

## From Farm to Family

### Survival depends on the nurturing of diverse organisms from the soil up

This issue focuses on critical public health and environmental crises of the day that need urgent attention—the loss of biodiversity and bacterial resistance to antibiotics. Seemingly unrelated, both problems intersect with chemical-intensive agricultural and land management practices, affecting nearly 75% of total U.S. land area, including forests, pasture and rangeland, and cropland. Pesticide use wittingly or unwittingly targets biodiversity, and antibiotics, used in orchard and vegetable production in addition to livestock, contributes to bacterial resistance and disruption of microbiota in the human gut. In both cases, only the exponential expansion of organic practices offers an opportunity to prevent these problems. The Organic Foods Production Act (OFPA), requires protection of biodiversity, and its regulations prohibit the use of antibiotics.

#### Pesticides and antibiotic resistance

One of the most widely used herbicides, glyphosate (Roundup), is patented for its antibiotic properties and its use results in bacterial resistance to antibiotics that are used in fighting human pathogens. Many fungicides or bactericides, registered by the U.S. Environmental Protection Agency (EPA), are antibiotics.

While the residues of the antibiotics that show up in food at low levels are of concern and certainly contribute to bacterial resistance in humans, the resistant bacteria that emerge on chemical-intensive farms raise problems just as serious. Resistant bacteria move from farms to families, through the environment to the human population. Adding to the problem, the ability of antibiotics to disturb or kill the gut micro-biota in humans leads to autoimmune and other 21st century diseases.

#### Gut microbiota to the soil microbiome

How land is managed is interwoven with how the human body is managed. In fact, the way we manage biodiversity and the microbiome, including microbes and nutrients, in the soil has a direct relationship to the gut biome in humans. It has become increasingly clear that human survival depends on the nurturing of diverse organisms from the soil up.

There are growing concerns about soil health in agricultural systems dependent on toxic chemicals that kill indiscriminately. For example, the newest generation of systemic insecticides, neonicotinoids, has brought scientific attention to their adverse impact on pollinators and predatory species that offer ecosystem services in a balanced ecosystem. Studies are showing declines in a range of insects beyond the target insects. A study, *Meta-analysis reveals that seed-applied neonicotinoids and pyrethroids have similar negative effects on abundance of arthropod natural enemies*, published in December by Penn State researchers, found that plant seeds coated with insecticides, thought to be a way to reduce

environmental contamination, adversely affect the health of beneficial predatory insects as much as broadcast applications of insecticides. In our piece on biodiversity, we highlight the work of the Wild Farm Alliance and its guide on biodiversity conservation practices for organic farmers and certifiers.

#### Transforming land management

The urgency of the environmental and public health problems that the nation and world face, calls for a transformation in the current chemical-intensive approach to land management. But the changes that are critically needed require a higher level of public involvement, much higher. Our piece on the National Organic Standards Board (NOSB) meeting this past Fall highlights the successes and challenges of the public-driven process used to determine acceptable standards and substances used in organic production. The foundation on which organic standards are set under OFPA will transform chemical-intensive agriculture, if we use the process. With an 11 percent growth in organic agricultural acreage in the last two years, there is constant pressure to relax oversight, standards, and even the underlying law. It will take a vigilant public protecting the values and principles of the organic law. The structure and process is in place to effect this transformation, so keeping the NOSB and the National Organic Program of the U.S. Department of Agriculture (USDA) accountable and compliant is key. Without public involvement, USDA and industry interests will limit the opportunities to effect broad change.

#### Natural lawsuits

Public awareness of environmental issues has grown. Still, there is confusion in the marketplace about best practices and purchases. Consumers read labels on food products and are misled by words like “natural” or “pure.” This drives purchases away from organic, undercutting the framework for a meaningful solution. We will continue to ask: Is it responsibly grown, if it’s not organic? Beyond Pesticides with others sued General Mills for labeling a product as natural, when it contains an ingredient grown with or containing residues of glyphosate (Roundup).

*We are in the midst of a societal shift to organic, which must continue with accountability and increased urgency. Thanks to all those who contributed to Beyond Pesticides during our end-of-year appeal. Your support keeps our program of science, policy, and advocacy moving ahead.*

Have a healthy new year!

**Jay Feldman, executive  
director of Beyond Pesticides**

