

CONTENTS

INTRODUCTION 1

CLARIFY YOUR MISSION, VISION AND GOALS 3

ASSESS YOUR READINESS TO SCALE UP 4

 Increasing Farm Production 6

 Growing Quality Produce 7

 Postharvest Handling 8

 Harvest Strategies 8

 Maintaining the Cold Chain 9

 Cleaning, Sorting and Packing 11

 Food Safety 11

WHOLESALE MARKETING 13

 Pricing and Profitability 13

 Working with Wholesale Market Buyers 14

 Marketing Materials and Product Labeling 14

 Cooperatives and Food Hubs 15

RESOURCES 16

Also available at www.sare.org/wholesale-marketing, or order a free hard copy at (301) 779-1007.



Scaling Up Your Vegetable Farm for Wholesale Markets



Left: Jason Grimm (right) of Grimm Family Farm in North English, Iowa, discusses invoices with purchasing department staff at a local grocery store where he sells black beans. Photo by Preston Keres, USDA Right: Shakera Raygoza of Terra Preta Farm in Edinburg, Texas, grows organic radishes for a Texas-based supermarket chain. Photo by Jamie Storrow, SARE

WITH THE POPULARITY OF LOCAL FOODS NOW SPREADING to even the largest retailers in the country, many farmers who have experience marketing their products directly to consumers are sensing an opportunity to grow. Working with new partners in the supply chain to distribute your products more widely can certainly come with its rewards, but it has its own challenges as well. It usually requires significant changes in the crops you grow and how you handle them postharvest, as well as how you manage your business operations and marketing. This means that scaling up from direct marketing to wholesale markets isn't for every farmer, but for those who've carefully considered it and are prepared to take on the challenges, the benefits can be appealing (see the box "What is a wholesale market?").

One advantage of working with intermediary buyers is that you can increase your volume of sales and your brand's reach. Once you've established your relationships with buyers, you can typically market your products more efficiently and consistently, which can mean more time spent on the farm. You'll receive lower prices for

your products than you would at a farmers' market or with a community supported agriculture (CSA) model, but you can benefit from important economies of scale due to the lower per unit costs that result from larger sales volumes. Increasing your sales volume usually requires growing fewer crops, adding more acreage, labor or equipment, or all of the above. Also, you usually need to make significant changes in how you harvest, sort, package, store and ship products to buyers.

Many farmers who direct market their products enjoy interacting with customers, prefer to grow a greater variety of crops and value the higher prices they receive. The downsides can be the considerable amount of time spent on marketing and the variability of some market channels; for example, your farmers' market sales are likely more sensitive to inclement weather. Economically, high-performing small- and mid-scale farms can be successful with either direct marketing or wholesale, especially when marketing themselves with local, organic or sustainable certifications and labels. Therefore, in many situations the decision to scale up to wholesale is

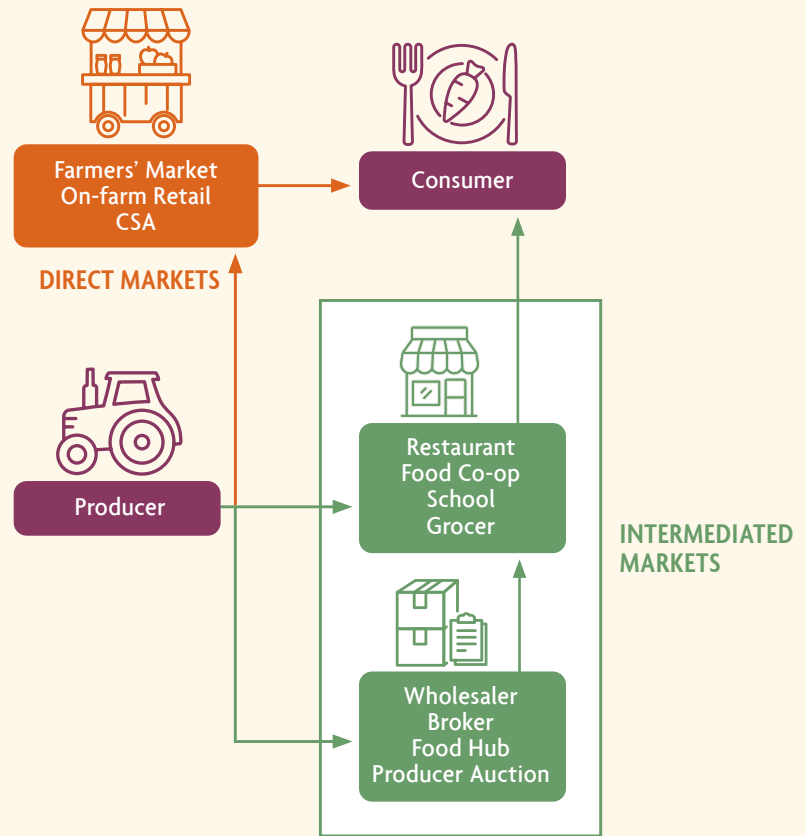
WHAT IS A WHOLESALE MARKET?

This publication uses the term “wholesale market” to refer to any intermediary in the supply chain that you sell your products to before they reach the consumer. These intermediary buyers include supermarkets, restaurants, distributors, processors, food hubs, institutions, brokers and terminal market buyers, as well as others. These buyers can also be referred to as “intermediated markets.” (Note: Even though the terms “wholesale” and “wholesale markets” are commonly used to refer to intermediated markets in general, a “wholesaler” is a distinct type of business *within* the intermediated marketplace. See figure to the right.)

Direct marketing, on the other hand, refers to any channel where you sell directly to consumers, most commonly through a farmers’ market, CSA, farm stand or online store.

Producers have the option to use many direct and intermediated markets to serve the end consumer. Within intermediated markets the supply chain can be shorter or longer depending on the buyer you work with—for example, wholesalers and brokers are more removed from the end consumer than restaurants and grocery stores.

