Summer Conference Registration is Live

by Jason Valcourt
NOFA Summer Conference Coordinator

Even as Hampshire College is going through a tumultuous period, as you may have seen on the news over the past few months, their summer schedule is business as usual. We are grateful that they are sticking it out even while things are rocky and we have constant communication with them as they manage their way forward. We hope they find a solution to their woes that gives them long term stability and allows their cutting edge culture of creativity to continue to thrive.

This year the conference festivities will begin on Friday evening, beginning with dinner and a NOFA mixer with live music. We will get you setup and settled into your accommodations in time to relax with live music and take the opportunity to shake your boots or just have some good’ole friendly conversation. Our Friday night music will be brought to you by local superstars The Gaslight Tinkers and there will be local beverages for your taste buds. Some of you might remember this band from a few years ago as the contradance band. There will not be a formal contradance this year, but no one will stop you from grabbing a partner and spinning around the floor.

Although we removed Friday workshops from the schedule, we’ve added another session on Sunday in order to offer attendees the most content possible in one weekend. It’s a program rich with diverse material and opportunity. In one day, you can hop from a pest-scouting workshop at the Hampshire College Farm to a discussion of the impacts of mushroom extracts on bee health, and end with a deep dive into the biology behind coppicing and pollarding. New this year are two kitchen spaces, which means you can join in a hunt around campus for edible weeds, and then pop into the kitchen to cook up your finds. Smoking meat, making cheese, exploring vegan comfort food and understanding animal fats all have a place this year, and you won’t find them in a lecture hall!

Beginning on Saturday morning you can feast on the amazing workshop program and drop into sessions from talented presenters such as Alice Percy, Dan Kittredge, Connor Stedman, Liz Henderson, and many many more. A wide range of topics, from seed saving, regenerative farming practices, healthy pigs, and measuring nutrient density fill out the robust program. So much to choose from!

On Saturday we will be offering two half-day intensives, Keynoter Sandor Katz - fermentation revivalist, author, and James Beard award recipient - will be offering up the simple secrets behind creating your own long time NOFA family are your host for the event. The Real Deal 2019.

Renewing our Debate Tradition!
Yes, Saturday from 4:30 to 5:30 join us to hear Dave Chapman, Real Organic Project leader and Johanna Miranda, Farm Policy Director of the Organic Trade Association, mix it up in a live debate on the future of organic farming and the National Organic Program. Jack Kittredge will moderate, as in days of yore!

On Sunday, two deep dives to choose from. Guido Meece (RH, AHO), a whole plant herbalist from Burlington, VT and chief herbalist at Urban Moonshine, will provide an in depth introduction to herbal medicine through lecture and practical work. Harvest, storage, extraction, and processing for basic internal and topical preparations will help provide you with a foundation for herbal medicine as a component of homestead gardens and self-care.

Growing Hemp
Alternatively, on Sunday, you can choose field to market CBD hemp cultivation with Brendan Beer, a CBD hemp grower out of Greensboro, VT. Be on the forefront of production as this crop gains more traction in the region. Brendan will offer insight from genetics to harvest and extraction, and everything in between.

Saturday Evening Plenary
Also on Saturday will be an evening plenary with soil biologist Kris Nichols, former Chief Scientist for Burlington, VT and chief herbalist at Urban Moonshine, will provide an in depth introduction to herbal medicine through lecture and practical work. Harvest, storage, extraction, and processing for basic internal and topical preparations will help provide you with a foundation for herbal medicine as a component of homestead gardens and self-care.

Bring Your Kids!
You may not know it but, bringing your kids to the Summer Conference is really affordable. Kids and Teens are $10 for the entire weekend and dining hall meals are super cheap too! Once again our youth conference has an amazing lineup and fun educational activities for your young farmers in training - ages 5 to 12. Valerie Walton and her own long time NOFA family are your host for the weekend and will keep the kids enthralled with hands on workshops and a Sunday morning visit to the Hampshire Farm to harvest and prepare a farm lunch!

Teen Summit - Our latest addition to the conference
This summer will bring a new addition to the summer conference schedule. NOFA will be sponsoring our first Teen Summit on Food Justice and Urban Agriculture. It will take place on Sunday.

Inside This Issue

Letters to the Editor A 2
News Notes A 5
Book Review A 10

Section B: Supplement on Plant Breeding
Dear Jack,

This is a note of appreciation, particularly for the depth and focus of TNF 2018-19. Reading and listening (NOFA-NJ) to your wisdom has affirmed the work I have been doing. First at the Asbury (NJ) Village Farm CSA and for the past 4 seasons at the Easton (PA) Urban Farm. We all need encouragement.

I called you last year inquiring about something I thought I had read in TNF about growing cotton. The snippet (enclosed) from the NY Times Magazine finally surfaced. I had forgotten that the inspirations came in many shapes and sizes. I wanted to source seed and start cotton to transplant this spring, but at 180+ days to harvest, it was fortunate to visit the African American Museum last Fall, and I was profoundly moved by his depiction of the elemental beauty of the plant and, of course, its freighted significance in American history.

I wanted to source seed and start cotton to transplant this spring, but at 180+ days to harvest, it will have to wait until 2020.

Our urban farm is in a racially diverse neighborhood and I think a few plants would initiate some interesting conservations with both adults and children and maybe a more formal teaching and learning opportunity. – Curt Rowell, Phillipsburg, NJ

Thanks, Curt,

For your kind words and interest in cotton. It is indeed a beautiful plant, as well as a world historical one. I have viewed some of Dowell’s pictures online and can understand your experience first touching a boll. I’ve never picked it, but it looks like the burs would tear holes in pickers’ hands until they were too tough to bleed, almost like leather. I’m hoping we can hold out in the Northeast a little longer than just until 2020 to be able to grow plants with 180+ days to harvest! -- Jack

Dear Jack, I read with more than a passing interest your lament in regard to the adoption of dogs. If memory serves (and, truth be told, it serves with decreasing accuracy in these, my dotage years) in the long ago past Kathy and I hosted a field day at which you and Julie served as representatives of NOFA. It was our first meeting. At close-up, you picked up your literature and card table and assorted children and… a puppy? Ah, the good old days. At any rate, if your request for a puppy elicited more than one response, we, too, are looking for one, currently dogless for the first time and unwilling to endure the modus operandi of the shelters. Best regards, -- Larry Siegel, Royalston, MA

Hi Larry,

I well remember that field day! It seemed the most natural thing in the world to take home a long-haired puppy from your litter for our daughter’s birthday (she called her “Diggzy,” recognizing a pronounced tendency to find a spot to sit in the cooling earth) and she was well loved for many years. We never had any trouble finding homes for her own litters of as many as 8 or 9 by taking them with us to a farmers market or two for the public to ogle.

