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Pros and Cons of organic farming and its environmental effects

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Abstract

Though there is wide acceptance for the good things about organic farming why do most farmers still operate by industrialized agriculture? Here we explore the pros and cons of organic farming for consumer's benefits like nutrition, poison-free food, better tastes, longer storage; Grower's benefits like disease and resistance, weed competitiveness, lower cost of produce, drought resistance, value added. In this paper some controversies also discussed about the objection raised against organic farming on the ground of productivity, cultivation, genetically modified crops, time and skills. This paper attempts to examine the environmental effects of organic farming on the bases of climate friendly, ecology friendly, etc. and some success stories and experiences.

Keywords: Organic Farming, Benefits, Disadvantages, Environmental effects, pesticides, customers, cultivators.

1. Introduction

Generally we all accept the good things of organic farming but despite it, why do most farmers still operate by industrialized agriculture? Here we explore the pros and cons of organic farming for consumers and producers, as well as examining the environmental effects of organic farming.

2. Good Things about Organic Farming

1.1. Consumer Benefits

(1) Nutrition

The nutritional value of food is largely a function of its vitamin and mineral content. In this regard, organically grown food is dramatically superior in mineral content to that grown by modern conventional methods. Because it fosters the life of the soil organic farming reaps the benefits soil life offers in greatly facilitated plant access to soil nutrients. Healthy plants mean healthy people, and such better nourished plants provide better nourishment to people and animals alike.

(2) Poison-free

A major benefit to consumers of organic food is that it is free of contamination with health harming chemicals such as pesticides, fungicides and herbicides. As you would expect of populations fed on chemically grown foods, there has been a profound upward trend in the incidence of diseases associated with exposure to toxic chemicals in industrialized societies.

(3) Food Tastes Better

Animals and people have the sense of taste to allow them to discern the quality of the food they take. It realizes easily that organically grown food tastes better than that conventionally grown. The tastiness of fruit and vegetables is directly related to its sugar content, which in turn is a function of the quality of nutrition that the plant itself has enjoyed.

(4) Food Keeps Longer

Organically grown plants are nourished naturally, rendering the structural and metabolic integrity of their cellular structure superior to those conventionally grown. As a result, organically grown foods can be stored longer and do not decomposing.

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1.2. Grower Benefits

A healthy plant grown organically in properly balanced soil resists most diseases and insect pests. This was proven by US doctor and soil nutrition pioneer *Dr. Northern* who conducted many experiments to test the hypothesis during the 1930's.

(1) Disease and Pest Resistance

By nature, each and every plant has disease and pest resistance. If we restore and balance the mineral of the soil there the plants grow clean and disease free. Dr. Northern experimented and observed it in case of orange, rose-bushes, tomato and cucumbers, etc. He observed that the bugs ate-up the diseased and refused to touch the healthy plants.

(2) Weed Competitiveness

Weeds are nature's band-aids, placed by the wisdom of creation to heal and restore damaged soils. When farmers husband and cultivate organic agriculture, the improved conditions persuade many weeds and favor their crops. The crops, being healthier, are also better able to compete with those weeds that are present.

(3) Lower Input Costs

By definition, organic farming does not incur the use of expensive agri-chemicals. The greater resistance of their crops to pests and the diseases save farmers significantly in expensive insecticides, fungicides and other pesticides. Fertilizers are either created by green maturing and leguminous crop rotation or on-farm via composting and worm farming. Biodynamic farmers use a low cost microbial solution sprayed onto their crops. The creation of living, fertile soil conditions through early corrective soil remineralization and strategic Keyline chisel ploughing are significant establishment costs that, however, reap ongoing benefits to production at minimal maintenance.

(4) Drought Resistance

Organically grown plants are more drought-tolerant. *A story explains it*, "This was dramatically illustrated to me several years ago when I was fortunate to attend a workshop with Australian organic gardening guru Peter Bennett. A slide he showed us has stuck in my mind ever since: it was a field of wheat, organically grown on re-mineralized soil. Bisecting the ripening green crop was a wide yellowed strip that had already finished growing and hayed off. He explained that the strip had been nourished using agri-chemical fertilizer early in the growing period. Because chemical fertilizer is soluble, plants are forced to imbibe it every time they are thirsty for water. They can and do enjoy good growth as long as water is readily available. As soon as water becomes limited, however, the soluble nutrient salts in the cells of chemically fed plants are unable to osmotically draw sufficient water to maintain safe dilution. They soon reach toxic concentrations, and the plant stops growing, hays off and dies earlier than it otherwise would have".

(5) Added Value

There is a perceptive market of consumers who recognize the greater food value of organic produce and are willing to pay premium prices for it.

3. Organic Farming Disadvantages

(1) Productivity

Proponents of industrialized agriculture point to its superior productivity. In the short term, this yield is possible by

expending massive inputs of chemicals and machinery, working over tasteless fields of a single crop (monoculture). Industrialized agriculture thrashes the land, and diminishes its soil life to the point where it can no longer function to convert available organic matter into soil fertility. Productivity begins to wane, and attempts to bolster it with increasing chemical inputs (common advice from farm consultants) have a similar effect to flogging a dead horse. Because it relies on living soil to build fertility, the benefits of organic farming for soil life are fundamental to its methods.

Organic farming benefits food production without destroying our environmental resources, ensuring sustainability for not only the current but also future generations.

