Photo © Ken Meter, 2006

Making Small Farms into Big Business

A plan for infrastructure investments to connect small farms in South Carolina to local markets

Produced for the State of South Carolina

by
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Crossroads Resource Center
www.crcworks.org

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Acknowledgements

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We are most grateful for the steering committee for this project, skillfully led by Jack Shuler of the Palmetto Agribusiness Council, whose support for the research was unflinching. We especially gained from the collaboration of food leaders in the state who brought the Agriculture and Commerce departments into the process, and who engaged so many diverse people to help inform this work. The spirit of this collaboration certainly represents the best of the promise of local foods work.

Members of the steering committee include:

Jack Shuler, Palmetto Agribusiness Council, chair

Ted Campbell – Department of Commece
Martin Eubanks – Department of Agriculture
David Lamie – Clemson University
Hugh Lane – Bank of South Carolina
Roland McReynolds – Carolina Farm Stewardship Association
Chalmers Mikell – South Carolina Farm Bureau
Ansley Rast – Department of Agriculture
Gary Spires – South Carolina Farm Bureau
Lisa Turansky – Coastal Conservation League
Diana Vossbrinck – Carolina Farm Stewardship Association
David Winkels – South Carolina Farm Bureau
Laura Wurts – Carolina Farm Stewardship Association

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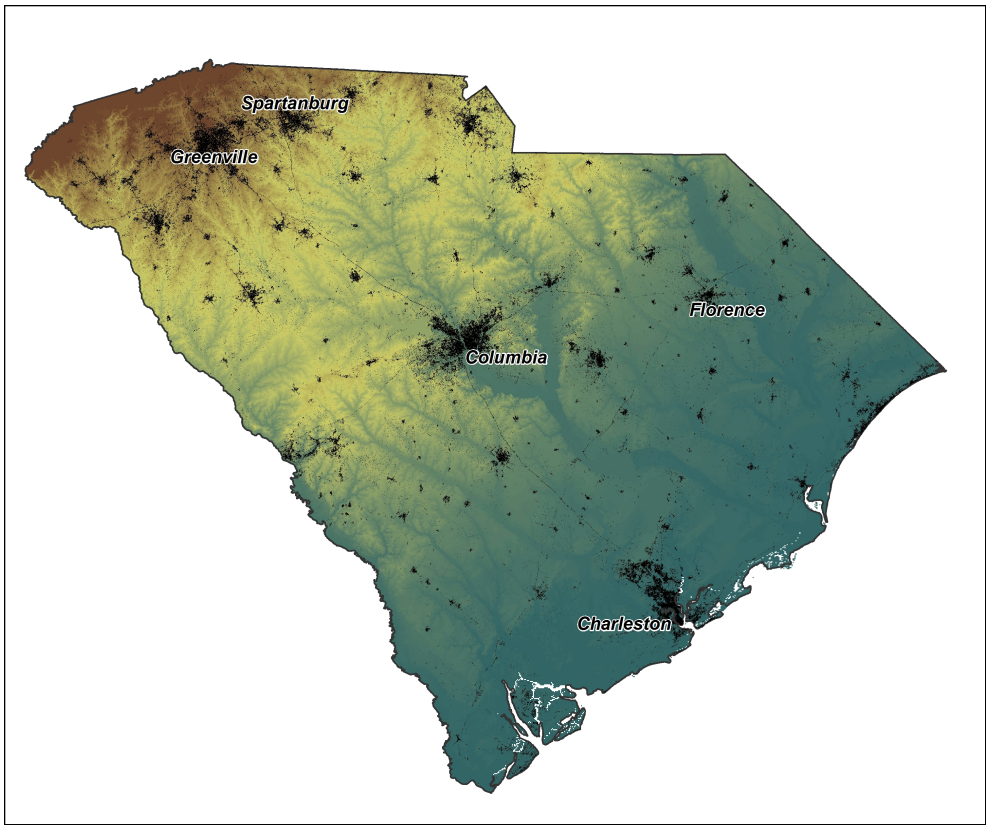

Figure 1: *Land elevations in South Carolina – Map by Adam Cox*

Purpose of this report:

The State of South Carolina has commissioned this report to solicit a plan for specific infrastructure investments that could be made by the state, and its partners, to promote the ability of small farms in South Carolina to raise food for in-state markets.

The primary focus of this document is to recommend investments that will foster the production, processing, and sale of locally produced fruits and vegetables in local markets, because this sector of the farming industry has the lowest barriers to entry. Also, it focuses on strategies that will do the most to assist small farmers.

Other sectors of the food system are equally important, but are covered in less detail due to the limits of time and resources. It is assumed that progress in achieving the recommendations outlined here will also reap benefits for these larger sectors.

While this report will propose specific allocations of money by the state, it will not include close detail regarding each specific investment; obviously, any steps taken using the framework developed here should be taken with sober calculation of economic realities in a rapidly changing food system; further feasability studies and business plans will be essential at each future stage to ensure that pragmatic steps are taken. Each step taken must ensure, to the greatest extent possible, that supply and demand are properly balanced.

South Carolina food leaders interviewed for this study

153 people (unduplicated) have been directly contacted for interviews or site visits

The following 53 people have been interviewed on the phone to date:

Frank	Blum	SC Seafood Alliance (Charleston)
Ben	Boyles	SC Cooperative Extension (Catawba region)
Kathryn	Boys	Virginia Tech (formerly Clemson Univ.)
Don	Brant	Brant Family Farms (Grays)
Bill	Buyck	Bank of Clarendon
Charlie	Caldwell	Ovis Hill Farm (Timmonsville)
Chalmers	Carr	Titan Produce (Ridge Spring)
Sara	Clow	GrowFood Carolina (North Charleston)
Claudia	Cordray	Cordray Meats (Charleston)
Beth	Crocker	SCDA Lead Council/Food Policy Council
Steve	Ellis	Bethel Trails Farm (Gray Court)
Weston	Fennell	Limehouse Produce (Charleston)
David	Gamble	Turkey Creek Farm (Nesmith)
York	Glover	Clemson Extension / Gulla Co-op (St. Helena's Island)
Kevin	Gowdy	Long Branch Farm (Cades)
Anna	Hamilton	Lowcountry Housing Trust (Charleston)
Holly	Harring	DHEC (Columbia)
Sep	Harvin	Williamsburg Packing Co. (Kingstree)
Clyde	Hoskins	Clemson Univ. Meat Poultry Inspection Department
Ed	Hudson	Hudson Family Farm (Rowesville)
Greg	Johnsman	Geechie Boy Farm & Mill (Edisto Island)
David	Lamie	Clemson Institute for Economic Development (Columbia)
Hugh	Lane	Bank of South Carolina
Blake	Lanford	Clemson Cooperative Extension (Conway)
Jay	Lewis	Rebecca Farm (Hemingway)
Rose	Lewis	Rebecca Farm (Hemingway)
Mark	Marhefka	Abundant Seafood (Mt. Pleasant)
Roland	McReynolds	Carolina Farm Stewardship Association (Pittsboro, NC)
Tee	Miller	Georgetown Economic Development (Georgetown)
Ryan	Nevius	Sustainable Midlands (Columbia)
Marjorie	Palmer	SC Rural Resource Coalition
LD	Peeler	Milky Way Farms (Starr)
Tim	Peters	Motor Supply Restaurant (Columbia)
Craig	Reaves	Sea Eagle (Beaufort)
Glenn	Roberts	Anson Mills (Hopkins, Columbia)
Joe	Schroeder	RAFI/TCRF (Pittsboro, NC)
Nikki	Seibert	Lowcountry Local First (Charleston)
Nikki	Smith	Hub City Farmers Market (Spartanburg)
Patrick	Smith	Clemson Univ. Meat Poultry Inspection Department

Jack	Stone	Bytech (Greenville)
Jason	Stugart	Creeklore Farms (Darlington)
Henry	Swink	McCall Farms / Glory Foods (Florence)
Cathy	Taylor	Seldom Rest Farm (Kershaw)
Weatherly	Thomas	SCDA, state food safety coordinator
Lisa	Turansky	SC Coastal Conservation League (Charleston)
Debbie	Turbeville	USDA Rural Development (Lake City)
Diana	Vossbrinck	Carolina Farm Stewardship Association (Anderson)
Sam	Wallace	Edible Upcountry (Greenville)
Don	Welborn	Carolina Produce (Anderson)
Janette	Wesley	Slow Food Upstate/Earth Market (Greenville)
Cassandra	Williams	Horry Co. Agribusiness Council
Brad	Wyche	Upstate Forever (Greenville)
Geoff	Zehnder	Clemson Univ. Sustainable Agriculture Program

The following 106 people have been interviewed during sites visits, to date:

		Cornwallis Tea House (Winnsboro)
Troy		Croissants Restaurant (Myrtle Beach)
David	Anderson	Black Pearl Farms / Chernoff Newman firm
Black	Arthur	Black's Peaches (York)
Buddy	Atkins	Richland County Conservation Dept. (Columbia)
Elizabeth	Beak	Crop Up Consulting (Charleston)
Sallie	Belue	Thicketty Mountain Farms (Spartanburg)
Brent	Belue	Thicketty Mountain Farms (Spartanburg)
Cory	Berg	Green Door Restaurant (Charleston)
Abraham	Bosvelt	Bosvelt Farms (Irmo)
Ben	Boyles	SC Cooperative Extension (Catawba region)
Don	Brant	Brant Family Farm (Grays)
Susan	Brant	Brant Family Farm (Grays)
Fred	Broughton	SC Department of Agriculture (Columbia)
Garrett	Budds	Charleston Land Trust / SILO (Charleston)
Renae	Chewing	Farmer, Johns Island
Sara	Clow	GrowFood Carolina (North Charleston)
John	Colbrith	Seabreeze Farms
Creg	Collier	The Yolk Café (Rock Hill)
Sabrina	Collier	The Yolk Café (Rock Hill)
Aubry	Cooper	Kershaw County (Camden)
Chanda	Cooper	RSWCD
Johney	Cousar	Catawba Farm & Food Coalition (Chester)
Carey	Crantford	Crantford Research (Columbia)
Laura	Cunningham	The Backyard Diner & Grille (Columbia)
James	Dargan	Triple R Farms (Florence)
Brenda	Davis	Eat Smart Move More (Columbia)
Chuck	Davis	Green Acres market (Florence)
Mike	Davis	Terra Restaurant (Columbia)
Emile	DeFelice	Caw Caw Creek Pastured Pork (St. Matthews)

Julie-Ann	Dixon	Richland County Council (Columbia)
David	Dorman	Palmetto Farms (Galivants Ferry)
Carrie	Draper	Copascities (Columbia)
Johnaca	Dunlap	Clemson Master Gardener (Spartanburg)
Maxine	Edwards	Bluefield Blueberry farm (Loris)
Erin	Eisele	Sustainable Midlands (Columbia)
Weston	Fennell	Limehouse Produce (Charleston)
Charlie	Fisher	Soil & Water Conservation District (Columbia)
David	Gamble	Turkey Creek Farm (Nesmith)
Leland	Gibson	Gibson Farms (Westminster)
York	Glover	Clemson Extension / Gullah Co-op (St. Helena's Island)
Margaret	Grant	Lowcountry Food Bank (Charleston)
Matthew	Gusmer	Windy Hill Orchard (York)
Reggie	Hall	SC Farm Bureau (Columbia)
Samuel	Hall	Bush & Vine Farm (York)
David	Harper	Pee Dee Land Trust (Florence)
Scott	Harriford	Jah Roots (Columbia)
Shaheed	Harris	Asya's Organic Farm, Sumter Cooperative Farms (Sumter)
Greg	Hyman	Hyman Vineyards (Florence)
Sharon	James	Carolina Bay (Hopkins)
Gloria	Kellerhals	Catawba Farm & Food Coalition (Chester)
Patrick	Kelly	SILO (Habersham)
Wendy	King	Old McCaskills Farm (Rembert)
Yasmin	Kor	USC (Columbia)
David	Lamie	Clemson Institute for Economic Development (Columbia)
Blake	Lanford	SC Cooperative Extension (Conway)
John	Lindower	Blue Cross Blue Shield Food Services (Columbia)
Kathy	McCaskill	Old McCaskills Farm (Rembert)
Eric	McClam	City Roots Farm (Columbia)
John	McIntyre	Clemson Extension (Mullins)
Kemp	McLeod	McLeod's Farms (McBee)
Tim	Meade	Hub City Co-op (Spartanburg)
Kellee	Melton	Asst. State Conservationist (Columbia)
Tony	Melton	Clemson Extension (ret. – Florence)
Robert	Moore	Senn Brothers Produce, Inc. (Columbia)
Azeez	Mustafa	Asya's Organic Farm, Sumter Cooperative Farms (Sumter)
Fathiyyah	Mustafa	Asya's Organic Farm, Sumter Cooperative Farms (Sumter)
Maceo	Nance	Dir, Small Business Ec Dev / Commerce (Columbia)
Caci	Nance	Nance Farm LLC (McConnells)
Ryan	Nevius	Sustainable Midlands (Columbia)
Amy	Overstreet	NRCS, Public Affairs Specialist (Columbia)
Daniel	Parson	Parson Produce (Clinton)
Paul	Pennell	The Pennell Barn (York)
Chris	Pinard	European Gardens (York)
Ben	Powell	Clemson extension (Conway)
Gary	Prince	Senn Brothers Produce, Inc. (Columbia)

Urbie	Rest	Rest Park Farm (Beaufort)
Christy	Rucker	Beaver Creek Farm and Market (Swansea)
Agnes Macfie	Russell	Fairfield Memorial Hospital (Winnsboro)
Hambright Belue	Sallie	Thicketty Mountain Farms (Spartanburg)
Jason	Scholz	Stella's Southern Bistro (Simpsonville)
Julia	Scholz	Stella's Southern Bistro (Simpsonville)
Ron	Sebeczek	USC (Columbia)
Gregg	Senn	Senn Brothers Produce, Inc. (Columbia)
John	Senn	Senn Brothers Produce, Inc. (Columbia)
Jessica	Shillato	Spotted Salamander (Columbia)
Steve	Slice	USDA, Farm Service Agency (Columbia)
Gene	Smith	Catawba Farm & Food Coalition (Rock Hill)
Nikki	Smith	Hub City Farmers' Market (Spartanburg)
Gary	Spires	SC Farm Bureau (Columbia)
Jack	Stone	Bytech (Greenville)
Syd	Thompson	Farmer (Conway)
Scott	Thompson	Farmer, (Conway)
Tara	Tracy	Limpin' Jane's Restaurant (Georgetown)
Tom	Trantham	Happy Cow Creamery (Pelzer)
Lell	Trogdon	former restaurant owner (Rock Hill)
Lisa	Turansky	SC Coastal Conservation League (Charlseton)
Terry	Vickers	Fairfield County Chamber of Commerce (Winnsboro)
Hugh	Weathers	Commissioner, SCDA (Columbia)
Ben	Williams	Millgrove Farms (Rose Hilll, Georgetown)
Carol	Williams	Millgrove Farms (Rose Hilll, Georgetown)
David	Williams	Muscadine grape farmer (Nesmith)
Keith	Willoughby	Wil-Moore Farms (Lugoff)
Jeb	Wilson	Cotton Hills Farm (Chester)
Glenn	Winborn	Farmer (Horry Co.)
Samuel	Wyatt	Bytech (Greenville))

Executive Summary of Strategic Plan

Drawing upon an economic overview of conditions in South Carolina agriculture, testimony from field interviews, and responses to our producer survey, the following key conclusions and recommendations are made in the Making Small Farms into Big Business strategic plan:

South Carolina's Unique Assets

South Carolina holds exceptional and unique assets:

1. Land is relatively plentiful
2. Farmers have multiple growing seasons each year
3. Water is often adequate
4. Charleston is an important culinary center, and excellent local restaurants are emerging in Beaufort, Columbia, Georgetown, Greenville, the Catawba region, and elsewhere across the state
5. Urban populations are large enough and sufficiently close to farmland that farmers and food buyers need not travel long distances to meet
6. Key leaders know each other well and the state is small enough to coordinate effectively
7. South Carolinians seek connection and authenticity

Issues and Opportunities

Yet our research also uncovered unsettling conditions that should be addressed. These create rich and emergent opportunities:

- Demand for local food exceeds supply
- South Carolinians are concerned about protecting the integrity of "local" food trade
- If the state food system does not reduce hunger, the system will not be sustainable
- Direct sales reward farmers adequately
- Farmers are often skeptical of aggregation and debt
- More farmers are needed
- The State plays a central role
- Infrastructure investments must accomplish multiple goals
- Regulatory barriers must be removed
- This is long-term work

What is a small farm?

