

CONVENTIONAL VS ORGANIC FARMING AND THEIR CONSEQUENCES

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Abstract

Organic foods became very important in today's world as people prove to be more self-conscious about what they eat. Although many studies were done in order to find a solution to the question of whether organic products are more nutritious and healthier than conventionally grown products, until today no study was able to find a definitive answer. There are specific advantages and disadvantages for both groups of products. Unlike the conventionally grown livestock, organic meat comes from animals that are not treated with antibiotics, and thus do not represent a threat of causing drug-resistant organisms in humans. However, the use of the growth hormone in conventionally grown livestock proves to help ease the effect of global warming. The labeling of products with the word "organic" is very strictly regulated in both the United States and Europe. Producers that use the organic logo need to go through very specific examinations before they can use this label.

Key words: organic, conventionally-grown, food, consumer, labelling, legislation

INTRODUCTION

In a world that cares more and more about diet and being healthy, organic foods have become one of the latest fads that require our attention. In the last years we saw a high increase in small-scale "green" enterprises that advertise themselves as selling real organic products. Although supporters of organic products argue that these products are more nutritious and healthier than conventionally grown products, there is no conclusive research to support this hypothesis.

MATERIAL AND DISCUSSIONS

Many people simply link "organic" to "healthy", but in order to understand the issue correctly one needs to understand the definition of "organic." Organic farmers grow crops or raise livestock without using synthetic chemicals, hormones, or other genetically engineered enhancers. According to a study that the Pediatrics Journal published online on October 22, 2012, in order to qualify as organic, the crops must be grown on land that has been free of prohibited pesticides for at least three years before the harvest. There must also be a buffer zone – a zone in which no crops are grown, in order to offer protection from unwanted substances that might travel by air from nearby farms. The fertility of the soil is given by a careful

rotation of crops, by using different cultivation practices and by supplementing the crops with animal waste. Livestock that is to be considered organic needs to have access to the outdoors and cannot be treated with any kinds of antibiotic agents or growth hormones. If an animal is treated for disease with antibiotics it cannot be sold as organic.

According to the Organic Trade Association, the market for organic foods in the United States has grown from \$3.5 billion in 1996 to \$28.6 billion in 2010. Until a few years ago organic products were to be found only in some conventional stores, but today they are very easy to find, both in conventional stores and in organic-only stores. According to data provided by the United States Department of Agriculture, in 2008 more than two-thirds of consumers bought some organic products and more than one-quarter bought organic products at least once a week.

Consumers choose organic foods believing that they are more nutritious, have fewer additives and contaminants, and are grown more sustainably (Magnusson, 2005). Other studies suggest that families with children or younger consumers are more likely to buy organic fruits and vegetables than other consumers (Loureiro, 2001). It is also shown that the purchase of organic food is related to the level of consumer education. However, organic products usually cost up to 40% more than conventional products.

Although consumers like to believe that organic products are more nutritious than conventionally grown products, there is no research that shows this to be the case. Studies indicate that no important differences exist in carbohydrate or vitamin and mineral content (Williams, 2002). The same study shows that organic foods might have lower nitrate content than conventionally grown foods. This could represent a benefit for organic foods because nitrates are associated with increased risk of gastrointestinal cancer. In 21 out of 36 independent studies researchers found that organic leafy vegetables such as spinach, lettuce and chard had a higher concentration of vitamin C than the same conventionally produced vegetables (Forman, 2012). Further research of higher quality needs to be done in order to discover potential differences in nutrients that are found in organic and conventional foods. As of today, however, there is no convincing evidence that organic foods are more nutritious than conventionally grown foods.

There were many attempts in trying to review all the relevant research studies and draw one single conclusion on the topic of organic versus conventionally grown foods, but unfortunately this was not possible because of the range of different results from different studies. It is important to take into consideration the fact that the nutrient content of produce is affected by lots of different factors such as geographic location,

local soil, climatic conditions, storage and time to testing after the harvest.