Yours was not the only response we have had to that editorial, but most people thought I was joking or they support the current monopolist repression of natural increase. Our most recent dog cost over $400 for the privilege of letting him run, bark, and gleefully control varmints on our farm. He also had contractually to be neutered before we were allowed to have him. I’m pretty sure whose values are being served by that system, and it is neither his nor ours! – Jack

Letters to the Editor

The Natural Farmer Needs You!

The Natural Farmer is a quarterly membership journal of the Northeast Organic Farming Assn. You may join NOFA through one of the seven state chapters linked at www.nofa.org

We plan a year in advance so those who want to write a top notch piece have a lot of time to think about it. The next 3 issues we are planning are:

Fall 2019: Cooperatives
Winter 2019-20: Glyphosate
Spring 2020: Organic Cannabinoids

If you can help us on any of these topics, or have ideas for new ones, please get in touch. We need your help! The deadline for the issues are: Spring - January 31, Summer - April 30, Fall - July 31, Winter - October 31.

Advertisers and Sponsors see rate and deadline information at www.thenaturalfarmer.org. Click the menu bar under “Advertising”

Moving? The Natural Farmer will not be forwarded by the post office, so those who subscribe directly should send address changes to us. Most readers, however, get this as a NOFA member benefit and should send address updates to their local NOFA chapter.

Archived issues from Summer 1999 through Fall 2005 are available at http://www.library.umass.edu/acoll/digital/tnf/. Also, more recent issues are downloadable (starting 3 months after paper publication) at www.nofa.org as pdf files. Finally, we also have many issues archived in convenient downloadable form at www.thenaturalfarmer.org

Jack Kittredge and Julie Rawson, editors
411 Sheldon Road, Barre, MA 01005 978-355-2853, fax: (978) 355-4046 tnf@nofa.org ISSN 1077-2294 copyright 2019

The 2019 NOFA Summer Conference will present a debate on the question: Proposed: The USDA National Organic Program is Doing its Job (protecting the values of traditional organic agriculture and meeting consumer expectations). The debate will take place on Saturday, August 10, from 4:30 to 5:30 in Hampshire College’s Franklin Patterson Main Auditorium.

David Chapman, owner of Vermont tomato operation Long Winds Farm and executive director of the Real Organic Project, has been challenging the NOP to return to organic principles for the last two years. He will defend the negative position.

Johanna Miranda, who has worked as policy director of Pennsylvania Certified Organic and technical director of ORMI (the Organic Materials Review Institute) is now the farm policy director of the Organic Trade Association, replacing Nate Lewis. She will defend the positive position.

Chapman and Miranda are on opposite sides of several issues concerning recent NOP performance and organizers expect a vigorous debate exploring this important issue.

In the wake of the National Organic Standards Board’s 8 to 7 vote supporting certification of hydroponics, criticism of the failure of the NOP to catch cases of fraud in imported grain and domestic dairying, and anger over passage of the Dark Act which preempted state laws requiring labeling of GMOs, many old time organic advocates are questioning whether, in this political and economic climate, organic advocates can rely on the NOP and the legislation behind it to protect the interests of organic farmers and consumers.

Jack Kittredge, past policy director of NOFA/Massachusetts and current editor of The Natural Farmer will moderate. Kittredge has been involved in NOFA Summer Conference debates for years and believes this year’s offering will be especially vigorous.

“For many years,” Kittredge says, “the organic movement was almost synonymous with its trade association (OTA predecessor ORPANA) – the Organic Food Production Association of North America predated the 1990 federal law which established the NOP). But as the organic market has grown and more and more conventional food companies have found a home there, the culture of the organic community has changed and grown more mainstream. This has led to schisms and some hard feelings. This year, for the first time in many, we will have a representative of OTA to give their thoughts on how the NOP is doing and if changes are required.”

The only other program activity during the debate will be the outdoors afternoon Fair, beginning with the 4:00 pm parade. The Fair continues until 6:00 pm so attendees can choose either event, visit both (they are located close together) or, in the event of bad weather, take a seat at the debate to dry off.
NOFA-Vermont Announces New Executive Director

The Northeast Organic Farming Association of Vermont (NOFA-VT) is pleased to announce Grace Oedel will be its new Executive Director, starting July 1, 2019.

Grace comes to NOFA-VT most recently from Ohavi Zedek Synagogue in Burlington, Vermont, where she served as Executive Director since 2016, overseeing the organization’s budget, cultivating donors, and working to build community. Grace has built several interfaith coalitions around social and environmental justice issues. She currently serves on the board of Vermont Interfaith Action.

Prior to moving to Burlington, Grace established and directed Dig In Farm in Shutesbury, Massachusetts, a farm-based educational center, focused on the intersection of social and environmental justice within the context of a working farm. Prior to founding Dig In Farm, Grace served as a member of the education team at Maine Organic Farmers and Gardeners Association (MOFGA), where she developed and administered educational workshops and conferences. Early in her career, Grace served as program director of a new Farm-to-Table program at the Woolman Semester School in Nevada City, CA, worked on an organic commercial vegetable farm, and managed the Yale University student farm.

“After an extensive search process, the NOFA-VT Board was unanimous in their choice of Grace Oedel as the next Executive Director,” said Board president Andrew Knafel, of Clear Brook Farm in Shafsbury, Vermont. “We are confident that her thoughtful outlook and tremendous skill set will be a great strength in reaching NOFA-VT’s new goals moving forward, while deeply valuing its past.”

Grace holds a degree in Religious Studies from Yale University with a focus on environmental activism.
Lasting solutions for your... Soil. Plants. Livestock.

For Soil and Plants, our most popular products
• Plant-Sure™ • Regenerex™ • Cal-Sentials™ • Phyto-Guard™

Moldy Feed? Mineral Deficiencies? Desert Dyna-Min™ and a full line of free choice minerals for healthier, more productive livestock

Parasites? Stressed Animals? Aqua-Nox™ Water additive for all livestock

Lame Horses? You Need Limber Res-Q™ Supplement for healthy joints and muscle

Questions: Call 1.877.393.4484 • Explore all our products: www.agri-dynamics.com
In the day-to-day, your people are your business. And maintaining timely and compliant payroll is critical to keeping your organization healthy for the long haul. Learn how we can help you keep your business strong at the roots with payroll services from Farm Credit East.