In the context of this Making Small Farms into Big Business study, small farm cannot be defined simply by either its acreage, or the amount of food it sells. For this initiative, a "small farm" is one that participates directly in efforts that create new, relational commerce, and strategic partnerships trading locally produced food. State funding will be directed solely to this purpose. Drawing upon supportive infrastructure, these small farms will form (and join) clusters of interrelated businesses to convey food from South Carolina farms to South Carolina customers.

Concise Summary of Recommended Strategies

Our recommendations are listed in detail below *(see full report, beginning page 25)*; key action items are outlined here:

1. The **State of South Carolina must adopt a formal commitment to creating a solid economy focused on local food production for local markets.** This policy commitment will both set a tone enabling food initiatives to thrive, but will also allow state staff to participate more fully in supporting these local foods initiatives.

2. **Emerging "food production nodes" should be strengthened by offering funding through a competitive grant program.** These production nodes will be defined and described in better detail below. Their key quality is that they are clusters of farmers working in close proximity to each other. The state will embrace and support financially community level activity that is attempting to connect these farmers with local consumers – not attempt to develop a single template that will apply across the state.

3. Expansion of local food production through food production nodes will be enhanced by **expansion of Clemson's New and Beginning Farmer Program, and by expansion (or adaptation) of Lowcountry Local First's incubator farm,** where appropriate, into new regions in concert with food production nodes.

4. **Food hubs such as GrowFood Carolina (Charleston)** are also essential facilities for larger regions. Food hub leaders think that perhaps three or four food hubs could be supported across the state; their creation and growth will draw upon a web of food production nodes, and must be coordinated on a statewide basis.

5. **Supportive state policy** will also be required, including:

    - Effectively coordinating local foods activity

    - Strengthening the Certified South Carolina Grown program

    - Engaging in an energetic marketing campaign calling upon state residents, for example, to "Eat Five, Buy Five:" that is, to eat five fruits and vegetables each day, and to buy $5 of food directly from a farm in the state each week.

Core Recommendation:

The State must make a formal commitment to supporting small farms that grow food for South Carolina markets. Such a commitment would allow State agencies to make a priority of supporting the expansion of local food production, distribution, and marketing efforts. This should be done as part of legislation with lasting force.

In order to demonstrate the state's commitment to small farms, and to reduce anxieties about uncertain markets, a customer base loyal to local foods must also be consciously cultivated. South Carolina Department of Agriculture should mount a **broad, long-term educational and marketing process** that engages state residents in learning productive skills in growing food, food handling, food preparation, and smart consuming. More on these marketing processes will be found below.

Much like any other educational process, these educational steps taken will not totally pay for themselves in a competitive economy. Yet some of this work will happen most effectively in social-entrepreneurial ventures that earn at least part of their income through competitive economic activity, and rely upon support as needed to carry out less lucrative educational functions.

With a dual commitment to generating new supply and new market demand in a balanced manner in place, South Carolina is well-positioned to make investments, primarily at the direct and regional sales level, to increase production of foods for local markets. Our favored strategy to accomplish this end is to develop 15-20 food production "nodes" is across the state. These should not be imposed by state action, but rather the existing work already underway in South Carolina communities should be leveraged with state funds that help strengthen local work and also help it become better coordinated. In turn this will inspire other regions to take action of their own, building a statewide enthusiasm for local food.

This state commitment to local foods will penetrate activity in all five tiers of the South Carolina food system, as outlined below.

Tiers of the Food System

Our action plan addresses all five tiers of the South Carolina food system (see Figure 2), from household to global. These include:

- Household level
- Direct and regional level
- Strategic partners level
- Large volume aggregation and distribution level
- Global anonymous level

The most effective work toward strengthening local food sales in South Carolina will begin with the direct and regional level, spilling over into all other levels as progress is made.

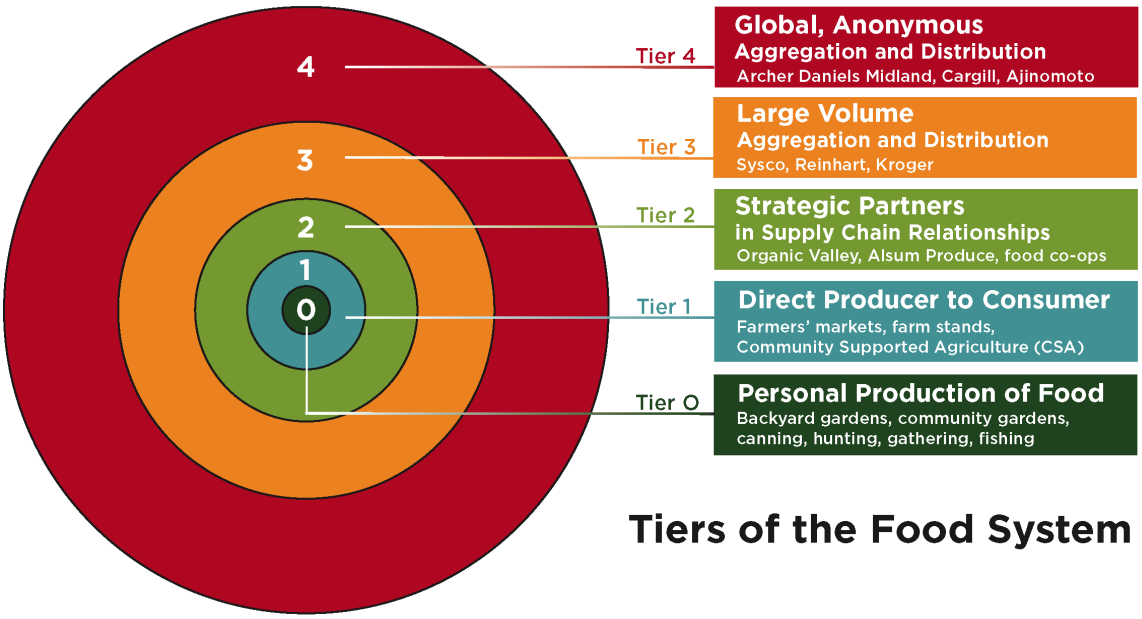

Figure 2: *Diagram created by University of Wisconsin Center for Integrated Agricultural Systems (CIAS). See full report for citation.*

At the direct and regional sales levels:

Food production "nodes" are emerging across the state, and should be strengthened through a competitive grant program. These nodes are essential to building a network of supportive relationships and physical infrastructure that will allow larger-scale initiatives (such as food hubs, processors, and other facilities) to thrive. This network might be called a "food web." Building such a web of interconnection is the essential precondition for building an economy in which small farms may become big business.

The term "node" comes from natural sciences and systems analysis.[1] A *food production node* is cluster of farms in close proximity to each other, working in collaboration and using common food production infrastructure. Strengthening food production nodes is a solid way to create lasting infrastructure that ensures South Carolina communities both maintain a sustainable agriculture system, and can feed themselves. Importantly, each builds local efficiencies in food trade. For example, such a cluster of producers might build a joint-use building that allows each of them to wash, sort, and package their products for local sale. It would also have enough storage capacity to hold this food safely for later distribution.

[1] The root of "node" is the Latin word for "knot." The Oxford English Dictionary defines a node as a "central or connecting point." http://oxforddictionaries.com/us/definition/american_english/node

A node may also be the place where local consumers turn to buy fresh food from a farm. Indeed, depending upon the vision of local food leaders, available resources, and production levels, a food production node could take on many other capacities as well. Yet its essential importance is to focus the vision and resources required to maintain local agriculture serving local producer needs, as negotiated with local consumers.

A food production node differs from a *food hub*. A food hub is more of a regional facility that focuses on aggregation and distribution of local foods for larger markets, such as restaurants, grocery stores, educational institutions, or wholesalers. South Carolina may have the potential for as many as four food hubs: the existing GrowFood Carolina near Charleston, and others in the Greenville/Spartanburg region, near Columbia, near Florence, or in Horry County.

A *food production node* will be created by clusters of farmers and food producers who are in very close proximity to each other, and to their intended markets. South Carolina may be able to support 15-20 nodes in different parts of the state; each feeding into a web of connections that helps supply food hubs and larger wholesale accounts, as well as local consumer needs (see Figure 3).

A "food web" is formed by networking food production nodes and food hubs

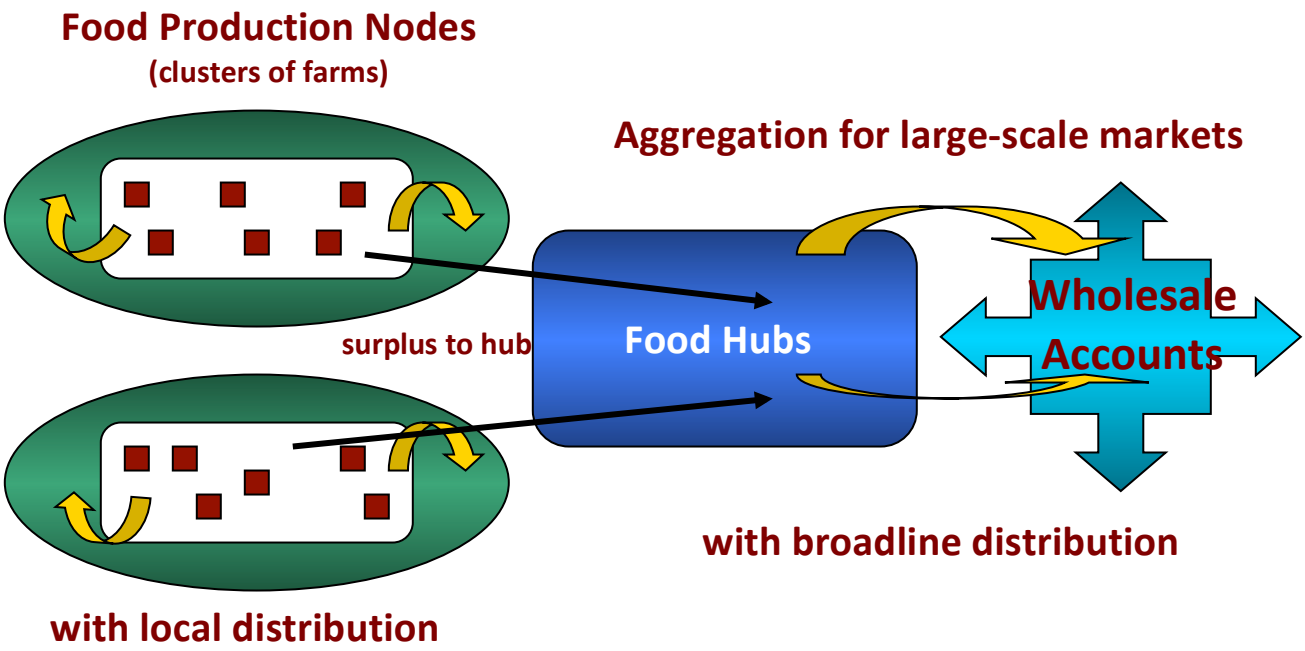

Figure 3: *Elements of the future South Carolina food web. Note that food production nodes (farm clusters) and food hubs may have similar facilities, yet each serves a distinct purpose in the food web.*

Building a network of food production nodes is the essential infrastructure required to create a web of support around these regional food hubs. Without sufficient supply of food, these hubs cannot thrive. Conversely, without regional food hubs, it will be difficult for the farmers at each production node to find adequate markets. The food production node is the connecting point that brings

farmers and food hubs into solid collaboration, but it also is the facility that focuses the attention of local farms on local markets. Food hubs also help bring farmers into collaboration, but cover a larger geography, and focus their distribution efforts on larger regional markets.

The map below (Figure 4) shows what this might look like in the future.

Already, food production nodes are emerging across the state, yet each is hampered by a lack of resources. Some examples:

- A resident initiative in **Chester** has obtained use of a historic building in the downtown area. This has been carefully refurbished to create an indoor market where farmers bring food to sell on Saturday mornings. Equipment has already been purchased to install a commercial kitchen on the site. In the future, organizers hope to build a cluster of farms adjacent to the market where food will be grown year-round in greenhouses and hoophouses. Organizers hope this will spur further food-oriented development in the urban core.

- Retiring Clemson extension agent York Glover is helping organize Gullah Co-op, a farmers' cooperative on **St. Helena's Island**. The farmers already market products together at the Bluffton Farmers' Market, and hope to launch their own market in a more visible location soon. They also plan to draw upon an existing commercial kitchen on the island for light processing. The Penn Center also has built considerable food production capacity.

- Hub City Farmers' Market is drawing up formal plans for an urban site in a low-income neighborhood of **Spartanburg** that would combine farms, a commercial kitchen, and storage areas. Although organizers currently consider this to be a "food hub," its primary importance (in our view) is as a facility that will encourage production of food in an urban setting, and as an educational facility that fosters healthy eating in the community. The site is close to the existing farmers' market so this will also strengthen food sales at the market.

The "Food Web" of the Future in South Carolina

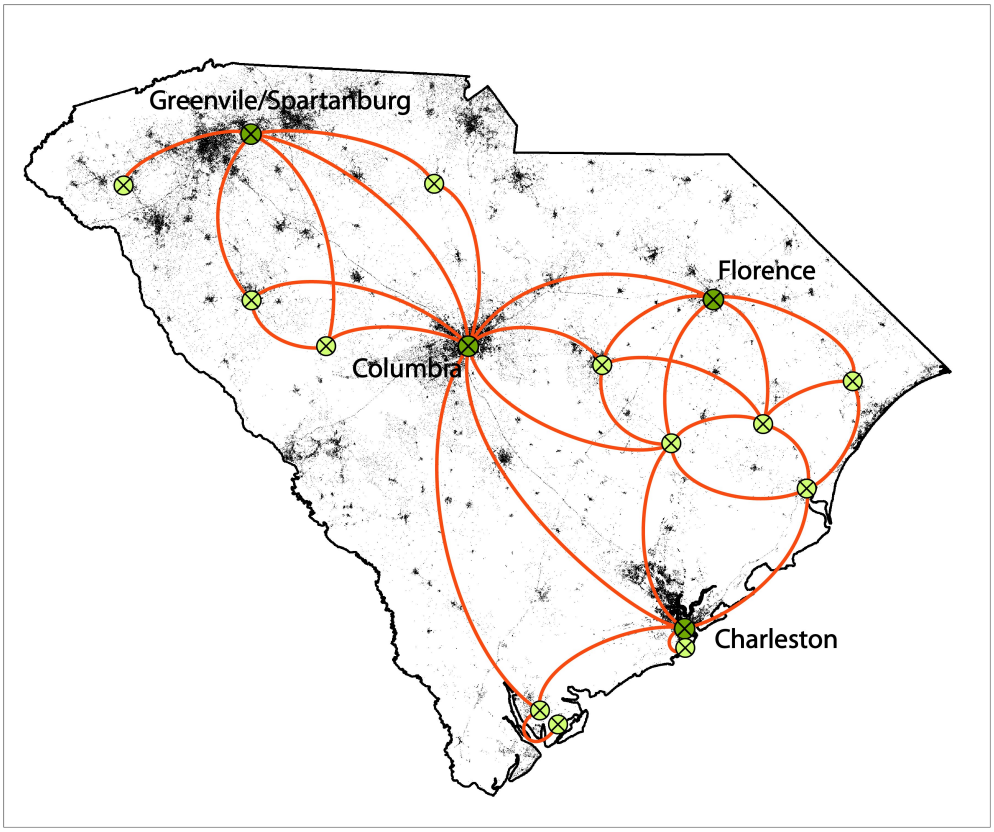

Figure 4: *Note that each food production node funnels food into local markets as well as to food hubs. – Map by Adam Cox based on design by Crossroads Resource Center research team.*

Several other food initiatives that are already underway represent complementary efforts to build a web of relationships below the level of a regional food hub. Each contains some of the elements of a food production node – but this is not to suggest any should force themselves into that specific model. Still, each might be considered by the competitive grant program for support to expand their reach.

