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Working paper on

Growing for the Future:
*How to Transition Traditional Farming
Operations to Organic Production*

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Growing for the Future:

How to Transition Traditional Farming Operations to Organic Production

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Table of Contents

1. Abstract	Pg. 3
2. Introduction to Organic Farming: Organic Market Conditions	Pgs. 4-7
3. Organic Farming	Pgs. 8-11
4. Organic System Plan	Pg. 11
5. Farming Considerations	Pgs. 12-13
6. Farming Transition Phase	Pg. 13
7. Crop Rotation	Pg. 14
8. Organic Vegetable Considerations	Pgs. 14-16
9. Summary and Recommendations	Pgs. 16-17

Abstract

Farmers across the nation are consistently looking for new ways to meet consumer demand and turn positive profit for their operations. One current trend in American agriculture is a high and fast-increasing demand for natural and organic food items. Many farmers are either considering or transitioning some or all of their operations into organic production methods. Farmers interested in exploring this possibility must engage in a long and involved process that is required for a successful organic farming transition. This article details the steps involved in the transition procedure, and also includes various considerations that farmers must make in order to ensure highest yield and maximum profitability during and after the transition.

Organic Market Conditions

78% of families are *buying organic food*, up from 73% in 2009. **4 in 10** families are buying more organic food than they were one year ago.

“Organic is healthier for me and my children”: the #1 reason cited by parents for purchasing organic food.



72% of parents are familiar with the USDA Organic Seal, up from 65% in 2009.

In order to transition a farm from traditional to organic production, one must understand what organic farming is and how it impacts the agriculture industry. The Organic Farming Research Foundation defines organic farming as: “Organic farming management relies on developing biological diversity in the field to disrupt habitat for pest organisms, and the purposeful maintenance and replenishment of soil fertility.” Functionally, organic farming is a form of agriculture based on traditional farming practices employed prior to the implementation of advanced farming technologies. These practices rely on techniques including *crop rotation*, *proper soil and nutrient management*, *manure and compost control*, and *pest management*.

Organic farming limits and excludes the use of modern agricultural technology including:

- manufactured and synthetic fertilizers
- pesticides, herbicides, insecticides, and fungicides
- growth hormones, and food additives

- antibiotics
- genetically modified organisms.

Consumption of organic foods has increased substantially in recent years, and is projected to continue to grow in the future, outpacing growth in the total food category. In July of 2013, FoodThink reported that over 1/3 of all consumers seek out organic products when they shop for groceries. The Organic Trade Association (OTA) reported that the United States organic industry grew 9.5% in 2011, reaching \$31.5 billion in sales. This growth continued in 2012 when total category organic sales grew by 10.2% (compared to the ROM growth of 3.7%). That year, the OTA reported that 78% of American families are incorporating organic foods into their diets, with 40% of families purchasing more organic products this year than ever before.

