

# Healthy Food Systems: A Toolkit for Building Value Chains



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## **Preface**

This toolkit is the product of nine years of experience that Appalachian Sustainable Development (ASD) has accumulated in building a healthy foods value chain in the Central Appalachian region of Virginia and Tennessee. The agriculture of this region was dominated by tobacco for several generations. The farm land is fertile, but divided into small parcels, where tillable land is at a premium. Although incomes vary, most farmers in the region have limited cash or capital, and as such are very cautious about taking on the risk of new ventures. The strategy detailed in this Tool Kit reflects the reality of these farms and farmers. We believe, nonetheless, that it will have broad applicability so long as local needs, limits and assets are considered.

This toolkit is designed to help new and emerging healthy food system value chain efforts. While it draws heavily from the experience of Appalachian Sustainable Development, including particularly its *Appalachian Harvest* network, it also includes ideas, challenges and insights from other value chain and food system initiatives, both within Appalachia and other parts of the country. The toolkit is intended to be a hands-on resource which can help spur new thinking, help refine plans, and perhaps help guide implementation of new and emerging food system initiatives.

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The toolkit is divided into seven sections:

- I. Introduction
- II. What is a Value Chain?
- III. Getting started – A Quick but Essential Field to Table Scan
- IV. Building Value Chains, the First Leg: Markets
- V. Building Value Chains, the Second Leg, Building Supply
- VI. Building Value Chains, Leg Three, Processing, Aggregation and Distribution
- VII. Summary of Challenges and Lessons Learned

Along the way, short questionnaires are included, intended to surface some of the key needs one is likely to encounter in building healthy food system value chains.

A summary of lessons learned from existing experiences and a short list of resources comprises the final section of this workbook.

A word about Appalachian Sustainable Development and CAN: Appalachian Sustainable Development was formed in 1995 to overcome the “jobs vs. the environment” conundrum faced by so many limited resource rural communities. As part of that, we have developed a sustainable agriculture program designed to promote improved farm incomes and better stewardship practices by linking farmers to

consumers and buyers seeking healthy, local foods. ASD's agriculture program encompasses work with farmers markets, chef's and restaurants, a farm incubator, Land Grants, extension personnel and a variety of agencies and organizations assisting lower income people. *Appalachian Harvest*, the flagship value chain of our sustainable agriculture work, provides the primary basis for this document.

The Central Appalachian Network (CAN) is a five state network of catalytic non-profits working to build a more sustainable and locally rooted economy in Central Appalachia. Member organizations include ACENet (Athens Ohio), Jubilee Project (Sneedville, TN), the Center for Economic Options (Charleston, WV), the Mountain Association for Community Economic Development (Berea, KY), the Natural Capital Investment Fund (Shepherdstown, WV), Rural Action (Athens, Ohio), and ASD (Abingdon, VA). CAN works in partnership with the Ford Foundation, the Mary Reynolds Babcock Foundation and several local and regional partners. CAN is supporting healthy local food system work including the development of value chains, through "best practice" gatherings, workshops and consultation, peer learning and a mini grant program. For more information, visit the CAN website at [www.cannetwork.org](http://www.cannetwork.org).

## I. Introduction

Ricky Horton has been growing tobacco on his Scott County, Virginia farm for many years. In 2005, Ricky decided to try organic farming, after being encouraged by several other local farmers who had been growing for the *Appalachian Harvest* organic growers group. In his first year, Ricky and his sister, Sherilyn Shepard, raised a little less than two acres of organic produce. According to Ricky, “We made more on a half acre of cucumbers through Appalachian Harvest than we did on over an acre of tobacco. That got me interested in trying to grow more organic.”

Ricky and Sherilyn expanded their operations and now raise nearly 15 acres of certified organic produce, while also maintaining a flock of free range chickens, selling the eggs through *Appalachian Harvest* as well.

Ricky and Sherilyn are typical of many farmers in the central Appalachian region. Born and raised on farms, they have seen their economic opportunities dwindle as the federally supported tobacco program declined. So they began diversifying their operations several years back, including raising flowers and potted plants for retail sales, and growing conventional produce for sale to local buyers. Nonetheless, they were struggling to find a core business with reliable markets and a good return for their investment of work and capital. Raising organic produce and free range eggs through the *Appalachian Harvest* value chain system seems to have given them that core enterprise.

### Building a Healthy Local Food System



*Customers at the Abingdon, VA Farmers Market*

Over the past few years, there has been an enormous expansion in interest in both local foods and in maintaining a healthier lifestyle, including our eating habits. This broad public interest has created strong demand for local and organically and sustainably raised foods in many different market outlets: farmers markets, health food and specialty stores, grocers and supermarkets and public school and college dining halls.

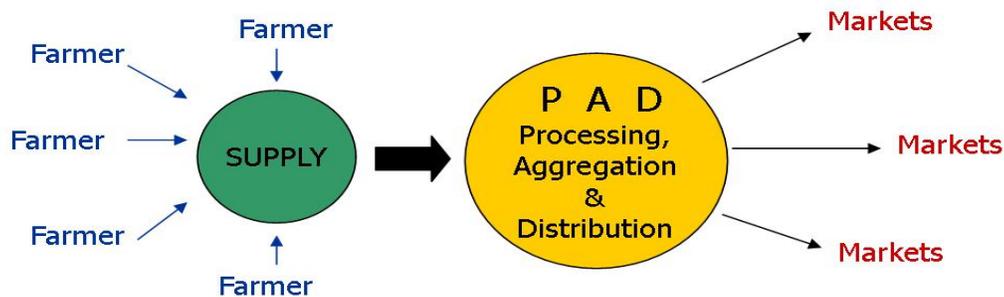
Although people define it differently, the idea of a healthy local food system is generally built around four elements:

- healthy food, including fresh produce and leaner, grass based meats;
- environmental stewardship practiced particularly by farmers but also considering the distance food travels and other post-harvest practices;
- access to healthy food for people at all income levels, not just for well-to-do “foodies”; and
- a livable wage for Farm-workers and a decent livelihood for farmers.

Few would argue with the goal of healthy food, accessible to all, that promotes better stewardship of the land while improving income for farmers. However, the challenge is in designing a system that makes these sometimes competing elements economically feasible for everyone in the chain. This work is generally referred to as “value chains”, that is, supply chains that begin on farm and end at the consumer’s table, and which promote values of health, fairness and sustainability.

## II. What is a Value Chain?

With barely more than 1% of the U.S. population engaged in farming, and our population steadily shifting to urban and suburban living, most Americans are several steps removed from farms and farmers. While the rapid growth in farmers markets in most parts of the country is an exception to this, the vast majority of food consumers depend on a “supply chain” to bring food – and for that matter, fiber, materials and energy – to their tables. This supply chain varies in both scope and scale, but usually includes:



1. **Supply** – Food producers, including farmers, ranchers, fishermen, aquaculture operations, etc;
2. **Market venues** – ranging from small grocers, independent restaurants and specialty stores, to regional and national supermarket chains, schools, colleges and universities, and an array of large institutional buyers;
3. **Processing, aggregation and distribution** - or PAD - which links the supply with markets. This ranges from community kitchens and small, independent broker/distributors to multinational food processing and/or distribution companies.

