

ORGANIC VERSUS CONVENTIONAL: ADVANTAGES AND DISADVANTAGES OF ORGANIC FARMING

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Abstract

Over the last years, organic food consumption has become one of the most popular trends amongst general public. The perception would be that organic food is much healthier for the consumer and that the farming practices used for producing the food are more environmentally friendly. There are however both advantages and disadvantages when it comes to production of organic food, the choice of many farmers being not to produce organic food.

Key words: organic farming, conventional farming, comparison method

INTRODUCTION

In the past few decades, there has been a rapid spread in organic farming, this contributing to a dramatic change in the agriculture of most developed countries. The organic system is thought to bring solutions to the environmental damages which are caused by conventional agriculture, the exhaustion of non-renewable resources, and also contamination by agricultural chemicals. The internal factors, which relate to the farmers themselves and their personal circumstances regarding their decision to take up an organic farming system, has been greatly researched through international work. In this concern there have been identified a series of characteristics of organic farms and farmers. The activities of an organic farm, which are usually small and extensive, vary from farm to non-farm. Moreover, it has been found that a high percentage of organic farmers are found to be better educated, younger and are thought to more likely have an urban background and also having less farming experience than a conventional farmer [1].

MATERIALS AND METHODS

The paper was accomplished using information from farms from both conventional and organic agriculture. The

method used was that of the comparison, mainly highlighting the advantages and disadvantages of using the organic system as means of cultivation.

RESULTS AND DISCUSSIONS

There are a number of ways in which organic agriculture differs from the conventional one. When it comes to conventional farming, the growth of cultivation is done by using synthetic chemicals. On the other hand, organic agriculture uses organic wastes and compost as fertilizers, this resulting in increase of nutrients which are supplied by plants.

As a method of extinction for pests and weeds, the conventional farming system uses pesticides and insecticides. Oppositely, the farmers operating in the organic system prefer to use birds and some insects that would destroy the insects causing harm. Sometimes, organic farming prefers to destroy the mating season of pests or even trap them, rather than using any sort of chemicals.

One of the main advantages of producing organic food is that farmers are able to cut the amount of greenhouse gases, such as methane and nitrous oxide, which farms release into the atmosphere. The synthetic fertilisers that many farmers use also require a lot of fossil fuels during the manufacturing process, so using less synthetic fertiliser means that less

fossil fuels are being burned. Chemical fertilisers pose a threat to the environment and often chemicals can enter into local ecosystems harming animals and polluting rivers. Organic farming does not pose such risks to the natural environment [2].

As for weeds, the methods used in conventional farming are based on herbicide use. As opposed to that, organic farming opts for crop rotation, which prevents plant destruction by a particular weed. Moreover, organic farmers would rather go in and pick weeds by hand in order to control the growth of weeds.

One of the major disadvantages associated with organic farming is the high costs involved in the process. Because there is no use of pesticides the crops grown are far more vulnerable to pests and disease. The farming can be a lot more labour intensive and the cost of organic feed is much higher than non organic feed. These costs are passed on to the consumer making organic food more expensive to buy than conventionally produced food. Whilst many people are more than willing to pay more for their food because it is organic, during times of hardship and recession people are less likely to buy organic when they can get the same food for a cheaper price [2].



Figure 1. Conventional farming system



Figure. 2 Organic farming system

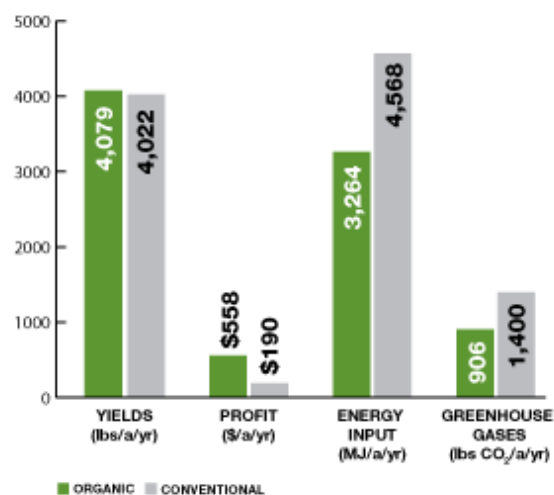


Figure 3. Organic versus conventional

The comparison in Figure 3 shows the following findings:

- There is a match between organic and conventional yields
- The organic system is a more sustainable system seeing as it builds, rather than depletes soil organic matter
- Organic farming is more efficient due to the use of 45% less energy
- Conventional farming produces up to 40% more greenhouse gasses
- There is a greater profitability in organic farming [4].