Adapted from the University of Kentucky’s MarketReady Producer Program.



about your vision for yourself and your business: What kind of farm do you want to operate? How do you want to spend your time? What kind of marketing and customer interaction do you prefer? If you decide to scale up, are you prepared to take on the challenges of doing so?

The decision to scale up doesn’t need to be an either/or proposition. Some farmers may choose to switch the majority of their operation to wholesale while retaining a smaller direct-market operation for their most valuable crops. Others find ways to grow gradually and explore whether scaling up seems right for them, for example by beginning with direct deliveries of products to nearby restaurants and small grocers.

Transitioning to Organic Production

Interested in pursuing organic sales and price premiums as part of a wholesale strategy? Learn more about the transition process with SARE’s bulletin *Transitioning to Organic Production* (www.sare.org/transitioning-to-organic).

When Shakera and Juan Raygoza of Terra Preta Farm in Edinburg, Texas, transitioned from a small-scale, diversified operation to growing 15 acres of organic radishes for local wholesale markets, they decided to continue operating a small market garden and two high tunnels at the same time. Because they’re located in an urban area, they wanted to use the garden and tunnels to help maintain relationships with their local community through a CSA, school tours and other on-farm activities.

“Even though we could just focus on wholesaling, we always strive to have that component of allowing people to come and harvest, and to have that connection with them,” says Juan Raygoza.

This aligns with their personal values, says Shakera Raygoza. Where they are in South Texas, “we have a lot of diet-related diseases, like obesity, diabetes and cardiovascular disease. So we really want to try and provide this good food for our community.”

This bulletin introduces small- and mid-scale direct-market farmers to the key issues you'll need to consider if you're thinking about scaling up a produce operation for wholesale markets. Because intermediary buyers are generally less forgiving of inconsistent quality and supply than direct market customers are, beginning farmers are advised to start out with direct markets while they gain practical experience and refine their systems. You should think about wholesale markets only after you feel confident in your business skills and in your ability to consistently produce good-quality crops. It's also critical to be familiar with all the national and state regulations associated with food handling, certification and processing before getting started.

Workers loading a shipment of radishes for delivery at Terra Preta Farm in Edinburg, Texas. Photo by Jermaine Hinds, SARE



Part One: Clarify Your Mission, Vision and Goals

BEFORE YOU GO ABOUT STUDYING SPECIFIC MARKET opportunities in your area and making contact with potential buyers, you should have a clear idea of what's required when scaling up to wholesale and whether it aligns with the overall direction you want to take your farm.

Like any major change you're considering, you should make the decision to enter wholesale markets in the context of a broader business plan and an assessment of both your current financial situation and the one you anticipate should you scale up. If you haven't done so already, start by defining your vision and mission as they relate to your farm, and identify your goals as they relate to you personally, your family, your finances, your community and your land.

A formalized vision, mission and goals provide a framework in order to keep your business in scope and to understand what's realistically achievable. A vision, mission and goals provide guidance when making business decisions and help you make decisions that will positively impact you, your family, employees, partners and customers. Wholesale marketing will most likely change your operation and some aspects of your lifestyle. Do these expected changes align with your goals, and are relevant family members on board? A mission and vision also provide the basis of your marketing and branding

efforts, helping you "tell your story" in a way that resonates with food buyers.

Goals should be "SMART": specific, measurable, attainable, realistic and timely. Having a clear sense of direction helps assess your options and manage both the risk and stress that can come with major changes. As you go further in your exploration of scaling up, make sure you're convinced that the associated benefits of doing so will help you achieve your goals. If the risks, costs and potential drawbacks seem too daunting, maybe it's not the right fit.

If you're unsure of your current financial position, discuss your concerns with an accountant or an Extension specialist, and consult with a lawyer whenever contracts are involved. Many tools exist to help you with the financial planning you'll need to conduct in order to understand whether a significant change to your operation will result in enough income to cover your new costs.

State Extension offices provide experts and educational resources that can help you with business, finance and market planning. SARE's *Building a Sustainable Business* (www.sare.org/business) provides step-by-step guidance on creating a business plan that can help you assess new opportunities. Also, many business planning organizations exist that specialize in assisting farm businesses.

Having a clear sense of direction helps assess your options and manage both the risk and stress that can come with major changes.

Part Two: Assess Your Readiness to Scale Up



Entering a wholesale market usually requires changes in how you harvest, handle and pack produce. Photo by Lance Cheung, USDA

Carefully assess your position, conduct market research, speak with potential buyers and seek guidance from both professionals and experienced farmers.

THE INTENTION WITH THIS GUIDE IS TO OFFER A BRIEF look at the key issues to consider when thinking about scaling up to wholesale markets. You'll need to explore much further by carefully assessing your position, conducting market research and talking with knowledgeable professionals. As you go forward with planning, take time to speak with buyers to learn more about their specific requirements and how a relationship might work. Early on, seek out support and guidance from other farmers who have already scaled up successfully. Also, if the requirements continue to seem daunting, consider if there are opportunities to collaborate with other local farmers through cooperatives or aggregators. (See the section "Cooperatives and Aggregators.")

There are many good resources available at the state and national level to help you dive deeper into the issues related to selling into wholesale markets. See the "Resources" section at the end of this publication for a partial list to get you started.

The Wholesale Success guide, published by FamilyFarmed.org, provides the following summary of requirements for selling into wholesale markets, many of which may be unfamiliar territory for direct-market farmers:

- » **Cold chain.** At harvest, you must remove the field heat from most crops using proper cooling. You must also maintain the "cold chain" from the field to the customer with refrigerated storage of most fruits and vegetables. It's important to understand and meet the storage needs for each crop, including temperature, humidity and ethylene sensitivity to accomplish maximum shelf life.
- » **Uniform pack.** You must sort products uniformly to match USDA grades and to pack them according to industry standards of quality and packaging.
- » **Food safety.** On-farm food safety procedures are important. Some buyers may require food safety certification by a third party auditor.
- » **Volume and consistency.** Plan succession plantings to provide consistent, quality product in the volume your buyer needs. Meeting buyers' needs is key to a healthy long-term relationship.
- » **Relationships and communication.** Build relationships with buyers and stay in touch regularly to communicate issues such as timing, quantity, price and quality.

