



## Alternative Veterinary Services, LLC

9 Hodges Street, North Andover, MA 01845

978-683-5775 fax: 978-409-1269

<http://AltVetServices.com>

Office@altvetservices.com

### How nutritious is our food supply, really?

A landmark study in 2004 compared the nutrient profiles of 43 garden crops from 1950 to 1999. All vegetables and fruits included in the study showed statistically significant declines for six key nutrients (including protein, calcium, iron, and ascorbic acid), with minimal change (not statistically significant) in seven other nutrients. At the time, researchers concluded that the cause of the decline in nutrients was primarily due to soil mineral depletion and the variety of foods grown – the genetically modified varieties that produced greater yields.<sup>1</sup>

However, more recent studies have shown that genetically modified varieties are being grown with increased or enhanced protein, carbohydrates, fiber, and micronutrients (vitamins and minerals).<sup>2 3</sup>

The depletion of minerals in soil is only partially responsible for the reduction of nutrients in our foods. As CO<sub>2</sub> levels rise, plants produce more sugars (carbohydrates) at the expense of other nutrients like calcium, potassium, zinc, and iron. The elevated CO<sub>2</sub> acts like “junk food” for plants, and they grow bigger and faster but with less nutrients. By 2050 it is estimated that 150 million people in developing countries (where people primarily eat plant based diets) may be at risk for protein deficiency, 138 million at risk for zinc deficiency (which is critical for maternal and infant health), and more than 1 billion mothers and 354 million children at risk for iron deficiency (causing anemia).<sup>4</sup>

And it's not just the human population at risk. The pollen that bees eat in late summer and fall has less protein than it once did, contributing to the declining bee population. Plants produce less nectar when exposed to increased CO<sub>2</sub> as well, affecting other pollinators like hummingbirds and butterflies. It is unknown how these changes will impact livestock like cows and pigs.<sup>5</sup>

---

<sup>1</sup> *Changes in USDA Food Composition Data for 43 Garden Crops, 1950-1999*, Davis, Donald R, Epp, Melvin D., and Riordan, Hugh D., Journal of the American College of Nutrition, Volume 23, Issue 6, 2004 (or link: [Changes in USDA Food Composition Data for 43 Garden Crops, 1950 to 1999: Journal of the American College of Nutrition: Vol 23, No 6 \(tandfonline.com\)](#))

<sup>2</sup> *Nutritionally Enhanced Food Crops; Progress and Perspectives*, Hefferon, Kathleen L., International Journal of Molecular Sciences, Volume 16, Issue 2, 2015 (or link: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4346933/>)

<sup>3</sup> *Nutritionally Improved Agriculture Crops*, Newell-McGloughlin, Martina, Plant Physiology, Volume 147, Issue 3, 2008 (link: <https://academic.oup.com/plphys/article/147/3/939/6107587>)

<sup>4</sup> *The Great Nutrient Collapse*, Evich, Helene Bottemer, Politico, 9/13/2017 (or link: [The great nutrient collapse \(politico.com\)](#))

<sup>5</sup> *Vanishing Nutrients*, Suglia, Elena, Scientific American, 12/10/2018 (or link: [Vanishing Nutrients - Scientific American Blog Network](#))