



Market Gardening: A Start Up Guide

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Market gardening involves the intense production of high-value crops from just a few acres and gives farmers the potential to increase their income. Market gardening is also of interest to people considering agriculture as an alternative lifestyle. This publication provides an overview of issues you need to be aware of as you consider starting market gardening and suggests helpful resources.

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Photo by Edwin Remsberg, USDA/CSREES.

Introduction

Market gardening is the commercial production of vegetables, fruits, flowers and other plants on a scale larger than a home garden, yet small enough that many of the principles of gardening are applicable. The goal, as with all farm enterprises, is to run the operation as a business and to make a profit. Market gardening is often oriented toward local markets, although production for shipping to more distant markets is also possible.

Business plan

Starting any business demands an investment of time and money. When you invest in your own business, be it market gardening or something else, a business plan will help ensure success. Developing your business plan helps you define your business, create a road map for operations, set goals, judge progress, make adjustments and satisfy a lender's request for a written explanation of how a loan will be used. A basic business plan includes:

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Related ATTRA Publications

Direct Marketing

Community-Supported Agriculture

Farmers' Markets: Marketing and Business Guide

Entertainment Farming and Agri-Tourism

Postharvest Handling of Fruits and Vegetables

Resource Guide to Organic and Sustainable Vegetable Production

Scheduling Vegetable Plantings for Continuous Harvest

Season Extension Techniques for Market Gardeners

Selling to Restaurants

Specialty Cut Flower Production and Marketing

What? Describe your product or service

Why? Describe the need for your product or service

Who? Describe your customer

When? Draw a timeline and list all the tasks you need to accomplish

Where? Describe the location of your business

How? Describe equipment, materials and supplies you will use in your market garden and how you will finance your market garden

The 280-page publication *Building a Sustainable Business: A Guide to Developing a Business Plan for Farms and Rural Businesses* is an excellent tool for business planning. Developed by the Minnesota Institute for Sustainable Agriculture in St. Paul, Minn., and co-published by the Sustainable Agriculture Network, the book helps people involved with commercial alternative and sustainable agriculture create profitable businesses. The book contains sample and blank worksheets that help you learn how to set goals, research processing alternatives, determine potential markets and evaluate financing options to create a business plan. See the **Further resources** section at the end of this publication for information on how to purchase this book.

The book *Sustainable Vegetable Production from Start-Up to Market*, published in 1999 by University of Vermont vegetable specialist Vernon Grubinger, has an outline for a basic five-part business plan. See the **Further resources** section for information on purchasing this book. The ATTRA publication *Agricultural Business Planning Templates and Resources* lists additional resources, primarily Web site links. You can access it at www.attra.ncat.org or call 1-800-346-9140 for a copy.

Choosing markets

You need to develop a focused marketing plan before planting any crops. A marketing plan helps, but does not guarantee, that most of what you plant will be sold and can

help eliminate wasted time, space, produce and money. Many market gardeners try to maximize their income by selling directly to consumers and bypassing wholesalers and other middlemen. Tailgate markets, farmers' markets, roadside and on-farm stands, pick-your-own operations and subscription marketing are common direct-marketing strategies. Sales to restaurants, institutions and schools and grocery stores are common wholesale marketing strategies. More in-depth details are provided in other ATTRA publications. Most market gardeners use several outlets. Diversity in marketing, as well as diversity in planting, is a cornerstone of stability.

If you choose a wholesale market, you will not be able to charge retail prices, but your labor cost for marketing may be reduced. The case study summarized below points out that price premiums at farmers' markets are not pure profit and less-costly wholesale marketing produced the highest profits.

A California case study

When comparing markets, be sure to compare the costs as well as the returns. If you sell wholesale, you will not get the price premiums expected at a farmers' market, but your labor cost for marketing will be lower.

A recent case study in California compared marketing costs of three farms selling by wholesale, community-supported agriculture and farmers' market methods. All three farms were well-established, diversified organic growers in northern California. One farm was small, with 20 acres and two full-time employees; one medium, with 70 acres and seven employees; and one larger, with 240 acres and 30 employees.

Labor was the highest marketing expense for all the farms. At the small farm, labor was 77 percent of all marketing costs, ranging from 67 percent for wholesale marketing methods to 82 percent for farmers' markets. Farmers' markets generated the lowest net revenue return for all three growers, while wholesale provided the highest net return for all. The study shows that price premiums at farmers' markets are not pure profit. (Hardesty, 2008).



Tailgate marketing. Photo courtesy of UM Food Services.

Tailgate marketing is one of the simplest forms of direct marketing. It involves parking a vehicle loaded with produce on a road or street with the hope that people will stop and purchase the produce. This is commonly used for selling in-season regional produce. This method takes very little investment and can be set up on short notice. Check with your city government first if you plan to set up inside a city. Some cities have regulations governing transient vendors.

Farmers' markets are an excellent place for a beginning market gardener to sell their crop. Farmers' markets do not demand that a vendor bring a consistent supply of high-quality produce every market day, although that is the goal. If you have less-than-perfect tomatoes, you may be able to sell them as canners at a reduced price. A farmers' market is a wonderful place to meet people and develop steady customers, which can lead to additional marketing channels. Disadvantages include the need to spend time away from the farm and the possibility of having produce left over at the end of the market. The ATTRA publication *Farmers' Markets* offers more information and resources about establishing, promoting and being successful at a farmers' market.

On-farm marketing strategies include roadside or farm stands and pick-your-own arrangements. On-farm marketing strategies are often successful because pick-your-own customers who come for the enjoyment of spending time in the field will often also



Farmers' Market. Photo by Jim Lukens.

purchase harvested crops. Innovative farmers have found that on-farm entertainment, like animals to pet or pumpkins to carve, can be profitable additions to on-farm markets. For these marketing methods, a mower may be your most important piece of equipment since you will need to keep the farm landscape neat to attract customers. See the ATTRA publication *Entertainment Farming and Agri-Tourism* for more information about on-farm selling.

Subscription marketing is a strategy that continues to gain interest and has benefited by the use of the Internet. Community supported agriculture (CSA) is one type of subscription marketing that involves providing subscribers with a weekly basket of seasonal produce, flowers or



Farm stand. Photo by Maggie Hoback, courtesy of www.fullcirclefarm.com.