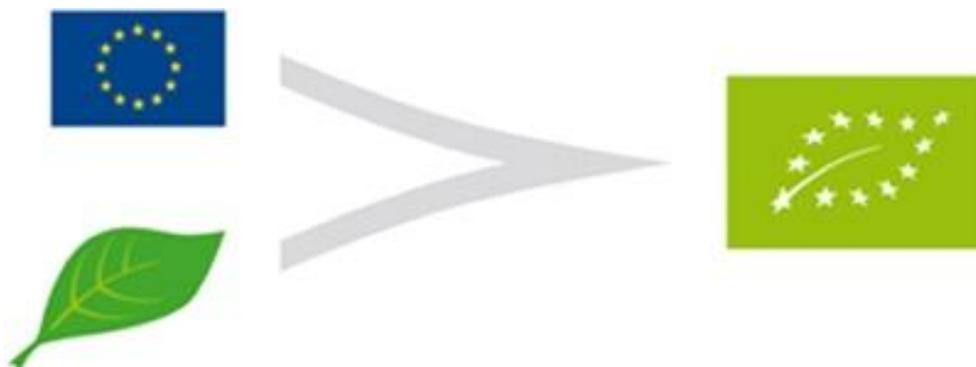
On conventional farms livestock are usually administered antibiotic agents in nontherapeutic doses in order to promote their growth. These antibiotic agents are similar to the antibiotics that humans use in treating their own health issues (Shea, 2004). The use of the nontherapeutic antibiotics leads to the development of drug-resistant organisms in animals in the same way in which antibiotics create drug-resistant organisms in humans. These drug-resistant organisms are transmitted on farms from livestock to the humans' intestines (Levy, 1976). There is also evidence that human disease caused by antibiotic-resistant organisms spread through the food chain (Hamer, 2002). Thus, because organic farming prohibits the nontherapeutic antibiotics it could potentially lead to a reduction in the threat of human disease caused by the drug-resistant organisms.

One of the major reasons why consumers prefer organic foods is because they are afraid of hormone supplementation of farm animals (especially with the GH – Growth Hormone, which increases milk yield of cows by 10 to 15%). GH is species-specific, and is administered by injection. It was proven that GH is biologically inactive in humans. Any GH in food products has no effect on humans, even if it were absorbed directly from the gastrointestinal tract (Forman, 2012). Moreover, approximately 90% of the GH in milk is destroyed during the process of pasteurization and there is no evidence that the vitamin and mineral contents of milk are altered by injecting GH to cows (Vicini, 2008). Further studies show that the use of GH might actually have environmental benefits. GH increases milk production, which in turn leads to a decrease in the number of cows needed to produce the same amount of milk. This results in fewer cows and less cultivated land to feed these cows and also less manure. The result would be reduced methane production (cows are big producers of methane and the pollution they create through methane is comparable to the pollution created by a car in one day) and less carbon dioxide production, with a positive effect on global warming.

Not everyone can sell organic products. Organic farmers need to apply for certification, pass a test, and pay a fee. There are specific laws that regulate the labeling of organic products. In the United States, a product can be labeled as “organic” only if its producer is certified by the National Organic Program (NOP) of the United States Department of Agriculture. The NOP was created from the Organic Foods Production Act of 1990 and it is based on strict federal regulations that define what organic products can be used as inputs. The NOP conducts annual inspections of the producers in order to ensure ongoing compliance with the organic farming standards. Growers of organic products whose gross income is less than \$5,000 and retailers are excused from certification.

The NOP accepts three levels of labeling. Products that contain only organically produced ingredients and processing aids (water, salt) receive the highest label, "100% organic." Products that are labeled "organic" must contain at least 95% organic ingredients and the rest can be conventional grown ingredients or synthetic, but must be on the approved list of the United States Department of Agriculture. Products that are made with at least 70% organic ingredients can use the label "made with organic ingredients" and have to list up to 3 of the organic ingredients that are being used. Livestock farmers that want to use the label "free range" must demonstrate that the animals were allowed access to the outdoors.

In June 2007 the European Council of Agricultural Ministers approved the creation of a new Council Regulation on organic production and labeling. The new regulations contain specific goals and rules that have to be followed in order to receive the "organic" labeling. For instance, the European Union prefers that in the creation of the organic foods the producers follow closed cycles with the use of internal resources instead of the open cycles with the use of external resources. The legislation recommends that external resources in the process of production of organic outputs should be limited to organic resources from other organic farms, naturally obtained materials and low soluble mineral fertilizers. The European Union prohibits the use of genetically modified organisms (GMO) and of products that might contain GMOs. Products that contain GMOs will not be labeled as organic unless the GMOs entered the products unintentionally and the GMO fraction is less than 0.9% of the product.



The “euro-leaf” - the European label for organic products

CONCLUSIONS

There is no definitive research to show that organic foods are healthier or more nutritious than conventionally grown products. It is proved that both categories have advantages and disadvantages: the growth hormone in conventionally grown products leads to an ease in global warming while the use of antibiotics in this type of products can lead to human diseases. Until better research will be conducted we cannot say if organic foods are better for humans than conventionally grown foods or vice-versa.

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