NOFA will be hosting its 44th annual Summer Conference at Hampshire College in Amherst, MA on August 10 - 12. As it is every year, this summer’s conference will be a vibrant gathering of some of the best and the brightest working to make our world a more just and sustainable place. This year’s influential keynotes are both individuals to be reckoned with when it comes to working to increase the sovereignty of our food systems. By keeping the agricultural wisdom of indigenous cultures alive and ensuring that that information is shared throughout communities that need it most, both of them are making great strides toward increasing food security locally and globally. The full list of workshops and conference registration is at www.nofasummerconference.org.

Our Friday evening keynoter will be Rowen White, the director of the Sierra Seed Cooperative in North San Juan, CA. She is a dedicated educator who teaches the ancient and irreplaceable art of seed saving. In addition to giving our Friday keynote address, White will also be leading an intensive on the history, policy and practicality of seed saving. White is a “seed keeper” in the Mohawk tradition, whose teachings are filled with extensive knowledge on the practical hands-on skills of saving seeds and infused with the indigenous stories of the seeds themselves passed down to her from the elders of the Mohawk Nation of Akwasasny.

When asked what being a seed keeper means to her by the interviewers of the documentary Open Sesame: The Story of Seeds, White responded: “A Seed Keeper is someone who stewards seed with integrity. A person who not only carries the seed from one generation to the next, but is also aware of the responsibility of carrying the stories alongside the seed and carrying the longstanding traditions that people have kept since the beginning of agriculture.”

Eric Holt-Giménez, our Saturday afternoon keynote speaker, is executive director of Food First and dedicated to food sovereignty. He co-authored Food Rebellions! Crisis and the Hunger for Justice and is author of the book Campesino a Campesino: Voices from Latin America's Farmer to Farmer Movement for Sustainable Agriculture. Holt-Giménez is an agroecologist and political economist who has dedicated his life to building sustainable farming movement. For 27 years he has spent time in Mexico, Central America and South Africa helping to develop sustainable agricultural practices in local farming communities. He helped to create the Farmer to Farmer movement, bringing together farmers to foster skill, knowledge and practice sharing in communities in dire need of agricultural knowledge. This movement has become a crucial way for thousands of small farmers and their communities in Latin America to build food security and improve their livelihoods.

We are honored to be hosting Rowen White and Eric Holt-Giménez as our keynote speakers this year. We hope to learn from them how bringing about food sovereignty in our own communities can bring the food security that the world needs.

The Debate is Back

Along with these two dynamic speakers we are bringing back the NOFA Summer Conference favorite of a Saturday night debate. We will, as always, have live music, dancing and entertainment but this tradition of having an open forum discussion will be happening once again to round out the evenings events. The debates topic of discussion will be one that is very close to every NOFA members heart, Organic Integrity. We will be having a friendly dialogue about where we go from here now that the USDA has watered down the Organic standard even more. What does Organic mean now? Do we create a new standard? New labeling? Where do we go from here? We can’t wait for you to see you this summer, experience our keynote speakers together and to hear your thoughts on the future of Organic!

For updated info on the Summer Conference, go to www.NOFASummerConference.org
To the Editor: Food is not the only thing that is organic. Wool, linen (flax), hemp, silk and cotton can also be organic. Perhaps organic fiber can be part of a revival of hand-crafted fabrics and clothing. After looking up “Luddites” in Wikipedia, I wrote this little mini-essay just for fun. I think readers of NF will enjoy it.

The Luddite Renaissance

The year is 1811 in Nottingham, England and you are a master weaver whose livelihood is threatened by the new textile mills. Your friends encourage you to join a group of loom-smashers, but you are concerned about your family and what would happen to them if you went to prison.

Your family, your shop, and your colleagues are magically transported to the year 2018. The crowd-source drive for capital is successful. You are able to purchase linen and wool from other cooperatives and organic farms. Several dozen Internet outlets serve to sell your items worldwide. You are able to tap into a network of Fair Trade local markets and carbon-neutral shipping cooperatives.