- Sea Islands Local Outlet (SILO) in **Habersham** is part of a new housing community west of Beaufort that aims to incorporate agricultural land into a development project. SILO began by launching an "online farmers' market" where local shoppers can order directly from as many as 40 producers. Orders are filled at the SILO storefront each Friday: farmers bring their products in the morning, and these are apportioned into shopping bags according to each order. Customers pick up their orders on Friday afternoon, or in Palmetto Bluff on Tuesday afternoons. While currently SILO considers itself a "local grocer with two shopping methods," offering over 800 different products after two years in business, its long-term aim is to foster food production within the new development of Habersham. At that point, it may take on more of the quality of a food production node.

- Millgrove Farms near **Georgetown** runs a retail food store on the edge of the city that serves multiple functions, including helping to coordinate harvest and shipping among half a

dozen local farms. The Charleston food hub GrowFood Carolina makes specific plans with each Georgetown grower to raise food that will meet the anticipated needs at the food hub, and then asks Millgrove owners, Ben and Carol Williams, to help coordinate the harvest with the growers. Products can be brought to the store to make up a shipment for GrowFood Carolina. Each farmer can also sell products to the store for retail sale.

Other examples may well exist; due to limitations of time and resources we were unable to learn about all of the activity currently underway; we regret any such omissions.

Such food production nodes might include the following essential elements, but every node will reflect the unique capacities and needs of its own locale. For example, when a historical building is available, and funds exist to fix it up, a node may form around a building site, as in Chester; when a food processor wants 200 acres of fresh produce, the node might form around the industrial food processor.

Core elements of a food production node would be unique to each place, but most nodes would want to make sure all farmers have access to the following facilities so that they are able to meet food safety protocols such as Good Agriculture Practices (GAP). Many could be constructed from used equipment; farmers who are able to construct their own buildings may also save on costs:

- Hoophouses, greenhouses, or other season extension facilities
- Irrigation including wells and drip irrigation systems
- Training programs (such as the New and Beginning Farmer Program or adaptations)
- Washing, sorting, and packing facilities
- Food storage (refrigerated and non-refrigerated)
- Local distribution capacity (refrigerated trucks, mobile markets, vans, etc.)
- Farm stand or small retail market to meet local consumer demand

Local plans for food production nodes might also incorporate the following (or other) elements. Clearly, some of these elements may already be in place:

- Incubator farm with plots available for emerging farmers
- Eventual access to farm land nearby for graduates of the training program, who could remain involved in local aggregation efforts and farm nearby
- Training in soil-building
- Community kitchen for training and/or small-scale value-added processing
- Classrooms, meeting rooms, laboratories, or training facilities
- Shared equipment where advisable
- Individually owned or leased equipment as advisable
- Marketing assistance
- Business planning assistance
- Small-scale processing appropriate to local markets (vacuum wrapping, perhaps flash freezing
- Food transportation such as refrigerated trucks, logistics coordination, and distribution
- Waste recycling and composting
- Renewable energy production that fuels these facilities and machinery
- Seed-saving equipment and storage

- Knowledge bases that help local food leaders understand how to work effectively in local market conditions, reach out to producers and consumers, and make compelling cases to outside investors
- Food safety training
- Training in food preparation
- Agri-tourism sites or coordination of on-farm visits
- Software for planning planting cycles, direct food sales to local customers, etc.[2]

The specific mix of such ingredients would be determined by each node based on local conditions. State moneys would leverage local plans and investments.

The purpose of such food nodes shall be to increase community capacity to produce food for itself, create local efficiencies by clustering local activity in close proximity to each other, create permanent physical facilities that ensure access to food for local residents, foster local collaboration, and scale up production as appropriate for regional food hubs. Indeed, the emerging food hub in Charleston desires to see more availability of on-farm storage and packing facilities to help farmers safely store food for distribution.

Note that food production nodes would not be new intermediaries that would require a cut of the value of what a farmer produces; they would be places where farmers could collaborate to prepare, and market their products directly to South Carolina consumers under their own labels (or a cooperative local label). Each will create local efficiencies that allow farmers to potentially increase their margins; state assistance will also help reduce costs to farmers. Some might include retail sales area to help build local awareness and an income stream. Once a statewide network of food nodes has been effectively built, it will become more clear where larger aggregation centers should be sited.

A host of local, regional, and state partners could play important roles in the creation of such food nodes: food processors, churches, faith-based organizations, public and private schools, community nonprofits, land trusts, food banks, South Carolina Department of Agriculture, the South Carolina Farm Bureau, technical colleges, Clemson Extension, South Carolina State University Extension, University of South Carolina, other colleges, technical colleges, economic development officials, county or city governments, academic researchers, foundations, private investors, and many more.

A list of communities where our research has found activity that might lend itself to creation of a food production node is on the next page. No commitment to creating a "node" has been made by any group listed. This list is simply meant to illustrate that potential sites already exist.

[2] Such software is already being beta-tested by Bytech in Columbia.

Emerging & potential food nodes in South Carolina

July, 2013

No order of priority is intended; nor is this a complete list, nor would local players consider themselves food production "nodes" at this time.
Yet each community has activity that could lend itself to expansion into a formal node.

1. Beaufort (Sea Islands Local Outlet -- SILO)
2. Charleston (Lowcountry Local First incubator farm)
3. Chester (urban farm + indoor market + kitchen)
4. Clemson (student farm at Clemson)
5. Columbia (Clemson New & Beginning Farmer Program; potential Sandhill campus incubator farm)
6. Conway / Myrtle Beach (Clemson experiment station)
7. Florence (land trust, food bank)
8. Greenville (perhaps around Amy's Kitchen)
9. Greenwood (Piedmont Farmers' Marketing Co-op)
10. Georgetown (Millgrove Farm)
11. Greeleyville (Farmers' Cooperative and Community Improvement Association)
12. John's Island (middle school)
13. Nesmith (People's Farmers' Cooperative)
14. St. Helena's Island -- (Gullah Co-op and CDC); (Penn Center Small Farmers' Cooperative)
15. Saluda (perhaps around Titan Produce)
16. Spartanburg (Hub City Market + Urban farm)
17. Sumter (SCF Organic Farms)
18. Williamsburg County (existing co-ops)

This list could also include seafood processing for small fishermen
(Mt. Pleasant, Georgetown, Murrell's Inlet, Beaufort, St. Helena's, etc.)

Future food production nodes may look very different from these early initiatives, if only because they will be able to draw upon additional resources through a state-funded competitive grant program, outlined in this strategic plan.

Each farm cluster faces an interesting challenge, as do food hubs: how to grow supply in ways that are matched to consumer demand at every step, inside a rapidly changing environment in which locally raised foods are energetically being sought by consumers. Food production nodes may wish to adapt modular strategies that allow them to add capacity rather easily as business grows.

Several food production nodes may also want to incorporate explicit, ongoing training programs that grow new farmers. Recent graduates of farm training programs may wish to settle close to the farm where they were trained, to take advantage both of the physical infrastructure they are accustomed to, but also to retain and build upon relationships with other farmers they have forged during training.

Two key programs are already in place that should help fulfill this education effort:

South Carolina New and Beginning Farmer Program, launched by Clemson University, receives excellent reviews. The state should extend its funding if the federal Farm Bill does not allocate money for programs that have funded this work in the past.

Lowcountry Local First has developed an **incubator farm model** that brings emerging farmers together to learn farming and marketing skills, develop business plans, share equipment, and prepare foods for direct and larger markets. South Carolina would do well to foster several such programs around the state, in response to local groups that organize an effective will to collaborate on training programs.

Our recommendation is that these Emerging "food production nodes" should be strengthened by offering funding through a **Competitive Grant Program** (CGP). While this grant program would consider proposals from individuals, the primary purpose of this program would be to support collaborations among growers, food processors, and consumers at the very local level. Individual grants would be capped at $10,000; food production node grants might run as high as $500,000 per site, perhaps over a multi-year period allowing staged and balanced growth.

One level up in the food system, food hubs will continue to be critical elements of the state food infrastructure, drawing upon surplus production from food production nodes as well as established commercial farms.

At the strategic partners level:

Food hubs **such as GrowFood Carolina (Charleston) are essential facilities.** As mentioned above, food leaders think that perhaps three or four food hubs could be supported across the state. Hubs are being contemplated in Spartanburg, Greenville, Horry County, and Florence. Columbia is also well-positioned to serve as a statewide food hub due to its central location and freeway access.

Yet a network of support must be built around each food hub, including farmers that produce for local markets, with on-farm washing, packing, and storage facilities, and a steady commitment from South Carolina eaters to buy local. Without such support, any new food hub may require years of subsidy. Food production nodes are integral to the web of support required to create sustainable food hubs.

Further, our report recommends critical investments at the state level as well. As the instigator of the Making Small Farms into Big Business initiative, state officials will also want to focus attention on building knowledge and other infrastructure that will create effective coordination of food service activity at all levels. Suggestions for creating this capacity follow.

Supportive State Policy:

- **More effectively coordinate local food activity** across all parts of the state, through the food policy council and/or a "community of practice" engaging food leaders from diverse sectors and locations. Several good examples for such an approach exist. The appropriate model for South Carolina should be developed by the South Carolina Food Policy Council in conversation with diverse stakeholders; potential sponsors for such a coordination strategy might well be a nonprofit, the Palmetto Agribusiness Council, or Clemson University. This strategy would be advanced by hiring a **statewide coordinator** to make sure local food system stakeholders are convened regularly, to serve as a facilitator for state action, and to intervene as needed to uphold the state's commitment to local foods.

Expanded marketing will also be critical. Two initiatives are most immediate:

- The state should also **strengthen the Certified South Carolina Grown** (CSC) program to (a) ensure that food sold in the state is **identified by the specific farm** (or farmer collaborative) where it was produced. Future marketing endeavors would also highlight (b) the need for consumers to support local food production at food nodes, (c) the importance of knowing the farmer who supplies one's food, and (d) should invite state residents to help shape the food web of the future. Our interview respondents also suggested that the CSC program should be expanded to **allow opportunities for regional branding** of foods (for example the Catawba region, or Lowcountry region), or for SC farmers to participate in multi-state regional branding (such as a Piedmont label).

- We further recommend an **energetic marketing campaign** similar to one launched in Southwest Colorado by a LiveWell group. This campaign advocates that residents eat five fruits and vegetables each day (the minimum number recommended by health professionals to reduce risks of disease), and to buy $5 of food directly from South Carolina farmers each week. This "**Eat Five, Buy Five" campaign**, run by the State, will set the proper tone to encourage consumers to support food production nodes, food hubs, and food businesses that feature local products. According to a 2010 study by the Moore School of Business at USC, the potential economic impacts of the Certified South Carolina Grown Campaign may have already totaled as much as $265 million of new agricultural revenue, resulting in $23 million of new tax revenue for the state (Willard, 2010).[3] Results of this new campaign could be even more potent, since it will suggest more localized sales. The potential impact if every South Carolina resident purchased $5 of food each week directly from a farmer in the state would be about $1.2 billion.

The above strategies are highlighted because they offer the most leverage using the fewest resources to set South Carolina on a solid path of supporting local farmers who produce for local markets, and fostering loyalty to local farmers on the part of state consumers. Still, our report also recommends

[3] Willard, D. (2010). The economic impact of agribusiness and the return of the Certified South Carolina Grown Campaign. Moore School of Business, Division of Research, April, p. 9.

related strategies that will be important in both the short and long term as resources become available *(see sections beginning on page 52 for further details)*.

Expanding local production to meet state markets will require effective coordination, supportive infrastructure that creates efficiencies for the local, and staged growth from very low levels to higher sales – with supply and demand balanced at each step of the journey. This task involves considerable complexity, and will require new forms of collaboration undertaken from a long-term vision of creating a stronger economy and a more cohesive state.

To help South Carolina achieve these ambitious goals, Crossroads Resource Center has provided a wealth of analytical research, examples of nodes, and cost estimates in the full report, available at http://www.crcworks.org/scfood.pdf

Proposed Budget

State investments should both stimulate and leverage investment from other sources, especially private investors, foundations, and individual consumers. State funds should also be dedicated to initiatives that would not flourish if left to existing market forces.

See following pages for Timeline/Success Measures and Impacts.

Total funds: $9.85 million for first three years.

Activity	Budget
Adopt a formal commitment to creating a solid economy focused on local food production for local markets.	No appropriation required, but legislative action required.
Emerging "food production nodes" should be strengthened by offering funding through a SC Food Production Cluster Competitive Grant Program.	$5,000,000 including start-up costs, administration, drawing up procedures, publicity, TA for applicants, and grant awards. Further funding after 3 years.
Expand Clemson's New and Beginning Farmer Program.	$300,000 per year for at least three years, contingent on federal farm bill funding.
Support incubator farms in new regions.	Funded through competitive grant program as proposed by local partners; no additional appropriation.
Explore feasibility of additional food hubs.	$100,000 per year for further feasibility analysis, business planning, and other preparatory work.
Coordinate local foods activity.	$350,000 per year including staffing, convening, and research costs.
Strengthen the Certified South Carolina Grown program.	$500,000 in 2014 for point-of-sale placards showing farm names, explore regional branding.
Engage in an energetic "Eat Five, Buy Five" marketing campaign.	$2,000,000 for statewide rollout.

Proposed Timeline/Success Measures

See previous page for Budget, and following page for Impacts.

Covers the first three years, 2014 - 2016

Activity	Budget
Adopt a formal commitment to creating a solid economy focused on local food production for local markets.	State legislation adopted in 2014 that establishes commitment of South Carolina's commitment to local foods for local markets.
Emerging "food production nodes" should be strengthened by offering funding through a SC Food Production Cluster Competitive Grant Program (CGP).	Competitive grant program fully operational 2014. 25 proposals received late 2014. Five awards to nodes by end of 2014, others to individuals.
Expand Clemson's New and Beginning Farmer Program.	Program expanded to at least three regional sites by end of 2016.
Support incubator farms in new regions.	2 incubator farms apply for partial support through CGP by end of 2015.
Explore feasibility of additional food hubs.	GrowFood Carolina continues on solid financial footing; Food hubs in Greenville/Spartanburg and Horry County identify clear path for establishment by end of 2015, at least 3 nodes funnel food to at least one hub by end of 2015.
Coordinate local foods activity.	Statewide coordinator hired by January, 2014; statewide community of practice formed as part of FPC; FPC and its community of practice holds meetings at least quarterly in 2014, 2015, 2016.
Strengthen the Certified South Carolina Grown program.	Every retail point of sale has identifying information showing farm name by 12/2015. Feasibility of at least one regional brand has been determined by end of 2015.
Engage in an energetic "Eat Five, Buy Five" marketing campaign.	Marketing campaign planned in concert with health officials implemented in 2014, focuses attention on local food, food nodes (farm clusters), and food hubs.

