



## Producing and Marketing Organic Produce

By Owusu Bandele, Ph.D.

Many small and limited resource farmers are looking for ways to diversify their operations and make them more profitable. At the same time, consumers are demanding that growers produce healthy foods without polluting the environment. The production of organic vegetables and fruits is definitely an area that small farmers should consider. According to the Organic Trade Association (1998), the organic industry currently accounts for over \$4.7 billion in annual sales and is growing at an annual rate of 24 percent. It is estimated that organic sales will increase from a reported \$178 million in 1980 to an estimated \$6.6 billion by the year 2000.

The production of organic crops offers growers several advantages over agronomic crops. Organic growers:

- Receive higher cash returns per acre
- Face less competition from other growers
- Satisfy a market niche
- Often use production systems which are environmentally sustainable

Organic produce usually brings higher prices than conventionally grown fruits and vegetables or agronomic crops. Currently, the number of organic growers in the south is relatively small. Therefore, there is less competition. Organic production systems are generally more ecologically friendly since organic growers do not use synthetic pesticides or fertilizers. Consumers are demanding more and more organic produce. Supermarket chains are now devoting substantial space in produce sections to organic products. A greater amount of organic produce is now being sold at farmers markets.

In spite of these opportunities, many limited resource farmers are not currently involved in organic production. Constraints that these farmers face regarding organic production can include: Difficulty in getting loans Lack of good information Problems in locating markets Finding adequate labor Equipment changes required Possible lifestyle changes (more intensive production) Negative "It won't work" attitude of many agricultural professionals.

Farmers may face a difficult task in getting lending agencies to advance loans for new type ventures. These agencies often are not aware of the returns that are possible from organic produce. Getting good information may be a problem in your area. Many agricultural professionals are convinced that organic production cannot work in the humid south even though there are successful farming operations there that should dispel this myth.

Farmers may have to change both equipment and lifestyle in order to farm organically. However, equipment costs for small produce growers are not nearly as expensive as those of agronomic farmers. Labor is also a consideration. Harvesting an acre (or less) of mustards by hand is quite different from harvesting an acre of soybean by machine. Some farmers may not want to make that change. Others might consider it, if the price is right.

### Managing Soils Organically

Definitions of organic production vary. However most definitions address the importance of developing a healthy soil through the use of ecologically sound principles. Soil testing is still a very important tool in both conventional and organic production systems. The soil test could help determine the pH of your soil, the nutrient status, and if requested, organic matter content. If liming is required, dolomitic lime can be used if your magnesium level is low. Gypsum can be used if your pH is okay, but calcium is low. Check the organic certification standards in your state since some materials such as calcium oxide and slaked or hydrated lime are forbidden (Louisiana Department of Agriculture and Forestry, 1998).

In organic and sustainable systems, soils can be improved through the use of compost, animal manures, and cover/green manure crops. Composting involves converting raw materials into a stable humus, an important component in fertile soils. Composting can eliminate plant pathogens and weed seeds. When done properly, temperatures in the center of the compost pile are high enough to kill weed seeds and plant disease organisms (Brady, 1990). Compost has also been found to reduce the incidence of soil borne diseases when applied to soils because of the presence of beneficial microorganisms . Composting also reduces volumes of waste. You can recycle crop residue and kitchen scraps into a valuable soil amendment.

It is often recommended that dried leaves be mixed with green organic matter such as fresh plant residue in a 3:1 ratio.

Materials that can be composted include:

- Leaves
- Grass clippings
- Kitchen scraps
- Straw
- Pine needles
- Manures

Materials to be avoided include:

- Meat scraps
- Plastic
- Glass
- Plywood/treated lumber
- Sewage sludge
- Cat droppings

Animal manures are important fertility components in many organic farming operations. Composted manure is often recommended over fresh manure. If fresh manure is used, be careful not to place the manure in the field too close to harvest. Several states have waiting periods between application of fresh manure and harvest of the crop. For example, Louisiana requires a fifty day waiting period (Louisiana Department of Agriculture and Forestry, 1998).