The growth rate for organic food sales was below 2016’s 9 percent pace and was impacted by markedly slow growth in the big organic dairy and egg category. However, it was well above that of the overall food market, which nudged up 1.1 percent. Organic continued to increase its penetration into the total food market, and now accounts for 5.5 percent of the food sold in retail channels in the U.S. source: OTA press release, May 18, 2018

Study shows Adverse Glyphosate Effects at “Safe” Dose

A new study, using the EPA’s acceptable daily dietary exposure level of glyphosate (1.75 mg/kg of bodyweight per day), has found alterations in sexual development, intestinal biome, and genotoxicity in rats given the same dose over a 3-month period. In human-equivalent terms, the dosing period corresponded to the period from the embryo stage to 18 years of age.

Smithfield Verdict Challenges Industrial Ag

The $50-million verdict in April against North Carolina hog producer Murphy-Brown is being hailed as a major new victory in the growing grassroots opposition to industrial farming operations around the country. Murphy-Brown is owned by Smithfield, the country’s largest pork producer. The 10 plaintiffs, residents of Bladen County, North Carolina, had argued in federal court that the company’s poor management of its hog farms, and particularly of hog manure, was exposing them to health risks and reduced quality of life.

“Finally, somebody heard what the people were saying was happening to them,” says Naeema Muhammad, co-director of the North Carolina Environmental Justice Network, of the verdict. “For two decades we’ve been working on this,” she says, and plaintiffs in this and other cases against Murphy-Brown have been “telling their stories over and over and over to the point of weariness, feeling like it’s not making a difference.” The jury’s verdict is a “victory,” Muhammad says, because “the industry is being made to pay for the damages that they’ve done to people.”

In their 2014 complaint, the plaintiffs argued that Murphy-Brown had “failed to take adequate steps to manage the number of hogs at the sites or dispose of the millions of gallons of manure that come from the hogs.” Open-air lagoons provided little protection for neighbors from noxious odors, and the farm operators sprayed urine and feces into the air, which would then drift to neighbors’ properties and expose them to health risks. The hogs brought flies and other insects in swarms to neighbors’ homes, making outdoor recreation impossible, plaintiffs said. One farm in the county housed over 14,000 hogs when the case began.

The jury found that Murphy-Brown “substantially and unreasonably [interfered] with the...
The USDA proposed “Bioengineered” food label. Doesn’t it look friendly?

The USDA is accepting comments on the proposed standard until July 3. There will be no extensions. If you wish to comment, go to www.regulations.gov/document?D=AMS-TM-17-0050-0004. source: The Organic Insider, May 9, 2018

USDA kills the proposed organic checkoff program

The USDA issued a preliminary notice on May 11 that kills the proposed organic checkoff program that would have raised money to fund research and marketing for organic food products. The Agricultural Marketing Service cited “uncertain industry support for and unresolved issues with the proposed program” as its rationale for the decision. The proposed checkoff program had been controversial in the organic food industry with some small producers taking issue with its threshold of $250,000 annual gross revenue for paying into and voting in the program. Arguments expressed during the public comment period were that the checkoff would have a “disproportionate impact on high value commodities as assessments would be tied to sales value." Other critics weren’t sure “whether organic promotion is possible without being disparaging to other agricultural commodities.”

The Organic Trade Association, which was the primary architect of the checkoff, said in a statement that USDA’s decision “reflects a pattern of holding back forward progress on organic.” Laura Batcha, the association’s CEO and executive director, said: “If there was ever a need for an organic checkoff it is now.”

source: May 13, 2018 FERN

Glyphosate Found in Granola and Crackers, FDA Emails Show

The FDA has been testing food samples for traces of glyphosate for two years, but the agency has not yet released any official results. But internal documents obtained by the Guardian under a freedom of information act request show the FDA has had trouble finding any food that does not carry traces of the pesticide.