Proposed Impacts of MSFBB

See previous pages for Budget and Timeline/Success Measures.

Covers the first three years, 2014 - 2016

Activity	Impact
Adopt a formal commitment to creating a solid economy focused on local food production for local markets.	Emerging local foods activity gains stronger foundation in state government, sufficient resources to grow for local markets, lasting infrastructure that creates local efficiencies.
Emerging "food production nodes" should be strengthened by offering funding through a SC Food Production Cluster Competitive Grant Program.	Groups of new farmers trained in new locations; ready to farm at nodes. Innovative individual initiatives also underway.
Expand Clemson's New and Beginning Farmer Program.	Program expanded to at least three regional sites by end of 2016.
Support incubator farms in new regions.	Groups of new farmers run farm operations that complement each other; install infrastructure for larger-scale production.
Explore feasibility of additional food hubs.	More concentrated aggregation activity in/near at least one city. This may emerge from a new food node, or from food hub development.
Coordinate local foods activity.	Costs reduced by reducing duplication; more systemic work and broader impacts become possible due to more effective coordination. Stronger implementation networks statewide.
Strengthen the Certified South Carolina Grown program.	Heightened sales of SC products. Every retail consumer has clear choice to purchase from SC farms and knows names of farms. Increasing loyalty to SC grown, more seasonal eating based on what is grown in state.
Engage in an energetic "Eat Five, Buy Five" marketing campaign.	Potentially $23,000,000 of new revenue for state according to Moore School of Business (2010).

An Economic Introduction

South Carolina has a long and proud tradition of exporting valuable crops and livestock to the world, beginning in the early days of European settlement, when the land supported productive indigo, rice, and cotton industries. Great fortunes were also made in tobacco.

This legacy continues today, with South Carolina serving as a prime source of food for the entire Eastern Seaboard. Indeed the state's top 20 farm commodities[4] accounted for $2.4 billion dollars of sales revenue for state farmers, over 94% of farm revenue in 2011. Most of these crops were exported broadly. Peaches and tomatoes, in particular, are renowned South Carolina exports. The state is the sixth-largest producer of tobacco in the U.S., and the eleventh-most important producer of broiler chickens.[5]

The state's Making Small Farms into Big Business initiative seeks to expand the impact of the farm sector. There are two main paths for doing so. One is to increase South Carolina sales of locally grown foods. The other is to increase commercial linkages within the state economy so that each dollar earned by an industry that generates tremendous new wealth multiplies itself more expansively through the state.

Critical to strengthening the competitiveness of South Carolina's agriculture will be to build strong connections between farmers and state residents. Amidst a global market that features a wealth of food products from exotic locations, it will ultimately be the willingness of state consumers to hold deep loyalty for local farmers and food brands that will be crucial for transforming agriculture's potential.

For example, 2011 data from the Bureau of Labor Statistics show that South Carolina residents purchase $11 billion of food each year. Yet well over 90% of this food is sourced outside of the state. Substituting South Carolina food for a significant portion of this imported food could add billions of dollars-worth of food sales to the state's domestic product. Further, as linkages are built among food-related businesses so they increasingly trade with each other, producing goods, services, and raw materials for each other and for state consumers—and recycling, for example, organic waste into new soil fertility— new economic multipliers will be built, leveraging additional impacts.

Moreover, significant private and public infrastructure must be built across the state, both to build local efficiencies [prior investment has often prioritized creating efficiencies in importing and exporting of food, rather than for local sales], and to build reliable local facilities that South Carolinians may depend upon to grow, store, freeze, dehydrate, preserve, distribute, and sell these foodstuffs to local residents long into the future.

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[4] The USDA Economic Research Service lists these in order as: broiler chickens, turkeys, ornamentals, cotton, cattle and calves, corn, chicken eggs, soybeans, wheat, peaches, peanuts, dairy products, tobacco, watermelons, hogs, tomatoes, hay, cucumbers, cantaloupes, & aquaculture. Rye is also listed among the state's top 25 farm products, but sales figures were not released by ERS.

[5] Tobacco from USDA/NASS; broilers from USDA Economic Research Service (2011). Leading Commodities by State.

The good news is that this transformation is already underway. The number of South Carolina farms selling direct to individual consumers rose from 1,175 to 1,323 (13%) from 2002 to 2007; while the amount of food sold directly rose 53%, from $8.3 million to $12.7 million.[6] This ten percent-per-year growth rate is fairly remarkable given overall economic trends during the same years. This echoes national trends, and is significantly better growth than many sectors of the state economy experienced. Yet this energizing news also carries a humbling caution. Only 5% of the state's farmers sold products directly to consumers in 2007. And these $12 million of sales constituted only 0.5% of the products farms sold that year – slightly above the U.S. average.

Small steps taken persistently could bring strong benefits to the state economy. If each Palmetto State resident purchased $5 of food directly from a South Carolina farm each week, this would yield $1.2 billion in revenue for the state's farmers,[7] a significant step toward the state's 50 x 20 vision.[8] This is about as much revenue as 2,090 South Carolina farms earned selling broilers and turkeys[9] in 2011.

Note also that this would be an increase of 44% in South Carolina's farm revenue, assuming state farmers continued to sell all the commodities they currently produce.

Substantial markets exist for South Carolina farmers within state borders. For example, while state consumers purchase about $1 billion of fruit and vegetables each year [at retail and value-added prices], South Carolina farmers sold only $126 million of vegetables, and $34 million of fruits, in 2007 [at wholesale prices]. Moreover, many of these farm products were exported to other states.

State consumers purchased about $1.5 billion of meats [retail] in 2011, while South Carolina farmers sold an equivalent value of meats [wholesale] in 2007—once again, however, primarily to external buyers. Thus the productive capacity may already exist in the state to feed most all residents the meat they currently enjoy. Significant to the 50 x 20 vision, if this were accomplished, new linkages would be built within the state economy that would increase the multiplier impact of each food dollar spent buying from local farms.

On the farm input side, significant gains could also be made. While South Carolina farmers currently (2007) buy $761 million of feed for their livestock and poultry, state farmers produced only $129 million of corn, and $65 million of soybeans. While it will be outside of the scope of the current strategic planning process, it will be critical for South Carolina to measure how many of these feed grains are currently produced within the state, and how many additional sales might be made by state farms.

Expanding the scope of sustainable agricultural practices might also reap significant economic impacts as well. Currently, South Carolina farmers purchase $143 million of fertilizers and soil

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[6] 2007 NASS Census of Agriculture.

[7] This is a simple calculation that multiplies the state population by 52 (weeks/year) and then 5 (dollars/week). Actually achieving this would not be straightforward. however. Moreover some of these purchases might replace current local-food purchases that people make through grocery stores, which could mean the overall impact of these consumer dollars is slightly less.

[8] Weathers, Hugh (2010?) "50 by 20: A ten-year goal for South Carolina agriculture. South Carolina Department of Agriculture.

[9] These, of course, are the state's top two farm sectors.

additives, and another $74 million of farm chemicals, primarily from distant sources. This leakage of $220 million per year could be significantly reduced if South Carolina increased the capacity of its farms and composting facilities to produce soil fertility amendments, and expanded adoption of integrated pest management practices, and sustainable or organic farming.

Turning to energy, one of the four key industries highlighted in the 50 x 20 vision, South Carolina farmers purchased $103 million of fuel and oil in 2007. Increasing South Carolina's supply of renewable energy from on-farm sources would decrease the agriculture sector's dependence on imported fuel and contribute to the state's 50 x 20 cause.

Naturally, South Carolina's 25,867 farmers do not go it alone. Drawing upon the considerable wealth produced by the state's farmers and foresters, extensive networks of processors, warehouses, wholesalers, and retailers add value to the primary wealth produced by the state's farmers. All told, 78,288 workers in the Palmetto State were employed in 3,281 food-related industries in 2011, earning a total payroll of $2.1 billion. Another 15,463 workers earned $579 million in 1,146 firms in industries related to forestry.[10]

It should be emphasized that not all of these jobs draw completely on farm production within the state, and that of course considerable value is added to South Carolina farm products that are processed in out-of-state factories. Several key industries, such as food transportation, are not covered in this data set.

Nevertheless, these figures show that farming, fishing, and forestry are important in the Palmetto State, since each harvest new raw material wealth that can be transformed into processed commercial products. As other sectors add value to what these primary producers harvest, by one measure, as much as $34 billion of value is created for the state economy through its agriculture and forestry.[11,12,13] This amounts to 10% of the industrial output of the state.

The heart of these food- and forestry-related sectors is small business. About 90% of the food-related firms tallied by the Bureau of the Census hire fewer than 50 employees, while only 1% hire more than 250.[14]

Yet this dynamic legacy also harbors less savory qualities. It appears the days in which immense fortunes could be made producing commodities such as tobacco or cotton are gone, in large part due to competing production outside of the state and country. This is shown graphically on the followng chart (Chart 1). Note that sales figures have been adjusted for inflation, so a dollar earned

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[10] Data from the Federal Census, County Business Patterns: http://www.census.gov/econ/cbp/— viewed July 3, 2013. These numbers do not include farm employment.
[11] Carpio, Carlos E; Hughes, David W; & Isengildina, Olga; *et al.* (2008). Comprehensive Assessment of the South Carolina Agribusiness Cluster: Prepared by MarketSearch, July, p. 5.
[12] Weathers, Hugh (2010?). "Fifty by Twenty: A Ten-Year Goal for South Carolina Agriculture." South Carolina Department of Agriculture.
[13] Miley, Gallo & Associates (2008). "The economic impact of the agribusiness industry in South Carolina. Prepared for the Palmetto Agribusiness Council, p. 28.
[14] Data from the Federal Census, County Business Patterns: http://www.census.gov/econ/cbp/— viewed July 3, 2013.

in 1924 is worth far more than today. The following charts, then, shows sales revenue for farmers in constant 2011 dollars:

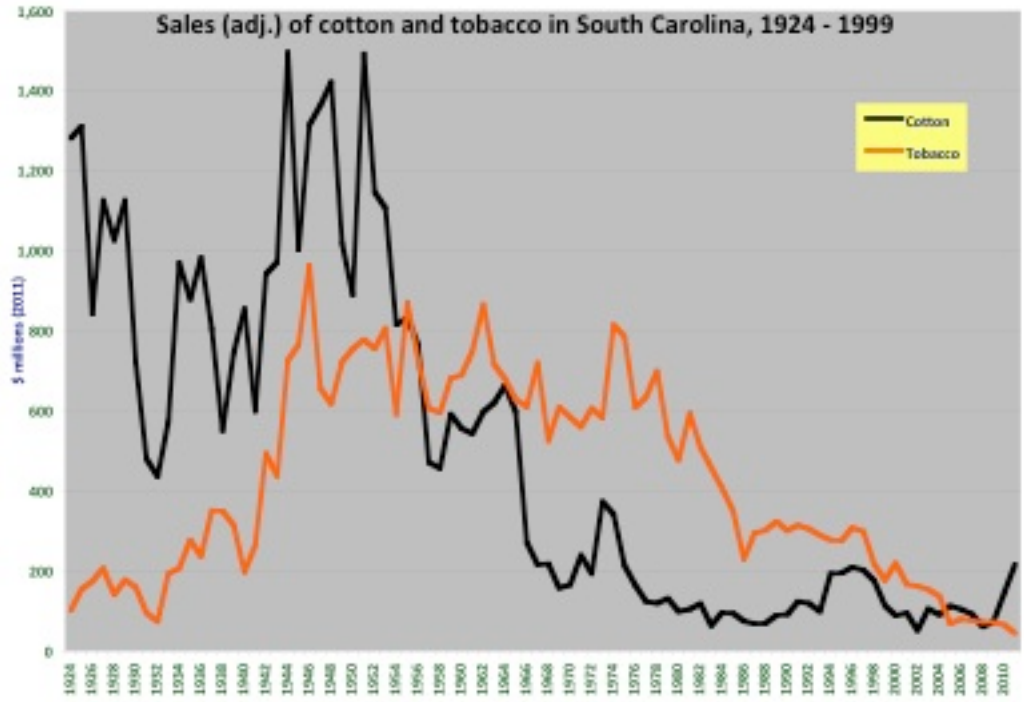

Chart 1 — *Source: USDA Economic Research Service. Table 5--Cash Receipts, by commodity groups and selected commodities, United States and States 1924-29, data for South Carolina.*

Cash grain production has not filled the gap (Chart 2):

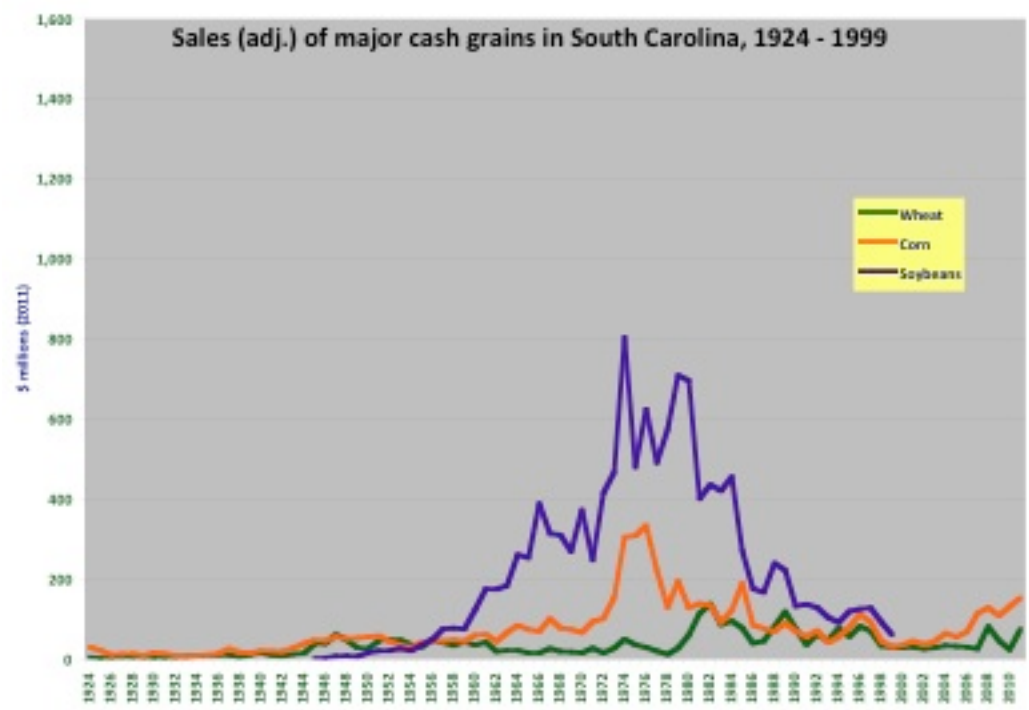

Chart 2 — *Source: USDA Economic Research Service. Table 5--Cash Receipts, by commodity groups and selected commodities, United States and States 1924-29, data for South Carolina.*

Poultry production has been a major source of revenue, while cattle and hog production have slowed in recent years, as Chart 3 shows:

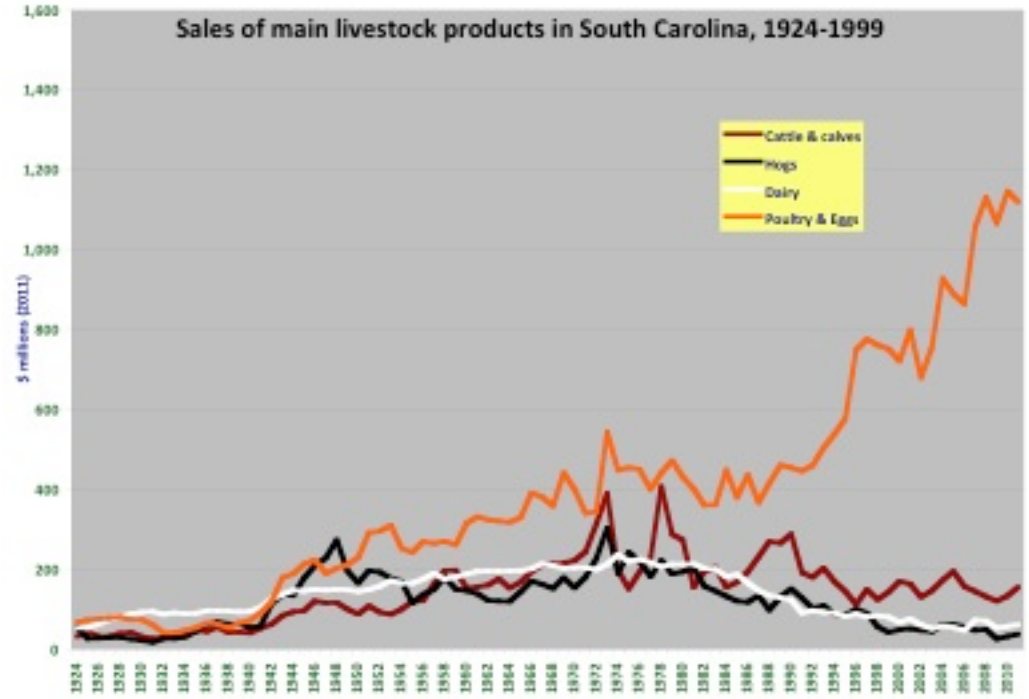

Chart 3 — *Source: USDA Economic Research Service. Table 5--Cash Receipts, by commodity groups and selected commodities, United States and States 1924-29, data for South Carolina.*

Despite the state's status as an important fruit and vegetable exporter, real value of these products has held basically steady since 1924, in adjusted dollars (Chart 4). This is especially noteworthy given that consumers are now being asked to consume more fruits and vegetables to reduce health risks.

