Farmers Assoc. *for more info: 802-656-3834*

Friday, August 11 - Sunday, August 13: NOFA Summer Conference, Hampshire College, Amherst, MA *for more info: 978-355-2853*

Saturday, September 2: Southern Vermont Garlic & Herb Festival, Wilmington, VT *for more info: 802-368-7147*

Saturday, September 23 and Sunday, September 24: New England Heritage Breeds Conservancy - Exhibition of Heritage Breed Livestock, Pittsfield, MA *for more info: 413-698-2044*

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 state.

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

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Vermont: Individual \$25, Family/Business: \$35, Sponsor: \$75

Kirsten Novak Bower, NOFA/VT, PO Box 697, Richmond, VT 05477, (802) 434-4122,

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photo by Jack Kittredge

Melissa and Richard Kurtz and some of their bees on Long Island.

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