800.562.2235 | FARMCREDESTE.COM/PAYROLL
NEW FROM CHELSEA GREEN PUBLISHING

Farming for the Long Haul: Resilience and the Lost Art of Agricultural Inventiveness
BY MICHAEL FOLEY
Farming for the Long Haul—the third title in our NEW FARMER LIBRARY series—is about building a viable small farm economy that can withstand the economic, political, and climate shock waves that the twenty-first century portends. Indigenous, peasant, and traditional farmers have all created broad strategies for survival through good times and bad. This book lays out some of these strategies and presents techniques and tools that might prove most useful to farmers today and in the uncertain future.

Farming While Black: Soul Fire Farm’s Practical Guide to Liberation on the Land
BY LEAH PENNIMAN
Leah Penniman’s mission is to end racism and injustice in our food system by increasing farmland stewardship by people of color, promoting equity in food access, and training the next generation of activist farmers. Her new book, Farming While Black, is the first comprehensive how-to guide for aspiring African-heritage growers, exploring the relationship between farming, communities of color, the land, and our food system. It has been called “a revolutionary work that opens important doors” by Civil Eats.

The New Organic Grower, 30th Anniversary Edition
A Master’s Manual of Tools and Techniques for the Home and Market Gardener
BY ELIOT COLEMAN
This is the book that started the organic farming revolution, and since its original publication in 1989, The New Organic Grower has been one of the most important farming books available, with pioneer Eliot Coleman leading the charge in the organic movement in the United States. Now fully illustrated and updated, this 30th Anniversary Edition is a must-have for any agricultural library.

Trees of Power: Ten Essential Arboreal Allies
BY AKIVA SILVER
Trees of Power explains how partnering with trees allows us to build soil, enhance biodiversity, increase wildlife populations, grow food and medicine, and pull carbon out of the atmosphere, sequestering it in the soil. Ten chapters focus on the specific ecology, culture, and uses of different trees, ones that are common to North America. This book is for everyone who wants to connect with trees. It is for the survivalist, the gardener, the homesteader, the forager, the permaculturist, the environmentalist, the parent, the schoolteacher, the farmer, and anyone who feels a deep kinship with these magnificent beings.

Always Organic. Always Independent. VEGETABLES • HERBS • COVER CROPS • FLOWERS

STAY CONNECTED WITH OUR AUTHORS, LEARN ABOUT NEW RELEASES, AND GET SPECIAL DISCOUNTS!

Sign up for our newsletter at ChelseaGreen.com/newsletter-signup and you’ll receive a coupon code for 25% OFF of a future order just for signing up!

Other ways to connect:
Facebook.com/chelseagreenpub
@chelseagreen
@chelseagreenbooks

Since 1984, Chelsea Green has been the leading publisher of books about organic farming, gardening, homesteading, natural building, sustainable living, socially responsible business, and more. Now employee-owned.
Bayer Investors Rebuke Their CEO

Bayer AG’s supervisory board called an emergency meeting on Friday, April 26, after Chief Executive Officer Werner Baumann lost a crucial confidence vote as investors questioned his handling of the $63 billion Monsanto deal and the wave of U.S. lawsuits that followed. In a stunning development for the German drugs and chemicals company, about 55 percent of shareholders voted against absolving Baumann and other managers of responsibility for their actions in the takeover last year. Though the result isn’t legally binding, it throws his future into question and prompted an immediate supervisory board session. Similar rejections have cost German CEOs their jobs.

The vote at around 10 p.m. local time capped a tumultuous meeting in Bonn, with investors berating Baumann and demanding explanations for the erasure of some 35 billion euros ($39 billion) in market value since the deal. At the heart of the debate was whether Baumann and other leaders properly assessed the legal risks of Roundup, the controversial weedkiller it acquired together with Monsanto.

Bayer completed the Monsanto takeover last June after years of wrangling with antitrust regulators. Then in August, a California jury found that glyphosate, the main ingredient in Roundup, causes a school groundskeeper’s cancer. Lawsuits have multiplied since then, totaling 13,400 U.S. cases by April 11. Bayer has vowed to fight in court and says there’s no scientific proof that glyphosate causes cancer.

source: Bloomberg.com. April 26, 2019

Lethal Industrial Farm Fungus Developing Drug Resistance

A fungal species, Candida auris, has developed multidrug resistance and is rapidly spreading through human populations across the globe. Reportedly 90% of the yeast’s infections are clocking in resistant to one antifungal drug and 30% to two or more. It is killing immunocompromised patients in hospitals, clinics, and nursing homes at a high rate, up to 40-60% of those who suffer bloodstream infections in a month’s time. C. auris’s resistance, and that of many other fungi species, is traceable to industrial agriculture’s mass application of fungicides.

Eighty percent of U.S. antibiotics are used to promote livestock and poultry growth and protect the animals from the bacterial consequences of the manure-laden environments in which they are grown.

The agricultural applications help generate drug resistance across multiple human bacterial infections, killing 23,000-100,000 Americans a year and,
All the GOOD Stuff

Organic & Non-GMO Farm Seed

- alfalfa
- barley
- bromegrass
- buckwheat
- chicory
- clover
- corn
- cowpeas
- faba beans
- fescue
- festulolium
- flax
- lentils
- lupin
- millet
- milo
- mustard
- oats
- orchardgrass
- peas
- phacelia
- radish
- rape
- rox orange
cane
- rye
- ryegrass
- safflower
- sorghum-sudan
- soybean
- sunflower
- sunn hemp
- sweet corn
- teff grass
- timothy
- triticale
- turnips
- vetch
- vetch
- wheat

Cover Crops
Forages
Small Grains
Corn & Soybeans

www.alseed.com

NATURAL FLY REPELLENT

- Immediate, Effective Relief
- Clean, Versatile Formula
- Wipe On, Spray On Or Use In An Oiler

Convenient Ordering
Ships Direct To Your Farm
1-888-376-6777

Order Online
www.crycrystalcreeknatural.com

REAL PICKLES
FERMENTED & RAW

100% Organic
Northeast Grown

Worker Co-op
Solar Powered

In natural food stores & farm stands throughout the Northeast!

realpickles.com (413) 774-2600 Greenfield, MA

NATURE'S BEST
ORGANIC FEEDS
The way nature intended.