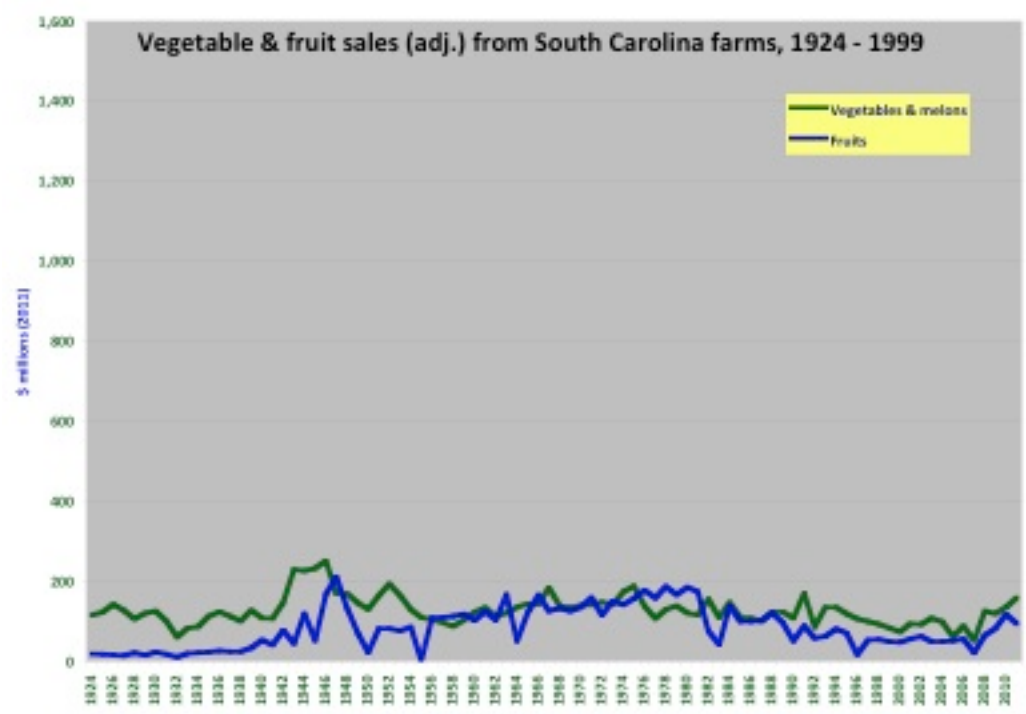

Chart 4 — *Source: USDA Economic Research Service. Table 5--Cash Receipts, by commodity groups and selected commodities, United States and States 1924-29, data for South Carolina.*

Not only have sales declined, overall, the margins of farming are far narrower than they were. Since data that allows us to compare farm cash receipts with farm production costs are only available beginning in 1949, let's look at the net cash income of farming (cash receipts less production expenses from 1949 – 2011 (Chart 5). All data are expressed in 2011 dollars (that is, they have been adjusted for inflation).

It is quite noticable that cash receipts fell from $2.9 billion in 1949 to $2.6 billion in 2011, a drop of $262 million in six decades. Meanwhile, production costs held relatively steady, yet rose rapidly over the past few years, meaning farmers spent $900 million more in 2011 than they had in 1949 — very likely due to increased corn production as prices for that commodity rose, as well as increased poultry expenses.

Overall, then, farmers earned $1.2 billion less in net cash income in 2011 than they had earned 62 years earlier, from $1.3 billion to $168 million. Meanwhile, the number of farms in South Carolina fell from 148,000 to 25,867. Thus, net cash income in 1949 was $9,000 per farm (in 2011 dollars), slightly higher than its 2011 level of $7,000 per farm.

Clearly, such per-farm totals are skewed by the presence of very small farms in the state. While some farms made considerable money over this time period – economics for the sector as a whole eroded considerably.

Farmers do have other sources of farm family income, such as cash rents, inventories, investment income, government payments, and off-farm jobs, which are not included in public data sets. Still, this shows that the backbone of farming — producing crops and livestock — has steadily deteriorated over the past six decades.

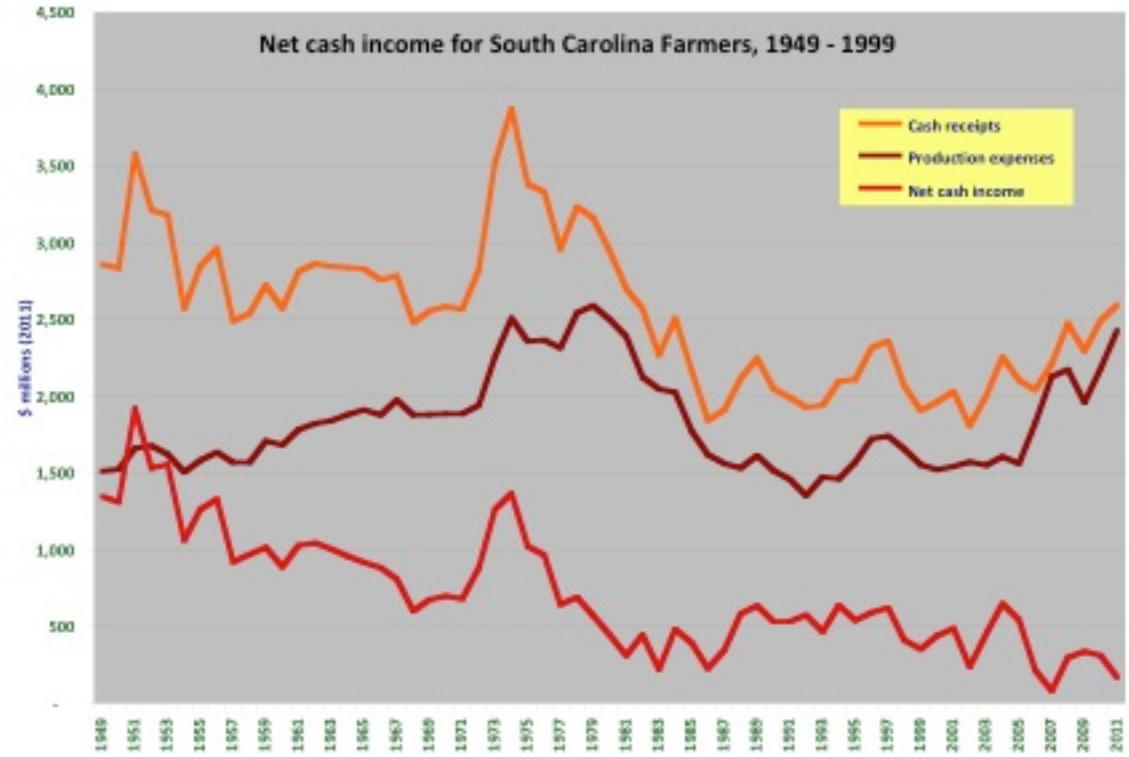

Chart 5 — *Source: USDA Economic Research Service. Table 5--Cash Receipts, by commodity groups and selected commodities, United States and States 1924-29, and Cash Expenses, data for South Carolina.*

Meanwhile, in large part due to the state's tradition of exporting agricultural commodities, and the public investments that have been made to support this industry, a deep irony exists — South Carolina imports well over 90% of the $11 billion of food it consumes each year.[15] This suggests that something like $10 billion per year flows out of the state as Palmetto State residents eat.

The decline in the number of farms over the past century has been dramatic, and seems to correlate with the decline in rural economies (Chart 6).

[15] While difficult to measure precisely, this figure was repeated by food leaders across the state in 2013 interviews, and corresponds with similar estimates from other states. Vermont researchers compiled a study documenting that about 5.6% of the food consumed in that very local-savvy state was likely to have been produced in the state [Conner, D., Becot, F., Hoffer, D., Kahler, E., Sawyer, S., & Berlin, L. (2013). Measuring current consumption of locally grown foods in Vermont: Methods for baselines and targets. *Journal of Agriculture, Food Systems, and Community Development.* May 17. Advance online publication. http://dx.doi.org/10.5304/jafscd.2013.033.004]; South Carolina is likely to have a far smaller percentage of locally produced food.

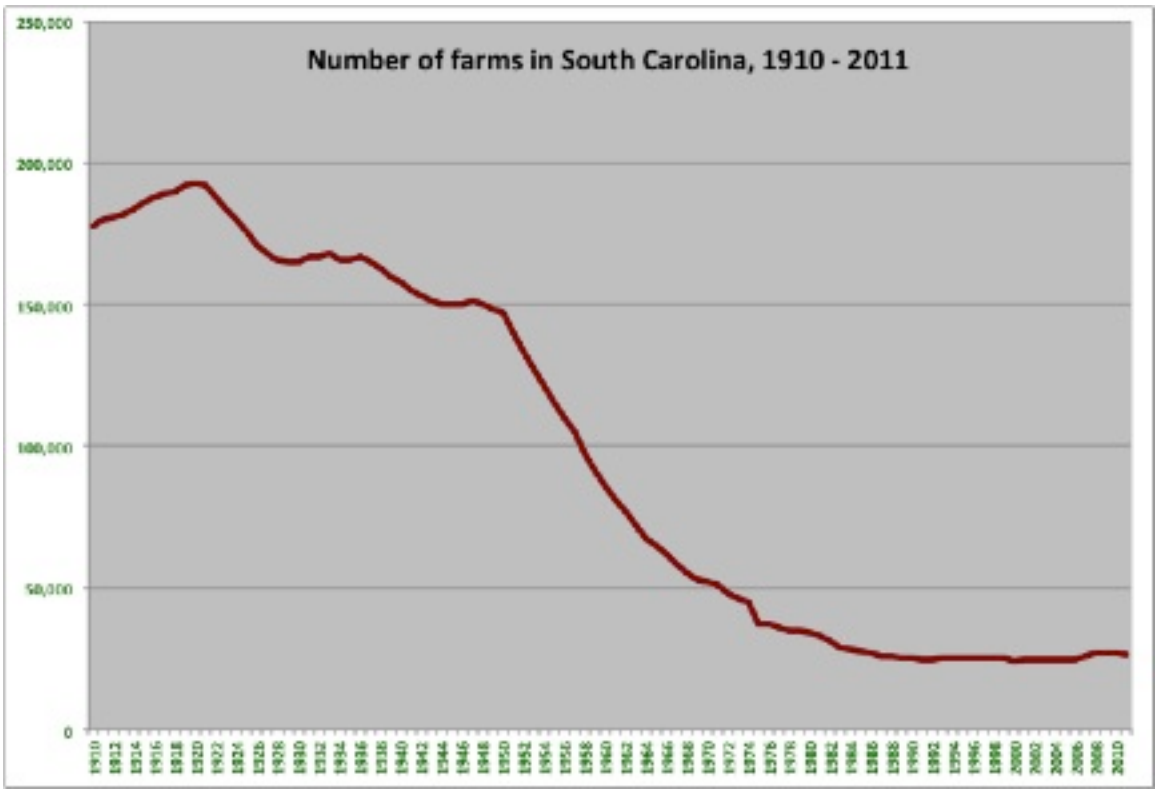

Chart 6 — *Source: USDA NASS (2012). Farms, Land in Farms, and Livestock Operations 2011 Summary: Released February. Available at http://www.nass.usda.gov/*

At a deeper level, even more troubling trends become visible. Interviews with South Carolina farmers who are growing food for state residents raised diverse and perplexing issues, troubling in a state in which agriculture is so prominent. One respondent from the Pee Dee region pointedly remarked that his neighbors are literally starving. While it is beyond the scope of this study to confirm this account, one thing is certain — nearly one of every three Palmetto State residents (31%) lives below the poverty line at which children qualify for free and reduced lunch at school.[16] Schools themselves report that over half (54%) of the state's 725,838 students live below this poverty threshold, up from 45% thirteen years earlier.[17]

Even in more prosperous regions, significant difficulties are encountered. Many farmers selling direct to state consumers report that they have to explain to their customers what a carrot looks like when it comes out of the field, since many have never seen one before. Others have found themselves persuading their neighbors that eating kale is worth a try.

Farmers also bemoan the realization that their neighbors often do not know how to prepare basic vegetables to eat. Even working families in which at least one member of the household knows how to cook often have difficulty finding the time to prepare meals at home because time is so scarce.

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[16] Federal Census for 2009, five-year average. This is the most recent data available. This poverty level is 185% of the official "poverty" income, a far more reasonable assessment of a family's spending power.
[17] U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey", 1998-99 v.1c, 010-11 v.2a; "State Nonfiscal Public Elementary/Secondary Education Survey", 1998-99 v.1b, 2010-11 v.1a.

On the labor side, many farmers complain, as one Midlands farmer did, that "kids not only do not know how to do field work, they are not interested in working that hard."

The prospect of an agricultural state, proud of helping feed the world, in which residents know so little about food, or hold so few skills in producing and preparing food, is rather humbling. Interestingly, it is the very convenience that brings fresh foods from around the world into supermarkets all across the state that helps harbor this sense among Palmetto State residents that they are *consumers* of commercially prepared products, not *producers* of food for themselves and their neighbors.

Health statistics, unfortunately, bear out these dilemmas. In a state that is a proud exporter of fruit and vegetables, only 17% reported in 2009 that they eat enough produce to meet minimum health guidelines. Two of every three residents were overweight or obese in 2010, up from half in 1995. Nearly 11% of Palmetto State residents have been diagnosed with diabetes as of 2010, up from 8% in 2004. Only one in every five residents reports they get the minimum recommended exercise, while one of every four South Carolinians carries no health insurance.[18]

Meanwhile, tens of thousands of consumers have opted to buy food from local farms. Farmers who are attempting to respond to this intense interest report that many people have been frightened by a health condition, often cancer, into seeking food from farms they know, often organically raised. Others are driven by a desire to connect directly with a farm so they can form a relationship with a farmer or store they trust. Others want to support local farms in an effort to support the local economy.