“I have brought wheat crackers, granola cereal and corn meal from home and there’s a fair amount in all of them,” FDA chemist Richard Thompson wrote to colleagues in an email last year regarding glyphosate. Thompson, who is based in an FDA regional laboratory in Arkansas, wrote that broccoli was the only food he had “on hand” that he found to be glyphosate-free. That internal FDA email, dated January 2017, is part of a string of FDA communications that detail agency efforts to ascertain how much of the popular weedkiller is showing up in American food. The tests mark the agency’s first-ever such examination.

“People care about what contaminants are in their food. If there is scientific information about these residues in the food, the FDA should release it,” said Tracey Woodruff, a professor in the University of California San Francisco School of Medicine. “It helps people make informed decisions. Taxpayers paid for the government to do this work, they should get to see the information.”

The FDA is charged with annually testing food samples for pesticide residues to monitor for illegally high residue levels. The fact that the agency only recently started testing for glyphosate, a chemical that has been used for over 40 years in food production, has led to criticism from consumer groups and the Government Accountability Office (GAO). Calls for testing grew after the International Agency for Research on Cancer (IARC) classified glyphosate as a probable human carcinogen in 2015.

source: April 30, 2018 The Guardian

USDA Formally Withdraws Organic Livestock Rule

The Organic Livestock and Poultry Practices Rule was first proposed as a final rule in Jan. 19, 2017, in the final days of the Obama Administration. USDA published the final rule’s withdrawal on March 13, 2018. The Organic Trade Assn. (OTA) has challenged the rule’s withdrawal in a lawsuit, as have several nonprofit special interest groups, including the Center for Food Safety. The lawsuit claims that USDA did not listen to the overwhelming responses offered in comments on the proposed withdrawal. The GAO review stated that the USDA’s Agricultural Marketing Service notice of proposed rule-making on Dec. 18, 2017, garnered approximately 72,000 comments on the proposed rule, and according to AMS, approximately 50 comments supported withdrawal, which included five
comments submitted as form letters. AMS states that it is withdrawing the rule because it lacks authority to promulgate the rule.

source: Feedstuffs.com, April 3, 2018

Brazil Sugar Mills Start Genetically-Modified Cane Plantation
Brazilian sugar mills looking to grow the world’s first variety of genetically modified (GM) sugar-cane have planted an initial area of 400 hectares (988 acres), according to the research firm behind the project. Developed by Centro de Tecnologia Canavieira (CTC) with Bt (Bacillus thuringienisis) genes that make it resistant to the cane borer, around 100 mills are working with the GM cane, company Chief Executive Gustavo Leite told Reuters. The cane borer is a widespread insect that costs Brazilian mills around 5 billion reais ($1.5 billion) per year in losses and insecticide expense.

Many environmentalists oppose the spread of GM plant varieties that kill insects, saying they could cause imbalances in the areas where they are mass cultivated.

Brazil approved the commercial use of CTC’s GM sugarcane last year, the first time such permission had been granted anywhere in the world. Leite, a former Monsanto executive, said the company’s objective was to rapidly increase planting of the new variety in the next three years, targeting around 1.5 million hectares.

source: Reuters, March 2, 2018

Farmland Birds in France Are in Steep Decline
Birds in farming regions of France are in trouble, and that may indicate problems in similar areas across Europe. Scientists involved in long-running regional and national bird-counting surveys in France have reported precipitous declines in agricultural regions, even among common birds well adapted to human activity — the generalists, like blackbirds, that seem to do well in most circumstances. This finding follows news of a devastating loss of insects in Germany, a decline of nearly 80 percent over the last 40 years. The drop is thought to be occurring throughout Europe.

The loss of birds has been going on for a long time. And in a sense it is no surprise that birds — as well as amphibians, reptiles and mammals — face population declines around the world because of habitat loss and other problems.