Feed created and tested by poultry nutrition experts using exclusively organic crops. 70 years of service and unmatched quality ... the way nature intended.

organicfeeds.com | 800.767.4537
A-9

with an increasing amount of antibiotics applied abroad, 700,000 people worldwide. 
source: Independent Science News, April 23, 2019

Real Organic Project Posts Letter Concerning Hydroponics in Organic 
Dave Chapman, Vermont organic tomato producer and spokesperson for the Real Organic Project has posted a letter about the group’s concerns regarding the allowance of hydroponic methods in organic production. He has asked us to notify readers about the letter. It is available at https://mailchi.mp/realorganicproject/usda-organic-now-talks-hydroponics
source: Email from Dave Chapman, April 14, 2019

Something Killing Young Apple Trees, Scientists Have No Answers

About five years ago plant pathologists began to hear reports of sudden young apple tree deaths from across the United States and Canada. In some places up to 80% of orchards have shown symptoms. “Rows of trees collapse for what seems like no reason,” says Kari Peter, who works at the Pennsylvania State University Fruit Research and Extension Center.

Weather-related stress—drought and severe cold—could be an underlying cause, researchers reported this month in PLOS ONE. Early freezes are becoming more common across the eastern United States, for example. But that doesn’t appear to be the whole story, and scientists are examining an array of other factors, including pests, pathogens, and the growing use of high-density orchards. “There are a number of things going on that are going to be really difficult to sort out,” says David Rosenberger, a retired plant pathologist who worked at Cornell University.

One common symptom in trees struck by rapid decline is dead tissue at the graft union, the part of the trunk where the fruit-bearing budwood of an apple variety is joined to hardy rootstock to create new trees. The union is vulnerable to late-season freezes because the tissue is the last to go dormant.

source: Sciencemag.org, March 21, 2019

2% Yield Reductions Measured from Managing with Low Tillage

A meta-analysis by a team from the Technical University of Munich (TUM) and Agroscope in Zurich has investigated how various farm management systems differ. In their study the researchers investigated the effect of reduced tillage. This often has a positive effect on soil structure and soil organisms, but is also known to result in slightly lower yields. The scientists compared the yield stability in 367 paired, long-term comparisons of reduced and conventional tillage. The result: The difference in yield, although measurable, amounted to merely 2% percent. The researchers found no significant differences regarding yield stability.

source: press release from Technical University of Munich, March 13, 2019
Book Reviews

Breed Your Own Vegetable Varieties: The Gardener’s and Farmer’s Guide to Plant Breeding and Seed Saving
by Carol Deppe
published by Chelsea Green, www.chelseagreen.com
1993, 2000, $29.95, paperback, 367 pages
review by Jack Kittredge

This has been the go-to book for plant breeders in the organic and small farming world for a generation now. Like many plant breeders, Deppe feels it is the fundamental to good farming to manage the biological as well as the agricultural systems involved. She has herself developed new varieties appropriate to her farming situation and believes it is a responsibility of any crafts-person to understand and control the materials of the craft. On top of that good reason, she also points out that no seed company, given the small level of seed sales involved, can devote resources to developing seed for gardeners and small growers. So if anyone is going to, we must.

Carol is an engaging writer. She brings you into her life as a farmer right away, introducing you to others — from the very young to the very old — who have developed important varieties, as well as into her own work. The principles she stresses — patience, respect for detail, judgment about traits and how they will impact the final product — are basic to any craft and she brings their importance home in her stories. She organizes the bulk of the book around stepping through the basic factors any breeder will have to consider. • How much of your life do you want to devote to this effort? • What do you want to get at the end?

These pages include as good a lecture on Mendelian genetics as I’ve seen. It explains the predictable traits you find, and their mathematical distribution when you cross different pure breeding diploid varieties in F1, F2, and F3 generations. They also include a good lecture on modern genetics: chromosomes, linkage, microsat and meiosis, alleles, as well as the ways in which Mendelian laws do not always apply — codominance, mutation, lethals, aberrant segregation, expressivity and penetrance, and many more. These are explained simply and clearly, and will doubtless become reference material for anyone who begins actual breeding work and comes up with some unusual results!

Also included is a table of 801 plants (selected from 3000 in Stephen Facciola’s book Cornucopia), listed alphabetically by scientific name, and giving for each plant such vital information as type (annual, biennial, perennial, herb, shrub, tree, etc.), diploid chromosome number, genomic formula, breeding system (outbreeding, inbreeding), flower type, percent contamination frequency, self-compatibility information, recommended isolation distances from various sources, yield of seed, location in USDA plant germplasm system, and sources of this information. The fledgling breeder will not need most of this right away, but once questions pop up such answers are invaluable.

Also, the 2000 2nd edition has been expanded to include 50 pages — 6 chapters — on seed saving, and another 2 chapters on crops for a sustainable future, focusing on a negative example (the corporate Flavr-Savr tomato that bombed so badly in the 1990s) and a positive one (the Sandwich Silk summer squash that showed up in Carol’s squash patch in 1998). These additions are valuable. The seed saving section has helped create a serious movement among growers to select and save seed — the first step of plant breeding. The section on developing crops for our collective future takes the reader into a discussion of pleiotropy — the tendency of genes to work holistically and impact many traits, not just the ones the engineer wants to affect. And it gives an excellent example of a farmer’s quest to improve on a variety that has presented itself, to find the flavor, convenience, marketability, size, healthfulness and all the other traits that will make it a winner.

All told, this is a solid basic text for the aspiring plant breeding grower. My only complaint, however, is that I would have liked a lot more illustrations. The many various flower types, the simple logic of the laws of inheritance, the generational steps in making and unmaking hybrids — all would benefit from simple drawings. I am a visual learner and for me an illustration is often worth many words. The two pages of drawings of various vegetable flowers in Appendix A seem almost to flaunt the lack of such useful help anywhere else in the book. But don’t let that keep you from getting a copy. Right now this is the best book available for the small amateur plant breeder. Have fun!

“Udder edema and robots are not a good combination. Softening udders with Udder Comfort works so well for us. We are glad to have this product.”

— Bryan Landsverk

HELP ANYONE?
• Meal
• Liquids
• Soluble powder

Products for Animals, Plants, Soils

Buy Direct from a USA Harvester & Processor

NORTHERN AMERICAN KELP

41 Cross Street • Waldoboro, Maine 04572
888-662-1357 • 207-832-7506
www.nakelp.com

Original Cornucopia

USA Harvester

Quality Udders Make Quality Milk

Keep the milk in the system

1.888.773.7153
1.613.652.9086
uddercomfort.com

Call to locate a distributor near you.