Community Supported Agriculture (CSA) Bivalve MD. Photo by Edwin Remsburg, USDA/CSREES.

livestock products. The subscribers pay at the beginning of the season for part of or their entire share of the farmer's planned production. This eliminates the problem of covering up-front production costs at the beginning of the season and guarantees a market. The challenge for the grower is to have a consistent and continuous supply of popular vegetables throughout the growing season. It is helpful to survey the customers or members about their preferences before planting. Refer to ATTRA's publication *Community Supported Agriculture* for more information.

Restaurants that are interested in serving fresh, locally grown produce can be a good market. Chefs or restaurant owners are very busy people. Ask the chefs what day and hour is the best time to call to find out what produce they need, and then be consistent about calling at that time every week. You can also find out when to make deliveries. Chefs appreciate the opportunity to tell you what they can use or would like to try. ATTRA's *Selling to Restaurants* has more information about selling to chefs, as does Diane Green's *Selling Produce to Restaurants: A Marketing Guide for Small Growers*, which is listed in the **Further resources** section.

Grocery and natural food stores may be one of the most difficult markets to break into for small-scale growers, but as interest in locally grown food increases, some stores are looking for ways to make this easier. If you want to sell to retailers, remember that they need consistently available and high-quality products. Have a sample of your product with you when you visit the store and know your selling price for the product.

A number of farm-to-school programs across the country make schools and institutions another market for small-scale growers. Food service departments at schools across the country are joining forces with concerned parents, teachers, community activists and farmers to provide students with healthy meals while simultaneously supporting small farmers in their region. Check to see if a farm-to-school program exists in your community. *Healthy Farms, Healthy Kids: Evaluating the Barriers and Opportunities for Farm-to-School Programs*, a campaign started by the Community Food Security Coalition, examines seven farm-to-school projects from around the country and provides plenty of information to start a farm-to-school program. See the **Further resources** section for information on how to find the *Healthy Farms, Healthy Kids* publication. Also useful is the ATTRA publication *Bringing Local Food to Local Institutions: A Resource Guide for Farm-to-School and Farm-to-Institution Programs*.

Market gardeners can use the Internet to transact business or distribute information about farms and products. *How to Direct Market Farm Products on the Internet*, a U.S. Department of Agriculture Agricultural Marketing Service publication, discusses what to consider before using the Internet as a marketing tool and provides examples of farmers' experiences, as well as links to more information. *Using the Internet to Get Customers* is available from the Southern Sustainable Agriculture Working Group. See the **Further resources** section for information on how to find these publications.

Learning production and marketing techniques

Apprenticing with an experienced market gardener is one of the best ways to learn sound techniques. If that opportunity isn't available, you can attend workshops and conferences, visit with other market growers, read industry materials, watch videos and experiment. State fruit and vegetable grower organizations, sustainable agriculture and organic grower groups and regional and national organizations host conferences, trade shows, workshops and field days where a wealth of information is shared. A few of these organizations, workshops and educational materials are listed in the **Further resources** section.

The Cooperative Extension System is an excellent source of bulletins on production basics for most crops. The service may be able to provide on-site consultation if you have production questions. Check calendars in trade magazines and the ATTRA online calendar at www.attra.ncat.org/calendar for conference postings. See ATTRA's Web site, www.attra.ncat.org, for current publications on soil fertility management; season extension techniques; organic production of specific crops; postharvest handling; and insect pest, weed and disease management.

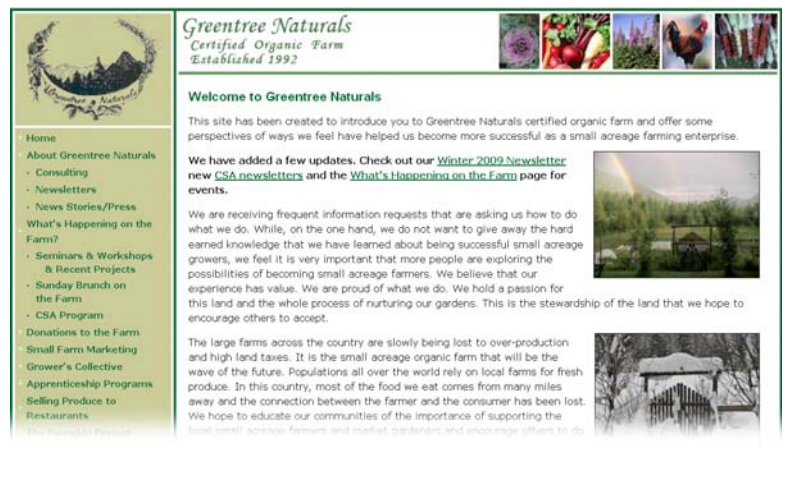
The books listed below are all highly recommended by those who have used them. Which one may be the most useful to you on a day-to-day basis depends on your scale of production. See the **Further resources** section for ordering information.

Market Farming Success was written by Lynn Byczynski, editor and publisher of the journal *Growing for Market*. The advice in this book comes from the personal experience of the author and her husband, Dan Nagengast, as market growers in eastern Kansas, as well as interviews with many other growers around the country. The book is intended to help those who are or want to be in the business of growing and selling food, flowers, herbs or plants create a profitable and efficient business. *Market Farming Success* identifies the key areas that usually hamper beginners and shows how to avoid

A green restaurant supplier

Greentree Naturals, a certified-organic farm in Sandpoint, Idaho, supplies a number of local restaurants. Diane Green and her husband, Thom Sadoski, created www.greentreenaturals.com to let people know about their products, workshops and projects. The Web site also gives Green and Sadoski a way to answer questions from other farmers.

"We receive frequent requests asking us how to do what we do," Green explains. "While on the one hand, we do not want to give away the hard-earned knowledge that we have learned about being successful small-acreage growers, we feel it is very important that more people are exploring the possibilities of becoming farmers. We believe that our experience has value. We are proud of what we do."



those obstacles. The book discusses how much money you will need to start growing, how much money you can expect to earn, the best crops and markets, essential tools, how to keep records to maximize profits and further resources.

Eliot Coleman's *The New Organic Grower: A Master's Manual of Tools and Techniques for the Home and Market Gardener* is written for market gardeners with about 5 acres of land in vegetable crop production. Coleman, an agriculture researcher, educator and farmer, describes techniques using walking tractors, wheel hoes, multi-row dibble sticks and soil block transplants. The sections on planning, crop rotations, green manures, soil fertility, direct seeding and transplants are inspiring. Coleman includes season extension techniques in this book and authored additional books on this topic, including *Four Season Harvest* and *The Winter Harvest Manual*.