But the most recent results from two surveys — one nationwide in France, the other limited to one region — caused scientists to sound an alarm, because the results suggest that agricultural methods are hurting birds, according to Benoit Fontaine, a conservation biologist at the National Museum of Natural History in Paris and a leader of the national survey, conducted twice a year by volunteers. “In the agricultural land,” he said, “there is something really bad going on.”

Over the past 17 years, the numbers of birds in farming areas have dropped by a third. Some of the species have declined even more: Meadow pipit populations, for example, fell by 68 percent. Dr. Fontaine described the situation as “catastrophic.”

He suspects that pesticides used in agriculture and intensification of land use are linked to the decline, although neither survey comes to conclusions about causes or makes any policy recommendations. But he pointed to the loss of insects, the major food source for many birds, as a likely result of pesticide use.

source: NY Times, April 11, 2018

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Attacks on Organic Integrity – Where Do We Go From Here?

by Steve Gilman, Interstate NOFA Policy Coordinator

(Note: for an expanded version of this article, complete with links to source materials and timely updates please go to the Interstate Policy Advocacy page at www.nofa.org)

By the Organic Trade Association’s statistics the continuing growth in organic sales is so bright you gotta wear shades. Now over 5% of the food industry, organic has left any purported bad status far behind. While the food industry limps along with annual 0.6 increases, organic continues to post gains over 8% year after year. Carried by Walmart, Target and other Big Box stores, total US sales have reached around $50 billion now – and some estimates are putting the organic market at $320 billion by 2025. With sales generated by consumer demand, minor and major companies are fearful not to have a stake in the accelerating market.

But by ignoring the dark, threatening clouds gathering on the horizon are those business-boosters really wearing blinders instead? Thanks to a spate of negative publicity about watered down standards and fraud in the organic industry consumers are getting longer. And for USDA preemptions and enforcement failures is getting longer. For farmers, nascent businesses and advocates it was a painful fit housed in USDA, long regarded as a Big Ag lapdog and described by organic stalwarts as “residing in the belly of the beast”.

But that was the trade-off for uniting the 60-some separate certification programs around the country and securing governmental legal protections against fraudulent operations. Adding insult to injury USDA then “owned” the use of the word “organic” in food and farming as producers cannot use the term legally without certification. But then again USDA has to contend with the definitive Organic Food Production Act of 1990 (OFPA) and a vociferous movement scrutinizing their every move.

OFPA

Championed by Vermont Senator Patrick Leahy, OFPA was enacted as part of the 1990 Farm Bill, passed by the slim Democrat majorities in both the House and Senate and landed in the Agriculture Marketing Service division of USDA for implementation. Creating comprehensive standards for organic certification, the act required the Secretary of Agriculture to establish a National Organic Program (NOP) – a Federal Advisory Board with atypical statutory power to determine which materials are allowed on the National Organic Standards List as well as to advise the Secretary on aspects of the NOP. The NOSB, composed of 15 members representing the food processing industry, farmers, consumers, and environmental organizations, was directed to meet twice a year with proceedings fully open to the public.

Passing the OFPA statute was just a first step – but no one supposed that this would turn into a 10 year process. Although annual appropriations were authorized to support the program no monies were voted into existence until 1994. And as for the federal command-and-control making phase required to create the program’s regulations, the proposed rule that finally emerged in 1998 had Big Ag’s fingerprints all over it. The regulations hit like a brick with the infamous allowance of GMOs, sewage sludge and irradiation which potential interlopers can apply for approval. The regulations hit like a brick with the infamous allowance of GMOs, sewage sludge and irradiation along with an additional “64 points of darkness”. NOFA was part of a huge public outcry that raised holy hell to send it back to the drawing board – but it wasn’t until 2000 that the revamped NOP Final Rule was instituted at last.