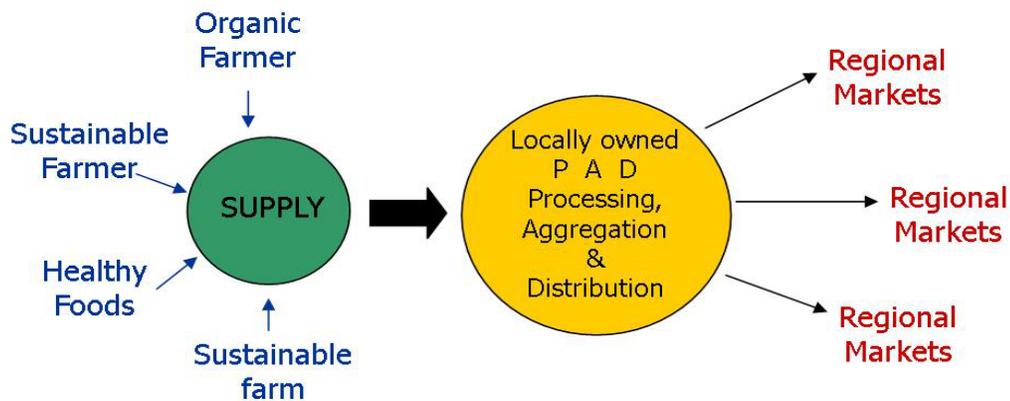
**A “value chain” is a supply chain that is designed to link supply with markets efficiently, but to do so while promoting certain core values, including:**

- *Equity and fair pay* – for farmers, farm-workers, food producers and workers in the supply chain.
- *Ecological sustainability* – beginning with more sustainable farming practices, but also considering the total ecological footprint of production, packaging, shipping, etc.
- *Community capacity* – to better meet its own food needs and to build a more self reliant economy, primarily through locally owned infrastructure and assets.
- *Health and food access* – for all, with a particular concern for people of limited means.

“We may be losing money on every bushel we sell, but we’ll make it up in volume,” goes the refrain of many a farmer. While it is said tongue-in-cheek, it is often a painfully accurate description of the farmers’ situation. When economist, Ken Meter studied Virginia’s food system, he found that annual sales of commodity crops in 1999 - 2004 averaged \$2.8 billion dollars. That seems impressive. Unfortunately, those same farmers’ input costs averaged \$2.9 billion per year. Substantial volumes, but a losing proposition for farmers. Is it any wonder that the state lost over five million acres of farmland over the past 50 years?

The same study also provides reason to be hopeful. Meter examined food expenditures by Virginia Consumers and found that if they bought directly from farmers - at farmers markets, through CSA’s, or through grocers and institutions sourcing from local farmers - **just one day per week**, farmers would reap an additional \$2.2 billion in annual sales. This new income alone will not guarantee farm profitability, but with well functioning, locally based value chains in place, farmers get a larger share of the consumer dollar, increasing their net return. More bushels sold and better prices on every bushel. It might just make farming a bit more viable.

Thus the work to build value chains involves the development and/or integration of the “three legs” of 1) supply, 2) PAD (processing, aggregation and distribution), and 3) markets in ways that promote equity, ecological sustainability, community self reliance, and improved health for all.



A value chain differs from a conventional supply chain in terms of the type of farming, the degree of local ownership or influence, and the distance to market. There is also more transparency and “feedback” among the different parts of the chain.

## **Value Chains and Place**

Over the past 20 years in particular, the food system has become increasingly globalized and in many respects “place-less”. Enabled by cheap energy costs and the Wal-Mart model of low cost international supply lines, this system has made food extraordinarily mobile and widely (though certainly not universally) available, irrespective of the season or the locale of those consuming it. In this environment, Wendell Berry’s oft-quoted dictum that “Eating is an agricultural act” has seemed unfathomable to most modern people.

Public policy has also played a critical role in shaping our food system. For example: Less than one cent of every Research and Extension dollar has focused on organic or sustainable production practices; extraction of ground water and river diversion have enabled large scale farming in arid areas, while externalizing long term costs; some states have provided incentives and exemptions that have encouraged Confined Animal Feedlot Operations; and federal laws have made procurement of local food difficult for most school systems.

On the other hand, the dramatic growth of farmers markets and other direct-to-consumer food arrangements (CSA’s, buying clubs, etc) since the mid 1990’s has helped spawn an awareness of food and its relationship to health and the environment, and a consequent demand for local and sustainably produced food. This in turn has spawned improvements in public policy that are beginning to level the playing field for local and sustainable foods.

Meeting this upsurge in demand for food that is both healthy and grown nearby has proven to be a challenge in most areas. Developing effective value chains can provide part of the solution.

Value chains are regional in nature. The transactions include more than the “farmer and consumer”, of necessity involving other parties and businesses such as processors or distributors. Nevertheless, they should provide several of the key attributes which local foods advocates seek:

- *Knowing where your food comes from*, through farmer profiles at the point-of-purchase, through farm tours and local meals that create direct contact, and through transparency and traceability throughout the chain;
- *Reducing food miles*, typically by 75 – 90% compared with conventional food transactions; and
- *Increased availability of organic and sustainably produced food, with less packaging and processing.*



*Appalachian Grown*, developed by the Appalachian Sustainable Agriculture Project, and *Appalachian Harvest*, developed by ASD provide examples of place-based brands

### **Value Chains and Scale**

Determining the appropriate scale at which to operate a value chain is critically important if it is to be financially viable for all parties throughout the three legs of the stool. While there is no clear formula for making this determination, the following questions should be considered. Keep in mind that these questions should be asked in an iterative, back and forth process. Information about markets will shape the size, type and number of farmers sought, while the type of farmers in your area will likely steer you towards particular markets.

1. How large is the unmet demand for healthy, local foods in your region, and can it be met by an expansion of farmers markets, CSA's and other direct market options?
2. Who and where are the specific market drivers for healthy local foods? Is it public schools, colleges and universities? Is it retailers, and are they regionally based or national chains?
3. What is the estimated total demand, and for what type of products? Is there a minimum demand that must be met?
4. Roughly how many farms / acres of land would be required to meet this demand?
5. Is there broad enough interest among farmers to meet this demand, and if so, how much assistance and support (training, materials, finance) will they likely need?
6. Why are these markets beneficial for farmers? Do they reduce costs? Improve prices? Provide larger or easier market access?
7. How many farmers / food producers will be needed to meet the minimum – and projected – demand, and how close are these farmers to one another?
8. What infrastructure is needed to link the desired products to the markets, and does some or all of it currently exist?
9. What will it cost to build or access the needed infrastructure, and what form of funding – grants, loans – is available?
10. Is there a local organization or business willing and able to launch the value chain? To manage it, if that is necessary?

Answering - or beginning to answer – these questions will help you assess your readiness to organize or build a value chain. It will also begin to connect you with farmers, buyers, distributors and others with whom you will need to work to build a value chain.

#### Value Chain Benefits

The primary reason to build or strengthen a healthy foods value chain is to move more organic and sustainably produced farm products into larger markets. But there are several additional benefits that accrue to local farmers and the economy, once an aggregation and distribution hub is in place:

**Jobs:** At processing, packing and grading, and food preparation facilities, and for truckers delivering food to markets.

**Business Development:** In greenhouses, feed, seed and breeding stock, organic or specialized materials, irrigation, mulch and other supplies and equipment dealers.

**New Healthy Food Products:** Using excess product or seconds

**Younger Farmers:** Who are attracted to both the organic / sustainable production methods, and the cooperative networks of growers around which value chains are usually built

#### **The “Chicken or the Egg” Dilemma**

A handful of farmers park their trucks in the Methodist Church parking lot on Main Street on a Saturday morning. There’s a good bit of vehicle traffic along that road and most people notice the trucks with produce on tailgates and tables. A few stop, but most people, busy with kids or chores, keep on going. At a glance, there doesn’t seem to be enough stuff to make a stop worth while, and judging from the number of shoppers, most folks seem to agree.

