Benefits of Organic Production Compared to Conventional Practices

by

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I. Introduction

According to the United States Department of Agriculture, the organic food industry is the fastest growing agricultural segments in the United States, with sales just under $35 billion in 2012 (USDA, 2013). The term “organic” in respect to agriculture is used to reference products produced without the use of synthetic chemicals such as pesticides, herbicides and fertilizers while “conventional” refers to agricultural products that are produced in a traditional manner, typically with the help of chemical treatments. The word usage can become confusing if not standardized. For example, some small agricultural communities, especially those in remote or third-world regions, have never used chemicals in their production, therefore their traditional methods might be considered organic. Also, some companies hoping to tap into the market for natural products might attempt to use certain words in an effort to gain more customers. In the United States, Canada, Europe, Australia, most of Asia and in many other markets, there are standards that set strict guidelines for what can be labeled organic.

In the U.S., the organization responsible for this regulation is the Department of Agriculture but there are also internationally recognized organizations not associated with any particular country. Not only do they require organic farmers and processors to withhold the use of synthetic chemicals, but they also set standards such as preserving natural resources and biodiversity, providing outdoor access to animals and prohibit genetically modified ingredients. Organic producers must undergo annual onsite inspections to continue using the organic label on their products. For all of this regulation, there must be significant benefits. This paper discusses the benefits of organic production as compared to conventional production in terms of 1) quality and nutritional value of products, 2) environmental benefits and 3) economic benefits and social implications.

II. Quality & Nutritional Value of Crops

The most common reason given by consumers for choosing organic is food safety, followed by environmental benefits, animal welfare and taste preferences (Seyfang, 2006). The idea of food safety in organic terms encompasses various aspects including an expected caliber of quality, nutritional value and a sense of security for maintaining overall welfare. While the organic market caters to consumers on the basis of these beliefs, the extent to which these ideas are tenable is contentious. The majority of studies exploring nutritional value of organic crops
Dangour, et al, (2009) conducted a review of 162 comparative studies, of which only 55 were of sound quality. Based on the analysis of those 55 studies, the authors concluded that there is no significant difference in nutritional quality between organic and conventional agricultural products (Dangour, et al, 2009). The researchers go on to note that any difference detected is probably related to differences in fertilizer use and ripeness at harvest. In contrast to the previously presented research, a meta-analysis of studies completed by Crinnion (2010) concluded that “organic foods have more vitamin C, iron, phosphorus and magnesium than conventional foods”. Crinnion (2010) notes that this information must be regarded carefully when considering the decline of these same vitamins and nutrients in conventional foods over the last half century. Another meta-analysis of 96 published studies supporting Crinnion, et al, determined that organic plant-based food are more nutritious than conventional foods on average with the biggest difference being in total antioxidant capacity (Benbrook, et al, 2008). There are even fewer studies regarding direct health benefits and Dangour, et al (2010) affirms the very limited evidence linking any health effects related to organic food consumption. There are, however, clear health benefits related to reduced allergies, especially dermatitis and eczema, reported with regular consumption of organic dairy products (Dangour, 2010; Crinnion, 2010).

The security associated with organic foods typically is referring to the fact that organically certified foods are mandated to be grown without the use of synthetic chemicals, which some consumers feel is healthier. However, organic crops are still subjected to these chemicals through atmospheric and environmental exposure. Soil, air and water is contaminated from leaching, drift and runoff and organic crops can absorb chemicals even if they were never directly applied while growing. According to a joint study by the USDA Pesticide Data Program and the California Department of Pesticide Regulation, organic crops do indeed carry agro-chemical residue equal to about one third of the amount of conventional crops (Crinnion, 2010). In addition, pesticides are not ruled out of organic agriculture as long as they originate from natural sources (EPA, 2012) but Magkos, et al, (2007) caution that “many natural chemicals are equally as potent carcinogens and mutagens as their synthetic counterparts.” While organic food may not be entirely pesticide free, organic fruits and vegetables “can be expected to contain agrochemical residues much less frequently and at lower levels than their conventional alternatives” (Magkos, et al, 2007).
III. Environmental Benefits