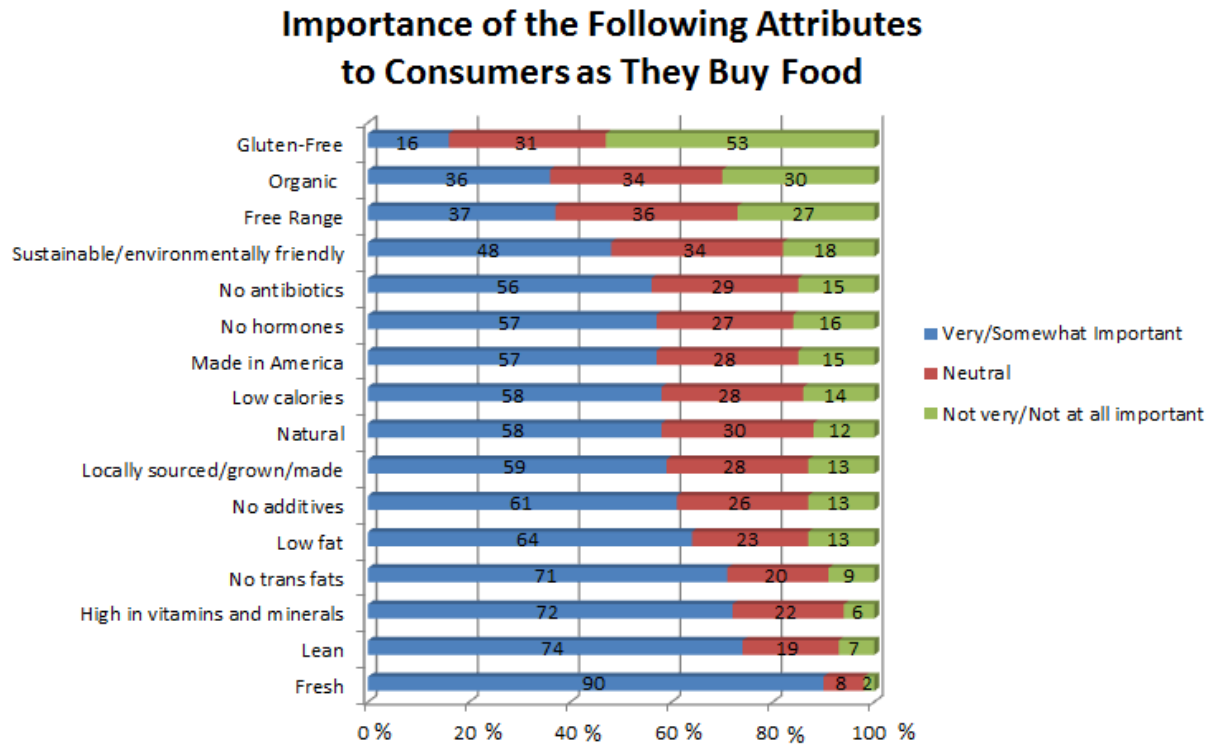


Figure 1.1 - July, 2013 "A Fresh Look at Organic and Local", FoodThink

It is clear from Figure 1.1 that nearly all consumers are motivated by freshness and health as primary purchase deciders and many are also concerned with purchasing food without hormones, antibiotics, foods that bear “natural” qualities. In addition, almost half (48%) of consumers look for foods that have minimal impact on the environment. So how do these insights translate into the massive increase in demand for organic foods in recent years?

Firstly, the consumer concerned about “natural” food products that are without hormones and antibiotics will likely find comfort in purchasing organic food. Consumers typically prefer organic products because they perceive that a lack of synthetic pesticides will hold health benefits for their families. Nearly half of parents state that organic foods “are healthier for myself and my children” and therefore choose to purchase organic foods. In addition, over half of organic consumers say that the minimal impact on the environment is a factor in their purchase decision and 40% believe that organic food is better for animal production. The consumer insights from Figure 1.1 translate seamlessly into the perceived benefits from organic food.

The caveat to these health benefits, however, is a cost increase for organic products; but organic food consumers are normally willing to pay a premium for these items. In terms of purchase motivation, 34% of organic consumers say that nutrition (specifically with relation to organic production) is their primary purchase motivator. Only 9% of organic consumers consider price as their primary motivator. The belief that organic foods are healthier and safer, as well as the increased traceability of organic products compared against the general market, allow these consumers to justify this cost. As we can see in Figure 1.2, organic shoppers are the most likely to consider nutrition an important purchase motivator, and they are also the least sensitive to cost. However, this attitude is also reflected across all categories of Organic, Natural, Local, and all

consumers. For organic food producers, this means that there is a wealth of development opportunity within the organic consumer base and the market at large.