Nutrient compositions of several manures from one study done at Southern University is found in the table below. Figures can vary depending on source of manure. Manure percentages are usually expressed on a dry weight basis. Raw manure would contain a lower percentage per pound because of the presence of water.

**Nutrient Percentages of Three Manures**

<b>Nutrient</b>	<b>Rabbit Manure</b>	<b>Chicken Manure</b>	<b>Cow Manure</b>
Nitrogen	2.20	1.97	1.08
Phosphorus	0.87	1.93	0.56
Potassium	2.30	1.80	1.30
Calcium	1.26	7.32	1.36
Magnesium	0.40	0.35	0.36

Note. Source:Wolff, 1991. Percentages are expressed on a dry weight basis.

Cover/green manure crops are also important in good soil management programs. Cover crops can:

- Improve soil fertility and organic matter
- Reduce erosion
- Provide a home for beneficial insects
- Increase plant diversity
- Reduce compaction
- Increase water infiltration

The legumes are especially important cover/green manure crops. They have the ability to fix nitrogen because of beneficial bacteria (rhizobium) which live on their roots. Recommended winter legumes for the south include hairy vetch and crimson clover. Both of these cover crops can supply in excess of 100 pounds of nitrogen per acre to crops that follow. Austrian winter pea is another winter legume, but its performance in the south has been somewhat inconsistent. Annual ryegrass is not a legume but is sometimes seeded along with the clovers for additional biomass, although it produces less nitrogen. Summer legumes recommended for the south include cowpea, soybeans, lespedeza, and sweet clover (Peet, 1995).

In addition to manures, compost and green manure crops, other organic sources of plant nutrients are available to the organic farmer. Several organic fertilizers are found in the table below. Some of these are relatively common and can be found locally. Others may be more difficult to obtain or too costly to use in large amount. Ordering from catalogs from other states also means additional shipping costs.

#### Sources of Nutrients From Organic Fertilizers

Nitrogen Sources	Phosphorus Sources	Potassium Sources
Blood Meal	Bone Meal	Green Sand
Fish Emulsion	Rock Phosphate	Potassium Sulfate
Chilean Nitrate	Kelp	Wood Ashes
Cottonseed Meal	Fish Emulsion	Fish Emulsion

There are sometimes restrictions on even naturally occurring fertilizers. For example, In Louisiana, Chilean nitrate (sodium nitrate) can only be used once a year on certified organic farms. It contains sodium which could build up and be harmful to the crop. Cottonseed meal extracted from conventionally grown cotton could possibly lead to synthetic pesticides showing up in soil certification tests.

Some organic growers use foliar fertilizers such as fish emulsion, Brix mix, and other organic materials. This might be useful for farmers in the initial stages of the soil building process. Nutrients not found in sufficient quantity in the soil could be applied to the leaves and absorbed. Foliar sprays can be applied with backpack sprayers.

#### Pest Management

One of the biggest challenges facing organic producers is how to manage insects, weeds, and diseases. A recent poll of organic producers cited weed control as the most serious problem they faced (Hizer, 1999). Components of a sustainable organic pest management strategy often include:

- Crop rotation and companion planting
- Sanitation
- A good fertility program
- Proper water management
- Beneficial insects

Crops rotation help break pest cycles. Companion planting can also be used since crop diversity can reduce infection and infestation. Naturally, a good fertility program which leads to the production of healthy plants can reduce pest problems. As with people, plants which are stressed by improper nourishment are more likely to be infected with pests. Water management (including irrigation and proper drainage) can help provide a healthy environment for plant growth. Providing beneficial insects with a good habitat can also enhance biological control of insect pests.