One indication of how deep-seated this desire is was an informal interview conducted with a woman who works a produce stand on the highway between Myrtle Beach and Florence. She did not want her picture taken nor her name used, but she told a very interesting story. Formerly living in North Carolina, she had been left unemployed when textile mills succumbed to foreign competition. Eventually, she moved to South Carolina in search of work, and ended up selling fresh produce at this stand. Her job did not appear to be lucrative, but she threw herself into the work with great energy. While in early June the produce at her stand was mostly sourced from farms several hundred miles away, she swept her arm in a broad gesture toward the farm fields across the highway, full of commodity grains: "If we don't buy from the farmers right around here, we can't have a strong local economy." It was a strong sign, once again, that often the people most marginalized by economic forces may have the clearest view of prevailing conditions.

Farmer after farmer in South Carolina, chef after chef, and food buyer after food buyer, all spoke a common refrain: "The demand is there [for local food], but not enough people are raising it." As noted earlier, federal data from the Census of Agriculture confirm these comments.

[18] Health data from the Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance Sample, from years 1995 to 2011, viewed July 3, 2013, at http://apps.nccd.cdc.gov/brfss/

Land Cover in South Carolina

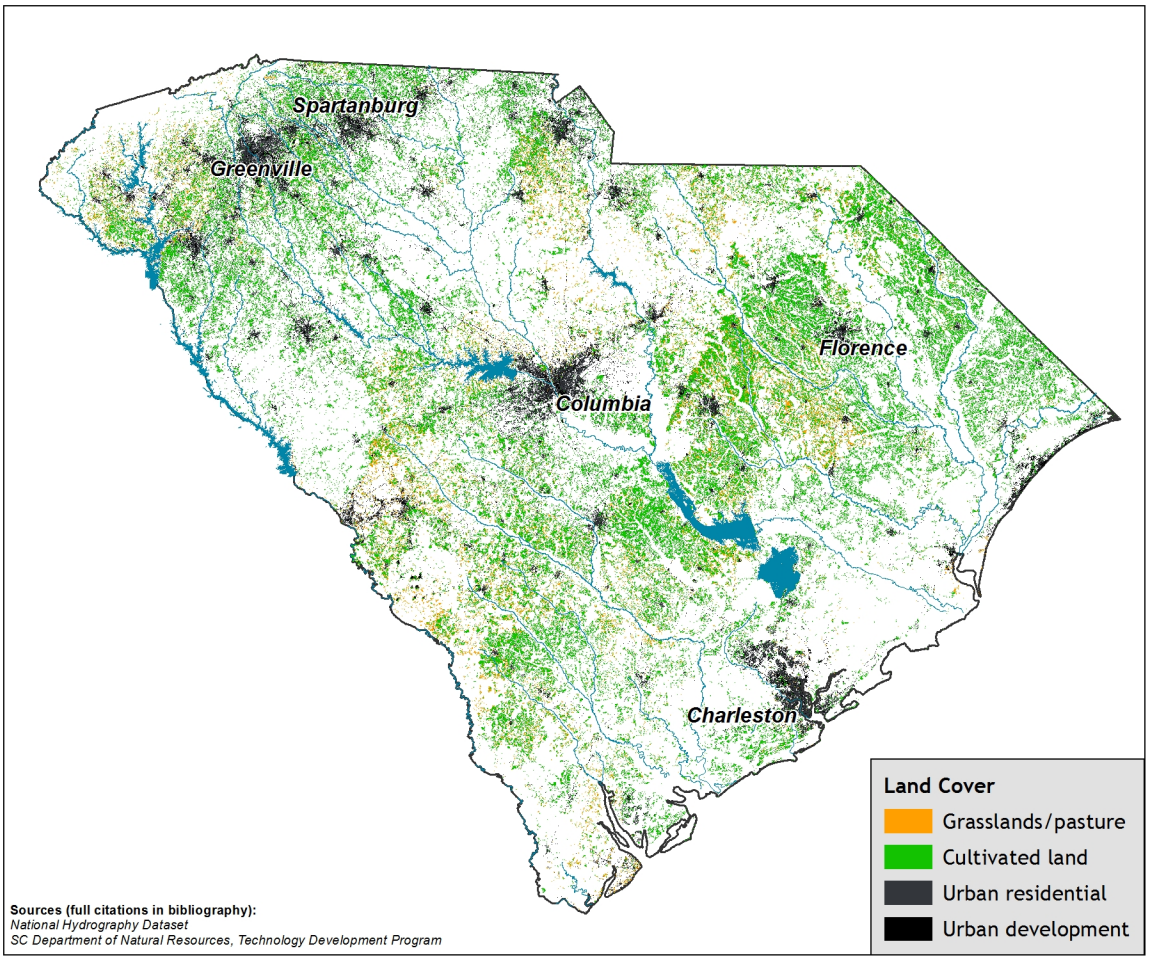

Figure 5: *Land cover in South Carolina. Map by Adam Cox*

Yet even larger promise lies in major markets, if schools, hospitals, and prisons were consistently purchasing food from local farms; if the distribution system were in place to convey larger quantities of South Carolina foods to South Carolina grocers, and if more food grown in-state were processed in local facilities and sold to South Carolina consumers. State schools spend more than $145 million buying food each year.[19]

At the largest level, feasibility studies have been completed that propose larger enterprises that process peanuts or peaches for Atlantic coast markets *(See pages 73-79).* The neighboring state of North Carolina has surely tapped similar markets already. Other opportunities are equally potent.

Yet none of these is likely to come to fruition unless more farms are producing fresh food, unless more farmers have the skill, desire, and supportive infrastructure to make a suitable livelihood producing food, unless more people know how to prepare food safely and eat an adequate diet, unless more people are willing to engage in value-added processing.

[19] National Center for Education Statistics. CCD Table 2. — Current expenditures for public elementary and secondary education, by function, subfunction, and state or jurisdiction: Fiscal year 2009. http://nces.ed.gov/

This is not to say that some larger-scale activity is not important; it is to say that this attention must be balanced by an extraordinary educational process to reclaim the productive skills of South Carolina residents. Indeed, balance is perhaps the most critical theme for the Making Small Farms into Big Business initiative: the state has to grow a strong food sector in a context that features massive competition from outside suppliers, and infrastructure that was designed for a different purpose. Local agriculture must grow, as Hugh Lane pointed out in an interview, in such a way that supply and demand are balanced at every step of the journey.

Prevailing inequalities between rural and urban residents must be addressed, especially in health. This cannot be accomplished through market mechanisms alone; it will take cohesive social networks, and an engaged public sector, to make this work. Luckily, coming together around food turns out to be an effective way of building collaboration across geographic boundaries, ethnic lines, and political persuasions. Since everyone must eat, it can be an exceptionally effective way of breaking down old divisions, and creating new cohesion.

This report, then, will suggest that the fundamental work to be done in South Carolina will be to restore a culture of productive skills in the state. This will be accomplished by building networks that connect Palmetto State residents to strategic opportunities to engage in productive economic activity in farm and food sectors.

This is essentially to build a new set of economic relationships that will emerge amidst and alongside prevailing economic institutions, even though to some extent dependent upon them. If properly balanced, small steps will lead to bigger results over the long term. Through this plan, South Carolina will build an economy that fulfills a purpose no one from outside the state could advance: a highly networked and integrated economy in which local farms feed local residents.

Major Land Resource Areas

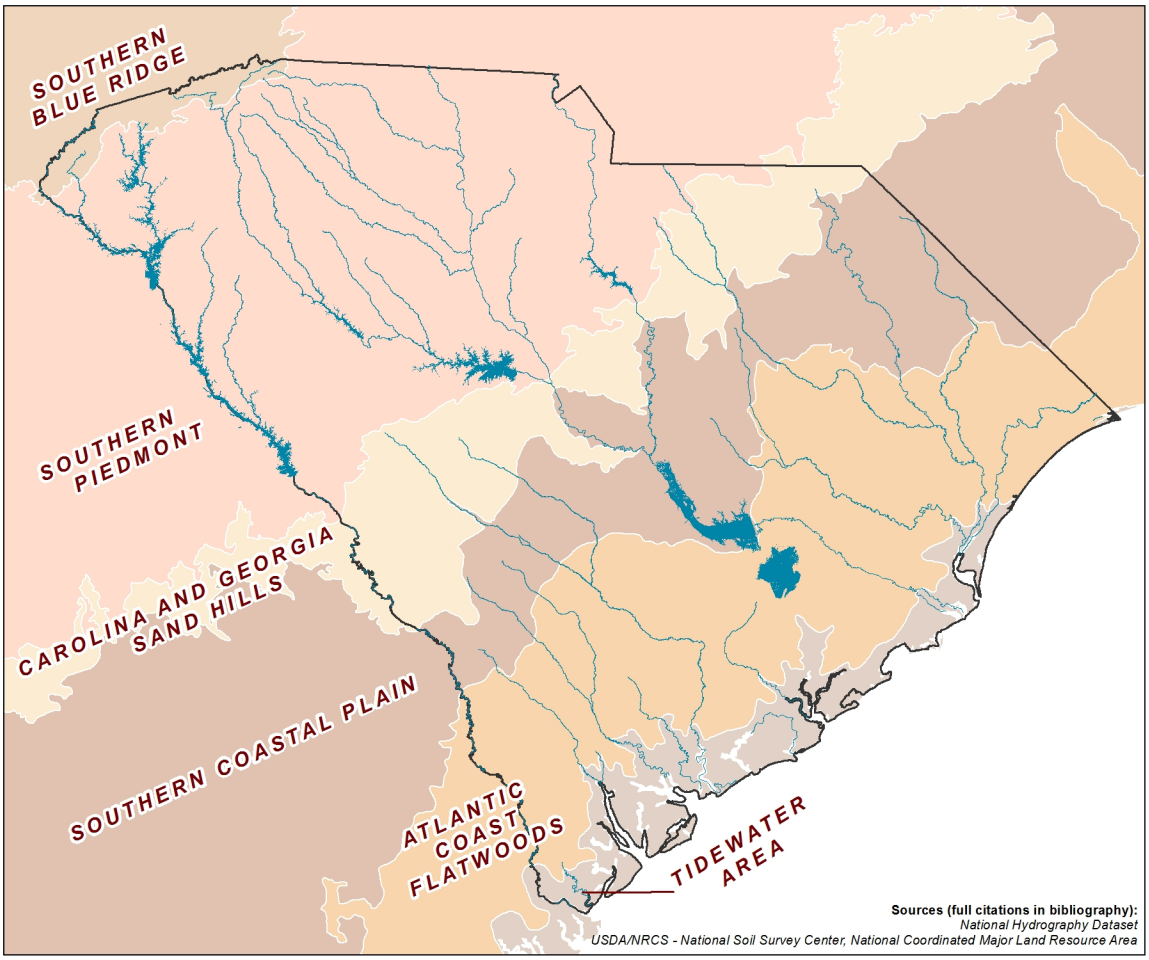

Figure 6: *Major Land Resource Areas – Map by Adam Cox*

Yet it is also a call for building a new economy that accomplishes ends that were not reliably met by the export-oriented approach: building productive skills among South Carolina residents, and building the reality that the state can produce more of what it needs for itself. To accomplish this will require asserting that Palmetto State residents have enough power to make choices based on their own priorities, rather than upon the dictates of distant market forces. It will require communities to build effective networks that allow residents to work collaboratively, in order to build resilience during changing (and highly unpredictable) economic, climate, and energy conditions. Indeed, the progress of the Making Small Farms into Big Business will often be measured by the strength of the social networks that are created, since this will be key to expanding economic impacts.

Most centrally, all of the efforts South Carolina farms and food processors might make to develop brand loyalty among their neighbors and customers for South Carolina grown products will come to naught if South Carolina consumers do not care to remain loyal to farmers and locally focused processors who live near them. If consumers do not insist they have the right to purchase from local farms and processors, and do not support those farms and processors by buying their products, South Carolina farms will have little competitive edge compared to producers in Georgia, North Carolina, Florida, Mexico, or China.

The essential truth about building loyalty to South Carolina grown products is that South Carolinians who know how to raise their own food are more likely to demand that local food options be available. Only those who know how to prepare food for themselves will demand fresh foods they can manipulate in their kitchens. Only those who know farmers personally will care to support supply networks that feature foods from South Carolina farms. Only consumers who understand the value of a day's work in the field will know how to properly value the time a farmer spends in his or her fields — and only these consumers will help share risks with South Carolina farmers over the long haul, including spending more for high quality local produce even when cheaper imported items are easily available.

Conversely, consumers who are ill-informed about the basic nature of food, and unprepared to cook for themselves are the most vulnerable to eating food that is not healthy, to eating what is cheaply and easily available, rather than what would benefit their health the most. Consumers who have no relationship to a producer will have no reason to support local farms, if they can buy products that look similar at a local supermarket. Those who insist on purchasing at the lowest price possible, rather than finding a balance of quality and price, will be happier buying at superstores.

The Foundation for our Recommendations

What is a "Small Farm"?

All measures are problematic. Neither sales nor acres is an adequate measure.

- Some very small farms sell considerable product on just a few acres.
- Some larger farms sell less per acre than small farms.
- Some farms selling millions participate in local sales.
- Some farms selling primarily to a small niche market also sell out of state.

In the context of this Making Small Farms into Big Business study, small farm cannot be defined simply by either its acreage, or the amount of food it sells. For this study, a "small farm" is one that participates directly in initiatives that create new, relational commerce and strategic partnerships trading locally produced food. Drawing upon supportive infrastructure, these small farms will form (and join) clusters of interrelated businesses to convey food from South Carolina farms to South Carolina customers.

This is not an easy quality to measure (some farms may sell largely to the global market but still participate in local trade, or some co-operatives may not work with strong collaboration), but establishing this definition will enable the state to set a high standard for participation in Making Small Farms into Big Business.

That is to say, the state should invest in initiatives that clearly create such local linkages, and networks of trust that connect South Carolina businesses with each other, as well as forge relationships of trust among producers and consumers. This will be the key step that will foster the goals of Making Small Farms into Big Business.

What values and principles guide this set of recommendations?

- **The core shift to be made is to create a food culture, and productive resident networks**, that allow South Carolina to produce most of its own food, and that encourages consumers to work collaboratively to eat locally.

- **The key priority for infrastructure investments is to create local efficiencies** (much as prior investment has created efficiencies for long-distance food travel). To the extent South Carolina taps renewable energy sources to produce, store, and distribute its food, it creates a competitive advantage for itself as fossil fuel prices rise.

- **This will be long-term work.** There will be few short cuts. The temptation to do only "what the market will currently bear" is likely to undermine the quest for in-state food trade.

- **The State of South Carolina should think in terms of using its investment dollars as a long-term effort to build local capacities**, not as a short-term cash flow for specific parties.

- **At each stage, it will be important to keep supply and demand for local food in balance as best as possible.** Currently, demand far exceeds supply. Yet planning one large processing facility in hopes of ramping up production to a level that would sustain it might require that the new facility have years of subsidy. In some cases, this could be the most reasonable option. Rapidly changing markets, and rapidly changing contexts, also suggest that early steps should be small, and made in concert with the ability of small farms to produce for local markets. Smaller facilities may be easier to cash flow in the short term, but also may be vulnerable to larger businesses and broader forces.

- **The key to growth will be building loyalty among South Carolina consumers at the household level to purchasing locally grown products;** if this element is not made central, larger institutional facilities will be more prone to market disruptions.