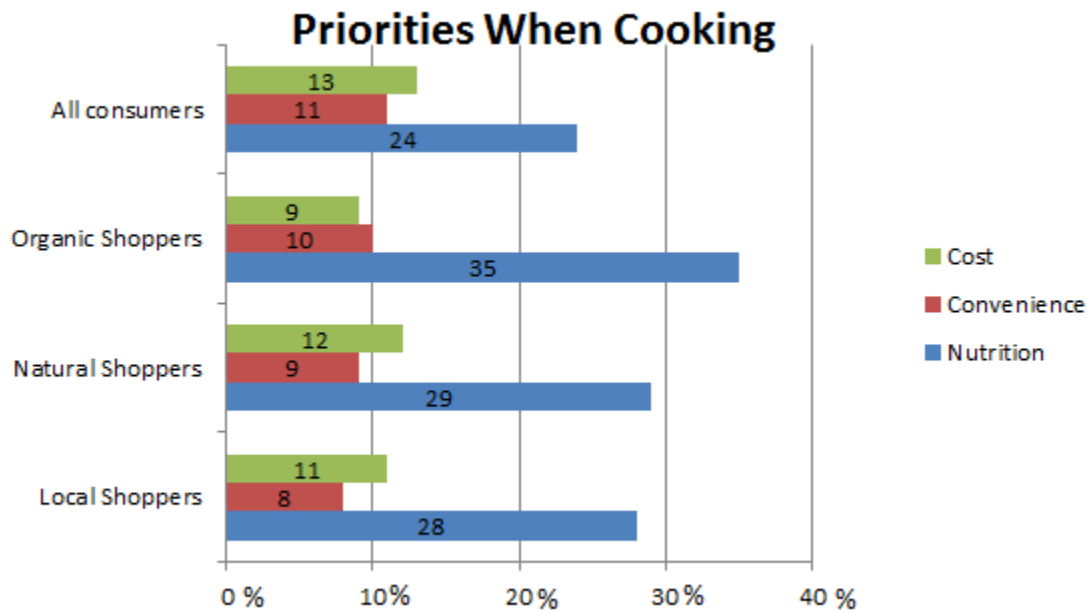
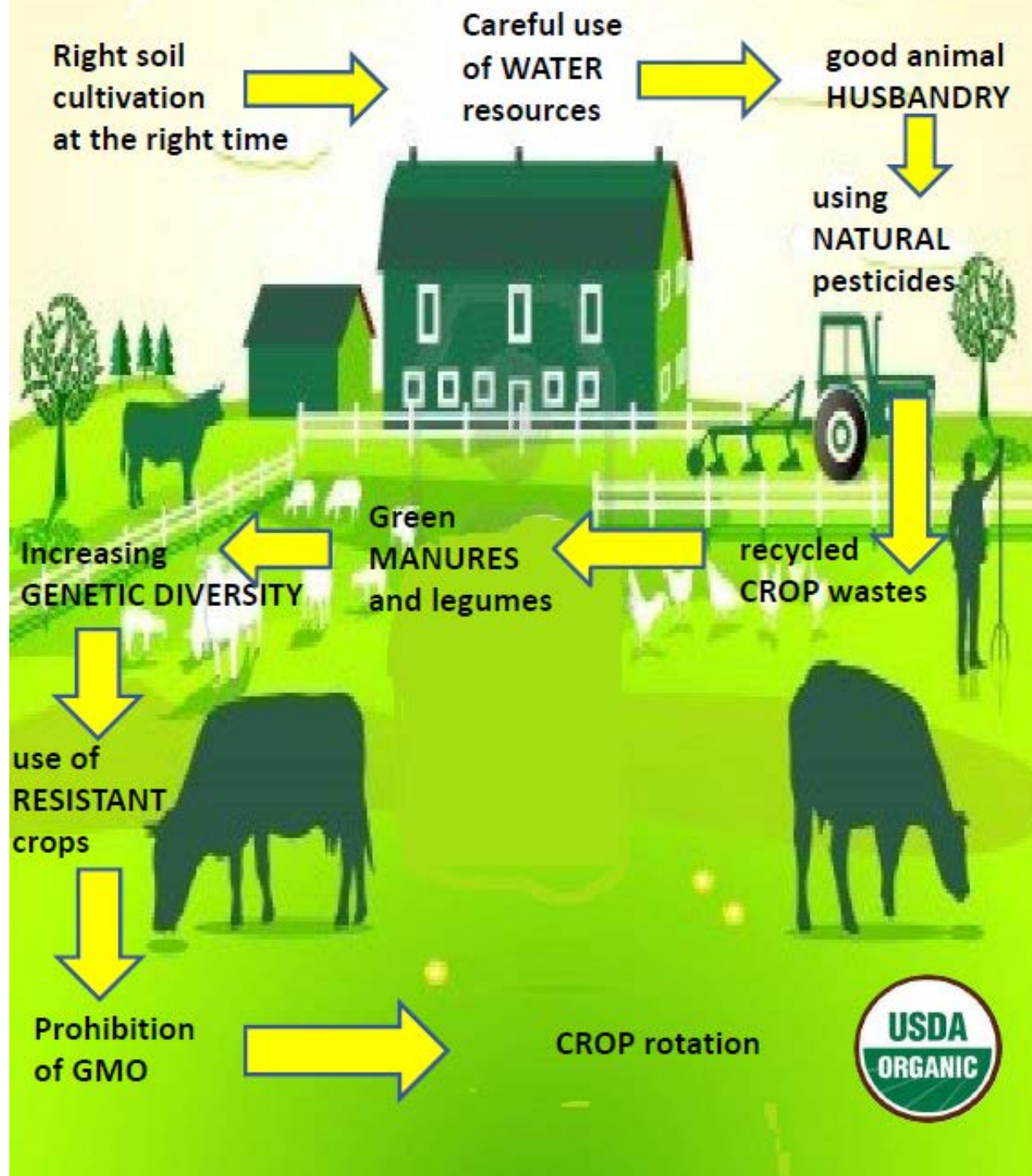