Several insecticides can be used by organic farmers such as:

- BT (Bacillus Thuringiensis)
- Pyrethrum
- Rotenone
- Sabadilla
- Neem
- Garlic/Hot Pepper
- Insecticidal Soap

All of these insecticides except BT come from plants or plant products.. BT is a bacterium that affects certain types of insects. BT has several trade names including Dipel and Thuricide. The most common use is for the larval (worm) stage of moths. The bacteria do not affect bees or many of other beneficial insects. BT is commonly used in green crops for such pests as the cabbage looper and the imported cabbage worm. Work is now being done to use several strains of BT on some beetles and mosquitoes.

Rotenone is an old compound derived from plants. Care should be used with this insecticide because of its relatively high toxicity to mammals. It is also very toxic to fish. In fact, it is used to kill undesirable fish before restocking ponds. Do not confuse insecticides containing pyrethrum with the synthetic pyrethroids, which cannot be used by organic farmers.

It should also be noted that the tolerance for insect damage can vary with crops. For example, more insect damage is acceptable with cucumber beetles on okra than on mustard greens. Okra plants produce an abundance of leaves and can withstand more damage without greatly reducing pod yields. This is not true with mustard greens since most consumers would tolerate only a limited amount of leaf damage.

There is only a limited number of fungicides available to organic growers. The most common ones are copper and sulfur compounds. Fixed copper is recommended for controlling both fungal and some bacterial diseases such as angular leaf spot on cucumbers. These compounds should be used sparingly. In high concentrations, copper can lead to crop toxicity problems. Cucumbers, squash, and melons are susceptible to sulfur toxicity. Therefore sulfur compounds are not recommended as fungicides for these crops.

Weed management is a big challenge to many conventional and organic farmers. Preventing weeds from flowering and setting seed is always recommended. Crop rotation is recommended to break weed cycles. Various mulches are used for weed control including wheat straw, leaves, newspapers, compost, or combinations of these. Plastic mulch is allowed on organic farms even though some growers do not use it because it is not biodegradable. The plastic can be difficult to remove after the growing season. Some growers mow winter covers in place, and use this residue as a mulch for crop production. Vetch is used in this way.

There are flame cultivators available which singe and kill young weed populations. Cultivation by tillers, tractor mounted cultivators, and hoes is also used. Hand hoeing can be greatly reduced if mechanical cultivation can be done in a timely manner.

## **Certification**

Several states have certification programs managed by the state departments of agriculture. Without certification, growers cannot advertise their products as "organically grown". Many retail establishments that sell organic produce also require certification before they will purchase from you.

Most certification procedures require soil tests, farm plans, and extensive record keeping. If conventional fertilizers and pesticides have not been used on the farm site for a prescribed period (three years in Louisiana) organic certification can be obtained. If the grower has used conventional chemicals within the last three years, the grower may be designated as "transitional organic" and can advertise accordingly. After three years, the grower then can become fully certified. If your state does not have a certification program, several accredited private agencies can be used. A national certification program is on the horizon. National standards are being established by a National Organic Standards Board. Once national regulations are in place, growers throughout the country will have to meet those requirements.

Some growers might want to have a mixed operation to include both organic and non-organic components. If so, care must be taken to keep produce from the two different systems separate. A buffer zone is required between crops grown organically and conventionally. For example, in Louisiana, a thirty foot buffer is required. I recommend that a greater distance (50 feet or more) of separation be used if possible to avoid spray drift or other problems.

### **Marketing Organic Produce**

Any comprehensive farm management system must include a well planned marketing component. Depending on the location and size of operation, several marketing options are possible. These options include:

- Farmers markets
- Roadside stands
- U-pick operations
- Community supported agriculture (CSA)
- Wholesale and retail establishments
- Cooperatives
- Mail order

There has been tremendous growth in the number of farmers markets in the south in recent years. Farmers markets are a favorite direct marketing outlet for organic growers throughout the country. Direct marketing has several advantages for growers. The middle man is eliminated, and farmers are in direct contact with consumers. Premium prices can be obtained for fresh produce. Markets in urban areas are more likely to pay premium prices. It is not uncommon to receive \$1.50 per pound or more for organically grown beans, okra, and squash at some urban farmers markets in the south.