- One key to ensuring consumer loyalty to South Carolina products is to ensure that each ultimate consumer can **identify the farm where the food they buy was produced.**

- **South Carolina consumers will eat differently in the future** if they are dedicated to supporting local farms. They will eat those foods that can most easily be produced in the state, according to their seasonality, and will rely less upon imported foods. The more state consumers align their preferences with seasonal cycles, the greater the potential for small farms to provide food for their South Carolina neighbors.

Findings From Field Interviews

Over 150 South Carolinians were interviewed in an effort to learn as much as possible about how key food system leaders view the potential for Making Small Farms Big Business. Interviewees responded with considerable candor, and their suggestions shaped the study's recommendations in important ways.

To contain the length of this report, only selected comments are listed here. All of these are summaries or direct quotations from one of the people interviewed – but to emphasize what people said, rather than who said what, these comments are recorded anonymously.

What drives the local food movement:
"One day I was at the market and I saw someone take a bite out of a banana – without peeling it. People will see a zucchini squash here and have no idea what it is" *[farmer]*.

"People like to come directly to the farm" *[farmer]*.

"A broadline distributor brought me a list of what local items they have available, listing the names of each farm. They see the trend. I was impressed. Yet it is easier to start a new distribution system than to change the old. The "farm fresh" label is nice, but I don't get a farmer's name out of the deal" *[chef]*.

"I get alot of questions at the market. The first one is, 'Did you grow this?" The second one is, 'Where did you get it?' " *[farmer]*.

"The key to this is relationships" *[nonprofit staff]*.

"We're building a network" *[farmer]*.

"You have to have a dialogue with the community – establish a relationship with people" *[agency staff]*.

"Ninety percent of local food is learning to eat differently" *[farmer & store owner]*.

Three farmers and food businesses collaborate to get one local dairy's milk from the Upcountry dairy to the Lowcountry, since the dairy will not ship long distances. One farmer drives to the farm to pick up the pasteurized milk, and then transfers the load to another farmer who carries it to local customers. It is safely carrried in refrigerated units the entire way.

"We've bought into the technology concept, but excluded so many people from sharing in the process. We've pushed people out of agriculture" *[agency staff]*.

"It's all about tort reform, really. It all comes down to liability. The largest grower in the state would not sell to me because of liability" *[food business owner & farmer]*.

Economic context:
"We heard of poverty in the 1950s and 1960s. Poverty, but not starvation. Today, we literally have people starving in the Pee Dee region" *[farmer]*.

"The hub is being fed and the spokes are falling out" *[farmer – this is not a comment about food hubs, but a comment about the broader economy]*.

"The recession has been good for agriculture" *[nonprofit staff – meaning the economic crisis has created new opportunities]*.

"Long-term resilience has to include food" *[nonprofit staff]*.

"When I started this dairy farm, there were 500 dairies in the state. It was the second-largest ag sector in the state by income. Now there are only 40" *[farmer]*.

"I'm a firm believer that we can use food to rebuild this economy" *[agency staff]*.

"We're at a serious crossroads – we have to take steps to determine our own destiny" *[agency staff]*.

Need for new farmers:
"We're about to age out a whole group of [farmers]" *[nonprofit staff]*.

"We need more farmers" *[distributor]*.

"We're giving land to people who want to farm" *[land trust official]*.

"We have acres of opportunity. There is no problem with getting access to land. I have 200 acres I could give tomorrow" *[farmer]*.

On the state's role:
"The state can and should invest in the infrastructure needed to help local people produce and market local foods to local people" *[agency staff]*.

"It's important to have a connected state program" *[farmer]*.

The Certified South Carolina Grown program is univerally liked, with respondents expressing strong appreciation for the tone the program has set, the visibility it has brought to local foods, and the investment the state has made in promoting South Carolina products. However, several refinements were suggested:

"What is cumbersome is ordering the stickers [showing my product is South Carolina grown]. It is not possible to order on line, and there is only one person I can call to place the order. So I have to make the call, wait until I locate that person, and then mail a check."

"Certified South Carolina Grown is an important tool. Yet in our rush to promote it we are diluting it. That is ruining the brand" *[farmer]*.

On infrastructure:
"I'd like to see a *farm* hub. There are lots of resources we don't have to put together bulk orders from area growers" *[farmer]*.

"We need a building big enough for refrigerated coolers, and some refrigerated trucks. We also need to build a fence around the property." *[farmer & co-op official]*.

"One thing I need is an improvement in my packing facilities, cooling equipment, etc. I could use an enclosed packing building. The FDA is scaring us with regulations. I am hesitant to invest. What I have now is primitive but effective" *[farmer]*.

"Next, I'd like to see us launch farm incubators around the state. New farmer training has to be different in each part of the state" *[nonprofit staff]*.

"We could have incubators all over the state" *[NRCS official]*.

"I need a facility where I can process my seafood. With the facility I have, I cannot physically cut any more than I already do" *[fisherman]*.

A critical need for supplying hubs like GrowFood Carolina, Sara Clow added, is for farmers to have on-farm infrastructure that will help them produce higher quality foods: drip irrigation systems, storage facilities, cooling rooms, packing sheds, and refrigerated transport. "Most of the stuff we get now arrives on open-bed trailers," she pointed out. She says it would be possible to design a standard kit that would be easy for any farm to place on their land. She added that existing federal Commodity Credit Corporation (CCC) moneys could be tapped to build such facilities.

On aggregation:
"Food hubs are a great way to connect farmers to the marketplace. The longer we have the conversation that food hubs are a good idea, the better the concepts gets" *[nonprofit staff]*.

"GrowFood Carolina has taught us that you have to understand the whole [food system] network" *[nonprofit staff]*.

"We don't need a food hub because we don't have enough farmers. We should address different areas of the state differently" *[farmer]*.

"Small farms need outlets" *[farmer]*.

"Alot of farmers have trouble getting the product right." *[farmer]*.

"For a farm my size, the food hub will take its cut. Is it worth it to me?" *[farmer]*.

"Farmers don't realize -- they will earn less per unit, but they will have more time to farm" *[food buyer]*.

"We need more distribution capacity" *[nonprofit staff]*.

"In the Charleston region, more food is grown than can be consumed at the food service level. But it is the only city in the state with enough restaurants to consume what is grown here." *[distributor]*.

"Changing consumer habits and attitudes is the hardest thing by far" [in making a food hub work] *[nonprofit staff]*.

"At some point, greed will start dictating the decisions of the truckers. Every vegetable grower has had the experience of a shipper taking money off the top [of an order]" *[farmer]*.

"Don't assume you need a food hub – it may not pay for itself" *[nonprofit staff]*.

"Alot of people are trying to develop localized (short) supply chains in various parts of the state" *[extension agent]*.

"We need to look at the potential economic impact of a food hub. It may only displace trade from some other business" *[researcher]*.

On debt:

"I'm not going into debt with the economy the way that it is" *[farmer]*.

"I don't do anything unless I can pay for it myself" *[farmer]*.

"Normally I have the deals done [with food buyers] before I buy seed" *[farmer]*.

"I would love to see a grant program. Those low-interest loans are great, but the paperwork involved is so restrictive. All I have to do with a bank is call them and the deal is done in an hour" *[farmer]*.

"Up to six months ago, beginning farmers wre not eligible for our loan programs. It is still difficult. We now have microloans for small operators, we are just getting started. The farmer has to have experience or a credible ability to manage" *[NRCS official]*.

"Agriculture does not fit into any lender's equation" *[farmer]*.

On access to capital:

"I'd love to have a couple of grain bins, but I cannot afford them" *[farmer]*.

"Where our grant programs really fall short is for really new farmers. To qualify for our grant programs, you have to be an established farmer" *[NRCS official]*.

"Usually we get about $28-30 million in requests, and this year we have $15 million of funding to give out. This is the highest level in our history" *[NRCS official]*.

On education and training:
"Kids are growing up with no work ethic" *[farmer]*.

"Labor is nonexistent" *[farmer]*.

"I spend one half of my time trying to encourage people to come to meetings that are free. It takes a long time to build that network of trust" *[nonprofit staff]*.

"Small farms are so different than traditional farms" *[nonprofit staff]*.

"We can do a conservation plan for a farmer for free" *[NRCS staff]*.

"People tend to support those things they help to create" *[agency staff]*.

On regulation:
"We need specific regs for the small guys" *[farmer]*.

"I need one person I can go to who can tell me how do I proceed. Someone who will work with a person, rather than shutting the door" *[farmer]*.

"The State can say whatever it wants, but it gets down to what an individual county inspector says. One classed my operation as a commercial factory/laboratory" *[farmer]*. That subjected the farm to additional food safety scrutiny.

"We ran a training program for farmers. We had eight state agency staff telling people the wrong things" *[nonprofit staff]*.

"It was hard to get a straight answer. The agencies don't communicate with each other. I had federal funding for my project, too. I had to work with FDA, DHEC, GAP training, the local planning commission, and the local building code. It would be worse if I were within city limits" *[farmer]*.

"I used to have some difficulty with my county council. Then I pointed out that my farm was one of the larger employers in the county. I have 50 employees, and every one of them is local. Since then, the county has been a whole lot nicer to me" *[farmer]*.

"Our regulations in South Carolina are so far behind those in North Carolina *[nonprofit staff]*.

"Alot of people assume I will sell my products off the farm, but there are so many regulations" *[farmer]*

One farmer considered building a farm stand to sell products from the farm itself, but learned that the county would classify this as an agri-tourism development, subject to more stringent regulation than a farm stand *[farmer]*.

"I wanted to have three-phase power. The company wanted $250,000 to lay the cable. They asked for a $10,000 deposit. They calculated these figures from the square feet of my building, not the

electrical load I required. It took four rounds of negotiations before the costs got down to a level I could afford" *[farmer]*.

"Each time I wanted to apply for a permit, I had to drive [an hour] to the county seat, and back. Some of the permits had to be approved by the State in Columbia, so I had to drive there as well – and often the application just sat on someone's desk for weeks. I would have to return later to pick it up, and then carry it to the county" *[farmer]*.

"Enforcement is often selective, sometimes more than what is needed, sometimes less." *[nonprofit staff]*.

On pricing:
"When you get into the global market, there is one world price. You can't sell above that price for very long" *[distributor]*.

Institutional purchases:
The Lowcountry Food Bank purchases 211,000 pounds of food from five local farmers each year" *[foodbank staffperson]*.

Survey of South Carolina Specialty Growers

Survey Dissemination and Response Rate

A survey intended for specialty crop producers was developed in June, 2013, using Google Forms, so respondents could enter answers through an internet platform. The link to the survey was sent out through various email networks (listed below) with a cover letter from Jack Shuler and Commissioner Hugh Weathers asking farmers to respond. The survey was open for five weeks; a two-week reminder was sent through email networks as well. The following organizations sent out invitations to their networks:

- Carolina Farm Stewardship Association
- South Carolina Farm Bureau
- Farmers Market Coalition
- Clemson Extension Services

These networks include many farmers who are not in the intended audience; the cover letter requested that only specialty crop producers respond. This request appears to have been followed.

Sixty individuals representing farms responded to the survey, representing less than 1% of the total number of farms in South Carolina (26,500 farms, 2011 NASS data). Respondents came from 26 of the state's 42 counties; however, the sample size is so small that the following results must be interpreted cautiously. **This was neither a random nor representative sample of all farms.** At best, it is a rough indication of the opinions of those farmers who responded. This may illuminate some larger trends, but only in a very broad sense.

Nevertheless, the size of farms responding reflected rather well the diversity of farm sizes found in the state of South Carolina. Very large farms of over 2,000 acres were more represented than would be expected from Census of Agriculture data (10% of the sample were farms over 2,000 acres; only 1% of the state's farms are this size).

Preliminary Analysis

Given that the survey was sent out in the middle of planting and harvesting season, 60 responses seemed to reflect strong interest among growers — this may also have correlated with an unusually rainy season, giving farmers more time in their offices.

Although the survey did not ask for detailed information about production practices, its appears that most respondents are natural/organic producers selling niche products. Their main sales channel is to sell directly to individual consumers.

Responses covering livestock were limited by the nature of the sample; nevertheless many specialty growers include livestock in their operations.

- Most respondents are interested in expanding their businesses, and those that aren't interested are mostly over 60 years old.

- Respondents held a stronger interest in having access to education and training than to additional infrastructure.

- Growers identified limited access to capital as a primary barrier to expansion.
- The most popular potential infrastructure investments were all on-farm (high tunnels, washing and packing, cold-storage).
- Growers who responded have limited interest in wholesaling.
- Many respondents were interested in having access to marketing and branding assistance.
- Growers identified the costs of packaging and branding, as a primary barrier.

Additional findings, methodology, data, and results are available in Appendix A, page 84.

Key Conclusions of this Report

Drawing upon this economic overview of conditions in South Carolina agriculture, testimony from field interviews, and responses to our producer survey, the following key conclusions are made:

South Carolina holds exceptional and unique assets

- Land is relatively plentiful.
- Farmers have multiple growing seasons each year.
- Water is often adequate.
- Charleston is an important culinary center.
- Urban populations are large enough and sufficiently close to farmland that farmer. connections to food buyers can be quite close.
- Key leaders know each other well and the state is small enough to coordinate effectively.

Demand exceeds supply

- Demand for locally grown food far exceeds supply
- The sole operating food hub, GrowFood Carolina, is highly praised and has benefited from special support, but also requires more products to be available if it is to reach its financial and social goals.
- This implies that prevailing market structures are not responsive enough to local food demand; new facilities and new relationships must be built.
- As farmers ramp up production, supply must be kept in balance with demand while both are changing.

South Carolinians seek connection and authenticity

- The desire for local food is not simply an economic concern, it also emerges out of a heartfelt desire to build stronger connections of trust among farmers and consumers.
- South Carolina residents also are hungry for authenticity in their food.
- People experience considerable isolation – even among those leading the food movement.
- Greater coordination of food initiatives across the state is critical.

South Carolinians are concerned about protecting the integrity of "local" food trade

- Many expressed concern about retaining the integrity of South Carolina Grown labels in the face of resellers, and how produce grown in neighboring states is passed off as "locally" grown.
- Farmers, food buyers, and consumers praise the Certified South Carolina Grown program, yet also want it to do more to ensure that residents have access to food grown inside the state.

If the state food system does not reduce hunger, the system will not be sustainable

- Some consumers are burdened by intense hunger.
- Many consumers are also overweight or obese.
- Many consumers cannot identify basic food items, and many do not know how to cook.

- Residents report that active engagement in learning about how food is produced is important in building better eating habits, and maintaining better health.

Direct sales reward farmers adequately

- Direct food sales (farm stand, farmers' market, CSA, etc.) are important to farmers since they earn maximum value for the products they sell, and also build connections with consumers that lead to a broader awareness of the food system, and stronger resilience for South Carolina's population.
- Community Suppored Agriculture (CSA) arrangements have been critical in reducing financial risk for farmers, and also for fostering relationships of trust among state residents.

Farmers are often skeptical of aggregation and debt

- Many farmers are wary of getting involved in an aggregation process because they are not convinced they can earn enough money at wholesale prices. Indeed without clear market power (often in the form of a commitment of loyalty from their buyers, or collaborative organization), farmers will always be prone to market upheaval.
- This is especially true of (a) established farms who do not feel a need for expanding production, and (b) new farmers who need to capture the best price possible to build their farm operations.
- Many farmers recounted experiences of having sold to a larger buyer, only to have the price dropped later.
- Farmers tend to be averse to taking on debt in an uncertain economy, since farmers understand that debt has been used historically as a tool to remove farmers from their land.
- Farmers notice that food shoppers are becoming more constrained by high oil prices, and are spending less for food in some cases, or are more reluctant to travel to get to the places where they buy food.
- Many emerging farmers ask for their risks be reduced if they are to take on new risk to grow food for larger markets.