For external application to the udder only, after milking, as an essential component of udder management. Always wash and dry teats thoroughly before milking.

“The more we use it, the more we love it!”

— Bryan Landsverk

“This is the second year in a row we bought the gallon of Udder Comfort™ at the Dairy Forward auction during Central Plains Dairy Expo. The first year we bought it thinking we wanted to use it more. The more we use it, the more we love it,” said Bryan Landsverk when he and Bridget stopped by the booth.

They have six robots milking 320 cows at Landsverk Dairy, founded by Bryan’s grandfather near Fosston, Minnesota, which is Certified Organic since 1997.

“We keep this in the robot rooms and spray the SCC cows exiting. We use it on fresh cows, fresh heifers especially.

“Udder edema and robots are not a good combination. Softening udders with Udder Comfort works so well for us. We are glad to have this product.”

LANDSVERK DAIRY, FOSSTON, MN
Bryan and Bridget Landsverk
320 cows, 6 Robots
Certified Organic since 1997
This book has been available for over 20 years, but the theme relates perfectly to the theme of this special issue of TNF, connecting the method of plant breeding that has dominated in the US with the need for the excessive and increasing use of pesticides. Robinson, who passed away in 2014, according to Wikipedia, was “a Canadian/British plant scientist with more than forty years of wide-ranging global experience in crop improvement for both commercial and subsistence agriculture.” He was a practitioner and a champion of horizontal or population breeding, an approach that attempts to replicate the level of resistance to pests and diseases found in uncultivated crops and resembles the way farmers have selected crops for millennia.

According to Robinson, it was J.E. Vanderplanck in Plant Diseases, Epidemics and Control, who distinguished between single gene and multi-gene resistances. He called single gene resistances “vertical,” they are qualitative – the resistance is either present or absent with no gradations. By contrast, “horizontal” resistance is quantitative and can occur at any level from a little to a lot. Pedigree breeding, the approach favored by the Mendelian school (followers of Mendel, whose “laws of inheritance” we have all studied in basic biology), is based on vertical resistance, a gene for gene relationship between a plant and its parasite. This form of resistance is also temporary, requiring the breeder to continually develop new cultivars as the resistance inevitably breaks down, or to resort to pesticides and fungicides to ensure high yields.

By contrast, horizontal resistance is complex and durable, involving many polygenes “controlling many different resistance mechanisms.” (p. 402) Robinson gives many examples of crops that farmers were able to grow for hundreds of years without resorting to pesticides – sugarcane, ancient clones like garlic and ginger, olive trees, bananas, hops, etc. Breeding plants for this kind of resistance does not require that there be a genetic source of resistance which is what the Mendelian breeders need to even begin.

Return to Resistance is a passionate argument for increasing the resources dedicated to horizontal breeding. Robinson insists that he admires the accomplishment of the Mendelians who have had great success with three of the broad objectives of breeding – “to improve the yield, the quality of crop product, the agronomic suitability…” (p. xiv) However, he blames the steadily increasing use of toxic pesticides on their failure with the fourth objective: “the resistance to pests and diseases…”

Section one of his book gives a clear explanation of the differences between the two approaches to breeding and the way pests and diseases behave. Section two give examples of successful horizontal breeding, including his own experience saving the coffee crop of Ethiopia. There is a fascinating chapter on the history of potatoes, the Irish famine resulting from reliance on only one variety that was devastated when late blight, a new pathogen, arrived from Mexico. Then, as varieties with horizontal resistance were selected to replace the susceptible one, the role of potatoes as a basic crop to feed the poor recuperated.

Section three is entitled “Solutions.” To counter the dominance of the Mendelians, and their offspring, the gmo breeders, Robinson urges the formation of Plant Breeding Clubs. He believes that only active and organized amateurs together with farmers can defeat the “vested interests,” the major seed companies and pesticide manufacturers who “positively require susceptibility to crop pests and diseases,” to justify their existence. (p. 254) He provides a detailed guide to forming these clubs including a glossary defining all the techniques and materials a club might need along with a warning against wasting energies on crops that are too difficult or require professional training.

In the final chapter, Robinson looks to the future. Optimistically, he predicts the development of a new discipline – “agro-evolution.” Replacing Mendelian breeding, “it will be based on horizontal resistance, and both pathosystem theory and complexity theory.” The complexity theory will ensure that the screening process takes place at the edge of chaos, and that all factors are allowed to exert their natural influence on the self-organization, the appearance of emergents, and the agro-evolution.” (p. 396) Upon this statement follows Robinson’s lucid analysis of the limits of genetic engineering relying as it does on the transfer of single, or at most, two or three genes. As with vertical resistance, parasites can overcome this simple gene transfer with their capacity for micro-evolution. Robinson predicts the kind of failure we are seeing now with superweeds bedeviling the farmers who are trapped in the tentacles of the Bayer/Monsantos. He concludes cheerfully “Perhaps plant breeders’ clubs working with horizontal resistance may not be such a bad idea after all.” (p. 403)
Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants

by Robin Wall Kimmerer

published by Milkweed Editions, www.milkweed.org

2013, $18.00, paperback, 408 pages

review by Jack Kittredge

Kimmerer is a Native American Potawatomi, a professor with a PhD in botany, a single mother, a deep thinker and a very gifted writer. This book is composed of 30-some essays in which she reflects on the various truths she has come to know through those different lenses.

Her stories often start as simple memories, listening to a tribal myth or learning to make a woven basket from black ash. She writes about the memory -- explaining how it is tied into her Indigenous culture, talking about how it might be seen in the western scientific world, gently exploring the strengths and weaknesses of the various points of view, and ultimately drawing out of the whole narrative some very surprising insights about ourselves and our relationship to nature.

In “People of Corn, People of Light”, for instance, she begins with the Mayan story of Creation. The divine beings imagined a world into existence, populating it with a rich flora and fauna. But they were not satisfied and wanted a creature that could tell the story of creation, and praise it. So they made people of mud. But they were ugly and crumbly and melted away in the rain. Next the gods made good people, nurturers, the man of wood and the woman of the pith of a reed. They were beautiful and clever, and used and filled the world. But their hearts were empty of gratitude. So the gods destroyed them with floods and earthquakes and the world ended. But as a lake with past, present, and future all immersed. So is this story history or prophecy? Are we still a people of wood, using and abusing? Or of light, in thrall to ourselves?