Figure 1.2 - July, 2013 "A Fresh Look at Organic and Local", FoodThink

ORGANIC FARMING

Agricultural system that works in harmony with nature.



Organic Farming

With consumer demand at an all-time high and price sensitivity very low, food producers are beginning to consider transitioning their operations to organic crop production. In order to meet consumer demand and profit from this upswing in popularity, farmers who have historically used conventional agriculture to grow their crops are now looking to the horizon of organic farming. This can be an arduous process, and not one that is undertaken lightly. However if a farmer is able to successfully transition into an organic operation, the profit can be a substantial increase over that of conventional agriculture.

Beginning the Transition Process

Before deciding to transition to organic farming, a farmer must consider many elements of his or her operation, including:

- choosing the correct location on-farm
- weed, pest, and nutrient management methods
- determining optimal crop selection
- natural resource and conservation concerns
- irrigation

Phase one of the transition process requires the farmer to develop a plan that will guide the operation through the organic certification process. This plan will serve as the baseline for implementation. The plan includes an organizational analysis of farm operations, tentative crop rotation schedule, and information regarding acre and field sizes. This plan will also include a nutrient management plan, explanations of how the farm will implement and utilize Good

Agricultural Practices (GAP), and justification on why organic production is the best option for these fields.

During the transition, the land in question will be removed from conventional production and will therefore fail to be profitable for the farmer. In order to offset this loss, farmers can take advantage of the Environmental Quality Incentives Program (EQIP). Established in the 2002 Farm Bill, EQIP offers financial and technical assistance to help eligible participants install or implement structural and management practices on eligible agricultural land. The 2008 Farm Bill added provisions to help organic operations to be environmentally sustainable, as well as to assist in addressing natural resource concerns. EQIP provides assistance that is limited to \$20,000 per year (\$80,000 in a six-year period). In order to participate, farmers must develop and work toward implementing an Organic System Plan (OSP) as they work toward organic certification.

EQIP is also activated at the state level. Each year the Natural Resources Conservation Service (NRCS) allocates financial and technical assistance through the EQIP Organic Initiative to applicants who are either **certified organic producers, transitioning to organic production, or producers who sell less than \$5000 annually of organic products**. Producers must have related natural resource concerns in the agricultural operation and demonstrate control of the land in production.