Sustainable Vegetable Production from Start-up to Market was written by Vern Grubinger, a vegetable and berry specialist for University of Vermont Extension and director of the UVM Center for Sustainable Agriculture. The book is aimed at aspiring and beginning farmers. The book introduces the full range of processes for moderate-scale vegetable production using ecological practices that minimize the need for synthetic inputs and maximize conservation of resources. The book provides practical information on essential matters like selecting a farm site; planning and recordkeeping; marketing options; and systems for starting, planting, protecting and harvesting crops. The book's

final chapter profiles the experiences of 19 vegetable growers, focusing on individual crops, and provides each grower's budget for these crops.

How to Grow More Vegetables: And Fruits, Nuts, Berries, Grains, and Other Crops Than You Ever Thought Possible on Less Land Than You Can Imagine by John Jeavons details biointensive gardening techniques. The book emphasizes the use of hand tools, raised bed production, intensive spacing, companion planting and organic fertility management. The planning charts are aimed at helping families provide for their own food needs, but can be adapted for use by market gardeners as well.

Table 1. Estimated equipment needs for various sizes of vegetable farms.

Scale	Seed starting	Power source and tillage	Direct seeding	Equipment	Cultivation	Harvesting	Post-harvest handling	Delivery
1-3 acres	small hoop house, grow lights, planting trays	rototiller or walking tractor, custom work	Earthway seeder, Cyclone seeder	Back-pack, sprayer, irrigation, tools	Wheel hoe, hand hoes, digging forks, spades	Field knives, hand boxes, buckets, carts	Bulk tank, canopy, packing containers	Pickup with topper or van
4-6 acres	1,000 sq. ft., greenhouse, cold frames, field tunnels, planting trays	35-40 hp tractor, with creeper gear, power steering, high clearance	Planet Jr. plate seeder	1-row transplanter, irrigation, more tools	Cultivating tractor (IH Super A or IH 140)	Potato digger, bed lifter, wagon, more boxes, buckets	Roller track conveyor, hand carts, walk-in cooler	Cargo van
7-10 acres	Additional cold frames, planting trays	40-60 hp tractor, chisel plow, spader	Stanhay precision belt seeder with belts	2-row transplanter, sprayer	Tool bar implements: beet knives, basket weeder	More field crates	Barrel washer, spinner, pallet jack	1 ton truck with refrigeration
20 + acres	2,000 sq. ft. greenhouse	80 hp tractor with loader bucket and forks, compost spreader	Nibex or Monosem seeder	Irrigation, bed shaper, mulch layer	Sweeps (Besserides), Buddingh finger weeders, flame weeder, potato hiller, 2nd cultivating tractor	Asa lift, harvest wagon	Wash line, larger cooler, packing shed and loading dock	Refrigerated truck

Adapted from a table distributed at Michael Fields Institute Advanced Organic Vegetable Production Workshop, 2/2001, Jefferson City, MO.

Selecting equipment

Table 1 (on the previous page) is adapted from a chart distributed to participants at an Advanced Organic Vegetable Production Workshop sponsored by the Michael Fields Agricultural Institute. The chart provides an estimate of equipment needs for market gardens of various sizes. The publication *Grower to grower: Creating a livelihood on a fresh market vegetable farm* also provides information on equipment options for different sizes of farms (Hendrickson, 2005). Please keep in mind that your own needs will differ. You may be able to adapt machinery that you already have or you may be able to buy used machinery. If you are just starting out with a small amount of land, it may be more economical to purchase transplants than to build a greenhouse and grow your own. It may make sense to have primary tillage done by someone with a large tractor rather than purchase a tractor for this purpose.

Depending on your location and choice of crops, irrigation is a must for consistent and high-quality production, even on a scale of less than an acre. Drip or trickle irrigation is becoming the method of choice for many fruit, vegetable and flower growers. Grubinger's book provides a summary of overhead sprinkle and drip or trickle irrigation systems. Byczynski's book also

Tools of the trade

It is possible to operate a market garden of less than an acre with little more than a shovel, rake, hoe and garden hose. However, most serious market gardeners acquire labor-saving tools such as walk-behind rototillers, mowers, small greenhouses and small refrigerator units. Some growers, especially those farming more than an acre, use small tractors with a limited array of implements.

Experienced market gardeners advise beginning growers to first purchase equipment that will support the back end of their operations. A small walk-in cooler to maintain high product quality or an irrigation system to assure consistent yields and quality might be more important early purchases than a tractor (Hendrickson, 2005).

explains how to set up a drip system. Your local extension office can supply detailed bulletins. An irrigation specialist who will work with you to design a system to meet your needs is also helpful.

Planning and recordkeeping

Recordkeeping may be one of the most difficult tasks for market gardeners, but good records are critical if you want to know which crops are profitable. Market gardeners need records to fine-tune planting, cultivation, pest management and harvest schedules. Records help answer questions about labor, equipment and capital needs, and are valuable when developing business plans.

Alex Hitt of Peregrine Farm in Graham, N.C., keeps extensive records. The records include planned and actual data for what crops he plants, where crops are planted in the field and when Hitt plants the crops. He keeps a harvest record and a crop rotation record. Hitt tallies the produce he brings to farmers' markets, charts selling prices and notes what doesn't sell. In addition, he keeps track of farm expenses and income

Table 2. Peregrine Farm 10-year rotation

	Spring	Summer	Fall
Year 1	Tomatoes & leeks (half no-till)		Oats with crimson clover
Year 2	Cool season flowers	Sudangrass with soybeans	Oats with crimson clover
Year 3	Spring lettuce	Summer flowers	Rye with hairy vetch
Year 4	No-till squash		Fall-planted flowers
Year 5	Over-wintered flowers	Sudangrass with soybeans	Rye with hairy vetch
Year 6	Peppers (half no-till)		Wheat with crimson clover
Year 7	Summer flowers		Oats with crimson clover
Year 8	Mixed spring vegetables	Cowpeas	Fall-planted flowers
Year 9	Over-wintered flowers	Sudangrass with soybeans	Oats with crimson clover
Year 10	Summer flowers		Wheat with hairy vetch

and records daily activities, including time spent on each farm task. A sample planting record is included on a CD titled *Organic Vegetable Production and Marketing in the South with Alex Hitt of Peregrine Farm*, produced by the Southern Sustainable Agriculture Working Group. See the **Further resources** section for ordering information.