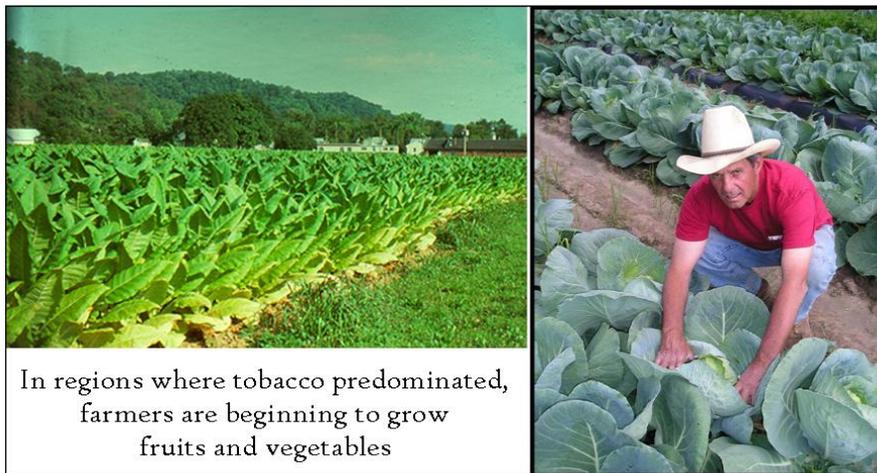
This market needs more farmers and more product diversity to attract a strong customer base. But most farmers don’t want to risk producing more or new products without first seeing a large and secure customer base. This is the “chicken or the egg” dilemma faced not only by farmers markets, but by most value chain initiatives as well. In fact, for value chains the challenge is usually greater, because the scale is larger and the requirements – quality, consistency, packaging and labeling, GAP, etc – are greater.

Section IV will explore strategies for overcoming, or at least working through the chicken and egg dilemma in order to launch a value chain.

### III. Getting Started – A Quick But Essential Field-to-table Scan

Developing each of the legs of the value chain will require considerable research, information gathering and experimentation. Before going too deeply in any one area, it is important to do a quick “field-to-table” scan of the value chain, both existing and potential, in your region. This will help focus your attention and resources and should reduce the chances of going down a path that is unlikely to succeed. It will also help you begin to assemble a team and develop the all important *relationships* you’ll need to catalyze or facilitate a value chain.

As with all things in this toolkit, we strongly recommend that information gathering and analysis be mingled with experimentation and practice. Don’t spend years or even months exclusively talking and thinking about what you might do; get involved, find the folks already engaged in parts of the value chain and together, try stuff. From this experimentation will come insights and relationships unlikely to surface from a purely academic or intellectual process. We might think of this as an “action learning” approach.



Once you decide to embark on action learning to scan the potential for a healthy food value chain, consider these questions to guide and organize your investigation:

*What is already here?*

- What are the major and minor crops or livestock that are being raised in our area? Which of these are increasing (in acreage, \$) and which are stagnant or in decline?
- Why are they increasing or declining? Is it falling prices, competition and loss of market share, production problems, regulatory or PAD barriers? Other factors?

- Who are our farmers and food producers? Multi-generation or newcomers? Conventional or sustainably minded? English speaking or non-English speaking? What are their resources and limits, and what is their capacity to handle risk?
- What could be raised here – in terms of soils, climate, topography - or once was, but is not now produced on a significant scale? What factors have precluded current production of these things? Can they be profitably and sustainably produced in our region?

*What's the market and where is it headed?*

- In our region and surrounding areas, what are the most important direct market outlets for healthy food: Farmers markets, CSAs, buying clubs, produce stands, restaurants? What is being bought there? Are any foods emerging in many or most of these markets that could be produced well in our region? Who are the farmers already doing so?
- In our region and surrounding areas, what are the most important wholesale and institutional markets for healthy food: Locally based grocers, regional or national supermarket chains, produce auctions, institutional purchasers, colleges and universities, public schools? Which of these are already sourcing locally/regionally and which appear serious about doing so? What is their interest in organic/sustainably produced food?
- Are there particular healthy foods for which a strong demand is evident or emerging in both direct markets and wholesale/institutional markets? Is this current demand significantly larger than current supply?
- Are there farmers raising these foods, and if so at what scale? Are these farmers interested in and capable of significant production increases? What would they need to scale up?

*PAD (Processing, Aggregation and Distribution) requirements*

- What are the PAD requirements to move larger volumes of the potential food products we are considering into wholesale and institutional markets? Are the PAD requirements of some buyers easier to meet than others? Who are these buyers?
- Are there existing facilities – meat processing, produce grading and aggregation, commercial kitchens – that could be used to meet PAD requirements? Who owns these and how accessible/affordable are they for local producers?
- Are there existing distributors that might help move local foods to regional markets? Who owns these, what would it cost to use them and what requirements do they have, in terms of grading, cooling, packaging, etc.
- If there are substantial gaps in the needed PAD infrastructure, are there partners or funds available to address these gaps?

These are among the important questions you should be considering as you begin to build or expand a value chain. There are certainly others, probably including some unique to your region. However, don't feel that you must fully answer all of these questions before taking action, developing partnerships, or experimenting with new products or markets. Remember: this is an *action* learning approach.

A fruitful field-to-table scan should focus your plans and efforts by helping determine **the basics:**

- 1. What farmers are now raising, or could be raising, that can be sold in substantial quantities, and produced profitably and sustainably*
- 2. Who is likely to buy these products, where they are located and what are their essential requirements; and*
- 3. What systems and/or infrastructure will be needed to connect area farmers with those buyers, and which parts of this infrastructure need to be developed?*

#### **IV. Markets – The First Leg of the Value Chain Stool**

Several years ago, a farmer made an appointment to show some samples to the produce buyer at a local supermarket chain. Once in the warehouse, he opened the box to reveal beautiful red and yellow bell peppers, most of which he'd grown on his organic farm. They were large and extra large, unblemished, some blocky in shape, others a bit more elongated. The buyer looked through the box quickly, shook his head and motioned for the farmer to follow him. Further back in the warehouse, he pulled a box marked "Product of Holland" down from the shelf and opened it. Inside there were dozens of perfectly red bell peppers, all virtually identical in size and shape. They were much smaller than the bell peppers in the farmer's box.

"Look at these" the buyer said, emphatically and proudly, "they look like they were made in a mold!"

When the farmer asked if the perfect uniformity was really necessary, the buyer responded, "That's what the American housewife wants."

The next day, that same farmer arrived at the dock of a different supermarket chain with the same box of peppers (He'd kept them in a cooler overnight!). When the box was opened this time, the buyer almost immediately took one of the peppers out, held it up to look at it, and then took out his pocket knife, cut a slice and ate it.

"That's fantastic! It's so crisp and sweet. You grew these?" asked the buyer. "I grew some of them and some were grown by another farmer in our group", was the reply.

As he dialed a number in his phone, the buyer asked "They're organic, right? How many cases can you bring me of these?"

Know your buyer.

A word about "the chicken or the egg"

Farmers want to know that their crops or products will sell. Buyers, especially those with institutions and supermarkets, want assurances that product will be there in the quantities and quality they need. How does one overcome this "chicken & egg" challenge getting a value chain going?

Two strategies appear to help. First, find a "patient buyer", i.e. one who wants what you have to offer, but understands that your supply will not be too large or entirely reliable for some time. They're out there. A medium-sized local grocery chain might fit the bill, or a larger one willing to place your items in designated stores, expanding the number as your supply grows.

Alternatively, a small private college with 1000-5000 students may also be a good fit. The key is that they are sufficiently committed to healthy local foods to stay with you as you learn, grow and make mistakes along the way.

A second strategy is to identify a small group of farmers who are willing and able to take risk, specifically to produce foods that buyers appear to want, in sufficient quantity to both test and begin to develop a market. Finding farmers willing to do this may be a challenge, although some will see it in their long-term interest to take such a risk. A small pool of funds might also be raised to help offset some of the risk to these growers, should the markets prove unworkable.