Tarnishing the Gold Standard

In markets replete with non-regulated claims like “natural”, the transparent and verifiable high standards built into the organic seal became respected as the gold standard of food labels, gathering solid consumer acceptance. Mounting challenges began to cloud its dominion, however. While NOFA’s organic and sustainable agriculture coalition partners have had a good share of policy wins, this current Congress and Administration is fixated on undoing as many as they can.

Several of these interloper incursions have morphed into serious attacks on organic integrity – with repercussions for the authenticity of the label. The short list includes overturning Biotech labeling by Congress; the reversal of Sunset Review regulations...
From all reports we’re going to need All Hands On Deck to thwart this unconscionable takeover attempt with a national campaign that once again raises holy hell to try and stop it.

“Where Do We Go From Here?”

In response to these diverse attacks on organic integrity “Where Do We Go From Here?” has emerged as a major concern for the Interstate NOFA Policy Committee and charting the course ahead was the main agenda item at the NOFA-IC Retreat in late March.

Although some of these transgressions are being dealt with in a number of ways, including pressure on the NOP and USDA lawsuits, there are further calls by new players on the scene for separate add-on labels to designate authentic organic inputs and practices in the marketplace.

Over the past year two major initiatives have emerged: the Regenerative Agriculture Certification (ROC) put forth by Rodale, Patagonia and Dr. Bronners and the Real Organic Project (ROP) that has come via the “Keep the Soil in Organic” movement by grassroots farmers. Initial pilot projects to test the efficacy for both are scheduled for this summer.
In the October 30, 2017, “Future of Food” issue of the Nation, Madeline Ostrander has an article, “Hacking the Grain”, focused on Kernza. This is a summary and review of that article.

Kernza is called a “perennial wheat”. It’s an alternative to agriculture’s first crops: barley and two varieties of wheat called emmer and einkorn, which started as wild plants. It’s an alternative because it’s not an annual crop, which dies and needs to be replanted for the next year, committing agriculture to tillage of the soil and its eventual degradation. In the U.S., after the dust bowl, the government promoted soil conservation measures. Yet the U.S. still loses soil ten times faster than nature can replace it.

More recently scientists have discovered that tillage and other activities that churn up the soil play a role in climate change. Turning the soil disrupts the communities of tiny animals, fungi and microorganisms that hold carbon. Tillage causes some of that carbon to break down and escape into the atmosphere. One recent study estimated that tillage has contributed about 133 billion metric tons of carbon to the planet’s atmosphere.

Kernza yields less than conventional wheat by one third. But it has one major advantage – a long life span. Its roots go fifteen feet deep and bank nutrients. It is able to produce edible grains for five years during which time it requires little or no tilling and less fertilizer than wheat does. According to its proponents, if Kernza succeeds it could be the start of a revolution to save soil and fight climate change.

Starting in the 1920’s, American and Russian scientists tested a few lines of perennial wheat, hoping to save farmers the cost of replanting. In the early 1980’s Wes Jackson, co-founder of the Land Institute, persuaded Robert Rodale, son of J. I. Rodale, to find a perennial that could substitute for wheat. At that point working toward a perennial agriculture became his dream. In 2003 he launched a large-scale program at the Land Institute to convert T. intermedium into a functioning grain. He called it Kernza.

Advances in the sequencing of DNA over the past fifteen years have made it easier to shift Kernza’s traits. With almost all the grain’s genome mapped, breeders can track the genes that control particular traits and select for fat seeds, resistance to disease, or grains that don’t scatter in the wind but cling until harvested.

In 2011, the Land Institute began collaborating with the University of Minnesota on studying the grain. And in 2017 General Mills offered the university half a million dollars to study several aspects of Kernza, including how it might help store carbon and organic matter in the soil. General Mills wants to reach what it calls “sustainable emission levels” by 2050. They hope Kernza will help meet this goal.