Finally the creators tried one last time to make creatures of respect and humility. They took two baskets of sunlight. They were dazzling and bright, but so powerful they felt themselves like gods and had to be controlled. So the gods responsibly kept them with floods and earthquakes and the wrath of the other species. Trees raged against them for their sharp axes, deer for their painful arrows. Once again the gods tried, this time with beings mixed the meal with water, and made a people of corn. These were good people, with hearts full of compassion and prayers and gratitude for the earth, which sustained them.

From this simple beginning, Kimmerer explores several directions in which we might seek for meaning. For starters, rather than being satisfied with ourselves she suggests that many indigenous peoples think of time not so much as a river with a beginning, middle and end, but as a lake with past, present, and future all immersed. So is this story history or prophecy? Are we still a people of wood, using and abusing? Or of light, in thrall to ourselves?

Consider that corn is the product of a long relationship between the precursor teosinte and our own human ancestors. Much more than mud, wood, or light, corn is joined in an obligate symbiosis with people. Does this build the capacity for respect and reciprocity?

Too, anthropologists see the Mayan sacred text, The Popul Vuh, as not so much a chronicle as an ilbal -- a seeing instrument or lens through which we can view the sacred. And what else could you call a world where light is turned into sugar, salamanders find their way back to ancestral ponds following magnetic earth lines, the saliva of grazing buffalo causes grass to grow, and tobacco seeds germinate when they smell smoke? (All subjects the science of which is explained in previous essays.)

A continual thread passing through all of Kimmerer’s essays is the inadequacy of science or technology to fully comprehend the natural world. In her reductionist approach it can’t grasp ecosystems, complex symbioses, the biota literally merging into higher organisms. That Lynn Margulis has exposed as fueling the leaps of evolution. And this is what makes up the world – not the individual but the community.

The words “gifts” and “responsibility” are always in Kimmerer’s thoughts. The wondrous world we join at birth is totally unearned. We are here for a short time only, and our responsibility, borne out of gratitude, is to care for it. If you are not convinced yet, you will be when you finish this book. Kimmerer has a remarkable ability to bring you along, seeing as she does a world full of agency – generous plants bearing flowers, berries and sweetgrass to please our senses, elders to teach, children to learn, ceremonies to make us laugh, dance and sing. Please read this book. You will be glad you did.

A Soil Owner’s Manual: How to Restore and Maintain Soil Health

by Jon Stika


review by Liz Henderson

This little book, only 75 pages long, is a great introduction to caring for the health of your soil whether you are gardening or farming, small or large-scale. For non-beginners, rereading this book at the start of each new farming/gardening season would also be a helpful refresher. In Stika’s words, this book “is a soil-centric view on restoring the soil first and then realizing all of the crop production and environmental benefits that will follow.” (xvi) Before taking up a plow or fork, Stika wants us to understand how soil function so that when we maximize productivity, we do not undermine future yields and ecosystem health.

The manual starts by defining soil health as “the capacity of a soil to function,” and lists the five main functions: “maintaining biodiversity and productivity, partitioning water and solute flow, filtering and buffering, nutrient cycling, and structural support.” (p. 1) To enable soils to fulfill these functions, farmers act as soil engineers, working with the photosynthesis naturally performed by plants to “harvest water and sunlight to manufacture carbohydrates, fat and protein.” (p. 2) Plants exchange the carbohydrates for the nutrients they need, of which 90% cycle through the living organisms in soil before they are available to the plants. As Michael Pollan wittily noted in The Botany of Desire, plants have much more agency than we give them credit for, exercising control by sending chemical signals and adjusting exudates to communicate their needs to the denizens of the soil.

Stika identifies three kinds of disturbance that cause soil dysfunction: physical, chemical and biological, making it very clear that tillage ranks among the guilest. Minimizing the physical disturbance of soil through tillage and cultivation is essential to unbarring soil life from human interventions. Tillage disrupts the fungi, especially the mychorrizae, that feed plants and exude the gooey substances that hold soil aggregates together. Most chemical fertilizers and pesticides also disrupt or kill important elements of soil life. Excessive use of natural fertilizers, too much manure or compost, can also be disruptive.

A common farming error is to use starter fertilizer. The addition of fertilizer as a plant is just beginning to grow shortcircuits the development of the relationships with microorganisms. It takes much more energy for a
Healthy soil is a miraculously efficient and complex system that human beings have only begun to understand. Plants feed the microherd of visible and microscopic organisms which in turn feed the plants, and very little is lost. Carbon is the most important element – Stika calls it the “currency of the soil.” A diverse food web ensures that despite varying weather conditions, the soil is able to maintain its many functions. Soil erosion, Stika points out, “is not a problem. It is a symptom of unhealthy, dysfunctional soil.”

Healthy soil makes nutrients and water available to plants. Stika sites research that shows that plant roots on their own can only reach 1% of the surrounding soil, but when fungi are associated with the roots, they reach 20% of the soil, enabling them to capture far more moisture and food. In Chapter Four, Stika covers the living organisms from the smallest bacteria through the largest arthropods, and concludes that when a soil serves as a beneficial habitat for all the members of the soil food web, they build aggregates that restore the soil’s capacity to infiltrate water and cycle nutrients.

Fortunately, it is possible to restore degraded soil and there is no limit to what we can achieve if we observe these simple guidelines:

- a. reduce soil disturbance
- b. increase plant diversity
- c. keep living plants growing as much of the time as possible
- d. do not leave the soil naked

Stika does not dictate how to accomplish this on every farm. He urges each farmer to develop the approach that works best for individual conditions and provides some helpful pointers. A key to the decomposition of crop residues lies in understanding the CN ratio: soil microorganisms need a diet with a CN ratio of 24:1. When the ratio is higher or lower either all the nitrogen present will go into breaking down the residues or the microorganisms will quickly consume the residue leaving the soil bare. Once soil has been degraded it takes 3 to 5 years to bring it back, so Stika counsels patience.

Stika concludes his manual with suggestions for assessing the health of your soil. Cornell offers a series of tests for soil biology that cost $110. There is also the Haney test. NRCS has a soil health website with assessment information. I like Stika’s do-it-yourself ideas – take a handful, examine it for worms and other critters, smell it – a healthy soil smells earthy, place some aggregates in water and see how long it takes them to dissolve, dig a small hole, pour water in and time how long it takes to sink in. Read Stika’s little book, be inspired and get started!