- » **Choose wholesale market crops carefully.** Before you plant, be absolutely clear on what the buyer wants in terms of specific cultivars, types of crops or quality characteristics. Then consider, are the crops you plan to grow likely to do well in your soils and climate? Can you manage the expected weeds, pests and diseases for these crops? What are the most labor-intensive tasks associated with these crops? Can you mechanize these tasks with a realistic amount of investment and without sacrificing quality?

Curriculum Materials for Educators

Extension educators who want to offer training to farmers on this topic can consider the *Baskets to Pallets Training Manual*, a comprehensive five-module curriculum developed by the Cornell University Small Farms Program, with funding support from SARE (<https://smallfarms.cornell.edu/projects/baskets-to-pallets>). The curriculum uses case studies to help participants understand real-life management, production and promotion strategies through the lens of wholesale marketing.

These requirements have implications that need to be fully and carefully explored. Do you have the resources, skills and interest in taking on this change? Michigan State University's Center for Regional Food Systems provides a *Market Channel Selection Tool* to help farmers decide which direct market and wholesale channels might be best, based on characteristics about the farmers and their farms. According to the tool, some of the characteristics that might make larger-scale distribution right for you include:

- » **Farm characteristics.** You're able to produce large quantities of individual crops. You have high levels of experience (10 or more years), mechanization and access to acreage.
- » **Marketing/advertising.** It isn't important to you that people know their food came from your farm, and you aren't particularly interested in interacting with consumers. You're willing to put effort into managing customer/buyer relationships if you have to, even if you don't enjoy it.
- » **Product characteristics.** You're content with minimal crop diversity on your farm, for example growing fewer than 10 crop types. You achieve excellent product quality and consistently high

yields. You're very willing to, or already have, met one level of food safety certification (e.g., GAP).

- » **Pricing.** You prefer working with set prices and prefer to operate at high volumes and low prices, rather than insisting on getting the highest price for your products.
- » **Farm location.** Proximity to large population centers isn't important to you.

Access to the right kind of labor is another important issue to consider early on. Direct market channels and wholesale channels tend to have different labor requirements. For example, direct-market farms may have a higher need for sales staff, whereas farms in wholesale markets usually require more production and harvest labor. Production labor is increasingly a bottleneck for commercial growers. It can be valuable to have a labor needs assessment and management plan in place as you consider major changes, especially if you expect to hire H-2A workers.

You should also think about your tolerance for risk and how different market channels could cause you stress. All decisions involving market channels can create their own stress, so these are highly personal considerations to reflect on. For example, which of these situations might cause you more or less stress: running a small-scale operation versus a large one, growing 30–40 varieties of crops versus only a few, or committing to a CSA each year versus having a truckload of produce rejected? Be aware too that sometimes the stress of trying something new gradually diminishes as you gain experience.



Photo by Andy Chamberlin, University of Vermont Extension



Make sure you have access to the amount of land you'll need in order to scale up your production. Photo by Lance Cheung, USDA

INCREASING FARM PRODUCTION

If you aren't already there, you'll need to make sure you can produce a large volume of high-quality products on a consistent basis. This is because wholesale prices are lower than direct markets, and these buyers require consistent supply and consistent quality. The usual ways to achieve this target are by focusing on growing fewer crops, expanding acreage, acquiring the right equipment, hiring needed labor and carefully fine-tuning your production system.

Since land can be a major limiting factor, look into it early on. Leasing is a good option if you have limited financing or if you aren't sure you want to commit to larger-scale production in the long term, but you'll need to carefully evaluate the condition of the land and quality of the soil before proceeding. If you know that expansion fits with your long-term goals, look into conventional loans or lower-cost FSA loans for buying the land you need. To receive financing you'll need to prepare documents that outline the cash flow you expect to create from your planned growth.

Consider the full range of equipment you'll need to grow, harvest, clean, sort, package, store and transport your produce (Table 1). This too can be an expensive proposition if you're currently relying on hand tools and walk-behind tractors, or if you'll need to scale up the size of your facilities or trucks to handle increased production volumes. If you're seeking to scale up a value-added product that you process on farm, consider whether your processing facility can handle increased production, or if you'll need to expand. Many state Extension programs provide information on partial budgeting, a strategy that helps you understand the financial impact of a proposed change to your farm. The University of Vermont's *Tractor Resource Hub* (<https://blog.uvm.edu/groundwk/>



Be prepared to invest in new equipment and infrastructure. Photo by Andy Chamberlin, University of Vermont Extension

tractor-purchase-maintenance) includes information on equipment purchasing.

When the Raygozas of Terra Preta Farm scaled up from 1.5 acres of diversified vegetables to a 15-acre wholesale radish operation, they made several key investments in equipment. Among those was a 25 horsepower tractor and several implements to plant and cultivate radishes, as well as to terminate off-season cover crops and prepare beds. In particular, adding a belly-mounted basket weeder to their high-clearance tractor after their first season of wholesale production was “a game changer,” according to the Raygozas. Not only did it eliminate the need to hire a crew for hand weeding, it allowed them to begin planting four rows of radish per bed instead of three. “We saved quite a bit of money just by adding that to our production,” says Shakera Raygoza.

Along with making sure you have the right acreage and equipment, developing a well-organized system for your growing beds is critical to efficient and consistent production and harvest. Try to arrange the size and layout of your fields, beds and driving lanes to optimize efficiency in terms of equipment access, including harvest and postharvest equipment.

While you’ll need less labor in the areas of sales and delivery, you’ll likely need more help in the fields during the growing season—especially during harvest. Factor in this expense during your planning and reflect on how easy or hard it might be to find good farmworkers, and whether you have the capacity to hire, train and manage your staff effectively.