Other ventures are looking at other perennial crops. The Land Institute and the University of Min-
nnesota and its partners are working on a rice being tested in China, an oilseed similar to canola, and a flaxseed native to North America. At Washington University they are developing a version of a wheat like perennial called Salish Blue. This is the result of a twenty year effort to cross wheat with perennial wheatgrass. Salish Blue lives about two years and farmers in northwest Washington are beginning to grow it.

With the advantage of gene mumping, Kernza has changed more quickly. Since 2001 the size of the seeds has doubled. Scientists hope to lengthen its productive life span from five to ten years. With this process of creating a new crop variety, what are the guiding values?

The values guiding the creation of one of the current GMO food crops, designed to be “roundup ready”, are those of the parent company. They are meant to survive the dosing of herbicides that are the products of the company that will kill their wild competitors. But if the values guiding the creation of these new crops were the health of the wider society then we would all benefit. If it’s profit that guides the process, in other words, if the health of the parent company is the governing concern, then we are in danger of ignoring important other results of the creation of new crops.

For instance, with Kernza it would be an advantage to expand the scope and use of the grain because the costs of production would be lowered and a more sustainably grown grain would replace some of the wheat now grown. It would not be an advantage to build a GMO to be “roundup ready”, because glyphosate is almost certainly a human carcinogen. Nor would it be wise to send it into the market without investigating the unintended effects of unexpected attributes. This is not a plant that has been modified slowly, over generations of humans, proving it’s safe to eat.

With tobacco, which was modified to increase its nicotine content, an expansion of the use of the grain would replace some of the population, it has behind it the power of an industry. The industry can limit and control the terms of the conversation. The search for a “sustainable agriculture” reflects the concerns of a growing number of people. We’re beginning to see how these issues are linked. But we haven’t found a way to make sure the decisions we make about agriculture and food are made according to the full range of values we hold.

Already Kernza has moved into the market in a small way. The owner of the Birchwood Cafe in Minneapolis was asked by an agronomist at the University of Minnesota in 2013 if she would help develop food products using Kernza. The first challenge was that the seeds were too small for conventional mills. A farmer milled them with a bicycle powered mill.

In Minneapolis a microbrewery is brewing a beer from Kernza. A San Francisco bakery makes a bread called The Perennial with the grain. A baker in New York produces a 75% Kernza bread. Patagonia Provisions and the Hopworks Urban Brewery are selling a beer make from Kernza in Whole Foods.

But this is early in the game as far as the market goes. General Mills’ interest in Kernza as a basis for more sustainable agriculture probably indicates that they see a marketing advantage there. If the full range of what we value in our food isn’t considered, General Mills’ definition of “sustainable emission levels” for carbon could be achieved by farmers using herbicides. Already, no-till farmers who are not farming organically are using herbicides to deal with weeds.

If we recognize that this process is problem solving about what values we want represented in our food, we can see that all the information about what’s being decided needs to be considered: the public health effects of the herbicides as well as the greater sustainability of the reduced tillage. We can’t maximize all of these values. Our political process needs to stretch to take these different values into account and consider them honestly. The balance is our choice, and we can’t afford to give it away.
The Natural Farmer
Summer, 2018

Book Reviews

Agroecology: Science and Politics
by Peter Rosset and Miguel Altieri
published by Fernwood Publishing (www.fernwoodpublishing.ca)
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reviewed by Jack Kittredge

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The same phenomenon is occurring with ‘agroecology’ as occurred with ‘organic’ back in the 1980s. This previously obscure subject is being touted by academics, development organizations, and the UN’s Food and Agriculture Organization as a solution to many of our increasingly serious food and environmental problems. But can a concept developed by studying the growing practices of indigenous farmers and peasants around the world remain the same when adopted as the latest fashion in the world of international trade and corporate hegemony?

Rosset (professor of agroecology at the College of the Southern Border in Chiapas, Mexico) and Altieri (emeritus professor of agroecology at Berkeley and founder of SOCLA [the Latin American Scientific Society for Agroecology]) are about as eminent as you can get in the field of agroecology. They have been working in this area since at least 1996, when I met them on a trip to Cuba during its “special period” of deprivation and agricultural innovation.