---

**Cold Springs Farm Organics, LLC**

**CERTIFIED ORGANIC FEED**

**A Schoharie County Family Farm**

**Certified Organic Grains:**
- Shelled Corn
- Keptas Steepneds
- Sheep Meal
- Small Grains
  - (barley, oats, peas, triticate, wheat, etc.)
- Rice Bran
- Alfalfa Pellets & Flax Meal

**Cold Springs Farm Mineral Packs:**
- Dairy Minerals
- Poultry Minerals
- Pig Minerals
- Goat Minerals
- Sheep Minerals
- Free Choice Minerals
- Stress Pack Minerals and more!

(All of our mineral packs are made to our specifications and contain high-quality ingredients, including the Alltech® products, like Sel-Plex 2000, Yea-Sacc 1026 & Bio-Mos.

- **We mix & deliver custom bulk feeds, for all types of livestock, in batches of 1-25 ton.**
- **We do GMO Testing using EnvironLogic QuickScan Technology.**
- **We have OMRJ approved Fertilizer available.**
- **We produce & deliver Certified Organic Hay.**
- **We have bulk quantities of Organic Liquid Molasses & Organic Apple Cider Vinegar.**

**Call today for a BULK FEED quote or DEALER location!**

Cold Springs Farm Organics, LLC

379 Slate Hill Rd.
Sharon Springs, NY 12345

(518) 234-4820

www.coldspringsorganic.com
bridgetc@verizon.net

Get the Right Seed for the Right Feed

**Eager: The Surprising, Secret Life of Beavers and Why They Matter**

by Ben Goldfarb

published by Chelsea Green, www.chelseagreen.com
2018, $17.95, paperback, 286 pages

review by Jack Kittredge

Beavers, the world’s second largest rodent (after South America’s capybara) used to be everywhere. They come in two varieties, the North American one (Castor canadensis) of whom there were an estimated 90 million inhabiting every stream and creek in the temperate part of the continent before Columbus, and a Eurasian one (Castor fiber) which was equally widespread in the old world.

The hallmark behavior of beavers is to build dams to slow the flow of streams and raise the level of water, causing flooding. The resultant ponds enable the rodents to reach their favorite foods – trees such as...
willow, cottonwood and aspen. These, once toppled by the animal’s amazing gnawing capacity (using self-sharpening teeth) and floated to the center of the pond, can be piled and stored for winter fodder largely unreachable by predators on shore.

Native Americans were divided on the acceptability of hunting beaver. Plains tribes like the Blackfeet had strict traditions against killing beavers, whereas the Athapaskan-speaking tribes of the North had more relaxed views. The beavers themselves have not been around for long enough to develop complex social behaviors. However, they have served as an important part of the ecosystem for thousands of years, and it is likely that they will continue to play a vital role in the future.

When Europeans arrived in this continent, however, they were not constrained. Beaver pelts were in much demand and the populations were heavily reduced by European trappers for their fur and also for castoreum -- an exudate from their castor sacs with uses in perfume and food -- and came to extinction almost 200 years ago. In 1845 John Audubon journeyed 2200 miles along the Missouri River searching for mammals to paint. He never saw a single beaver.

Many settlers also saw little use for beavers, blaming them for flooding cropland and blocking water flows used for animals. Others, however, recognized the long term benefit they brought to agricultural production.

This benefit, as Goldfarb puts it, was that: “beaver ponds slow flows, trap sediment, and gradually fill with silt and pioneering plants, whereupon their creators move upstream to repeat the cycle again. Left behind are open, grass-ﬁlled meadows – their surfaces flat, treeless, and ﬂat-like underfoot, bermed with the overgrown contours of long-ago dams.” These beaver meadows sometimes covered hundreds of acres and were rich feeding grounds for deer and other animals.

Settlers moving to these locales found the soil, rich with “leaves, bark, rotten wood and other manure”, perfect for crops. European trappers for their fur and also for castoreum, a material used in perfumes and tobacco, had removed them. The beaver’s role in maintaining these resources.

Gary Paul Nabhan has seen people collaborate to heal the earth and enable beavers to cooperate on your land, or just like them. He imagines many more organizations of beaver enthusiasts (sometimes on official work, sometimes on clandestine missions) and helps the rodents find streams, mates, and a chance to do their special work undisturbed.

The author is an entertaining writer and brings the beavers’ proponents, as well as plenty of the ranchers, to the reintroductions, to life. He sees both points of view regarding his subjects, and waxes particularly enthusiastic about the many efforts to construct devices that enable these rodents to earn their living without flooding roads or drowning ﬁelds. Such devices are many, some rough and ready, others carefully fabricated, but essentially they all enable the slowed water to ﬂow once it reaches a certain height. They let the beaver dam impound water and create ponds, but prevent the beavers from blocking a ﬁnal elevated outlet by using pipes, fencing, grids, and other man-made creations to frustrate them. These devices, and the compromises they enable, are of course not perfect and require regular maintenance and repair, (on which trips Goldfarb happily catches a ride). But they seem to be doing an important job of mediating between the natural and the anthropocentric worlds.

If you like wildlife, would like to engineer a device to enable beavers to cooperate on your land, or just like stories about passionate people taking a stand for what they think is right, you will enjoy Eager.

Food from the Radical Center: Healing Our Land and Communities by Gary Paul Nabhan Island Press, 2018 hardcover, $19.04, 184 pages review by Bob Banning

Gary Paul Nabhan has seen people collaborate to heal their land, food systems, and communities, and he wants us to see what he sees. He imagines many more organizations of beaver enthusiasts (sometimes on official work, sometimes on clandestine missions) and helps the rodents find streams, mates, and a chance to do their special work undisturbed.

The name of the book is a grail-like term only if they know it, love it, and see its health as important. However, he’s concerned that environmentalism, which “began [in the 1970s] as a nonpartisan effort to protect our planet[,] has become one of the most perniciously divisive issues in public life.

In chapter 1, “A Land Divided,” Nabhan enumerates some of the divisions in our society and notes that we are divided on environmental issues. However, he writes, “America is not divided about whether the environment deserves restoration. . . . What divides us is who gets to decide how this work is done, who does it, and how much it should cost.” He believes this sort of division has developed because environmentalists have emphasized regulation and prohibition too much, and this approach to environmental restoration leaves too much to be desired. He believes that the willing work of people who don’t like regulating or enforcing laws, and who don’t like broadcasting their views or engaging in conflict with the authorities who they suppose she belonged to. The theme that emerges from the six principles and this story is that land and food systems can be restored for the long-term if all of the stakeholders feel they have truly been listened to and treated fairly and if they believe that the result of the restoration will be a better life for everyone in the community. The theme of the “Radical Center,” according to Nabhan, was coined in the 1990s by a rancher named Bill McDonald to refer to a “fertile middle ground” where participants in a dialogue are willing to take risks and make principled compromises in order to achieve consensus.