Labor

The size of your operation and the crops, markets, and equipment you choose will determine the amount of labor needed. Two of the growers profiled in this publication have decided that they do not want to hire outside help and planned their production and marketing accordingly.

Many market gardeners, however, will need help. In an advanced organic vegetable production workshop offered by the Michael Fields Agricultural Institute, Richard DeWilde of Harmony Valley Farm explains how to manage labor so crews will be happy and productive. DeWilde's operation is one described in the grower profiles at the end of this publication.

DeWilde emphasizes that it is important to be clear about your employee expectations and operating procedures. He does this by meeting regularly with his employees and using an employee manual. An employee manual details farm standards and expectations. For example, it might tell people what to do with trash and include a Friday night checklist to ensure that supplies and equipment are properly stored at the end of the week. Employees do not work on Saturday or Sunday.

On Monday morning DeWilde meets with his crew in the packing shed. He makes the day and week manageable by writing down all that needs to be accomplished on two dry erase boards. One board provides information about tasks planned for the entire week. On the other board, De Wilde posts tasks for the day with assignments for who will do each task. Past records show how long it should take to do each task. This information is critical for determining assignments.

Separate task sheets list supplies needed for each task. For example, if floating row covers need to be laid, the task sheet will include shovels, markers and marking pens.

Harmony Valley Farm commits to providing full-time jobs. A list of rainy day tasks and extra chores is on hand to ensure that employees always have something useful to do.

DeWilde emphasizes that it is important for employers to be knowledgeable about government regulations, including field sanitation, drinking water, worker protection and safety regulations. A resource for learning about government regulations is Neil D. Hamilton's *The Legal Guide for Direct Farm Marketing*. The book includes a chapter on labor and employment. See the **Further resources** section for ordering information.

Food safety

Changing lifestyles and a growing interest among consumers in fresh, nutritious food has created an increase in produce consumption. Along with this increase, there has been an increase in the number of food-borne illness outbreaks associated with fresh fruits and vegetables. An occurrence can cause irreparable damage to a business, both legally and from the negative effects on its reputation (Cuellar, 2001).

Currently, there are no mandatory rules for the safe growing and packing of fruits and vegetables, except for those regulating water and pesticide residues under the surveillance of the Environmental Protection Agency. In 1998, however, the EPA published the *Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables*, comprising a set of Good Agricultural Practices. Although the practices are optional, many growers incorporate them into their operations. Extension offices in a number of states provide bulletins outlining safe growing and packing practices. Cornell University compiled a number of educational materials in English and other languages. The National GAPs Education Materials can be found at the Web site www.gaps.cornell.edu/educationalmaterials.html. Kansas State University published *Food*A*Syst*, a

Past records show how long it should take to do each task. This information is critical for determining assignments.

handbook to help address food safety and environmental concerns. You can find the third chapter, *Growing Vegetables, Fruits and Produce*, online at www.oznet.ksu.edu/library/fntr2/foodasyst/foodasys.pdf. The University of California's *Good Agricultural Practices: A Self Audit for Growers and Handlers* is online at <http://ucce.ucdavis.edu/files/filelibrary/5453/4362.pdf>.

Agricultural insurance

According to the Washington State Department of Agriculture, insurance is one of the most overlooked pieces of running a farm business. In today's litigious culture, it is wise to have adequate coverage for all your farm activities. Insurance coverage is available for nearly any activity on your farm, but the cost of coverage may not be economically viable. Shop around for the insurance that best suits your needs and balance the coverage into your farm business plan.

If your farming operation is very small, you may be able to simply add coverage to your homeowner's policy. Larger operations may require a farm policy that includes property coverage as well as liability coverage for physical injury and ingested food products. A farm policy can also cover a roadside stand whether or not it is on your property and may be extended by endorsement to cover a farmers' market stand. Farms that process foods or sell primarily flowers or other non-edibles may require a commercial general liability policy (WSDA, 2006).

Visit the Washington State Department of Agriculture Web site at http://agr.wa.gov/Marketing/SmallFarm/Insurance_Risk_Management.htm#Insurance for more information.

The Pennsylvania State University bulletin *Agricultural Business Insurance* discusses the different types of insurance you should consider as part of your risk management strategy. Agricultural business insurances include general liability, product liability, business property, workers compensation, vehicle and crop insurance and more. The bulletin is available online at <http://agalternatives.aers.psu.edu/>

[Publications/AgBusinessInsurPM7.pdf](#) or see the **Further resources** section for information on obtaining a print copy.

A very readable discussion on insurance is in Lynn Byczynski's *Market Farming Success*. She advises that your best bet in finding what you need is to sit down with an independent agent and explain your business thoroughly. Another excellent resource on this issue is Neil Hamilton's *The Legal Guide for Direct Farm Marketing*. Both books are listed in the **Further resources** section.

Organic market gardening

Some market gardeners grow their crops organically. The motivations vary. Some market gardeners think it is the socially and environmentally responsible thing to do. Some are motivated by economic benefits. Organically grown produce typically commands higher prices in the marketplace. Growers who sell through CSAs or use other forms of relationship marketing sometimes find that their customers expect and demand organic produce. There is a long history that equates organic farming with fresh, whole foods.

The production and marketing of organic foods is subject to federal regulation. Organic production is defined in legal terms and use of the term organic is controlled. You must be certified by the USDA to market your products as organic unless your annual sales of organic products are less than \$5,000. ATTRA has numerous publications that address organic matters. See ATTRA's *Guide to Organic Publications* for more information.

Grower profiles

To give you additional ideas and inspiration, several market gardeners from different parts of the United States agreed to share information about their operations. Alex and Betsy Hitt are featured in the Sustainable Agriculture Network publication *Building Soils for Better Crops, 2nd Ed.* and *The New American Farmer*. Richard DeWilde and Linda Halley are also featured in *The New American Farmer*.

In today's litigious culture, it is wise to have adequate coverage for all your farm activities.

It is interesting to note that although each operation is unique, all have a number of things in common. These include:

- Diversity of crops
- Diversity of marketing strategies
- Cover crops grown for soil building
- Detailed recordkeeping systems
- Willingness to share knowledge and ideas with others

Peregrine Farm, Alex and Betsy Hitt, Graham, N.C.