Perhaps the best statement of the essence of agroecology I have seen is at the beginning of this book: “Guided by an intricate knowledge of nature, traditional farmers have nurtured biologically and genetically diverse smallholder farms with a robustness and built-in resilience necessary to adjust to rapidly changing climates, pests, diseases, and more recently to globalization, technological penetration and other modern trends.”
Of course the content of agroecology is as diverse as the crops, climates, growing conditions and soils of a diverse planet. But the principles of these ancient management practices, whether by raised fields, terraces, polycultures, agroforestry, rice-duck-fish systems or dozens of other innovations, promote biodiversity and thrive without external inputs.

This book is an effort to summarize the science (Chapter 1) as well as the history (Chapter 2) of agroecology. Chapter 3 provides evidence of its advantages (more production, lower costs, fewer negative environmental impacts and a more sustainable agriculture), and Chapter 4 discusses bringing it up to scale. The concluding Chapter 5 focuses on the crossroads at which the authors believe agroecology currently is, where it is seen as either:

1) offering additional tools for industrial food production which can make the dominant model more sustainable without challenging the underlying relations of power, or

2) an alternative to such an industrial food production model which is better for people and the environment.

The science of traditional farming systems is, as stated, as diverse as the methods analyzed. Some general principles, however, are that:

1) high levels of biodiversity regulate ecosystem functioning and provide ecosystem services

2) creative landscape, land and water management systems improve ultimate efficiency
The principles are explored in some detail in Chapter 1. They are well supported, but the reading is somewhat dense and abstract. It could benefit from more examples. I doubt they are too far removed from the experiences of most organic growers in the Northeast, however, as most of us are to an extent practitioners of agroecology on our own small farms and homesteads.

The precursors of organic farming are discussed in Chapter 2. Mentioned are Rudolf Steiner, Albert Howard, Lady Balfour, J. I. Rodale, and others who popularized farming in close connection to nature. These names will be familiar to many readers. The academics, however, were new to me. Russian agronomist B. M. Bensin, German zoologist Wolfgang Tischler, Italian scientists Girolamo Azzi and Alfonso Draghetti, US agronomist Karl Klages and dozens of others were early to see the emerging problems and questions that lessening the importance of nature was causing in agriculture.

Works stressing the differences between tropical and temperate zone farming, calling attention to the impact of synthetic chemicals on the environment, and identifying human and social problems resulting from the shift away from sustainable small farms catalyzed a movement of critics of the industrial farming model. Some of the social movements often associated with small farming are also mentioned in Chapter 2, including Organic Farming, Fair Trade marketing, Conservation Biology, Eco-agriculture, Nature’s Matrix, and Ecofeminism.

Chapter 3 documents the inescapable fact that agroecology is and has been feeding the world for thousands of years. Between 70 and 80 percent of the world’s food is currently produced by smallholders on plots averaging 5 acres in size. Seventy-two percent of all farms are of 2.5 acres or less. How such productivity is possible is explored by detailed looks at many farming systems in Latin America, Africa and Asia. These are fascinating case histories and I expect many serious readers who also farm will be as pleased as I was to see such elegant examples of creative management of natural resources by smallholders around the globe. One observation I can’t help making, however, is that many of these were apparently helped in one way or another by ideas from NGOs in their area. You can say that this gives the lie to claims that peasants have always created such elegant systems out of whole cloth. But I prefer to see this as an indication that human creativity can continue to improve on almost anything!

Significant barriers exist to scaling up agroecology. Some covered in Chapter 4 are:

1. Insecure land tenure prevents farmers from investing in improvements such as soil conservation
2. Farmer knowledge has been lost during the Green Revolution and horizontal farmer-to-farmer learning is needed
3. Public officials are more influenced by reductionist science than holistic, integrative approaches
4. Where farmer organizations are lacking, so too is experimentation and exchange of information among farmers
5. The high cost of conventional farming and consequent indebtedness of farmers stifles their
ability to experiment and try new approaches

6) National policies are often geared to promote and subsidize agriculture for export, not local markets.