This is perhaps the first and most important step you can take in developing a value chain. Needless to say, getting to know potential buyers happens over time, so you must go well beyond a single meeting. Nonetheless, though often you can get a reasonably good idea about their attitudes, priorities and likely interest in your product from that first impression. **Getting to know your potential buyers** is the first step in assessing and building a market for your healthy foods. The second is to **narrow the market scope** to those that best fit your current and near-term needs and capabilities.

### Getting to know potential buyers

Having completed a field-to-table scan of the healthy food system in your region, you begin the process of getting to know your buyer with a critical baseline of information:

- What farmers are raising or could raise in substantial quantities, produced sustainably and profitably;
- Who is likely to buy these products; and
- What are the infrastructure needs to prepare and transport these products to markets.

It is now time to drill down much deeper.

Two simple things will get this process underway. First, visit the market(s) and take note of what you see. If the potential buyer is a grocer or supermarket, what's on their shelves and how is it displayed? Are there "local" sections, or local branded products? How much of an organic presence is there, and for what items? What about grass finished, free-range meats and eggs? How well placed and displayed are these items? What is the price difference between these and the non-local/sustainable items? While you're there, talk to the produce manager and other staff.

For schools and institutions, visit their dining halls or cafeterias with comparable questions in mind, and talk to students and faculty you encounter. These visits will give you a sense of where the buyer is now with the types of foods you hope to sell them (Of course for chains, it is better to visit several stores, and for any buyer, you need to take seasonality into account if you're looking for local items).

The second step involves a little research to ascertain where these potential buyers are headed in regards to local and sustainable foods. Have they set specific procurement goals, as some universities have done, for a percentage of local or sustainably sourced foods? Are they planning to create a local/organic salad bar in one of the dining venues, or a designated section within their stores? Have there been any statements or pledges made by their leadership, for example to the Climate Action Commitment or to source from local farmers? This information, combined with what you've learned from market visits, should help you decide the buyers with whom you want to make an appointment.

When meeting potential buyers, it's best to carry two things with you: solid information about them, obtained during the process outlined above, and samples. Produce and eggs provide potential buyers with immediate visual cues about the quality of what you're raising and about your "presentation", including packaging and labeling of the product. For meats, while the visual is important there will likely be a taste test element as well. Because it is not uncommon for meat samples to get "lost in the shuffle", you may need to provide them more than once, or to several people in the institution. Alternatively, bringing potential buyers to you at a cookout or sit-down meal on the farm can insure that they taste your products, while they also begin to develop a sense of connection to the farmers.

Before you provide samples, whether tomatoes, free range eggs or ground beef, be sure these are items you can raise well, in quantities large enough for at least a "trial period" with the buyer. This might be an academic semester or a designated season, but it should be long enough for their students or customers to taste your food, and hopefully, start asking for it regularly.

While much of the initial meeting with a potential buyer is about "putting a face on their food", it is also essential that you glean as much information as possible, including:

- Which attributes are they most interested in and why? Quality? Locally raised? Organic?
- Quantities: What would they like to have and what would the minimum be that they need?
- Quality standards, regarding size, ripeness, color (for eggs in particular), fat content, etc.
- Delivery schedule: Monthly (for prepared foods), weekly, twice per week?
- Delivery destination: Will you be delivering to a central dock, or to each individual store or school?
- Seasonality: What do they want and what are they willing to accept?
- Packaging and labeling preferences and requirements
- Do they require GAP (Good Agriculture Practices) for produce, or USDA certification for meats?
- PRICE – What are they now paying for comparable products and what are they willing to pay for your foods?

Price is an especially critical element in developing value chains. Low prices, for milk, meats, grains and produce have driven thousands upon thousands of farmers out of farming. Low prices also encourage poor environmental and labor practices, as farmers seek to cut costs any way they can. **Therefore, it is of no value to get access to markets if the prices they pay don't offer farmers the possibility of profit.**

On the other hand, retailers must cover their costs and schools must keep their meal plans affordable. Finding a price that meets their needs and still offers a decent return to farmers is one of the biggest challenges you'll face if you move beyond the "direct-to-consumer" sales. There are tools to make this more feasible, but we'll come back to that later. Now we're ready to turn our attention to supply.

Appalachian Harvest focuses on supermarkets and currently sells to six different chains encompassing nearly 600 stores in Virginia, Tennessee, North and South Carolina, Georgia and Maryland. Supermarkets were chosen because of the size of the market and the access it provides to a broad spectrum of consumers (as compared to restaurants, CSA's or Universities). We sell approximately 25 different produce items along with free range eggs. Additionally, supermarkets are "in season year round", while schools, colleges, and universities are at least somewhat out of sync with the growing season in much of the country. The potential to steadily expand the market and introduce new crops and products is also strong with supermarkets,

The primary disadvantage of selling produce to supermarkets is the strict, almost industrial, aesthetic standard which most maintain. This translates to a relatively high proportion of "seconds", i.e good quality produce that is a bit too small, too large, too curved or otherwise non-uniform.

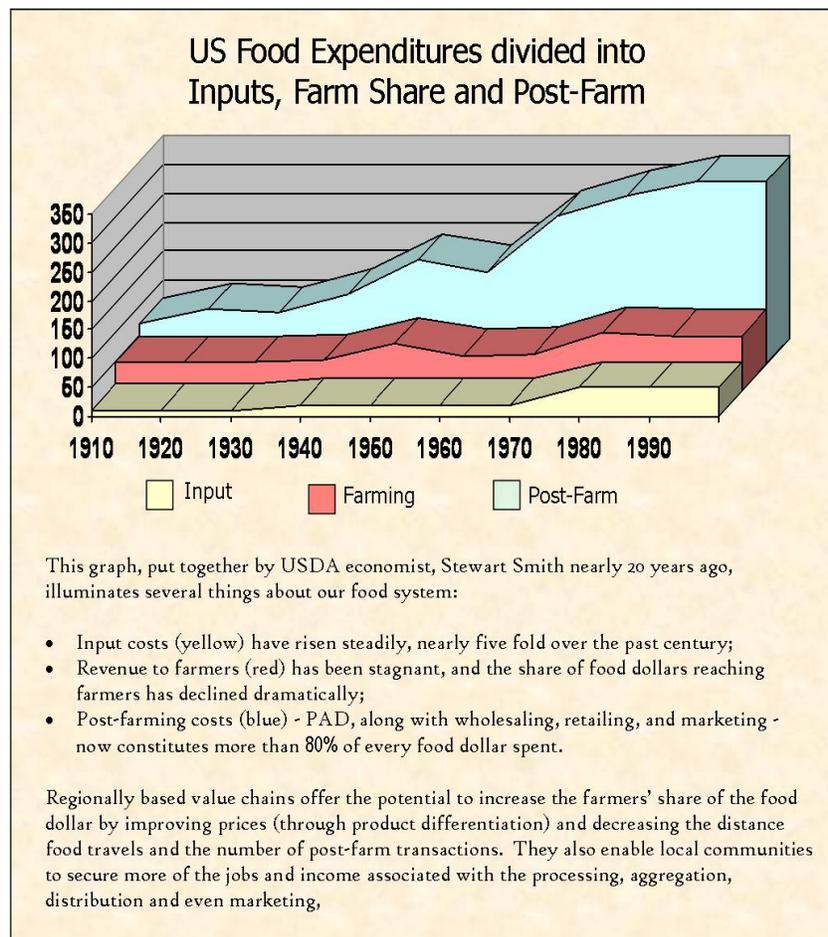
ASD addressed this challenge by developing multiple markets for seconds, greatly improving farmers' bottom line. These include:

- Healthy Families, Family Farms – Using funds provided by churches, civic groups and individuals, organic produce seconds are purchased directly from local farmers, at a discounted price, and then distributed to families in need through the Southwest Virginia Second Harvest Food Bank.
- Sales to college and university dining services – who can use seconds for most items because they will be chopping, slicing or cooking them. The price at which we can offer them is lower than a #1, making *Appalachian Harvest* more competitive with other conventional suppliers.
- Sales to in-store food service – that is, the salad bars and food bars which many supermarkets offer. Like college food services, they also can use seconds since they will be chopped or cooked.