Growing Quality Produce

Wholesale market buyers will expect your produce shipments to be of consistently high quality. Rightfully, much emphasis is placed on the importance of best practices in postharvest handling in order to maintain the shelf life of products from the field through to the end customer. But at the same time, you’ll need to grow good crops in the first place so that they keep in storage and meet U.S. Grade Standards. Here are some examples of how farm practices can influence the quality of produce for the wholesale market:

- » **Soil and nutrients.** A healthy soil is the foundation of a healthy, well-yielding crop, and of course, farmers who use organic practices such as cover crops and amendments of compost or manure are already prioritizing soil health. Manage nutrients carefully as well. Nutrient deficiencies can negatively affect the color, texture,

TABLE 1. Equipment options for a 20-acre vegetable farm¹

50–75 horsepower tillage tractor with loader
15–20 horsepower cultivating tractor
Pickup truck
Manure/compost spreader
Three-bottom plow
Three-shank chisel plow
Rotavator
Disk harrow
Field cultivator
Bed former or mulch layer
6–8-foot seed drill (for cover crops)
Two-row tractor mounted plate or drill seeder
Two-row tractor mounted precision seeder
Two-row mechanical transplanter
Boom sprayer
Basket weeder
Spring tine cultivator
Set of cultivating sweeps, shanks, shovels, etc.
Flail mower (or brush hog)
Hand tools and wheel hoes
Irrigation lines, sprinklers, pumps, etc. (per acre)
Two-row gravity fertilizer side-dresser
One-row potato harvester
Root lifter
Harvest wagons
Wash tanks
Washing line and sorting table
Barrel washer
2,000-cubic-foot walk-in cooler
Refrigerated delivery truck
Shop tools (welder, drill, grinder, compressor, etc.)

¹From Grubinger, V. 1999. *Sustainable Vegetable Production from Start-Up to Market*. Ithaca, NY: Plant and Life Sciences Publishing.

Along with making sure you have the right acreage and equipment, developing a well-organized system for your growing beds is critical to efficient and consistent production and harvest.



Carefully arrange your fields, beds, rows and driving lanes to maximize efficiency. Photo by Andy Chamberlin, University of Vermont Extension

taste or nutritional content of produce, and can lead to disorders during storage such as rot or discoloration. High levels of nutrients such as calcium and potassium play an important role in favorable vegetable qualities, but excess levels of some nutrients can lead to problems, such as excess nitrogen causing increased soft rot in stored tomatoes or increased weight loss of stored sweet potatoes.

- » **Water management.** Irrigate in a timely manner to meet an individual crop's needs and avoid over or under watering, either of which can negatively affect harvested crop quality. Avoid harvesting fungal-sensitive produce such as crops in the solanaceous (tomato, potato, pepper, eggplant) and cucurbit families (cucumber, melon, squash) when it's wet or dewy. This can cause disease in the field and impact produce storage life. Surface or subsurface irrigation can help prevent this issue. Harvesting leafy greens, broccoli and cauliflower during rainy periods or when morning dew is present doesn't affect crop quality or storage.
- » **Pest management.** Insect pest problems during the growing season can result in visible damage to crops that makes them unappealing and prone to disease. Also, pests that are present on harvested crops can proliferate in postharvest storage.

- » **Crop and variety selection.** Focus on crops that grow well in your climate and soil conditions, and that make sense for the amount of acreage you have. Carefully select vegetable varieties with characteristics that will best serve you. Varieties that store well might be better for wholesale, whereas varieties with strong flavor characteristics are more attractive for direct marketing. Because quality is important, start with crops you're familiar with and branch out to new ones only after you've established yourself in wholesale markets.
- » **Crop sequencing.** You'll need to make an annual plan for when you'll plant and harvest crops so that you can let buyers know what to expect from you and when. Adjust planting dates and do successive plantings as needed to ensure consistent yields over the longest period of time you can and to take advantage of seasonal price increases for individual crops when demand is higher. Make sure your annual plan takes into account the ideal harvest window of your selected varieties because harvesting a crop before or after its maturity window negatively affects yield and quality.

POSTHARVEST HANDLING

One of the most important aspects of scaling up to wholesale markets is making sure you have a good system in place to meet the postharvest handling demands that buyers expect. You'll need to consider how you harvest, cool, clean, sort, pack, store and transport produce. The optimal requirements can vary depending on the crop, so take time to research best practices for each crop you're planning to grow. The University of California's Postharvest Center offers "[produce fact sheets](#)" on dozens of fruit, vegetable and ornamental crops. (Food safety, another critical part of postharvest handling, is addressed in the next section.)

Harvest Strategies

To ensure you're harvesting crops at the optimal time, learn the ripeness and maturity indicators for the crops you're growing and train workers to recognize them as well. These indicators are usually when the crop has reached peak ripeness. Some crops, however, such as tomatoes, stone fruit and avocados, should be harvested before they've reached peak ripeness, as long as they're physiologically mature, because they'll continue ripening in storage. Ask your buyer what level of ripeness they want



Time your harvest correctly by learning the ripeness indicators of your crop, and train workers to handle produce gently to minimize damage. Photo by Lance Cheung, USDA

to receive these crops at. Smaller-scale producers have some advantages over larger operations when it comes to fine tuning the time to harvest, for example by harvesting crops earlier as “baby” vegetables that capture a premium, harvesting at peak ripeness, and harvesting more often to create a steady supply of optimal produce.

If economically feasible, seek out specialized mechanical harvesters for your crops. Hand harvesting allows you to better select for ripe, high-quality produce, but look for tools that make this approach less laborious and more efficient, like hand carts and bins.

Try to settle on a harvesting system that’s efficient, reduces the potential for crop damage and maintains quality. For some crops, such as leafy greens, an approach that allows you to select, sort, trim and package crops in the field can be more efficient, can reduce opportunities for produce to be damaged, and eliminates the need for a packing facility. For other crops, field packing can be challenging to grade your produce and maintain quality control.