Alex and Betsy Hitt began market gardening on their 26-acre farm near Chapel Hill, N.C. almost 20 years ago. They grow organic vegetables and specialty cut flowers on 5 acres and have a quarter of an acre in highbush blueberries. The Hitts sell primarily to local farmers' markets, but have also sold to restaurants and stores.

"Our original goals," Alex Hitt said, "were to make a living on this piece of ground while taking the best care of it that we could." For the Hitts, making a living doing work they enjoy and finding a scale that allows them to do most of it themselves are key aspects of sustainability. Their crop mix and markets have changed over the years, as they continue to evaluate the success of each operation and its place within the whole system.

When the horse stable down the road went out of business, it forced the Hitts to re-evaluate their farm fertility program. Without this source of free manure, the Hitts created an elaborate rotation that includes both winter and summer cover crops to supply organic matter and nitrogen, prevent erosion and crowd out weeds.

"We designed a rotation so that cover crops play a clear role," Hitt said. "Many times, where other growers might say, 'I need to grow a cash crop,' we'll grow a cover crop anyway."

The farm stays profitable thanks to a marketing plan that takes full advantage of

their location near Chapel Hill, home to the University of North Carolina. More unusual produce like leafy greens, leeks and rapini find a home in restaurants, and sell well alongside their most profitable lettuce, tomato, pepper and flower crops at area farmers' markets.

A year in the Hitts' rotation may include a cool-season cash crop and a summer cover crop like soybeans and sudangrass followed by a fall cash crop and then a winter cover.

"We have made a conscious decision in our rotation design to always have cover crops," Alex Hitt said. "We have to. It's the primary source for all of our fertility. If we can, we'll have two covers on the same piece of ground in the same year."

While other farmers grow beans, corn or another profitable annual vegetable in the summer after a spring crop, the Hitts don't hesitate to take the land out of production. Instead, Alex Hitt said, their commitment to building organic matter in the soil yields important payoffs. The farm remains essentially free of soilborne diseases, which they attribute to "so much competition and diversity" in the soil. And, despite farming on a 5-percent slope, they see little or no erosion.

The Hitt's 10-year rotation plan is on page 7. You can learn more with the *CD Organic Vegetable Production and Marketing in the South with Alex Hitt of Peregrine Farm*, available from the Southern Sustainable Agriculture Working Group. See the **Further resources** section for ordering information.

Beech Grove Farm, Ann and Eric Nordell, Trout Run, Pa.

Neither Ann nor Eric grew up on a farm, but both gained experiences on other farms during and after college before they bought Beech Grove Farm, their small farm near Trout Run, Pa. In this area with steep, rugged terrain and a relatively short growing season, they had three goals:

- Remain debt-free

The Hitts created an elaborate rotation that includes both winter and summer cover crops to supply organic matter and nitrogen, prevent erosion and crowd out weeds.

- Keep the farm a two-person operation
- Depend on the internal resources of the farm as much as possible.

Of the 90 acres on the farm, 30 are wooded. Six are cultivated for the market garden. The remainder, excluding the homestead and house garden, is left in pasture. They use draft horses and low-cost implements for cultivation and tillage and have the 6-acre plot divided into half-acre strips of 20 yards by 120 yards, which the Nordells find to be a good size for working with horses and by hand.

Because the farm is distant from major markets, the Nordells first chose crops that can be sold wholesale, like flowers and medicinal herbs for drying and root vegetables. As the couple became known in the area, they were approached by restaurant buyers to supply cool-season and specialty items. By 1998, they were selling to 10 fine restaurants in the area and at the Williamsport farmers' market. Income from wholesale markets is now only 10 percent of their total income.

For the Nordells, as for all market gardeners, weeds presented a major challenge. They adapted a traditional field crop rotation system of corn, oats, wheat, grass and legume sod used in the Midwest and Pennsylvania to a rotation that includes vegetables, cover crops and a summer fallow. The half-acre strips are managed so that 3 acres are in crops and 3 acres are in fallow or cover crops. Over the years, the Nordells reduced the fallow period to six weeks or less as the weed population has diminished.

The Nordells offer a video of a slide presentation made at the 1996 Pennsylvania Association for Sustainable Agriculture Conference that explains their controlled rotational cover cropping in the bio-extensive market garden system. The Nordells also collected copies of the articles they've written about rotation, cultivation, growing onions, using pigs to turn compost, designing a barn for animals and for compost production and more. The Nordells also have a new weed

management publication, *Weed the Soil Not the Crop*, available for \$10 plus \$3 shipping and handling. Order these directly from them at 3410 Rt. 184, Trout Run, PA 17771. You can read more at www.newfarm.org/features/1204/nordell/index.shtml.

Harmony Valley Farm, Richard DeWilde and Linda Halley, Viroqua, Wis.

Richard DeWilde has farmed for most of his life. He moved to Harmony Valley Farm in 1984 after his farm in Minnesota was paved over by urban sprawl. Linda joined him there in 1990. The DeWildes grow vegetables, fruits and herbs on 70 acres and have pasture, hay and a few Angus steers on 220 acres. They sell produce wholesale at the Dane County Farmers' Market in Madison, and through a 500-member CSA. DeWilde handles this scale of operation by hiring labor, becoming highly mechanized and through careful management.

DeWilde notes that his wholesale markets have been the most profitable, and CSA the least. The time needed for management makes the difference. The wholesale market is the least diverse. The moneymaking crops are turnips and daikon radishes. A CSA market demands a tremendous diversity of crops and a complexity of management needed for market.

Soil building is done with cover crops, compost and additional micronutrients as needed. Favored cover crops are sweet clover, vetch, rye, oats and peas. Seeds for these are available locally and are reasonably priced. The residue is chopped into the top 1 or 2 inches of soil with a rotovator.

DeWilde and Halley have experimented with many ingredients for making compost and have been pleased with dairy manure and cornstalks, which are readily available and have a good carbon-to-nitrogen ratio. The compost is made in windrows, turned with an old wildcat turner pulled by an International tractor equipped with a hydrostatic drive so that it can move slowly. Finished compost is spread on fields at a rate of 10 to 15 tons per acre.

A CSA market demands a tremendous diversity of crops.

One strategy for insect pest management on Harmony Valley Farm is to provide permanent habitat for natural predators and parasites. Refuge strips in the fields are made up of plants that attract and harbor beneficial insects and birds. A number of these plants can also be cut and sold as flowers or woody ornamentals.