*Finding good markets for seconds is key to improving farmer incomes, but it also helps achieve goals of making healthy food more affordable and accessible.*



*Through this Healthy Families initiative, ASD has distributed over 250,000 lbs. of fresh organic produce to families in need, while providing income to more than 50 small farmers. Gary Mitchell, Manager of the Second Harvest Food Bank in Abingdon, gets ready to prepare some organic cabbage.*



## **VI. Supply – The Second Leg of the Value Chain Stool**

Value chains provide farmers with three important benefits:

- Large markets for their products
- Relatively good prices
- Time saved on sales and distribution

These benefits are what drive many farmers to participate in a value chain, often raising a new crop or changing production practices to meet a specific standard, such as “organic” or “grass finished”. While many farmers welcome the opportunities a value chain offers, it is not for everyone.



Farmers in the *Appalachian Harvest* network gather to plan for the upcoming season.

### **Two Types of Farmers**

In Appalachian Sustainable Development’s early years, we formed a restaurant marketing group that included about ten small scale farmers and market gardeners. We pooled our produce (uncertified organic), field graded it and delivered it to about a dozen restaurants in a (sometimes) air conditioned van. We also operated a CSA together, usually with about 50-60 households. This group included some Amish families, a few back-to-the-landers and some middle-aged hippies. We were a pretty typical bunch of organic growers.

By 1999, we were still pretty much the same group of growers, in spite of five years of outreach to local farmers. On the heels of some visits to regional supermarkets late in 1999, and with their stated interest in local, organic produce, we secured our first two

tobacco farmers willing to grow for these buyers: seasoned farmers, born and raised in Appalachia, known in their communities. This was the beginning of our rapid transition from idealistic newcomers to veteran local farmers, from the pony tail crowd to the Ollie North crowd.

Know your farmer.

It is essential to know your base of farmers and to build your marketing and distribution systems accordingly. From our experience, it seems clear that there are two basic types of farmers, which we'll categorize as "sustainably minded" and "conventional". Recognizing that these are generalizations and that some folks don't fit either, it nevertheless provides a useful way to understand and meet the needs of farmers.

Sustainably-minded"	"Conventional"
Generally younger	Typically middle aged or older
Often new to farming	Born and raised on farms
Transplants to the area	Local
Strong philosophical commitment to organic/sustainable	Skeptical of organic/sustainable
Experimenters, "dabblers", who want to raise many things	Prefer to produce smaller # of items on a larger scale
Love the idea of farming, but lack resilience	Know the work of farming, are resilient
Micro to small scale	Small to medium scale
Want interaction with customers	"I'll grow it, if you'll sell it"
Expect top dollar	Want good prices, but more accustomed to wholesale.

While there are definitely exceptions to these categories, the majority of farmers in the Appalachian region and the southeast largely fall into one of these two groups. Building a sizeable and reliable supply requires outreach, education, extension work and development of some form of cooperative marketing. This in turn depends upon knowing the farmers with whom you work and ensuring that these support services are relevant to them. In the case of *Appalachian Harvest*, we have designed our system primarily to meet the needs of the more conventional growers, as they represent the vast majority of farmers in our region. It is feasible, we have found, to also reach newer and more sustainably-minded farmers, with some adjustments and additions to our training and support system.

Building a reliable supply is among the most challenging aspects of value chain work. But it is absolutely essential to developing strong commitments from buyers.

**There are three key components to building supply:**

- **outreach;**
- **training and technical assistance; and**
- **building a producers' network.**

Outreach

An effective outreach strategy will vary considerably from region to region, but begins with an understanding of what type of farmer you're hoping to attract. Young people and sustainably-minded growers are more likely to attend a community meeting and respond to a message focused on organic crops or healthy foods. Tobacco growers and more traditional farmers are more likely to come out if the meeting is hosted by a neighbor, or is held at a farm, rescue squad or other familiar location. Both groups are looking for help with selling their products, so an emphasis on secure markets is always helpful. The flyer below is typical of what ASD has used – at farm stores, equipment dealers, libraries and other venues – to reach a broad group of farmers.

# Growers Wanted!!

TO RAISE ORGANIC  
PRODUCE  
FOR LARGE MARKETS

Tuesday, January 29th  
6:00-8:00 pm  
Washington County Public Library,  
Abingdon, Virginia



Appalachian Harvest is a network of nearly 60 local farmers raising organic produce and free-range eggs, selling to more than 600 supermarkets.

At this meeting you'll learn about:

- Raising organic produce for commercial markets
  - How to become certified organic
  - Markets: What items are needed
- Potential profits from organic production
- How to become part of the Appalachian Harvest Network

For more information contact Phil Blevins with Virginia Cooperative Extension at (276) 676-6203 or Appalachian Sustainable Development at (276) 623-1121 or visit our website [www.asdevelop.org](http://www.asdevelop.org)

Using local media also helps spread the word about the opportunities you are offering.

BHC, Jan 7, 2008

# AGRIC

Market growth  
creating more  
opportunities

On Tuesday, Jan. 29, from 6 to 8 p.m., there will be a public meeting for people considering raising organic produce or free-range eggs for commercial markets.

Sponsored by Appalachian Sustainable Development and Virginia Cooperative Extension, the meeting is free and open to both experienced and new farmers. Those attending will learn the basics of organic farming, including the process for becoming certified, and for raising free-range eggs.

Specific market opportunities will be discussed, primarily focused on the large supermarket demand which Appalachian Harvest has secured for the 2008 season.

For more than fifteen years, the market for organic produce and other organic foods has been growing by nearly 20 percent annually. Sales in 2006 exceeded \$10 billion and are expected to reach \$20 billion nationally by 2010. Demand for organic foods in Southwest Virginia and East Tennessee has also grown substantially over the past several years, as reflected in a doubling in Appalachian Harvest sales to supermarkets from 2005 to 2007.



FARM SCENE  
ANTHONY FLACCAVENTO

For the 2008 season, Appalachian Harvest has secured commitments from 8 different supermarket chains in Tennessee, Virginia, North and South Carolina, Georgia and Maryland.

All told, these buyers are requesting 7,000 to 10,000 cases per week of certified organic produce, involving more than two dozen different items. Among the larger sellers in 2007 were grape tomatoes, red slicer tomatoes, bell peppers, zucchini, cucumbers, leaf lettuce, sugar snap peas and eggplant.

According to ASD's marketer, Robin Robbins, "We currently have at least twice as much demand for organic produce as we have supply. So we need many new, dedicated farmers to help meet this demand."

In addition to the organic produce, free-range eggs are also now selling through the Appalachian Harvest System. At present, about 750 dozen eggs are selling each week with a projected demand of 1,000 to 2,000 dozen per week.

In addition to market demand, the community meeting on Jan. 29 will provide participants with a basic understanding of commercial organic production systems, along with a list of upcoming workshops and farm tours throughout the spring.

For more information contact Phil Blevins at the Virginia Cooperative Extension office at (276) 676-6203 or the ASD office at 276.623.1121 or visit our Web site: [www.asdevelop.org](http://www.asdevelop.org).

**ANTHONY FLACCAVENTO** is executive director of Appalachian Sustainable Development in Abingdon. You can reach him at (276) 623-1121 or e-mail him at [asd@eva.org](mailto:asd@eva.org).