Pay attention to other ways you can minimize the risk of damage during and after harvest. A few include:

- » Make sure your roads are smooth and trucks have good tires and suspension, to reduce damage from bumping during transport.
- » Keep harvested produce out of direct sunlight as much as possible.
- » Train workers on how to gently harvest, handle and pack produce.

- » To avoid nicking or gouging produce, tools should be sharp but without sharp points, and workers shouldn’t have sharp nails or jewelry on their hands.

For produce that’s damaged, you can explore selling it for processing or using it for your own value-added products. You can also compost it, but make sure you follow best practices so that the composting process destroys pathogens.

Maintaining the Cold Chain

The cold chain refers to the process of removing field heat from crops and keeping them at their ideal storage temperature through all stages from handling, packing and storage through transportation and delivery to a buyer. Meeting the postharvest needs of perishable crops will maximize their shelf life and quality.

Quickly removing the field heat from crops is the most critical aspect of the postharvest cold chain. You’ll want to familiarize yourself with the variety of techniques and equipment used for cooling and refrigeration to determine what will work best for your operation and available resources. Some common approaches to removing field heat include room cooling, forced-air cooling, hydro-cooling and icing, among others.

Regardless of the system used, you can maximize its efficiency by harvesting early in the day when field heat is lower, avoiding direct sunlight on harvested produce, and continuously transferring harvested produce to cooling facilities and refrigerated storage. Trees around your cooling and storage facilities can help shade them, and inside these facilities use low-heat lighting such as LEDs or fluorescent bulbs instead of incandescent or halogen ones. Be prepared to monitor and record temperatures at all stages of the cold chain up to delivery to the buyer.

This storage shed uses low-heat lighting and a standard air conditioning unit connected to a CoolBot temperature controller. Photo by Andy Chamberlin, University of Vermont Extension





Crops have many characteristics that influence how you should store them to optimize shelf life. Photo by Andy Chamberlin, University of Vermont Extension

When devising your cooling strategies, be aware of the respiration rate of the crops you're planning to grow. This rate corresponds to how perishable it is. If you're planning to grow crops with the highest respiration rates, such as leafy greens, sweet corn or asparagus, they'll need to be fully cooled quickly after harvest to avoid quality loss. If your ability to cool and refrigerate crops is limited, consider only growing those with low respiration rates, such as tomatoes, potatoes, gourds or melons.

Storage. Along with quickly taking field heat out of heat-sensitive crops, you'll need well-insulated storage facilities that are maintained at an optimum temperature as part of the cold chain. Generally, minimize the amount of time your produce is kept in storage, and ensure that the produce that's been in storage the longest is the first to leave when preparing a delivery. Consider how produce is grouped during postharvest storage to avoid unintended damage. Grouping strategies can include:

- » **Ethylene grouping.** Ethylene is a gas released by plants that regulates their growth; certain crops release it after harvest, and it continues their ripening process in a favorable way (for example, apples, bananas and tomatoes). Other crops (green, leafy crops) don't release ethylene gas and, if they're exposed to it in storage, will decay more quickly; so don't store ethylene-producing crops with non-producing ones, and minimize exposure to artificial sources of ethylene, such as cigarette smoke, natural gas and fossil fuel exhaust.

- » **Cross-transfer of odors.** Certain storage combinations should be avoided because one crop will transfer its odor to another in an undesirable way; for example, it's recommended that onions, nuts, potatoes and citrus be stored separately.

- » **Temperature and humidity groupings.** Many crops can be grouped together based on their optimal temperature and humidity conditions. For example, crops like broccoli, cabbage and carrots have similar temperature and humidity storage requirements (32–35°F and 98–100% humidity).

Transport. Cool your trucks before loading and monitor produce temperature during transit. Follow best practices when stacking boxes on pallets and pallets on trucks to promote air flow, maintain cool temperatures and minimize the risk of damage. If you're making multiple stops, consider installing plastic strip door curtains that help maintain cool temperatures inside the truck door. Consider having a checklist of steps to take before loading each shipment to ensure the truck's refrigeration system is in good working order, is free of damage or broken seals, and that the temperature is set appropriately for the produce being shipped.



Photo by Andy Chamberlin, University of Vermont Extension

Cleaning, Sorting and Packing

All produce should be clean when shipped, and it's important to use the correct cleaning process for each type of produce. Cleaning harvested produce is the most labor-intensive stage of production for many crops. If this is the case for your crop, cleaning equipment can be one of the most cost-effective places to invest as you explore your need for mechanized equipment. As with cooling, there are various equipment systems in use for washing and sorting produce. Washing equipment can include barrel washers, pressure washers, wet brush washers and fixed sprayers. Drying may include spinners for greens or screen tables and fans.

Some crops, such as raspberries and strawberries, shouldn't be washed before marketing, as it will cause mold, bruising and spoilage. Grow these crops using systems that minimize the fruit getting dirty, such as trel-lising or mulching.

The University of Vermont has free videos of scale-appropriate, cost-effective postharvest cleaning equipment at <https://blog.uvm.edu/cwcallah/post-harvest>.

When washing produce in water, a sanitizer such as a chlorine-based or peroxyacetic acid product helps to minimize the chance that the water will become contaminated and thus contaminate other produce. Use only food-grade sanitizer products, follow label instructions, and seek out organically approved products as needed. If using a chlorine sanitizer, the pH of wash water needs to be maintained at 6.5–7.5 or the sanitizer efficacy will be reduced. Peroxyacetic-acid-based sanitizers don't require pH management.

Dunk tanks are the riskiest washing method from a food safety perspective, so consider avoiding them altogether. If you must use dunk tanks, you'll need to monitor water temperature and maintain it to meet specific produce guidelines. Guidance varies from crop to crop, but generally, the water should be no more than 10° F cooler than the produce's core temperature to minimize wash water infiltrating into produce during dunking. Some farmers accomplish this by cooling produce before washing it.