The rest of the chapters, 3-13, tell many stories of the successful restoration of soils, waters, species, and human communities. Each begins with a question directly addressing readers, in the form “Have you ever thought...” or “When I’m thinking...” or “When I’ve learned...”. Then they have been captivated by the beauty and abundance of a certain spot on earth. He then affirms that he too has enjoyed that beauty and abundance. The body of each chapter narrates a story with more examples of people collaborating to restore the health, beauty, and productivity of places, plants, and animals, motivated both by the beauty of places and their creatures and by a desire to create a better life for themselves and their neighbors.

A list of chapter titles may serve to evoke the nature of these stories that make up the body of the book: chapter 3, “Pretty Work for Dedicated Dwellers” chapter 5, “Bringing Back the Water and Wealth” chapter 6, “Farming the Radical Center,” chapter 8, “Strange Birds Flock Together”; chapter 9, “Herders of Many Cultures”; chapter 10, “Immigrant Grains”; chapter 11, “Urban Growers and Rare Fruits”; chapter 12, “Return of the Pollinators”; chapter 13, “You Can Go Home Again.”

The book concludes with an appendix composed of eleven “conservation couplets”, pairs of short paragraphs in the form “We once thought... But now we realize that...” These statements summarize the themes Nabhan has seen emerge from the restoration projects he has observed and participated in.

I enjoyed this book very much. I agree with Nabhan that people will take care of a spot of earth for the long term only if they know it, love it, and see its health as necessary for their own survival. I was pleased to learn that this is happening all over the country. And I was provoked to thought about what more I myself might do.

As is consistent with the desire of the book’s many protagonists to do good work, the book is well edited, and it has a sewn binding, which is unusual nowadays and will enable the book to last a long time.
Imhoff takes this complicated, dense topic and breaks it down into its components in a compelling and page-turning manner that caused both my husband and me to geek out with this book for several weeks. They start off explaining the basics of the farm bill in the most readable format I’ve ever encountered. It then launches into the history of US food policy before exploring issue by issue policy topics and reform opportunities like “Nutrition, SNAP, and Healthy Eating,” “Ethanol,” or “National Security.” Imhoff concludes with a more hopeful “The Future of Food Policy” before wrapping up with excellent footnotes and a stellar resource guide “Activist Tool Kit.” Arranging charts and sidebars tracing the startling and at times eye-opening ups and downs of American farm and food policy enliven the entire work for more visual learners.

What The Farm Bill’s presentation most reminds me of is the new sort of “explainer” podcasts, where each chapter builds to a larger whole, while simultaneously executing a deeper dive into one aspect of the Farm Bill. They can be read sequentially, but the chapters also stand alone well and can be read out of order, as they reference earlier chapters as needed. At different points in the past months, I even found myself pulling out the book to read a chapter again based on stories in the current news (checking again the chapters on “Crop Subsidies” and “Trade” during some heated tariff talks, and “Conservation” as the flooding continued in the Midwest). Imhoff is able to both explain the historical context in each chapter, while also tying in modern political and social issues and challenges.

Throughout this book were some truly staggering numbers. “On average, at least 10 calories of fossil fuel are used for every 1 calorie of industrial food eaten” popped out during the “Energy and Climate Change” chapter’s exploration of how energy is used in US agriculture (most of that energy use happening after the crops leave the farm). Or that the top four producers of beef slaughter control 82% of the market as just one example of many of rampant market consolidation into fewer hands. As an organic farmer interested in sustainable agriculture, many of the issues in the later pages cover more familiar terrain—“Ecosystem-Based Agriculture” and “Public Health,” for instance. Imhoff, however, takes these more recognizable issues and examines them through the lens of how they are supported (or not) by farm bills over time, while making arguments over how the farm bill could do better.

I found the earliest two parts the most interesting, as they delved into the basics of the farm bill and then a fascinating history of the evolution of American food policy. What finally came home to me in these sections is a better understanding of the Farm Bill cycles, and that “the importance of the yearly money battles cannot be overstated.” Silly me, I thought that “mandatory” programs meant they were funded for the whole farm bill cycle (as opposed to the discretionary programs that face yearly appropriation struggles). Yet as “How Does the Farm Bill Work?” makes clear (if the last federal budget cycle didn’t!), there are ways that Congress can defund mandatory programs that can even potentially permanently lower future program funding.

As he starts early on by emphasizing the need to constantly keep on pressure through yearly appropriation funding. Imhoff balances the challenges presented in The Farm Bill, by returning to its strengths and opportunities to make change. At least, he points out, we have a starting point for this conversation—a farm bill that while it may be dysfunctional, “still represents one of our best chances to create a truly vibrant food system.” Recent history shows that the Farm Bill has the “capacity to serve as an energy catalyst” and deeply change American agriculture (for better or worse), as the did in the 60s with the food stamp program, the 80s with a growing conservation focus, and in the 80s and 90s by switching from supply management to subsidy supports.

This isn’t a big book, but it’s dense in a good way, full of a vast amount of superbly organized information that demystifies the Farm Bill, its history and scope, and its language and acronyms. Throughout this all, Imhoff and Badaracco draw in modern issues and challenges, and weave the story of how this one piece of legislation actually threads together a huge swath of American history, ecology, food, and culture.

Anyone interested in agriculture or food, or who wishes they too were better informed on Farm Bill policy would enjoy this interesting book. By “interesting,” I mean that it was alternately eye-opening, disturbing, rage-inducing, and inspirational in a way that’s challenging to read, but definitely keeps you turning the pages. It’s a work that I am already using as a reference, and that has helped me feel like I have a much better grasp (and understand the constant fight and high stakes) of the Farm Bill and American agricultural and food policy and politics.
WHAT’S ON YOUR FIELDS?

IT’S TIME TO #PLAYFREE

- FREE FROM THE USE OF HARMFUL PESTICIDES
- FREE FROM WORRY

JOIN STONYFIELD AS WE STRIVE TO MAKE ALL PLAYING FIELDS ACROSS AMERICA ORGANIC AND FREE FROM THE USE OF HARMFUL PESTICIDES.

TOGETHER WE CAN ALL #PLAYFREE

STONEYFIELD.COM/PLAYFREE