Richard says his goal is “to develop an organic farming curriculum, complete with slides. My time and focus could be put into a Harmony Valley Farm operating manual. It would deal with communication, employee training and recordkeeping. Who knows? Maybe I would retire and do training seminars.”

Halley adds, “We really do have clear family goals: to continue to learn new ways to do things on the farm and communicate those things.”

Thompson Farms, Larry Thompson, Boring, Ore.

Oregon farmer Larry Thompson has a long history of using innovative, sustainable practices to grow his array of berries and vegetables. He also works closely with the fast-growing community of Damascus to develop policies that help farmers hold onto their operations as urban boundaries grow around them. Thompson Farms has 140 acres in strawberries, raspberries, cauliflower, broccoli and other crops. Produce is sold at farmers’ markets and farm stands; one in a new location just outside a hospital where patients, nurses and staff benefit from his healthy fruits and vegetables.

Thompson’s parents, Victor and Betty, began raising raspberries, strawberries and broccoli in the rolling hills southeast of Portland in 1947. Thompson’s parents sold their produce to local processors, where agents for canneries always set the purchase price. In 1983, Thompson took over operating the farm and sought more profitable places to sell his produce.

After Thompson started working on the 140-acre farm, he quickly learned that selling to canneries failed to cover production expenses. The family opened their farm to the local suburban community. Thompson started offering pick-your-own berries and selling the fruit at a stand he built at the farm. Strawberry sales were so strong that Thompson decided to plant new varieties to extend the season.

The Thompsons soon attracted a loyal following, primarily from Portland, which is 20 miles away. The family started selling at area farmers’ markets, too. The family and 23 employees raise 43 crops and sell them at six markets and two farm stands and through on-farm activities. For Thompson, profitability means that each year he earns more money than he spends. “I reach that level consistently,” he said.

Thompson makes sure he earns a profit. He calculates the cost of planting, raising and harvesting each crop, and then charges his customers double that. His most profitable crop is strawberries. Retaining different marketing channels gives Thompson a chance to cross-promote.

Thompson is a dedicated advocate of crop rotations and planting a succession of flowering species to control pests without pesticides. He relies on cover crops to control weeds and provide habitat for beneficial insects. Thompson allows native grasses and dandelions to grow between his berry rows. The dandelion blossoms attract bees, which are efficient berry pollinators. The mixed vegetation provides an alluring habitat that, along with flowering fruit and vegetable plants, draws insects that prey on pests. Late in the year, Thompson doesn’t mow broccoli stubble. Instead, he lets side shoots bloom, creating a long-term nectar source for bees into early winter. Thompson Farms sits on erodible soils and runoff used to be a major problem. But thanks to the cover crops and other soil cover, now virtually no soil leaves the farm.

Thompson makes sure he earns a profit. He calculates the cost of planting, raising and harvesting each crop, and then charges his customers double that.

Thompson won the Sustainable Agriculture Research and Education's 2008 Patrick Madden Award for Sustainable Agriculture. Many call him a pro at relationship marketing, or forming bonds with customers who see a value in local produce raised with few chemicals. Thompson regularly offers tours to students, other farmers, researchers and visiting international delegations to show

off his holistic pest management strategies and bounty of colorful crops. As a result, the farm attracts people by the busload for educational seasonal events.

"Instead of seeing my farm as a secluded hideaway, I am getting the community involved, bringing them to see our principles in action," Thompson said (USDA CSREES, 2008).

References

Cuellar, Sandra. 2001. Assuring produce safety: A key industry marketing strategy. *Small Fruit News of Central New York*. Cornell Cooperative Extension of Oswego County. November. p. 3-5.

Hardesty, Shermain. 2008. Case study compares marketing costs of farms selling wholesale, CSA, and farmers market. *Small Farm News*. p. 4.

Hendrickson, John. 2005. *Grower to Grower: Creating a Livelihood on a Fresh Market Vegetable Farm*. CIAS, University of Wisconsin-Madison. p. 7.

U.S. Department of Agriculture Cooperative State Research, Education and Extension Service Web site. 2008. Larry Thompson - Boring, Oregon. Accessed April 2009.
www.csrees.usda.gov/nea/ag_systems/in_focus/sustain_ag_if_profiles_thompson.html

Washington State Department of Agriculture Web site. 2006. Insurance and Risk Management. Accessed April 2009. http://agr.wa.gov/Marketing/SmallFarm/Insurance_Risk_Management.aspx#Insurance

Further resources

Books

Corum, Vance et al. 2001. *The New Farmer's Market: Farm-Fresh Ideas for Producers, Managers and Communities*. New World Publishing. 272 p. Available for \$24.95 plus \$3.95 shipping and handling from:
SAN Publications
Hills Building, Room 10
University of Vermont
Burlington, VT 05405-0082
(802) 656-0484
sanpubs@uvm.edu

Covers the latest tips and trends from leading sellers, managers and market planners all over the country, including the hottest products to grow and sell as well as how best to display and merchandise your products, set prices and run a friendly, profitable business. The second half of the book, written for market managers and city planners, offers ideas about how to use farmers' markets as a springboard to foster community support for sustainable and locally grown foods. List of additional resources.

Hamilton, Neil D. 1999. *The Legal Guide to Direct Farm Marketing*. Drake University. 235 p. To request a copy, contact:
Karla Westberg
(515) 271-2947

Karla.westberg@drake.edu

Covers questions about liability, insurance coverage, labor laws, advertising claims, zoning, pesticide drift, inspections and food safety issues.

Green, Diane. 2005. *Selling Produce to Restaurants: A Marketing Guide for Small Growers*. 95 p.
greentree@coldreams.com

www.greentreenaturals.com/selling_book.htm

Available for \$12.95 plus \$3.95

shipping from:

Greentree Naturals
2003 Rapid Lightning Road
Sandpoint, ID 83864
(208) 263-8957

The author is a certified organic grower in Idaho who markets through restaurants, CSA subscriptions and a farmers' market.

DiGiacomo, Gigi, Robert King, and Dale Nordquist. 2003. *Building a Sustainable Business: A Guide to Developing a Business Plan for Farms and Rural Businesses*. Minnesota Institute for Sustainable Agriculture. 280 p. Printed copies are available for \$14 plus \$3.95 shipping and handling from:

SAN Publications
Hills Building, Room 10
University of Vermont
Burlington, VT 05405-0082
(802) 656-0484

sanpubs@uvm.edu

You can also download the publication from www.sare.org/publications/business/business.pdf.

