

Bionutrient Density of Food

Food contains life-giving substances that give us the proper nourishment to grow and thrive. Some of these substances are called carbohydrates (sugars and starches), proteins and fats (oils). There are also macro and micronutrients such as vitamins and minerals that are essential to our well-being. Finally there are special components of food like flavanoids and omega 3 fatty acids that we understand have special purposes and benefits.

Yet some foods have greater quantities of these life giving substances than others. This is referred to as the *Bionutrient Density* of food. These quantities affect the quality and flavor of the food we eat. As an example, some organic carrots are sweet and delicious while others are bitter. Both were produced without chemical pesticides, herbicides or fertilizers. What accounts for the difference? Well the presence or absence of these micronutrients of course!

Another example moves us beyond taste. Researchers in the US (*Davis D, University of Texas 2004*) and Europe (*Thomas D, UK Medical Research Council 2003*) have documented a 50 year long downward trend in the nutrient value of fruit, vegetables, wheat, meat, milk and cheese. For example, in the case of spinach, there has been an 80% decline in the copper content over those 50 years. What could be causing this change? How can organically grown food still be lacking in Bionutrient density?

The answer is found in the soil. The current trend in agriculture (organically grown food included) has focused on the macronutrient compounds in the soil, namely Nitrogen, Phosphorus and Potassium or NPK and the lack of attention towards the micronutrients of the soil such as Boron, Magnesium, Copper, Zinc and Manganese to name just a few. The result is a decrease of Bionutrient Density (and flavor). In short, our food is decreasing in nutrition. Human health depends upon healthy soil. Let me say that again. Human health and the health of human communities are dependent upon how we care for the soil.

For those who want a detailed exploration of the link between human health and soil see *The Development and Use of Biofortified Agricultural Products*, CRC Press 2009, Edited by Gary Banuelos and Zhi-Qing Lin. This book collects a series of research projects supported by the World Health Organization. It documents the consequences for people whose soils are deficient in minerals or when their diets make those minerals unavailable to them. Or for a less intense approach, watch [this lecture](#) that New Mercies Farm owner, Rodney Hornbake, gave to the Bionutrient Rich Crop Production course sponsored by the Bionutrient Food Association in 2012.

Upon the creation of New Mercies Farm, we committed to enriching the health of the community by focusing on building soil quality. Here is what they have accomplished so far.

- In the spring of 2012 advanced soil testing was carried out. We use Logan Laboratories and rely on the internationally recognized agronomist Bill McKibben for advice on interpreting and acting upon those reports.
- As a result, mineral levels were adjusted through the application of more than 8000 lb of mined minerals. These were applied in conjunction with organic humate solutions.
- At the same time a cover crop of clover and rye were planted and mowed every 2 weeks to add organic matter to the soil
- In the spring and fall of 2013 repeat soil testing was used to guide the application of additional mined minerals.
- In the fall of 2013, 110 cubic yards of composted horse manure from our neighbors at Woodland Farm were applied to 1 acre in preparation for the 2014 season's crop production.

· At the same time the remaining acreage was plowed in preparation for 2014 cover crops designed to enrich the soil. Here is what we have planned for 2014.

- Application of mined minerals based upon the fall 2013 soil testing
- Incorporation of the manure applied in the fall of 2013
- Planting of sequential cover crops in the new field plowed in the fall of 2013
- Interplanting and underplanting of field crops with dwarf clover to enrich the soil.
- "Top dressing" crops with composted manure. Here is what we commit to doing year after year.
- Regular soil testing and soil management based upon those results
- Maintain a large portion of the land in cover crops at all times. This practice gives the land a 'rest' period allowing the bionutrients and life supporting microbes to balance themselves naturally.
- Use crop rotations designed to enrich the soil and avoid depletion.
- Regular applications of organic compost and mulch
- Use our multi-year land use plan to assure that all soil on the farm improves steadily over time.

But let us remember this, a local farm is a valuable community resource and the commitment to wholesome food produced on local farms extends to its communities by way of their commitment to support it. We cannot live healthy lives and grow healthy communities without healthy food and we cannot have community resilience without the presence of a local food system. But production and stewardship are only half the equation. If there is no demand for the food we produce, then our efforts to provide wholesome healthy food will not be viable. So please, spread the word. What is happening here is special. Let your friends and neighbors know.

We thank you for your support.

Rod and Debby Hornbake

[Contact Us](#)

[Administrator Login](#)

**Organically Grown Goodness
at 256 Beaver Brook Road in Lyme, Connecticut**

All content property of New Mercies Farm. 256 Beaver Brook Rd, Lyme, CT, 06371.

This page was created using the [Small Farm Central](#) web development service.