In addition to farmers markets, roadside stands can also be profitable. Often, farmers sell for slightly less at their farms than they would at the farmers markets. U-pick can also be profitable if your farm is located close to an urban area or community which will support it. With CSA's, customers pay in advance to receive a weekly supply of fresh produce throughout the growing season. Of course, you would need a good variety of vegetables to be able to offer this service.

Restaurants and other retail stores can also be a good outlet for organic produce. Often, chefs are willing to pay retail prices for good quality organic produce. Organic produce can also be sold at supermarkets, health food stores and retail stores. Often good sales skills are necessary in establishing relationships with purchasers at retail outlets.

Small farm cooperatives in Mississippi, Georgia, and other states currently pool their produce to satisfy distant markets. The potential for small-scale organic farmers to do the same needs to be explored and developed.

## **Where To Get Help**

There are many sources of good information concerning organic production. These include the following:

- Farmers and farm tours
- Land grant universities
- Southern SAWG and other sustainable agriculture meetings
- The internet
- USDA/state and local agencies
- Farmers markets
- Catalogs (such as those from Peaceful Valley)
- ATTRA (Appropriate Technology Transfer For Rural Areas-(1-800-346-9140))

I would encourage you to participate in farm tours where you can actually see successful farming operations. An excellent tour is sponsored in the spring by the Carolina Farm Stewardship Association in North Carolina. The tour includes several well established organic farms. The Southern Sustainable Agriculture Working Group (SAWG) also holds excellent conferences which are well attended by farmers. The meetings are usually held in January.

Historically, the main thrust of many of the land grant universities has been geared toward conventional agriculture. However, in recent years, most land grant universities have adopted sustainable agriculture programs. Many of the 1890 land grant universities have had sustainable agriculture programs for years. Research and outreach at the 1890 land grant universities often involve finding alternative crops and cropping systems for limited resource farmers. Several USDA agencies also provide information of importance to small and organic farmers. Overall, research and outreach work concerning organic production and marketing in the south is still limited.

ATTRA is another excellent source of information. Their staff will research and provide information on many topics, including organic production. The internet is also a good source of information regarding organic practices and organizations. There are a large number of publications available including books, magazines, and catalogs.

## **Conclusion**

Consumer demand for fresh organic produce is steadily increasing. This demand is also coupled with an increased concern for protecting the environment. This offers excellent opportunities for small and limited resource farmers. Although organic production can be challenging, it can be done, and done profitably. Success can be achieved by developing a manageable and holistic farm management plan. Markets should be explored and developed prior to planting. Information should be gathered regarding certification requirements, production practices, pest management and time and labor requirements. Start small. A few acres of organic produce can be very profitable if managed and marketed properly. Of course those few acres could also be very labor intensive. Make sure that the system you develop is sustainable for both the land and your family.

## **References**

- Brady, Nyle C. (1990). *The Nature and Properties of Soils*. New York, NY: Macmillan Publishing Company.
- Hizer, Cynthia. (1999). Organic farmers identify weeds and information as biggest barriers. *Southern Sustainable Farming*. Summer, 1999. Number 23, 3.

Louisiana Department of Agriculture and Forestry. (1998). Organic Certification Program. Baton Rouge, LA.

Organic Trade Association. (1998). Organic trade association questions timing of USDA "issue papers" on organic rules. Website: <http://www.ota.com>.

Peet, Mary. (1995). Sustainable Practices for Vegetable Production in the South. Website: <http://www.cals.ncsu.edu/sustainable/peet/index.html>

Wolff, Xenia. (1991). Rabbit manure- a good fertilizer. Domestic Rabbits 19(3), 9.