Byczynski, Lynn. 2006. *Market Farming Success*. Fairplain Publications, Lawrence, KS. 138 p.

Available from:

Growing for Market
PO Box 3747
Lawrence, KS 66046
1-800-307-8949

www.growingformarket.com

Coleman, Eliot. 1995. *The New Organic Growers: A Master's Manual of Tools and Techniques for the Home and Market Gardener*, 2nd ed. Chelsea Green Publishing Company. 340 p.

Coleman, Eliot. 1998. *The Winter Harvest Manual*. 63 p. Available for \$15, including postage, from:
Four Seasons Farm
609 Weir Cove Road
Harborside, ME 04642

A supplement to The New Organic Grower, this manual records recent experience in planning, carrying out and fine tuning a fresh vegetable production and marketing operation on the back side of the calendar.

Grubinger, Vernon. 1999. *Sustainable Vegetable Production from Start-Up to Market*. NRAES-104. 270 p. Available for \$38 plus \$6 for shipping and handling from:
NRAES, Cooperative Extension

152 Riley-Robb Hall
Ithaca, NY 14853-5701
(607) 255-7654
(607) 254-8770 FAX
nraes@cornell.edu

www.nraes.org/publications/nraes104.html

Jeavons, John. 2002. *How to Grow More Vegetables*, 6th ed. Ten Speed Press. 276 p.

Magdoff, Fred and H. van Es. 2000. *Building Soils for Better Crops* 2nd ed. Available for \$19.95 plus \$3.95 shipping and handling from:

SAN Publications
PO Box 753
Waldorf, MD 20604-0753
(301) 374-9696
sanpubs@sare.org

www.sare.org

You can also download a free copy at www.sare.org/publications/bsbc/bsbc.pdf.

Valerie Berton, editor. 2005. *The New American Farmer*. 200 p. Available for \$16.95 plus \$5.95 shipping and handling from:

Sustainable Agriculture Network
10300 Baltimore Ave., Bldg. 046
Beltsville, MD 20705-2350
(301) 504-5236
(301) 504-5207 FAX

san_assoc@sare.org

You can also download a free copy at www.nrcs.usda.gov/NEWS/thisweek/2005/062205/susag18.html.

Bulletins or reports

Azuma, Andrea Misako and Andrew Fisher. 2001. *Healthy Farms, Healthy Kids*. CFS Coalition. 64 p. Available for \$12 plus \$4 shipping and handling from:
Community Food Security Coalition

PO Box 209
Venice, CA 90294
(310) 822-5410
asfisher@aol.com
www.foodsecurity.org

This report documents the barriers and opportunities for school food services to purchase food directly from local farmers. Case studies and policy recommendations are included.

Klotz, Jennifer-Claire. 2002. How to Direct Market Farm Products on the Internet. USDA Agricultural Marketing Service. 50 p. For a copy, contact: USDA Agricultural Marketing Service Transportation and Marketing Programs Marketing Services Division 1400 Independence Ave., S.W. Room 2646-South Washington, DC 20250 (202) 690-0031 www.ams.usda.gov

Newenhouse, Astrid et al. 1998–2001. Work Efficiency Tip Sheets. University of Wisconsin. Available from: Healthy Farmers, Healthy Profits Project Biological Systems Engineering, UW-Madison 460 Henry Mall Madison, WI 53706 <http://bse.wisc.edu/hfhp>
A series of tip sheets on labor efficiency for vegetable and berry growers.

Periodicals

Growing for Market

Subscriptions are available from:
PO Box 3747
Lawrence, KS 66046
1-800-307-8949
www.growingformarket.com

Growing for Market is published 10 times per year. It covers growing and direct marketing vegetables, fruits, herbs, cut flowers and plants, farmers markets, Community Supported Agriculture, the local food movement, organic growing, cut flowers, and much more. Print subscriptions are \$33 per year, or 2 years for \$60. It is also available electronically.

Small Farm News

Now available online or from:
Small Farm Center
University of California
One Shields Ave.
Davis, CA 95616-8699
(530) 752-8136
sfcenter@ucdavis.edu
www.sfc.ucdavis.edu

The 12-page Small Farm News is published four times per year. It features farmer and farm advisor profiles, research articles, farm-related print and web site resources, news items, and a calendar of state, national, and international events. The newsletter is free. However, contributions to help defray expenses are encouraged. Many past newsletters contained articles on marketing produce and crafts.

Other SFC publications of possible interest include Small Farm Handbook, a guide for people interested in operating a successful small farm; Production Practices and Sample Costs, Chili Pepper, Eggplant, Lettuce, and Okra. These and more are available for free online or \$4 each for printed version.

The Packer

Target audience is primarily large-scale produce growers and wholesalers.
Subscription rates are \$79 per year. The Packer is available online in both English and Spanish from: Vance Publishing Corp.
PO Box 1415
400 Knightsbridge Pkwy.
Lincolnshire, IL 60069
(847) 634-2600
www.thepacker.com

American Vegetable Grower

Available from:
Meister Media
37733 Euclid Ave.
Willoughby, OH 44094-5992
1-800-572-7740
avg.circ@meistermedia.com
www.americanvegetablegrower.com

Monthly publication featuring production and marketing information. Annual Sourcebook provides information on state vegetable grower organizations. Also information about equipment and supplies. Print

or online. Free to qualified growers and consultants. Meister also publishes *American Fruit Grower*.

Agencies, associations and organizations

North American Direct Marketing Association
62 White Loaf Road
Southampton, MA 01073
1-888-884-9270
info@fafdma.com
www.familyfarms.com

NAFDMA is a 501(c)6 trade association whose members include farmers, farmers' market managers, extension agents, industry suppliers, government officials and others involved with agritourism, on-farm retail, farmers' markets, pick-your-own, consumer-supported agriculture and direct delivery. The organization hosts an annual conference and trade show.