ASD uses a five step strategy for grower outreach and recruitment in to the *Appalachian Harvest* system.

**Step 1: Farm tours** – beginning the prior year and continuing through the fall. These tours help teach existing farmers new skills, but also help potential growers become more comfortable with new crops or practices, once they see folks they know (or can relate to) having success.

**Step 2: Five to ten community meetings**, beginning late fall and continuing through the winter. These are geographically dispersed, some in people's homes, others in familiar community venues. A short presentation provides people with basic information about the types of crops or products being sought, the market demand, the training and support offered, and how to get started.

**Step 3: "Meet the buyer" gatherings** are similar to the community meetings, but utilize a buyer from a well known supermarket or institution to bring people out (we have done this with both regional supermarkets and national chains like Whole Foods).

Step 4: **Use the media**, both to advertise your community meetings and to build broader interest among potential growers. Most local papers are happy to provide this coverage or run your press releases.

Step 5: **One-on-one outreach and word of mouth**. Often current growers in a value chain become great “recruiters” as they see the benefit of increasing the size and reliability of supply.

Keep in mind that many farmers will want to “study on” the possibility of participating in a value chain. In our experience, most farmers take one to three years before they feel ready, so don’t become discouraged if only 10% of farmers who attend outreach meetings actually become involved in the first year.

#### Training and Technical Assistance

The essence of a strong training and technical assistance (T & TA) program is that it will be technically sound and current, yet “farmer-friendly”. Usually this means that more complex research and comprehensive information need to be condensed into much shorter pieces. In some cases, the language will also change in the process. Regardless, the focus is on **practical application** of information, adapted to the farms, soils, pastures and ecosystem of your particular region.

With the emphasis on sustainable production practices, this information can be more difficult to find from land grant universities and Cooperative Extension, although increasingly there is both interest and expertise there.

ASD uses a four step approach to providing good T & TA. Throughout each element of this training, a **peer-learning** approach is utilized because it is, quite simply, much more effective.

Step 1: Gather information, including both academic research and field tested experiences, on the range of subjects your farmers will need to succeed. This may include information on enhancing soil fertility, no-till production, organic pest and disease management, rotational grazing systems, etc. In addition to Land Grants, ATTRA (Appropriate Technology Transfer for Rural America), USDA/SARE, Stockman Grass Farmer, and several other information clearinghouses can be excellent resources.

If you have the capacity or partners with the capacity, it is also helpful to conduct your own field research as a means to expand knowledge and help strengthen relationships with Extension and universities. Over the past three years, ASD has coordinated field trials on three different organic production issues in concert with Virginia Tech, University of Tennessee and Cooperative Extension.



*Allen Straw and Phil Blevins, VA Cooperative Extension, show farmers results of an organic tomato blight trial, undertaken with ASD*

Step 2: Compile the information in a “farmer friendly” form that provides background (and sources for additional reading) but emphasizes practical application. ASD utilizes a Growers Resource Manual that we update each year.

Step 3: Hold practical workshops and farm-based trainings. Where possible, these should be led or co-taught by local farmers, sometimes along with Extension personnel or more experienced farmers from other areas. It is also important to address the broadest range of farmers’ information needs; thus you may need to offer “beginner, intermediate and advanced” levels of training.

Farm tours, in which specific methods, practices or systems are showcased, can be especially effective among farmers, as they make information contained in written materials come alive on a local farm.



*Local farmers participate in a hoop house workshop in Lee County, Virginia.*

Sept 4: One-on-one TA and mentoring. However strong your workshops, training and written materials are, there's a good chance that many farmers, especially newer ones, will also need one-on-one TA to help identify problems and solve them. *Appalachian Harvest* has a paid staff person – an experienced local farmer who has received extensive additional education – who helps fill this need, drawing upon the experience of others in the network. We also utilize *farmer-mentors* to extend this capacity and shorten response times for farmers. Two to three of our more experienced growers serve this role, under part-time contracts with ASD. The farmer mentors are provided with additional training and materials (e.g. insect and disease identification guides) that increase their effectiveness.



*Farmer-mentor Gary Van Cott explains drip irrigation.*

### Building a Producers Network

A “network” is not a cooperative in the organizational or legal sense. It is, however, an effective means to foster cooperation among farmers (and other producers) and in so doing, build the supply one needs to develop a value chain.

Networks form when people come together out of a common need, typically a market opportunity that each producer alone cannot meet. The market may be too large, or the requirements of cooling, packaging, labeling, processing or shipping may involve equipment and facilities they cannot afford. This is the case for the *Appalachian Harvest* grower’s network. From the standpoint of building supply, a producers network, provides two key benefits:

First, it brings farmers together, with some regularity, to plan production, discuss products and markets, share woes, and celebrate successes. It builds collegiality over competition and helps farmers see that they need one another to succeed.

Secondly, it cultivates peer learning, as farmers share tips, techniques and ideas, and seek information from their colleagues. It also provides a friendly venue through which to deliver workshops, and from which farm tour hosts arise.

Producer networks tend to form organically when a larger-scale market opportunity is presented. Nonetheless, they require attention and coordination if they are going to meet the farmers' needs and provide the reliable supply that value chains demand. This will likely require regular – and useful – meetings that are straight forward, participatory and as short as possible. Meetings of the *Appalachian Harvest* network have evolved to generally follow the following format:

1. Welcome/orientation of new producers
2. 20-30 minute educational session, focused on an issue or challenge farmers face
3. “Business meeting”, primarily focused on markets, products and production planning.

The producers' network provides the vehicle through which production is planned and coordinated to match (or at least approximate) the secured demand. ASD utilizes two spreadsheets, a “Buyers Weekly Demand Matrix”, with weekly projections for multiple crops, provides the basis for production plans for every crop (or product). Our “Projected Production Schedule” flows from the demand matrix, allocating production of the various crops among the growers in the network. Through the producers' network, farmers cooperatively “allocate” the production needed to meet the stated demand. Where possible, we strive for 10-20% more production than demand, as experience shows that not every farmer will meet his or her projections.

<b>Appalachian Harvest</b>													
<b>Large Volume Buyer</b>													
<b>Crop Demand and Acreage Requirements by Crop -- 2006</b>													
Crop	Size	Ukrop's	Food City	Lancaster	Whole Fds MD	Whole Fds SO	Earth Fare	Ingles	Totals	Yield Per Acre/Wk	Wkly total div. By yield/acre	x # of plantings or selling weeks	Total Acres
Sugar Snaps	10#	25		20	350		10	90	495	200	2.5	1	2.5
Early Tomatoes	20#								275				
Red Slicers	20#	50	100	64		50	75	80	419	275	1.5	2	3
Carolina Gold	20#								275				
Red Grape	12 pint flat	160	50	120		50	50	180	610	400	1.5	2	3
Sun Sugar	12 pint flat	25	50		50		15	180	320	400	1	2	2
Roma	20#	100	50	64		50	20		284	275	1	2	2
Heirloom	10#		75	50			60	80	265	250	1.25	2	2.5
Green Bells	1 1/9 bu	60	50	100		50	30	60	350	225	2	2	4
Cucumbers	1/2 bu	45	60	160		50	75	80	470	200	2.5	4	10
Picklers	1/2 bu	30							30	225	0.1	4	0.4
Green Zucchini	1/2 bu	35	60	160		50	80	100	485	300	1.5	4	6
Golden Zucchini	1/2 bu	25	50	160	50	30	40	100	455	300	1.5	4	6
Eggplant	1/2 bu	15	25	75	50	35	30	30	260	255	1.25	2	2.5
Green Beans	bu									120			
Butternut	1 1/9 bu	25	30	50			30	30	165	500	0.5	12	6
Acorn	1 1/9 Bu	25	20	50			20	25	140	500	0.4	12	5
Delicata	1 1/9 bu			20			15	15	50	500	0.1	8	1
Sweet Dumpling	1 1/9 bu						15	15	30	500	0.1	8	0.75
Tapered Peppers	1 1/9 bu									175			
Watermelons	3 count	25	50	32			20		127	1500	0.1	8	1
Seedless	6 count	25	75	32	200	40	25		397	1000	0.5	8	4
Cantaloupes	6 count	25	50	56		56	50	30	267	1000	0.3	8	2.5
Leaf Lettuce	24 count	40	200	42		50	40	80	452	800	0.6	6	4
Romaine	24 count	25	25	35		50	60	50	245	800	0.3	6	2
Cabbage	15 count			55		35		100	190	1000	0.2	8	1.5
<b>Total</b>													<b>71.65</b>