The Fiscal Year 2012 EQIP Organic Initiative provides financial assistance to implement a broad set of conservation practices that assist organic producers in meeting their resource concerns and fulfilling many of the requirements in an Organic System Plan. This includes but is not limited to assistance with:

- Developing a conservation plan
- Developing a transition to organic production plan
- Establishing boundaries and buffer zones
- Improving soil quality and organic matter while minimizing erosion
- Improving pest management
- Developing a grazing plan and improving grazing resources
- Improving waste utilization and composting
- Improving irrigation efficiency
- Enhancing cropping systems and nutrient management

If applicants are seeking more information regarding EQIP, they can refer to their local NRCS office or refer to the NRCS website at <http://www.nrcs.usda.gov>.

Organic System Plan

An organic farmer keeps a record of all documentation needed to farm organically, called an Organic System Plan (OSP). The plan must be kept in accordance with the EQIP program and is subject to audit by government officials and organic certifiers. Items that must be kept in the plan include:

- Certificate of Record
- Maps of organic fields
- Certification standards
- Standard Operating Procedures/Best Management Practices
- Seed and input receipts
- Soil, manure, and water tests

Farming Considerations

In order for a farm to undergo a shift to organic production, the land must go through a transition phase that will typically take three years. Prior to planting the field, there are some considerations that a farmer must decide upon when choosing which fields to transition to organic farming. One of the most important considerations is determining if the ground is suitable for organic farming. Since a farmer will be operating equipment several times on the ground during a growing season, the farmer should consider ground that has lighter soil rather than heavier. After a rain or irrigation, the farmer must cultivate or rotate harrow weeds out quickly. Therefore, lighter soil is advantageous because it takes less time to dry out and can be worked more rapidly.

Soil analysis and weed control are two items of urgent concern when choosing to transition to organic farming. The farmer will need to perform and analyze soil tests to determine the amount of nutrients in the soil. There are some nutrient concerns that may be prohibitive in a transition to organic farming. For example, if a particular farm is high in phosphorus then the farmer should consider another field to transition. Weed control is another area of note. The farmer must consider the types of weeds that grow in the selected fields. Because of the nature of organic farming, producers must choose fields that contain weeds which are simple to control and manage. Fields with noxious weeds like Johnson grass and Canadian thistle which can only be removed chemically would not be suitable options for organic transition.

Managing water input maximizes crop yield. Producers should consider transitioning fields that are already irrigated. An irrigated field helps to prepare the ground for planting and increases a new seed's chance of surviving against weed infestation. Sufficient water supply

through irrigation also maximizes efficient use of nitrogen in crops – limiting nitrogen leaching which is of particular concern in the Chesapeake Bay area.

Farming Transition Phase

During the beginning of the transition phase, farmers will typically plant alfalfa. Alfalfa is an ideal crop for this period - because alfalfa is a legume, it restores nitrogen levels in the soil. During the transitional phase, the alfalfa crop may be harvested, but cannot be considered organic. Producers should mow the alfalfa several times during the growing season in order to control weeds and limit seed dispersion. After completing the three-year transition phase, each farm must be certified by a USDA Accredited Certifying Agent.

After being certified by the USDA, the producer must decide what to plant in the newly organic-certified fields. A common choice is corn – since the alfalfa has recently restored nitrogen to the soil. In order to supplement the nitrogen levels in the soil, the farmer has several options (bearing in mind that the constraints of organic production prohibit the use of most conventional methods). One option for adding nitrogen to the soil organically is to apply chicken manure to the soil prior to planting. After applying the chicken manure the ground is disked several times to ensure maximum distribution. Although this is a viable alternative to add nitrogen to the soil, the downside is that the presence of chicken manure can increase phosphorus levels in the soil. Proper management and careful analysis of the soil tests will prevent a farmer from exceeding state standards.

Crop Rotation

Organic farming is often described as a holistic approach to agriculture – meaning that challenges are approached through methods that are thought to have the least impact on the soil

and the environment. Crop rotation is of utmost importance and is just one of the many careful considerations that an organic farmer faces. Crop rotation is critical for organic farming success for several reasons. First, the soil must be “fixed” (replenished with essential nutrients) but this must be done through organic-approved methods. Crop rotations are also important in limiting pest problems, as pest reproduction cycles are interrupted by the rotation of crops.