While the nutritional and food safety argument might be difficult to uphold within the current framework, there is no denying the environmental benefits of organic agricultural production. Excess chemicals used in traditional conventional agriculture are a large contributor to non-point source water pollution through runoff and leachate as well as a contributor to air pollution drift. In fact, the dead zone in the Gulf of Mexico as well as the collapse of many other important fisheries in North America is a consequence of long-term pollution from agricultural production (Pimentel, 2005). Organic agriculture is also associated with conservation of soil moisture and water resources due to production practices and generally smaller scale production, which reduces input needs. Integrated pest management practices can further reduce the need for artificial and synthetic chemical inputs. Organic agricultural production is more energy efficient than conventional crop production, using thirty to fifty percent less energy, and this can be attributed in part to the immense fossil fuel resources needed for production and transportation of synthetic chemical typically used in conventional agriculture (Ziesemer, 2007). However, organic agriculture generally requires thirty-three percent more hours of human labor inputs, so there are indirect energy tradeoffs (Ziesemer, 2007).

IV. Economical Benefits & Social Implications

One of the major accusations by advocates of the organic market is that conventional production externalizes social and environmental costs while organic internalizes these costs, resulting in higher, more accurately priced food. The estimated environmental and health care costs associated with pesticide use at EPA recommended levels is nearly $12 billion annually and the public and environmental health deficits from soil erosion alone are over $45 billion each year (Pimentel, 2005). In the U.S., there are subsidies that benefit most types of conventional, pesticide-dependent agricultural production, and when combined with other externalized costs, the result is a pricing system that makes conventional food less expensive for consumers (Seyfang, 2006). However, the USDA cites that farmers can indeed access supplemental financial and technical assistance resources by entering the organic market (USDA, 2013).

By entering the organic market, traditional farmers can gain access to additional markets and acquire premium prices for their products (USDA, 2013). On average, organic foods retail ten to thirty percent higher than conventional foods and farm price premiums can be anywhere from seventy to two hundred and fifty percent greater than conventional farm price premiums (Lohr, 2002). Within this new market, there is a sub-market for local-organic foods which is part
of the desire for consumers to maintain eco-citizenship within the realm of sustainable consumption (Seyfang, 2006). This market provides a significant source of employment opportunities for communities where consumers exist for this specialized market. Some other advantages beyond the obvious financial benefits include decreased exposure to harmful chemicals for farm workers and the farming families (Ziesemer, 2007). While the organic market can boost local economies, especially in areas with high unemployment and/or poor rural economies, the increased need for manual labor can be, and is often, filled with immigrants, which are sometimes mistreated are not paid fairly in the agricultural sector (Soil Association, 2006). In general though, organic agriculture has been shown to have very positive effects on local economies, including contributions through sales, net revenue, farm value, paid taxes, payroll, purchasing and repair or maintenance services (Lohr, 2002). According to Lohr, “counties with organic farms have more committed farmers and give more support to rural development with higher percentages of resident full-time farmers, greater direct to consumer sales, more workers hired, and higher worker pay, provide more bird and wildlife habitat and have lower insecticide and nematicide use.” (2002).

V. Conclusion

Many reasons are given by consumers for choosing to eat organic with health and food safety at the top of the list. However, scientific evidence is inconclusive regarding direct health benefits associated with consuming organic food compared to conventional food. Nevertheless, it must be respected that health, social, environmental and economical benefits are intertwined. While there may be no particular health benefit beyond reduced the reduced chance of eczema in children who eat organic dairy, it is important to note the significance that environmental health, financial security and peace of mind play in overall well-being. For many consumers, supporting the organic markets and thereby contributing to the comprehensive benefits that are shared among various stakeholders is enough of a personal benefit.

Works Cited