**Appalachian Harvest P.O. Box 791 Abingdon, VA 24212 276-623-1121 asdfarm@eva**

With market demand secured and a producers network in place, the final, critical component of the value chain is the infrastructure and system that links them together, the Processing, Aggregation and Distribution.



## **VII. PAD – Processing, Aggregation and Distribution – the Final Leg of the Value Chain Stool**

The lynchpin in any value chain is the infrastructure (and the system) that moves products from farms to markets, in the form required by the buyers. This usually involves some combination of **processing, aggregation and distribution, or PAD**. There are four basic types of PAD, designed for four different types of foods:

1. Slaughterhouse – for meats; usually USDA inspected, depending on buyers requirements; may also involve a custom butcher or additional processing for specialty items.
2. Dairy and/or Creamery – for processing and bottling milk, and for making cheese, ice cream and other dairy products.
3. Shared-use or Commercial Kitchen – for a range of preserved foods, from bagged, fresh-cut salads to salsas, jams and baked goods.
4. Produce Packinghouse – for washing, grading, cooling, packaging and shipping produce.

Generally speaking, the processing, cooling, packaging and food safety requirements for each of these require separate facilities, although a commercial kitchen can certainly complement a produce packing house. Whether for meats, dairy, processed foods or produce, PAD infrastructure serves the basic same purpose: Providing market access to substantial numbers of farmers and making farm products “market-ready”. What constitutes “market-ready” is determined by the buyers you choose, their needs and how the food you raise is merchandised.

PAD infrastructure is especially critical when working with limited resource farmers, as in most of central Appalachia and the southeast, or farmers transitioning from commodity crops to fruits and vegetables or higher value meats. These farmers typically are unable to purchase the basic equipment involved in PAD (the limited resource growers) or unwilling to take all the risk on a new and untested venture (the commodity growers).

The essential elements of PAD in value chains include:

1. A building
2. Equipment for grading, cutting, processing, cooking, etc.
3. Coolers or freezers (in most cases)
4. Trucks, or some sort of distribution fleet
5. Product differentiation capacity, including labels and handling, special packaging, etc.
6. The ability to meet food safety (GAP,GHP, HACCP) and possibly organic standards

7. The organizational capacity to manage the PAD and integrate market demand with production.

These elements may be dispersed among several businesses and organizations or managed by a single entity. Regardless, they must be closely coordinated and tightly integrated for a successful value chain.

#### *Appalachian Harvest approach to PAD*

When Appalachian Sustainable Development launched *Appalachian Harvest* in 2000, there were no local food distributors carrying organic produce, and no facility for packing and grading produce in the region. Experience and research had led us to the conclusion that sizeable markets for organic produce offered the best opportunity for tobacco growers and other traditional farmers seeking a viable crop. As a result, we decided to build our own PAD system. In truth, we had no idea what we were getting ourselves into.

The centerpiece of this infrastructure is the *Appalachian Harvest* Packinghouse. As the pictures below illustrate, our packinghouse started out as a bay in a tobacco barn, on “loan” to us from one of the participating farmers. After a few years we purchased the barn and property (about one acre) and continued retrofitting and adding on to the building, as the number of farmers and the market demand grew. In May, 2007, an electrical fire destroyed the building (just days after a major renovation and expansion had been completed), forcing us into a temporary location for that season. By June of 2008, our new facility was completed and operational.



*Appalachian Harvest began operations in a tobacco barn in Stickleyville, VA to which modifications and additions were added over several years.*



*The fully renovated and expanded Appalachian Harvest packinghouse, April, 2007.*



*An electrical fire destroyed the packinghouse in May, 2007.*



*After a season in a temporary facility, the new Appalachian Harvest packinghouse was completed in July, 2008, in Duffield, VA.*



*Internal view of Appalachian Harvest packinghouse.*



*Getting ready to run cucumbers on one of the grading lines.*



*Cucumbers coming through the line.*



*Golden zucchini, washed and labeled*

### Processing: The first stage

In a fresh produce operation, the “processing” does not involve chopping, slicing or cooking of items, though these are compatible operations that may be useful in dealing with excess or seconds. The processing function is nevertheless critical to meeting the demands of buyers and getting the best possible price for farmers. There are three sequential steps:

1. *Inspection at the dock* – Farmers in the *Appalachian Harvest* network are trained in quality standards for the produce they grow, including proper picking (size, cleanliness, ripeness), post-harvest handling and Good Agricultural Practices (GAP – more on that later) protocol. When they bring produce to the dock, it is inspected to be sure that the majority meets the standards of a #1 or #2. For new growers particularly, this initial inspection, which involves looking through the boxes or bins, provides an opportunity to improve their quality, to ensure that a higher percentage of their produce is picked at the right size, ripeness or time of day (if it appears limp or shrunken). If a substantial portion of a grower’s produce does not meet the standard, it may be rejected at the dock. **A poor quality batch of produce takes more time and money to grade, and slows down the process for other farmers.**

Farmers receive an invoice for their produce, denoting the type of produce, # of boxes or bins, and date of delivery.

2. *Forced air or hydro-cooling to remove field heat* – With the exception of tomatoes and most winter squashes (butternut, acorn, etc.), it is very desirable to remove field heat from produce as quickly as possible. “Field heat” refers to the interior temperature of produce at the time of picking, and is usually close to the ambient temperature over the preceding few hours. This is why early morning picking is strongly encouraged (though not always possible for growers); cucumbers picked at 7:00 a.m. following nighttime temperature of 60 degrees will obviously have less interior heat than those picked late afternoon, following several hours of 85 degree sun. Where morning picking is impossible, growers are encouraged to pick mid to late evening.

*Appalachian Harvest* has adapted a forced air cooling system to remove field heat. Depending on the item and quantity, the produce is placed in a cooler at low temperatures (34 to 38 degrees) and very high humidity (over 90%). A strong fan is then used to blow this cold, moist air through the produce for 15 minutes to one hour, again depending on the item and quantity, until the desired interior temperature is reached. A small number of fruits are poked with a temperature probe to see when the temperature is appropriate. The produce is then moved, either to a standard cooler or directly to the grading line.

Removing field heat extends the shelf life of produce, a critical attribute not only for your buyers and customers, but for your own reputation as well. A shriveled cucumber in a major supermarket with your label on it constitutes bad PR.

3. *Washing, Grading and Labeling* – *Appalachian Harvest* began with a single grading line, which we used for every type of produce. For several years, we also hand washed or wiped produce as well, a very slow process that you want to get beyond as soon as possible.