Buyers demand consistent quality, quantity, packaging and handling, priorities that tend to be different from your direct market customers. Make sure that workers are well trained to handle produce gently, sort it by grade standards and pack it so that it looks presentable and so that the risk of damage in storage and transit is minimal. Being consistent in how you sort and pack will help you



A barrel washer is used for rinsing beets. Photo by Andy Chamberlin, University of Vermont Extension

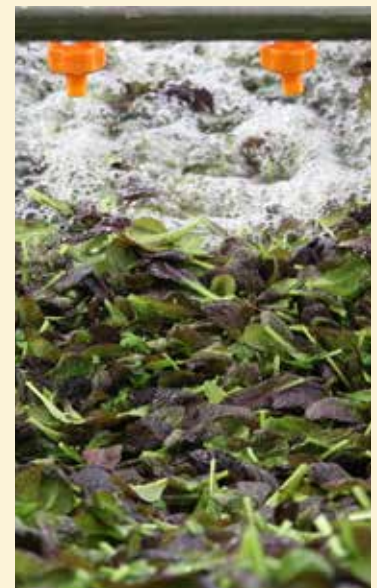
accurately keep track of yields, and this information will help you when planning for the next year.

When sorting produce, presort to remove damaged, diseased or decaying produce. Low-cost sorting equipment such as sizing tables, divergent bars or conveyor belts may be useful, depending on the volume of your produce. Your packing and sorting area should be well designed, taking into account both worker comfort and efficiency. Use standardized packing boxes that are sturdy and have the shape and size suited to the crop so that you can fill them without risking damage to the contents and so that they will stack well on pallets.

A wash line can be an efficient way to clean larger volumes of produce. Photo by Andy Chamberlin, University of Vermont Extension

FOOD SAFETY

Food safety compliance has received increased attention in recent years, in particular with the passage in 2011 of the Food Safety Modernization Act (FSMA). Many small-scale farms that sell direct to consumers or that wholesale directly to grocers, restaurants and institutions may be exempt from FSMA compliance. Also, FSMA compliance does not require growers to have a written food safety plan or to obtain a third party audit. However, if your aim is to enter wholesale markets, many buyers require growers to have a written food safety plan in place that aligns with Good Agricultural Practices (or GAPS, which are [guidelines developed by the USDA and FDA](#) to reduce food safety risks). Buyers may also require farmers to obtain certification by a third party





Radishes are packed in ice before they're loaded on a truck for delivery.

Photo by Jermaine Hinds, SARE

auditor, even if your farm is exempt from FSMA compliance.

The Produce Safety Alliance at Cornell University provides basic information about food safety plans, GAPs and third party audits in their publication *Produce Safety, Audits, and Regulations: A Few Short Questions and Answers to Help Fruit and Vegetable Growers*.

Broadly, the process of becoming food safety compliant involves understanding what GAPs are, assessing the food safety risks present on your farm, identifying ways to mitigate those risks, continuously monitoring your practices and keeping relevant records. Understanding the guidelines and developing a GAP-compliant plan can seem daunting, but there are many resources available to help. Along with local Extension specialists, good places to start include the Produce Safety Alliance (<https://producesafetyalliance.cornell.edu>) and the National Good Agricultural Practices Program (<https://gaps.cornell.edu/about>), which provide FSMA and GAP training resources (respectively) through a collaboration between Cornell University, the USDA and the FDA.

Here's a summary of the eight principles that underlie the FDA's guidelines on produce food safety:

1. From both a human health and financial perspective, a preventive food safety plan is better than a reactive one that relies on corrective action after microbial contamination has occurred.

2. GAPs should be used by growers, packers and shippers in those areas over which they have control.
3. Fresh produce can become microbiologically contaminated at any point along the farm-to-table food chain, and major sources of contamination are associated with human or animal feces.
4. Water is one of the most common ways that pathogens travel and contaminate produce. All water used on the farm should be carefully monitored because its source and quality dictates the potential for it to contaminate produce that it contacts.
5. The use of animal manure or municipal biosolid wastes should be managed closely to minimize food safety risks.
6. Workers should follow good hygiene and sanitation practices during production, harvesting, sorting, packing and transport.
7. Follow all applicable local, state and federal laws and regulations.
8. Qualified personnel and effective monitoring must be in place to implement successful food safety programs and to provide accountability and traceability throughout the food supply chain.

Even though prevention is the main goal of a food safety plan, you'll want to include a component that identifies an individual or team who will respond to any crises that might arise, as well as a plan for what steps will need to be taken.

Recordkeeping is another important aspect of a food safety plan, one that auditors and usually buyers will require. Records should support all aspects of a plan, for example water quality test results, temperature records in cooling and refrigeration equipment, pest control logs, worker training on hygiene, and logs of when postharvest handling equipment and storage have been cleaned and sanitized.

Resources for Writing a Food Safety Plan

The Produce Safety Alliance at Cornell University provides a [Farm Food Safety Plan Template](https://gaps.cornell.edu/educational-materials/farm-food-safety-plan-template) (gaps.cornell.edu/educational-materials/farm-food-safety-plan-template) that addresses dozens of topics and can be tailored to a variety of farming operations. The alliance also offers a list of Extension and industry-specific resources to assist with writing a food safety plan, [Farm Food Safety Plan Writing Resources](https://producesafetyalliance.cornell.edu/resources/farm-food-safety-plan-writing-resources) (producesafetyalliance.cornell.edu/resources/farm-food-safety-plan-writing-resources).

Part Three: Wholesale Marketing



Photo by Andy Chamberlin, University of Vermont Extension

DETERMINING WHICH MARKETS AND MARKETING strategies will work best for you is something you should thoroughly explore before investing in farm expansion. While buyers in the wholesale market share general characteristics as far as their emphasis on higher volumes and greater consistency of product quality and delivery compared to direct market channels, individually they're unique in some ways that could affect which one or ones make the most sense for you.