There have been many studies made on the comparison between an organic cultivation system and the conventional one. For example in the US, economic performance was compared between 14 organic crop/livestock farms in the Midwest and 14 conventional

farms (Lockeretz et al., 1978). The comparison was made on the basis of physical characteristics and types of farm enterprises. The result was that the market values of the crops produced per unit area was 11% less for organic farms. Though, seeing as the cost of production was also less, the net income per unit area was comparable for both systems. Another study (Roberts et al., 1979) had compared information taken from 14 organic farms compared with the same number of representative farms in the area of western Corn Belt, in the Midwestern United States. In most of cases, the net return was greater for the organic cultivation system [3].

The conventional system uses synthetic or chemical fertilizers often containing nitrates in order to promote plant growth. Herbicides are also used to kill off weeds and to exterminate insects and bugs, in order to reduce diseases. Conventional farming uses antibiotics, growth hormones and medications in animals in order to prevent diseases and promote their growth.

CONVENTIONAL	ORGANIC
Seeds are typically treated with insecticides	Uses untreated seeds
GMOs (Genetically Modified Organisms) typically used	Never uses GMOs
Synthetic fertilizers are used	Not needed due to stronger soil via crop rotation
Loss of soil due to mono-crop culture	Soil retains more water because of the organic matter in the soil
Intensive irrigation is required	Rain water is better retained and irrigation requirements are greatly reduced
Herbicides are applied to the soil to reduce weed germination	Weeds are physically removed
Herbicides added to the soil are used to kill weeds	Weeds are physically removed
Accounts for approximately 25% of the world's insecticide consumption	No chemicals are used
Many of the insecticides are known to be carcinogens	Beneficial insects and other natural methods are used
Frequent crop dusting is used causing harm to surrounding eco-system and communities	Trap crop methods are used to lure insects away from the cotton plants
At harvesting, the cotton defoliation process is activated by chemicals	Defoliation through natural seasonal freezing

Figure 4. Comparison chart of basic differences between conventional and organic farming

The organic system of cultivation encourages the use of natural fertilizers as are manure or compost in order to nourish the soil and promote plant growth. By rotating crops, using mulch or hand weed, the organic farmer

provides beneficial crop hygiene, removing pests and reducing diseases. Also on an organic farm, the owner gives organic feed to animals, and allows them access to open pasture while utilizing rotational grazing patterns [5].

Studies of farmers practicing organic farming for many years found the following common reasons:

- effects of chemicals on health
- effects of conventional farming on soil quality and conservation
- dissatisfaction with conventional farming practices
- personal or family health problems
- decline in family farms and rural communities
- opportunity to improve farm profitability

For many organic growers, finances and profitability are less important than personal values of health, environment and other social issues. There is also a greater personal satisfaction that the success of the farm is a result of personal decisions and on-farm inputs with less reliance on outside purchases. Recent converts to organic are attracted by the price premiums and reduced costs. These fluctuate with seasonal factors including product supply and demand. It is anticipated that over time some premiums will decrease as larger buyers enter the marketplace [6].

CONCLUSIONS

Organic food consumption has become one of the most popular trends amongst general public.

The conventional system uses synthetic or chemical fertilizers.

The organic system of cultivation encourages the use of natural fertilizers as are manure or compost in order to nourish the soil and promote plant growth.

Studies have shown that there is a match between organic and conventional yields.

Organic farming is more efficient due to the use of 45% less energy.

Conventional farming produces up to 40% more greenhouse gasses.

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REFERENCES

- [1] Saer Barhoum, Risk and farmers' decisions to farm organically or conventionally
- [2] ***<http://www.nrec.org.uk/organic-farming/>
- [3] William Lockeretz, 2007, Organic farming: an international history -, Wallingford, UK ; Cambridge, MA
- [4] ***<http://anh-europe.org/news/organic-farming-blows-conventional-farming-out-of-the-water>
- [5] *** <http://www.mygreenmoon.com/2009/12/why-is-organic-food-beneficial/>
- [6] H. Martin, 2010, Transition to Organic Crop Production Factsheet, Organic Crop Production Program Lead, OMAFRA, Ministry of Agriculture, Food and Rural Affairs, Ontario, Canada.