Grading is essential if you are going to meet the aesthetic demands of most buyers, especially grocers and supermarkets, since they display your produce for all to see. But good grading also increases income for farmers, as it enables you to find the highest value for different sizes and shapes of produce. This is because different buyers have different standards for a “#1”. In cucumbers, for instance, some buyers prefer a smaller cuc, generally a “32 count”, meaning that 32 fill a 20 pound, half bushel box. Others want a 24 count cucumber, which is about 25% larger. Both pay a #1 price (though it will likely be somewhat different), so farmers get top dollar for a wider range of produce. The same holds true for zucchini, summer squash, bell peppers, tomatoes and other items.

Additionally, the grading process allows you to sort out good quality “seconds”, for which substantial, though lower paying markets also exist (see earlier discussion in the Marketing section).

Washing of produce usually occurs at the beginning of the grading line, and allows you to remove small amounts of dirt or dust. **Washing does not replace proper picking or handling by growers, as it will not remove mud or extensive amounts of soil.**

Washing also enables you to better address GAP and food safety standards, as you can introduce a dilute amount of bleach or similar disinfectants (such as Stor Ox) into the injectors of the grading line. Properly done, this both increases the shelf life of the produce, while operating within both food safety and organic standards.

Labeling is the final step of this processing stage. It may or may not be required or expected by your buyers. Along with other point-of-sale materials, labeling helps establish your identity in the market place, and can help consumers feel connected to the farmers who raised their food.

Labeling also enables the stores to “get the ring” i.e. to capture any price premium, for example for local and organic items. It also allows them to track the sales of your products, by item and in total. But labeling can also be expensive, more so in the actual application of labels, than in their production. Think about 40 bell peppers in a box, each labeled; 500 boxes of peppers, every week. And cucumbers, zucchini, tomatoes... It is a substantial cost, the value of which you will need to determine.

### Aggregation: The Second Stage

A weekly order from one of the core *Appalachian Harvest* buyers might involve ten different items and over 1000 total cases of produce. This would be impossible for most smaller, limited resource farmers to fill, even for a single week, let alone every week for a few months. However, **aggregating the produce of several farmers makes this possible.** Aggregation can happen without a packing facility, e.g. through an internet-based farm-to-consumer website. For larger buyers who demand consistency, as well as various packing requirements, aggregation usually happens in and through a packing house.

In addition to meeting the larger volume requirements of most supermarkets or institutional buyers, aggregation can provide both a longer season and some reduction of risk for the organization or business responsible for supply. Utilizing the producers network to coordinate and manage supply, multiple growers are recruited to raise a specific item such as summer squash. In southwest Virginia, the season allows for three to four plantings of summer squash, more if hoop houses are used for early or later season production. Efforts are made to have roughly equal acreage of summer squash planted on 4 week intervals (squash bears high quality fruit for 3 – 5 weeks), ensuring a steady supply over a longer period. This helps avoid large price cuts that come with a glut of product, while also building both buyer and consumer loyalty to your brand

(Being present in the marketplace for a longer period is needed if people are to become repeat customers).

Aggregation can also make distribution more cost effective as a full truck costs less per case to transport than one that is half empty.

One of the decisions you'll need to consider once you do decide to aggregate the products of multiple farmers, relates to brand identity. Some groups, like the Oklahoma Food Cooperative, maintain the identity of each individual producer, whether they're selling beans, beef or bread. Consumers – both individuals and chefs – select items from specific producers, using a web-based system that displays what's available and facilitates ordering. Farmers and food entrepreneurs then bring their products to a designated center where volunteers (and a small amount of paid staff) pack orders for individual buyers, drawing from among several producers. Co-op members then pick up their orders at a designated site.

While this system works very well, it is geared for a large number of small buyers – primarily households and some restaurants – and a monthly distribution system. *Appalachian Harvest* sells to a small number of large buyers (primarily), shipping twice per week. It would be virtually impossible for us to maintain individual farm identities for 60+ farmers in hundreds of markets. Instead, we have worked to build a brand inextricably linked to those farmers, their farming methods and our region.

### Distribution: The Third Stage

An effective distribution system is critical to the success of any value chain. Often, it is one of the most expensive components as well, particularly for highly perishable items (like produce) that must be shipped frequently. It is possible to cover your costs, even generate a small amount of net revenue, with careful planning of delivery routes and a reliable supply of product.

The single most important determinant of net costs or revenue in shipping is **whether or not your truck is full**. Traveling with a full or nearly full truck is a challenge, especially during the early and late parts of the season, when produce may be less available. Plan your sales and delivery accordingly, focusing on closer buyers during times when supply is lean.

Although it varies, most food shippers charge a per-case delivery fee, which represents the primary means to offset costs ("Backhauling" products for companies is the other, wherein you bring their product back to your area, charging a fee for that service, rather than returning with an empty truck.) The more cases you can put on the truck, the more revenue you generate. Delivery fees vary widely, with cross-country produce often tagged with a \$5-\$7 per-case fee. A local or regional food distribution system has, potentially, a competitive advantage here. You can charge much less, making the total

cost of your items – what the buyers call the “delivered price” – more competitive. *Appalachian Harvest’s* delivery fees vary with fuel cost and miles shipped. For 2009, they ranged from \$2-\$3 per case.

The other factors in determining shipping revenue are the size of the truck and the relative bulk of the product. A 4’ x 4’ pallet holds 80 flats of grape tomatoes, 40 cases of bell peppers, and only 25 of cabbage or cantaloupes. Because it is not feasible to charge different per-case fees for every product, you must be careful to consider weight and bulk in planning your deliveries, and before that, your product selection.

Delivery costs include:

- Rental or lease costs on vehicle, or
- Loan payments, if you purchase the vehicle, and maintenance costs
- Fuel and oil
- Road and vehicle taxes and fees
- Insurance

Determining your cost for different delivery routes involves calculating both variable costs – fuel and labor – and your fixed costs of loan payments (or lease), insurance and taxes and fees. Maintenance costs are also variable, but since they are unpredictable, can be assigned an average amount per year (based on experience). Maintenance and fixed costs are then divided by the number of deliveries made (or projected to be made) in a year. These are then added to the variable costs, as in the following example:

<b>Annual fixed costs for a 24’ refrigerated delivery vehicle:</b>	
Loan payments (based on a 5 year loan and a used vehicle):	\$7,000
Maintenance	\$1,500
Taxes and fees	\$1,500
Vehicle insurance	\$2,000
Total annual fixed costs:	\$12,000
Number of deliveries (3 / week x 20 weeks)	60
Fixed costs/deliver (\$12,000 ÷ 60)	\$200
<b>Variable costs, per delivery:</b>	
Labor (based on \$25/hr for 12 hours)	\$300
Fuel (based on 600 mile round trip, 10 mpg, \$3/gal).	\$180
Misc. – tolls, meals, etc.	\$70
Variable costs per delivery	\$550
Total cost/delivery	\$750

A 24' truck can hold 10 (sometimes 12) pallets, each of which can hold from 25 to 80 cases. An average of 50 cases/pallet or 500/truckload is a reasonable basis for estimate. In this instance if you charged a \$2/box delivery fee, it would take 375 boxes (approximately 8 full pallets) to break even.

Beyond costs and revenues, the other key distribution considerations include: proper refrigeration temperatures (different for tomatoes than most other crops); tight, secure wrapping of pallets to preclude shifting and falling of boxes; proper loading, so that the last delivery goes on first; dock timing, to ensure that your driver arrives at the dock(s) within their receiving hours; driver training; and following FHSA (Federal Highway Safety Administration) rules, particularly regarding weight limits and limits on driver hours.

There's no avoiding the fact that distribution and delivery is a constant challenge. If you can work out a contract with a nearby distribution company that is reasonably priced, and assures that your food will be handed with care and reach your markets on time, you should seriously consider this.

## **VIII. Summary**

- **Review of key components of value chain**
- **Key learnings/lessons**
- **Importance of v-c to accelerating and expanding good food in our nation, and in building community assets.**