



REAL FOOD Campaign

of the Bionutrient Food Association

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Building Tools for Transparency in the Food Supply

Over the past several decades, concentrations of vitamins, minerals, and micronutrients have steadily decreased in fresh fruits and vegetables.¹ During a comparable period, degenerative diseases such as Alzheimer's, diabetes, and heart disease have risen to epidemic levels.² Simultaneously, agricultural practices have polluted aquifers and ecosystems and led to degradation of millions of acres of land.

We understand that correlation does not prove causation, and that grasping complex relationships requires collecting mountains of data over a long period of time. However, it is undeniable that human, crop, soil, and environmental health are deeply interrelated.

Healthy food comes from healthy plants, and healthy plants come from biologically vital, ecologically regenerative, and carbon-rich soils.

But what is the definition of healthy food? Consumers have had few cues at their disposal for determining the relative nutritional value of specific fruits and vegetables. The truth is we haven't really known the quality of our food because nutrient density has not previously been measurable.

But imagine going to the farmers market, flashing a light at several different carrots, and comparing their nutritional value in real time. Readings might show that some carrots are nutrient dense, while others are not. Which ones would you buy? Would you start to choose food based on how good it was for you and your family?

We need a comprehensive plan to understand and revitalize our food supply.

The Bionutrient Food Association is initiating the Real Food Campaign to make the nutritional density of food easily detectable and incentivize the entire food supply chain to focus on nutritional value as a key metric.

We believe this new paradigm has the potential not only to improve the quality of crops and human health, but also to nourish ecosystems and enable soil to sequester carbon to its fullest capacity.

The Bionutrient Food Association is building a broad partnership.

The Bionutrient Food Association is coalescing a partnership of food, health, environmental, and climate movements for a three-pronged campaign:



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1) **Create a handheld sensor to measure nutrient density.**

Spectroscopy is a well-developed technology that can discern the makeup of materials using a noninvasive flash of light. Advances in spectroscopy now make it possible to produce inexpensive (~\$200), hand-held consumer-oriented sensors that can measure nutrient density. Engineering a prototype will take 12 months and a consumer tool will be available in three years, following calibration through crop surveys. The hardware and software will be fully open source, and the long-term design goal is to integrate the hardware into cell phones so consumers won't need to carry separate equipment.

2) **Reveal the spectrum of variation in the food supply and use it to calibrate the sensor.**

Documenting the variation of nutritional content in produce through crop surveys is critical to both calibrate the sensor and expose the unseen variation in crop quality. Once visible, this variation will drive public discussion of food quality and raise awareness of the project. The survey data will be held in a public domain database, spurring public and private entities to further develop tools and software to increase food quality.

3) **Identify management practices that produce the highest-quality crops by collecting and analyzing shared data on an open platform.**

Historically, agronomists have been primarily engaged in single-factor analysis of a small number of nutritional compounds. This is not sufficient. Through exhaustive crop and soil sampling and analysis of multiple factors, we will identify strategies that are conducive to the growth of nutrient-dense crops in specific locales. In addition to fertility programs, cultivars, and management practices, this open-source platform will track factors such as soil types, pest and disease pressure, microbiomes, and epigenetics.

By making data freely available to growers of all sizes, research institutions, organizations, and corporations, we hope to accelerate the progress of this campaign and inspire international collaboration that will support increases in food quality globally. This work obviously requires a major investment. With your help, we will raise \$10 million over the next five years to achieve these ambitious goals.

¹ Davis DR et al. "Changes in USDA Food Composition Data for 43 Garden Crops, 1950 to 1999." *Journal of the American College of Nutrition*. 2004; 23(6):669–682.

² National Council on Aging: "Top 10 Chronic Conditions in Adults 65+ and What You Can do to Prevent Them." <https://www.ncoa.org/blog/10-common-chronic-diseases-prevention-tips/>