There are various strategies and opinions on how a crop rotation should be followed, but most organic farmers tend to use similar methods. The typical rotation after a corn crop involves planting a cover crop such as wheat, barley, or clover during the winter months to help maintain soil integrity. The farmer then begins the spring with a full season soybean crop (since soybeans are a legume like alfalfa, nitrogen is restored to the soil). After harvesting the soybeans, a farmer may plant alfalfa in the fall or soybeans in the spring, or choose to plow them under which is described as fallowing. Fallowing is done every three years to maximize nitrogen use, resulting in a profitless growing season.

Organic Vegetable Considerations

Organic vegetable production also proves to be a very challenging task. Similar to conventional crop production, the most difficult aspect of growing organic vegetables is developing a feasible plan. Luke Howard, an organic farmer from Millington, Maryland agrees and further comments that “the most important and complex decision is ascertaining what vegetables to plant, and where.” Experienced organic vegetable farmers recommend starting with only a few acres and expanding as the novice organic producer becomes more comfortable with the operation. When deciding upon an organic operation, the farmer will have to consider many elements of the operation. Organic vegetable farmers will face the same challenges as organic

crop farmers do in terms of deciding where to plant crops and how to irrigate, but also experience added components that can complicate the process.

Vegetable farming oftentimes finds several different crops in a single field, so farmers must take care to ensure that the correct amount of water reaches each plant correctly. Over applying or under applying water can damage vegetables and restrict yield. Pest control is another area of concern with vegetable farming - the farmer must dedicate a considerable amount of time fighting various pests including weeds and bugs, and animals such as raccoons, squirrels, deer, and birds. A novice organic vegetable farmer must also be mindful of harvest timelines, since the products will likely be harvested by hand the farmer must plan accordingly based upon operational capability during the harvest season.

One of the most pressing concerns for organic vegetable farmers is freshness throughout the storage process. The specifications of organic farming prevent the use of many preservatives, resulting in a product that loses freshness quickly. Farmers face heavy competition at market, and must give thought to the types of vegetables that they can realistically produce using organic methods. For example, sweet corn is a popular summer vegetable but is difficult to grow in the Mid-Atlantic Region because of corn earworm infestations and the inability of organic farmers to fight this pest effectively. On the other hand, tomatoes can be grown relatively easily using methods of organic production.

In terms of crop rotation and nutrient management, organic vegetable farmers should follow similar procedures as with organic crop farming – restoring appropriate nutrient levels to the soil in order to maximize yield. Local organic farmer Luke Howard of Millington, MD, reports that as of now, there is not a significant reduction in soil nutrients caused solely by a single vegetable – however he also points out that further data collection and research is

warranted on this subject. An organic farmer should pay close attention to soil nutrient test results, and potentially also employ the services of an organic agronomist to ensure well-nourished soil that will best support vegetable growth.

Organic vegetable farmers can consider utilizing a small greenhouse in which they allow seeds to develop into small plants before transplanting them into the field. Managed appropriately, organic vegetable farming can be a very lucrative endeavor. The OTA reports that in 2012, 34.8% of all organic food sales were comprised of organic fruits and vegetables.

Summary and Recommendations

As consumers in the United States become more aware of their overall health and well-being, they are in turn looking to improve the quality and healthfulness of the foods they eat. Organic methods of production are becoming increasingly popular and consumers are beginning to demand more options within the organic segment. As food producers, farmers have the ability to profit from this demand increase by choosing to produce organic food in place of conventionally prepared options.

As farmers look to transition into organic production, they must make serious considerations as to determining whether their operation is suitable for organic farming. If so, then they can begin the process of organic certification. The transition process is challenging. However by working with available government resources, gaining insight from experienced organic farmers, and working from a deep knowledge of their own products and fields, a farmer can bring his or her operation into compliance with organic standards.

With the growing availability of organic farming resources as well as skyrocketing consumer demand, the future is bright for farmers who wish to farm organic. Rewards for

producers are many; financial, environmental, and extending beyond these into goodwill and long-term sustainability for the producer and for the land alike.

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