7) Lack of infrastructure that enables better access to seeds, markets, cover crops, etc. prevents wider adoption of sustainable practices.

Conventional research and extension systems are not effective in reaching peasant families compared to approaches involving farmer organizations and farmer-to-farmer sharing. Some farmer organizations, such as Zero Budget Natural Farming in India and La Via Campesina in the Americas, Asia and Africa, have been effective in spreading agroecological training and methods among peasants.

The recent rise in recognition of agroecology has created somewhat of a dilemma for its proponents. Chapter 5 outlines how governments, agencies, and corporations have become interested in promoting some of its technical innovations, co-opting it to make the faltering industrial model more sustainable, whereas NGOs, scientists and social movements feel that these structures of power need to be transformed to enable food production in ways that benefit humanity and the earth. An illustration of this dichotomy is the contrast between the FAO’s 2014 Rome process with that of the IPC (International Planning Committee for Food Sovereignty) in N’jéléni, Mali, in 2015. The FAO approach, dominated by national governments and forbidding discussion of international trade policies, GMOs (genetically modified organisms), or even the notion of food sovereignty, released a report calling agroecology a valid approach and deserving of support, although suggesting it be combined with sustainable intensification, “climate-smart” agriculture, and GMOs. The IPC gathering, however, went on record to oppose reducing agroecology to a set of eco-techniques in service of industrial food production. Instead they argued for a fundamental change in the power structure. The delegates – indigenous people, fisherfolk, pastoralists and peasants – called for putting “the control of seeds, biodiversity, land and territories, waters, knowledge, culture and the commons in the hands of the peoples who feed the world.”

Wouldn’t that be something?
Mighty Mini Microbe’s Tale:
The Underground Adventures of Soil’s Superheroes

story by Ron Nichols, illustrations by Cat Bailey
published by National Resource Conservation Service (NRCS)
booklet available free in limited quantities from NRCS, or download as pdf
24 pages, October 2017
reviewed by Jack Kittredge

This coloring book is a creative effort by the NRCS to acquaint children with soil microbes and their important role in our world. It describes the oozing of plant root exudates which feed the microbes, and properly credits the microbes with providing the nutrients that plants need to thrive, helping them fight pests and diseases, and producing the glues which hold soil particles together and provide pore spaces for water. The booklet touts the practices (planting cover crops, keeping soil protected from sun and air, avoiding tillage) that farmers can use to encourage vibrant microbial populations, and briefly explains photosynthesis.

Overall, this is an exciting effort. Some of the ideas in the coloring book will be new to children, and even their parents, so it provides a wonderful opportunity for teachers to answer questions and further educate about these vital functions.

Critics may find fault with the anthropomorphic illustrations that represent bacteria and fungi and other denizens of the microbial world as masked super hero humanoids, living in traditional houses and eating at restaurants (at least they are “Roots” Restaurants) but I am quite familiar with the problems of properly representing such creatures in print, having faced the problem of illustrating bacterial and fungal operations in the NOFA white paper on soil carbon restoration. Properly conveying the essence of these critters is not well understood and calls for creative license. These drawings have my full sympathy.

My only criticism of the booklet is one which mirrors my criticism of NRCS overall. Despite all their good work regarding soil, they appear to be unable to mention the use of farm chemicals. This obviously is a major omission when trying to educate about how to be friendly to microbes. To discourage tillage while remaining silent about the use of toxic pesticides is not doing them much of a favor.

But with that major reservation, which can after all be discussed by a competent teacher, I think this booklet is a wonderful device for teaching or parenting and I encourage you to google “Mighty Mini Microbe’s Tale” and order or download some from NRCS.
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