Some of the ways wholesale markets can vary include:

- » The volume you can sell, the price you receive and when payment is made to you
- » How you create and manage relationships, use contracts and negotiate prices with buyers
- » Delivery logistics, such as how far you may need to drive, when and how often
- » The need for liability insurance, a food safety plan and other documentation
- » Whether your brand adds value to the exchange

Resources to help you evaluate the pros and cons of common wholesale markets in more depth include:

- » ATTRA's *Marketing Tip Sheet Series*
- » Rutgers University's *To Market, To Market: A Workbook for Selecting Market Options and Strategies for Agricultural Products*
- » SAREP's market channel tip sheets and other resources at their *How to Sell Produce Wholesale* website (<https://sarep.ucdavis.edu/fs/supply/wholesale>)

PRICING AND PROFITABILITY

In wholesale markets, prices will not be near direct market prices or the retail prices consumers end up paying. In many cases, you'll be competing with regional, national and international producers. Some buyers will recognize and value that your farm is local or certified organic, and you can earn higher prices in these "values-based supply chains." Other buyers will be seeking the cheapest supplier available. Ultimately you make up for the lower pricing through higher volumes.

Keys to ensuring profitability include:

- » Maintaining consistent production volumes and sales
- » Knowing your production costs
- » Researching market prices and contacting buyers to learn about both their pricing policies and their desired volumes
- » Accounting for seasonal and annual price volatility
- » Developing a diversity of wholesale channels

The USDA Agricultural Marketing Service publishes daily price reports at terminal markets around the country as well as historical data by commodity group, which can give you some idea of national wholesale prices. However, terminal prices are generally significantly lower than what a grocery store or restaurant would pay to a distributor, and many small and mid-sized farms selling into local markets expect to receive a premium above nationally shipped product.

In wholesale markets, prices will not be near direct market prices. Ultimately you make up for this through higher volumes.



Stickers with price look up (PLU) codes are one example of the packing and labeling expectations buyers typically have. PLU stickers also offer an opportunity to keep your brand visible through the supply chain. Photo by Kirsten Strough

As with direct marketing, it's essential to take the time to calculate your return on investment for both your current production and marketing situation, and for your anticipated situation.

For starters, it's critical to understand your cost of production and how much you need to charge for a crop to be profitable. A healthy working relationship with a buyer can be the best way to establish prices that are fair for both parties and reasonable enough for the end consumer so that your product keeps moving with strong sales. Another strategy is to have a distributor that markets products with similar qualities as yours into your end market (perhaps local or organic) add you to their product availability price list email so you can watch prices in real time as they're affected by weather and seasonal impacts.

As with direct marketing, it's essential to take the time to calculate your return on investment for both your current production and marketing situation, and for your anticipated situation. You'll want to include costs associated with production, harvest, postharvest, packaging and delivery, as well as costs for land, facilities and equipment associated with producing the crop in question. Use your research on wholesale market prices to complete the picture. Enterprise budgeting tools and resources are readily available through state Extension offices.

WORKING WITH WHOLESALE MARKET BUYERS

It's important to build a relationship with wholesale market buyers that involves clear communication from both parties so that all can be successful. Take time to learn about the products and volumes each buyer wants, and when throughout the year they want them. Also learn about their requirements and preferences as far as pricing, billing and invoicing, packaging, labeling, food safety standards, delivery procedures, mode and timing of communication, and points of contact. North Carolina State Extension's guide *How to Sell Produce to Distributors* includes a list of questions to ask distributors

to glean important information, as well as questions you might expect to receive from them.

When starting out, contact potential buyers when they're less busy, such as the off season. Be ready to share as much helpful information about your operation as you can, such as branding materials, food safety documentation, recent yield data, and an upcoming planting and harvest schedule. It also helps to provide samples of packaged products to demonstrate that you know how to grow, handle and package a quality product.

Be aware of the ongoing communication that will be needed after you've found a willing buyer. For example, be ready to provide buyers with up-to-date product availability and price lists, and communicate with them 1–2 weeks in advance of an individual crop's harvest to let them know it'll be available soon. Also, with each order that's placed there should be consistent communication, which may include a confirmation that you received an order, a pending invoice, a packing slip included with the delivery and a final invoice. Agree on protocols for these kinds of communication at the beginning of the relationship, and keep records of all of them. Finally, respond quickly and professionally if questions should arise, or if you need to make any changes to your arrangement.

Many fee-based online tools exist to help you manage product lists, ordering, invoicing and other important communications with your buyers, for example [Local Food Marketplace](#) and [FarmersWeb](#). (These commercial services are being provided as examples only, and mention or exclusion of a product does not imply a positive or negative endorsement by SARE.)

MARKETING MATERIALS AND PRODUCT LABELING

An effective way to maximize your market presence may be to “co-market” your product through your buyer. Shelf talkers, branded price signs and social media are examples of how you can differentiate your product from competitors and “tell your story” to a broader audience than you may reach through direct marketing. These efforts can create brand loyalty with consumers and can help your buyers stay competitive in a challenging grocery market. If this is important to you, seek out buyers who want to retain your farm's identity and values through the distribution chain to the grocery store shelf or restaurant table. Many state departments of agriculture have strong marketing support programs that you should integrate where useful into your marketing plan. Many commercial buyers value these branding programs.

A good farm website that gives consumers information about your farm, how to find you and how to order products is highly effective when you're direct marketing. In the wholesale context, your website can show buyers your professionalism as a businessperson, so it should be well organized, well designed and mobile friendly. Many free and low-cost tools exist to build a website yourself.

At a minimum, you should include your farm logo and values through packaging to differentiate your farm from the competition. Along with being certified organic (if applicable), explore third-party verification and labeling around different types of standards. You may not need such certifications when you're direct marketing because you can share your values in other ways, but as you enter a longer supply chain, labels can communicate that you're local or that you use sustainable farming practices. There are many third-party certifications out there and each comes with its own cost, audit process and level of recognition among consumers, so be discerning in which one(s) you pursue.