Association of Specialty Cut Flower Growers
MPO Box 268
17 ½ College St.
Oberlin, OH 44074
(440) 774-2887
ascfg@oberlin.net
www.ascfg.org

*Formed in 1988, the essential goal of ASCFG is to help growers of specialty cut flowers produce a better crop. The ASCFG hosts an annual conference and trade show, regional workshops, coordinates new variety trials and publishes the *Cut Flower Quarterly*. Its members share information based on their field and marketing experience through a *Bulletin Board*.*

Southern Sustainable Agriculture Working Group (Southern SAWG)
PO Box 1552
Fayetteville, AR 72702
(479) 251-8310
info@ssawg.org
www.ssawg.org

*This association of organizations and individuals from 13 Southern states holds the *Practical Tools and Solutions for Sustaining Family Farms Conference*, an annual January event that provides a forum to learn about sustainable farming techniques and marketing strategies, community food systems and federal farm policies and programs that promote sustainable agriculture. This event also provides producers, researchers, information providers, concerned consumers and community organizers the opportunity to build networks,*

strengthen alliances and celebrate the achievements of Southern sustainable farmers.

*Southern SAWG's video series titled *Natural Farming Systems in the South* provides an easy, economical way to take a virtual tour of some highly successful farming operations in the region. Organic vegetables and cut flowers are among the enterprises covered.*

Center for Integrated Agricultural Systems
1535 Observatory Drive
UW-Madison
Madison, WI 53706
Contact:
John Hendrickson
(608) 265-3704
jhendric@facstaff.wisc.edu
www.cias.wisc.edu/marketgrower.php

Wisconsin School for Beginning Market Growers is an intensive three-day course held in January or February. The course demonstrates what it takes to set up and run a successful market garden or small farm, including capital, management, labor and other resources. Topics include soil fertility, crop production, plant health and pest management, cover crops, equipment needs and labor considerations at different scales of operation and marketing and economics. The course is taught primarily by three growers whose farms vary in scale, cropping mix, marketing strategies and growing methods. It includes presentations and hands-on labs by University of Wisconsin faculty and other specialists.

Michael Fields Institute
W2493 County Rd ES
PO Box 990
East Troy, WI 53120
(262) 642-3303
<http://michaelfieldsagainst.org>

Michael Fields Agricultural Institute offers courses of benefit to people who want to become farmers and those who have been farming for many years. They are also creating opportunities for consumers to enter into farm life through cooking, gardening and farm tours. These include interactive workshops and on-site field trainings.

Videos and CDs

From Vern Grubinger,
University of Vermont Extension
Farmers and Their Diversified Horticultural Marketing Strategies
Farmers and Their Innovative Cover Cropping Techniques
Vegetable Farmers and Their Weed-Control Machines

Farmers and Their Ecological Sweet Corn
Production Practices

High Tunnels (DVD only)

Farmers and Their Sustainable Tillage Practices
(DVD only)

Available as DVDs at \$15 each or VHS at \$5 each,
including shipping, from:

Center for Sustainable Agriculture

University of Vermont

106 High Point Center, Suite 300

Colchester, VT 05446

(802) 656-5459

sustainable.agriculture@uvm.edu

www.uvm.edu/vtvegandberry/Videos/videoorderform.html

*These videos were produced by Vern Grubinger,
University of Vermont Extension, and feature vegetable
growers in the Northeast.*

From Southern Sustainable Agriculture
Working Group

Order SAWG videos from:

Southern SAWG

PO Box 1552

Fayetteville, AR 72702

(479) 251-8310

info@ssawg.org

www.ssawg.org

Hitt, Alex. 2007. Organic Vegetable Production &
Marketing in the South with Alex Hitt of Peregrine
Farm.

*This Windows-only CD-ROM resource grew out of
presentations made by Hitt at Southern SAWG
conferences. The presentations follow Alex and Betsy
Hitt's system from the start to marketing, including soil
building, planning, crop rotation, pest management,
recordkeeping and more. Available for \$15 plus
\$7.50 shipping.*

Organic Horticulture & Marketing:

Maple Springs Garden

Organic Horticulture & Marketing: Au Naturel Farm

Cut Flower Production and Marketing: Dripping
Springs Garden

*The Southern Sustainable Agriculture Working Group's
video series titled Natural Farming Systems in the South
presents virtual tours of many types of farming operations
in the region, including the three listed above. Available
as DVDs or VHS for \$15 each plus \$7.50 shipping.*

Nordell, Anne and Eric. 1996.

Available for \$10 by writing to:

Anne and Eric Nordell

Beech Grove Farm

3410 Route 184

Trout Run, PA 17771

*A 52-minute video of a slide presentation by the
Nordells at the PASA conference.*

Kaplan, Dan. No date. Crop Planning and Record
Keeping with MS Excel.

Brookfield Farm

PO Box 227

Amherst, MA 01002

(413) 253-7991

info@brookfieldfarm.org

www.brookfieldfarm.org

*Disks with the spreadsheet templates can be obtained
by sending a check for \$25 made out to Brookfield
Farm with your name, address, phone number and
what version of Excel you will be using. The file will
be sent as an e-mail attachment or can be sent on disk
via regular mail.*

Rosenzweig, Marcie. No date. Market Farm Forms:
Spreadsheet Templates for Planning and Organization
Information on Diversified Farms. Available from:

Back40Books

Mail Order Department

Nature's Pace Sanctuary

Hartshorn, MO 65479

1-866-596-9982

www.back40books.com

*A 95-page book and a disk containing Excel spread-
sheet templates available in PC or Macintosh formats.*

Internet

Market Farming list serve

Market-farming@lists.ibiblio.org

<http://lists.ibiblio.org/mailman/listinfo/market-farming>

*A discussion group that covers tools and equipment,
markets, production practices, labor, and more.*

Business plans

Developing a Business Plan. 2004. Agriculture Alterna-
tives. Penn State College of Agricultural Sciences Agri-
cultural Research and Cooperative Extension.

[http://agalternatives.aers.psu.edu/Publications/new
DevelopBusPlanPM7.pdf](http://agalternatives.aers.psu.edu/Publications/newDevelopBusPlanPM7.pdf)

Building a Plan for Your Farm: Important First Steps.
2003. Jones, Rodney. Presented at the 2003 Risk and
Profit Summer Conference. [www.agmanager.info/farm-
mgt/planning/Building_a_Plan_for_Your_Farm.pdf](http://www.agmanager.info/farm-mgt/planning/Building_a_Plan_for_Your_Farm.pdf)

Notes

Market Gardening: A Start Up Guide

By Janet Bachmann
NCAT Agriculture Specialist
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Holly Michels, Editor
Amy Smith, Production

This publication is available on the Web at:
www.attra.ncat.org/attra-pub/marketgardening.html
or
www.attra.ncat.org/attra-pub/PDF/marketgardening.pdf

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