(2) Cultivation

Direct drilling of seed into herbicide treated soils; organic farmers are usually at least partly dependent on cultivation to remove weeds prior to sowing. In contrast to cultivation, direct drilling does not mechanically disrupt soil structure and removes the risk of exposed soil being lost to wind or water erosion. This is a valid argument where farmers are working marginal quality soils. However, the structure of agri-chemically deadened soils is weakened by the corresponding loss of soil life and thus unable to maintain its integrity under occasional cultivation.

Structurally sound (life-rich) soils may be cultivated regularly without significant damage, particularly if protected appropriately by soil conservation measures.

(3) Genetically Modified (GM) Crops

Organic growers do not use *Genetically Modified* or engineered food crops, some of which are engineered to tolerate herbicides or resist pests. Conventional growers, on the other hand, are free to "take advantage" of GM crops. According to a report from the Directorate-General for Agriculture of the European Commission, productivity gains attributed to GM crops are usually negligible when growing conditions, farmer experience and soil types are factored in, and are often in fact negative. The main advantage farmers using such crops gain is convenience only.

There are worrying indications that GM crops may be associated with harm to both human health and the environment. The main concern is that once they are released it is nigh impossible to "un-release" them.

(4) Time

Organic Farming requires greater interaction between a farmer and his crop for observation, timely intervention and weed control for instance. It is inherently more labor intensive than chemical/mechanical agriculture so that, naturally a single farmer can produce more crop using industrial methods than he or she could by solely organic methods.

(5) Skill

It requires considerably more skill to farm organically. However, because professional farming of any sort naturally imparts a close and observant relationship to living things, the best organic farmers are converted agri-chemical farmers. Organic farmers do not have some convenient chemical fix on the shelf for every problem they encounter. They have to engage careful observation and greater understanding in order to know how to handle situation to correct the cause of the problem rather than simply correct its effect.

This is a bigger issue during the conversion period from conventional to wholly organic when both the learning curve and transition related problems are peaking (it takes time to build a healthy farm ecosystem that copes well without synthetic convenient).

4. Environmental effects of organic farming

4.1. Climate Friendly

The synthetic inputs upon which conventional agriculture is so dependent are energy expensive to mine and manufacture. According to expertise, mostly the embodied energy of industrial agriculture uses up 9 calories for every 1 calorie of food that it produces whereas organic agriculture with its low input needs of naturally derived substances produces less greenhouse gas emissions and is considerably more climate friendly.

4.2. Ecologically Friendly

(1) It doesn't use soluble fertilizers

Farmers pour tons of phosphate and nitrogenous fertilizer on their cropping lands every year. Because it is soluble, much of this fertilizer is either washed off the soil surface and into waterways (especially phosphates) or leaches through the soil profile beyond the reach of plants and finds its way less directly into waterways (especially nitrates). Nitrate contamination of groundwater (indicated by >10 mg/L nitrate) in Australia is widespread in every state and territory, occurring over regional and local scales. In many areas, the concentration is greater than the recently revised Australian Drinking Water Guidelines level of 50 mg/L nitrate, resulting in groundwater that is unfit for drinking. In some of the more contaminated areas, the concentration is in excess of 100 mg/L.

With fresh water reserves under increasing pressure from climate change is a serious situation for humanity. The soluble nutrient pollutants that contaminate surface waters fuel the overgrowth of algae. What is not used up by algae in fresh waterways, releases into the ocean where it supports the growth of algae on sea plants and coral reef systems. This blocks access to sunlight, causing whatever it covers to die.

(2) It doesn't use pesticides or herbicides

Another pollution disaster caused by agri-chemical use is the contamination of groundwater reserves with poisonous and unpleasant. While systematic monitoring of pesticide contamination of groundwater in Australia is limited, available tests have detected pesticides in at least 20% of samples, indicating significant contamination (Australia State of the Environment Report 2001).

Groundwater studies in the US have found similarly significant polluted. In Carolina, for example, over 27% of wells sampled in 1997 were found to be polluted with pesticides predominantly from routine agricultural usage.

There is no economically viable method to clean up widespread contamination. Pesticide contamination poses a serious, unreasonable public health threat to current and future ground water users.

Synthetic agri-chemicals (and most plastics widely used in our society) are derived from oil, and thus a source of endocrine-disrupting chemicals (especially xenoestrogens) in the environment. Distorted sex organ development and function in alligators has been related to a major pesticide spill into a lake in Florida, U.S.A.

There is also evidence to link sex hormones to a range of human medical concerns, particularly reproductive problems such as reduced sperm count in men and breast cancer in women.

Even the "safest" herbicides such as Roundup (glyphosphate) – the second most widely used in the USA - are now known to pose a danger to wetland ecologies, and can totally decimate frog populations at routine contamination levels.

5. Organic Farming – An experience of Cuba

Agri-chemical farming is extremely energy dependent, particularly in the extraction, manufacture and processing of the synthetic chemicals. One has only to study the experience of Cuba to know this is so. In the early 1990s Cuba had the most industrialized agriculture in Latin America, fueled by cheap, readily available Soviet oil. With the collapse of the Soviet Union, this supply was cut, virtually overnight. At first Cuba was faced with dire food shortages and despite rationing the average Cuban lost 10 kilograms in weight. Hungry people responded by becoming farmers – lawyers, teachers, truck drivers, etc. everyone learned to garden. Under the community-focused direction of its socialist leadership, Cuba rapidly made a successful transition to organic agriculture and more labor intensive methods, including reintroducing the use of bullocks in the cultivation of crops.

This is the near future that awaits us all. Do you believe our corporation-serving governments will so decisively lead us through it? Will you be ready for it?

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