The labeling that's required will vary depending on the buyer and the product. For example, loose apples, a bag of potatoes and a jar of almond butter all have different requirements. Labeling requirements can range from simple stickers on produce to the weight of a package, a list of ingredients, nutritional content, a bar code and other information. If you're unsure of what's required, talk to your buyer and seek further guidance from your state Extension office or state department of food and agriculture. While it could be burdensome to navigate initially, packaging presents another opportunity to think through how you want to brand your farm and its products for the end consumer.

When selling loose produce in wholesale markets, your buyer may require stickers that include the price look up (PLU) code. Even when not required, including these labels can give you an advantage over competitors who don't use them. PLU stickers appear on individual pieces of produce and include standardized 4- and 5-digit codes that help cashiers quickly look up the retail price at checkout. Work with your buyer or visit www.plucodes.com to ensure you're using the correct number for a particular product; for example, tomatoes can have several different PLU codes depending on how they were grown, their size, variety, etc. You can either customize your own labels or order predesigned ones from a label and packaging supply company. Designing your own provides yet another opportunity to add your logo to your product for the consumer to see, but if you do so, follow best practices as far as label dimensions and font size.

COOPERATIVES AND FOOD HUBS

If the requirements of scaling up to wholesale markets are too great, look for opportunities to work with nearby aggregators such as cooperatives and food hubs. These entities will pool the crops grown by many farmers in order to achieve the scale that buyers want, and they will usually provide those services that small-scale farmers find the most daunting, such as refrigerated trucking and storage, marketing, sales and recordkeeping. Food hubs often include staff who can help farmers improve their crop production practices to meet wholesale market standards. Although, be prepared to still meet certain requirements of wholesale marketing, such as creating a food safety plan and removing field heat from crops at harvest.

Formal co-ops are member-owned business entities, and if you join one, expect to pay an annual membership fee that supports the staff, infrastructure and services the co-op is providing. In addition, you may be required to participate in its governance in some way. Because the co-op exists to serve its members, your participation is a form of oversight to make sure the co-op is performing to the mutual benefit of its members. Important questions to ask yourself before joining a co-op include:

- » Does the co-op have a good, long-term track record of success?
- » In exchange for not having to handle many of the day-to-day tasks of marketing myself, am I willing to instead work with other farmers to provide governance of the co-op?
- » Am I willing to adhere to standards that are collectively established by the members?



Photo by Tiffany Edmundson, USDA

The Fresh Farm HQ Cooperative Association, a Kansas City area co-op of small- and mid-scale farms created to better access local wholesale markets, found itself struggling in a crowded field. So, in 2017, the co-op used a SARE grant to reevaluate its branding strategies and to improve the food safety and traceability compliance of its members. One outcome of the project was to create professional marketing materials and rebrand the co-op with the name Kansas City Food Hub, steps that have helped the co-op grow from 10 members in 2017 to 22 in 2021.

“The new name and professional material that was developed out of this effort raised the profile of the organization,” said Katie Nixon, a farmer-member who serves on the co-op’s board of directors.

In recent years, some Kansas City Food Hub members have received additional SARE grants to build the co-op’s capacity to supply allergy-friendly prepared foods to area school systems, a niche they’ve identified as having a lot of unmet demand.

There are ways to collaborate with fellow farmers to meet the requirements of wholesale markets other than joining or creating a co-op. However, any partnership carries with it important legal and risk management considerations that you and potential partners should explore thoroughly, in consultation with accountants and lawyers. Eventually, you’ll want to create a formal agreement and establish an appropriate business structure, such as a limited liability corporation, to shield you from risk should the partnership run into unexpected trouble. Farm Commons has extensive free videos and print materials to download about the business structure options available to you, including, *Farm Business Structure Basics* and *What, Why, and How of Choosing a Business Entity for the Farm*. Chapter 12 of the book *Farmers’ Guide to Business Structures* (www.sare.org/guide-to-business-structures), published by Farm Commons and SARE, reviews the issues farmers should consider when entering into partnerships.

Resources

The following is a list of in-depth guides on the topic of preparing your vegetable farm for wholesale markets. This list is not intended to be comprehensive. Consult with your local Extension office for resources that are tailored to your geographic area and type of operation.

FamilyFarmed.org

This nonprofit organization hosts a training program for small- and mid-scale farmers who want to grow their business. They also publish the in-depth guide *Wholesale Success: A Farmer’s Guide to Food Safety, Selling, Postharvest Handling, and Packing Produce*. Contact info@familyfarmed.org for ordering information.

<https://familyfarmed.org>

How to Sell Produce Wholesale

The University of California’s Sustainable Agriculture Research & Education Program’s (SAREP) online resources at *How to Sell Produce Wholesale* include information on market channels, working with buyers, food safety, packing and grading, pricing and other important business aspects of wholesale marketing.

<https://sarep.ucdavis.edu/fs/supply/wholesale>

The MarketReady Producers Program

This training program offered by the University of Kentucky includes both virtual sessions and online guides that provide best practices and information about commercial buyers’ expectations across 12 core business functions, such as communication and relationship building, packing and labeling, and pricing strategies.

www.uky.edu/marketready/marketready-business-functions

NCAT ATTRA

The National Center for Appropriate Technology’s ATTRA program offers dozens of publications on marketing-related topics, including *Scaling Up Your Vegetable Farm for Regional Markets* and the *Marketing Tip Sheet Series*, which summarizes the pros and cons of the most common direct-market and wholesale channels.

attra.ncat.org/topics/marketing-business

Small-Scale Postharvest Handling Practices: A Manual for Horticultural Crops

This comprehensive guide on postharvest handling practices is published by the University of California Davis. It covers a variety of topics like harvesting, packaging and packinghouse, transportation and processing strategies.

https://postharvest.ucdavis.edu/Library/Postharvest_Center_Publications

To Market, To Market

Published by Rutgers University, *To Market, To Market: A Workbook for Selecting Market Options and Strategies for Agricultural Products* is a decision tool that helps beginning and established farmers consider which direct and wholesale markets might work best for them.

<http://farmmgmt.rutgers.edu/resources>

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