More farmers are needed

- More farmers are needed in South Carolina if the local food supply is to be strengthened.
- Ample land is available, though not always available to those who wish to farm, or on terms they can afford.
- Those farms that have emerged in recent years have been developed primarily because (a) the farm family paid for its land long ago and does not need to carry the costs of a mortgage, (b) an entrepreneur with wealth that was created outside of the local food system decided to enter local food trade with resources at his/her disposal, (c) an entrepreneur with an off-farm income decided to start a farm operation, or (d) some grant program enabled a farm or business to build capacity it could not build on its own. It is exceptionally difficult for a new farmer with limited resources to build a thriving farm with their own capital.
- This suggests that if the state does not invest in emerging farm operations, then only those who are wealthy through some other process will raise food for state consumers.

The state plays a central role

- The state has not systematically invested in local agriculture and local food consumption for decades; until it does strong local markets are unlikely to form.

- The state must also commit itself to the growth of local foods trading networks, and must re-interpret its own regulations in light of that commitment.
- Local food networks have the capacity to organize themselves quite effectively, providing that residents have adequate resources at their disposal. The state must invest in ways that promote spontaneous growth of local food networks, and must refrain from unduly restricting these community processes.
- The state needs to create ongoing processes for training new farmers, food system workers, and consumers. Many of these could be accomplished through existing schools, technical colleges, and universities.
- The State should invest in initiatives that would not otherwise be supported by prevailing market economics, but must invest in a manner that is wise to prevailing market conditions.
- State investments should also leverage private investments.
- State funds should play a limited role in investing in private businesses or family farms as individuals. Small grants (perhaps $10,000 or less) may be very appropriate for individuals if they serve a public good of increasing local food production; larger grants should build lasting public infrastructure.
- The State of South Carolina should value diverse approaches that suit local realities.
- The State must also insist that local stakeholders operate inclusively and transparently, present a hard-nosed, practical plan with measures of success, and demonstrate that local collaboration is solid enough that the initiative will build greater coordination and stronger capacity in each region.

Infrastructure investments much accomplish multiple goals

- New infrastructure needs to be built that (a) favors careful and safe handling of perishable products for local markets; (b) creates local efficiencies in trade, (c) builds loyalty among state consumers to local farmers, (d) builds market power for farmers as they trade with larger systems; and (e) effectively supports farmers who shoulder risks of climate, weather, and uncertain markets.
- Farmers and local food businesses may not make adequate income until supportive infrastructure has been created that fosters local food trade. Solid business concepts may require subsidy until such infrastructure is pervasive.

Regulatory barriers must be removed

- Local, state, and federal regulation are often inconsistent with each other, and have posed considerable burdens on farmers in terms of unwarranted costs, as well as considerable time and energy.
- Unifying regulatory processes will be critical; the state must vest someone with the power to clear up regulatory complexities, and to advocate for farmers who are striving to meet the goal of Making Small Farms Big Business.

This is long-term work

- The local food movement is no passing fad; it may be the prime vehicle for transforming the economy so that health, wealth, connection, and capacity are built in South Carolina communities.
- There will be few quick victories; food leaders must address change over the long haul and be prepared for complexity and uncertainty.

- Remnants of plantation culture and heirarchical power relationships still exist in the state, and until these are overturned, there is risk that South Carolina will use public money to rebuild systems of privilege, rather than democratic and inclusive food systems.

Strategic Action Plan

Core Recommendation:

The State must make a formal commitment to supporting small farms that grow food for South Carolina markets. Such a commitment would allow State agencies to make a priority of supporting the expansion of local food production, distribution, and marketing efforts. This should be done as part of legislation with lasting force.

In order to demonstrate the state's commitment to small farms, and to reduce anxieties about uncertain markets, a customer base loyal to local foods must also be consciously cultivated. South Carolina Department of Agriculture should mount a **broad, long-term educational and marketing process** that engages state residents in learning productive skills in growing food, food handling, food preparation, and smart consuming. More on these marketing processes will be found below.

Much like any other educational process, these educational steps taken will not totally pay for themselves in a competitive economy. Yet some of this work will happen most effectively in social-entrepreneurial ventures that earn at least part of their income through competitive economic activity, and rely upon support as needed to carry out less lucrative educational functions. Short-term subsidy, if properly done, will lead to long-term sustainability.

As one example of what might be done: Residents of Southwest Colorado have devised an **"Eat Five, Buy Five" marketing campaign** that encourages their neighbors to eat five fruits and vegetables per day (the minimum recommendation to reduce the risk of developing cancer) and buy five dollars of food each week from a local farm. These could be sales through farm stands, farmers' markets, CSA or similar arrangements, internet sales, or other direct channels.

Such a marketing initiative, tailored to South Carolina, could have a billion-dollar impact: If each South Carolina resident purchased an additional $5 of food each week *directly* from some farm in the state, $1.2 billion of new farm income would be generated. As a publicity effort, such a campaign would also encourage consumers to buy SC food through supermarket chains, restarurants, and institutions, but obviously, sales through an intermediary will not have as large an impact on farms as direct sales, at least in the early stages.

There is ample public relations expertise present in South Carolina to devise a similar campaign that would engage residents in treasuring local food, buying local food, and staying committed to purchasing from local farmers. While the Colorado initiative is new, it has already spread from one county in the corner of the state to four nearby counties – after an initial rollout costing $500. As a public relations campaign, it targets consumers primarily, but also underscores the work of farmers who are growing for local markets. The publicity poster for Montezuma County. Colorado, is included as an Appendix B *(see page 98)*; marketing experts in South Carolina can carefully adapt this approach, tailoring it to local conditions.

Such a campaign would be a natural extension of the existing Certified South Carolina Grown marketing efforts run by SCDA; this would be a natural place to house this new initiative. Other

potential sponsors include the South Carolina Farm Bureau, the Palmetto Agribusiness Council, or Carolina Farm Stewardship Association.

As will be seen below *(see page 80),* our recommendations also call for strengthening the Certified South Carolina Grown program by ensuring that consumers know which farm grew their food at point of sale, and perhaps increasing branding opportunities. We also call for statewide coordination of local foods activity.

Our strategic approach covers all levels of the food system in South Carolina:

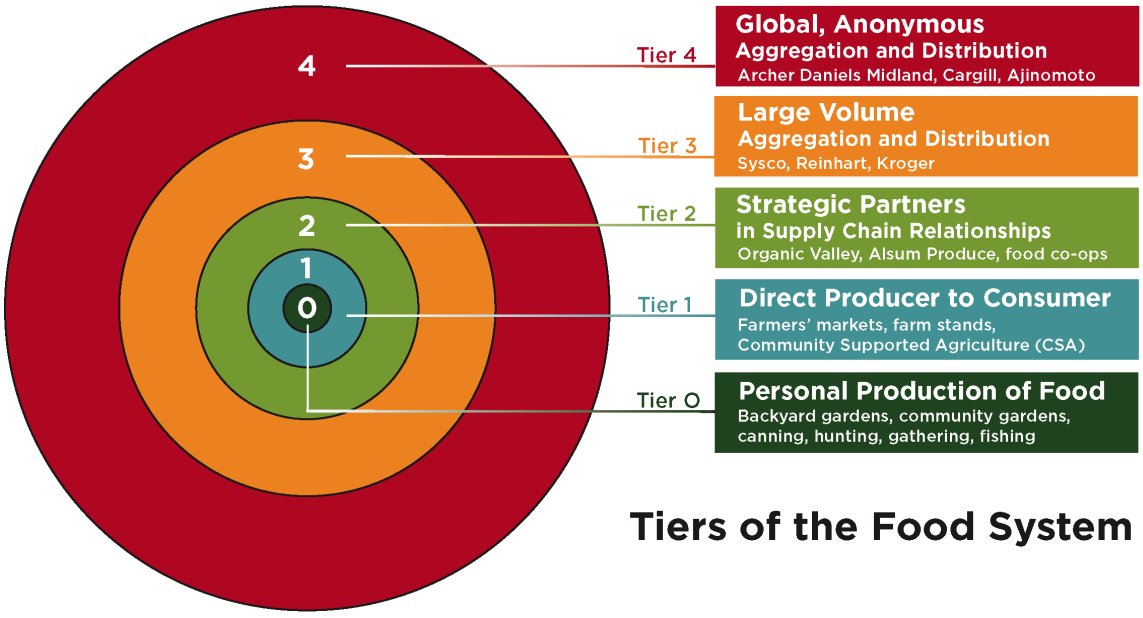

Figure 7: *Diagram created at the University of Wisconsin Center for Integrated Agriculture Systems*

Tiers of the Food System[20]

Arranged from household level to global level

0. Personal Production of food
1. Direct Producer-to-Consumer sales
2. Strategic Partners in supply chain relationships
3. Large Volume aggregation and distribution
4. Global Anonymous aggregation and distribution

[20] Source: University of Wisconsin Center for Integrated Agriculture Systems. http://www.cias.wisc.edu/farm-to-fork/tiers-of-the-food-system-a-new-way-of-thinking-about-local-and-regional-food/, viewed July 3, 2013.

We propose strategies at all five levels of the food system illustrated above. After this section, we recommend key steps for State policy that is supportive of these investments.

At the household level:

Food awareness, food preparation, and food safety classes that are currently being offered in low-income and other settings are an essential core of creating informed, healthy consumers. If led properly, neighbors can learn collaboratively, building lasting connections that lay the foundations for a more inclusive and productive economy.

Encourage and support household gardens, community gardens, and cottage industry processing. Farmers in Williamsburg County report that most of their neighbors have gardens of their own. This home production represents an important, although unmeasured, industry. While this may seem to work counter to the goal of increasing value-added processing, it does not. People who know how to grow food for themselves are more likely to value locally produced items. There is strong interplay among local production methods: one master gardener who tends the local Clemson Extension booth at a local farmers' market reports that once the farmers' market opened up, she experienced far more demand for her services, since people began to grow more food for themselves. Master Gardener programs might be expanded to place more priority on growing food, including an ongoing technical assistance initiative.

At the direct and regional sales levels:

The centerpiece of our strategic plan – and a major innovation for the state to pursue – is the creation of a statewide "food web" connecting farmers with customers at local and regional levels. This food web would build upon emerging clusters of farmers who produce for local markets – "food production nodes" – which would be enhanced by connections with Clemson's New and Beginning Farmer Program, and incubator farrms such as the one already launched by Lowcountry Local First. These in turn would feed food "hubs" such as GrowFood Carolina, which would supply broadline markets.

To explain this, however, let's first look at the major innovation – the food production node.

Food production "nodes" are emerging all across the state, but lack significant resources to implement their visions. These nodes are essential to building a web of supportive relationships across the state that will allow food hubs and other larger-scale facilities to thrive – what might be called a "food web" – that supports larger aggregation efforts.

The term "node" comes from natural sciences and systems analysis.[21] A *food production node* would be a place where several farms cluster near each other, perhaps drawing upon common equipment to wash, sort, and package their products, aggregate production from small farms into larger units, and store this food safely for later delivery. Depending upon the vision of local food leaders, available resources, and production levels, a node could take on many other capacities as well.

[21] The root of "node" is the Latin word for "knot." The Oxford English Dictionary defines a node as a "central or connecting point." http://oxforddictionaries.com/us/definition/american_english/node

Importantly, however, such a food production node would be run by the farmers themselves. Its purpose would be to create efficiencies for local food and to promote collaboration among the farmers. It would not be a separate business that takes a cut of the farmers' revenue, it would be a facility farmers can use to prepare products for market and store them for later resale. With state support, initial costs to farmers could be quite low; if local efficiencies are created, operational costs should be covered by earning higher margins.

To spark the creation of food production nodes across the state, we suggest that South Carolina make a major investment in them. Rather than designing a single template, however, we recommend that the State offer funding in the form of a competitive grant program. This will place the responsibility for defining the vision and capacities of local food production nodes on local food leaders; the state will then invest in the most promising and transformative plans.

Food production nodes should be built and strengthened across the state through a competitive grant program. Such a grant program could be funded by the state, and administered by a nonprofit entity. A competitive funding mechanism would allow local communities to define their own vision for the food "node" that draws upon existing assets, taps local capacities, and is appropriate to the resources available within each community. While this would be a single state program, a multiplicity of unique nodes would be built.

A "food web" is formed by networking food production nodes and food hubs

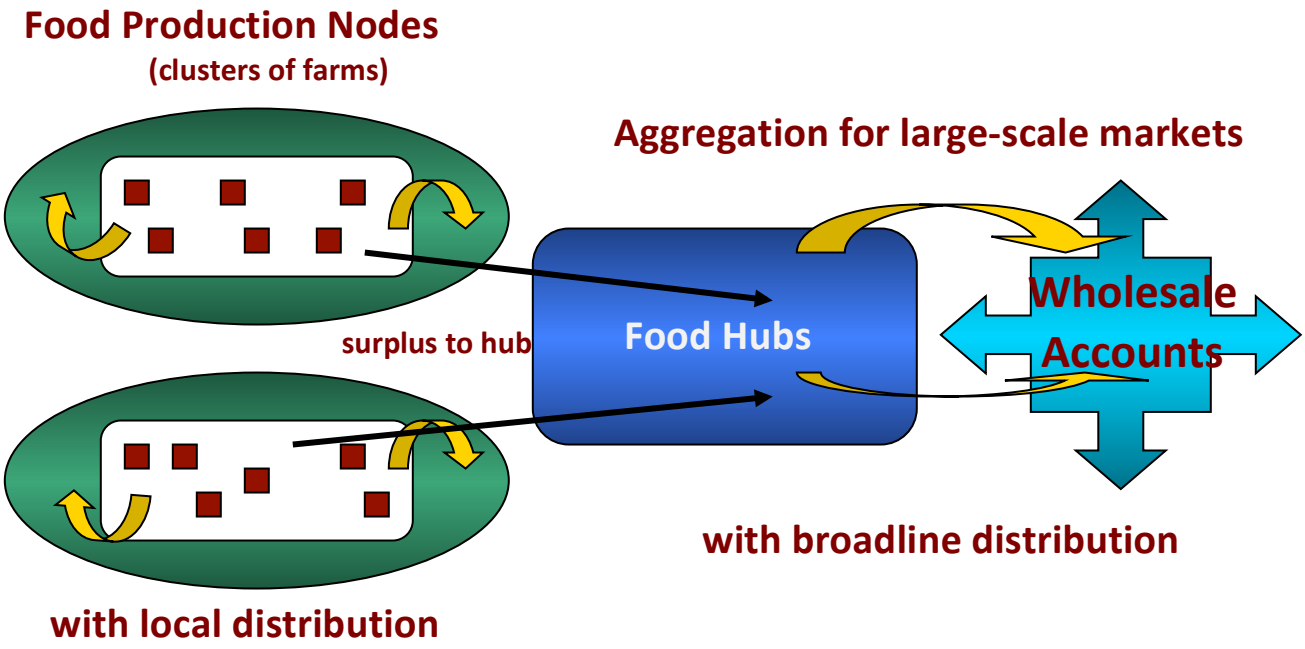

Figure 8: *Elements of the future South Carolina food web. Note that food production nodes (farm clusters) and food hubs may have similar facilities, yet each serves a distinct purpose in the food web.*

It should be emphasized that creating a food production node is long-term work. There will be few quick and dramatic victories, but each node will build lasting capacity in South Carolina regions that wish to become producers of their own food, rather than being limited by what is available through prevailing commerical channels.

Building a network of food production nodes is the essential infrastructure required to create a web of support around these regional food hubs. Without sufficient supply of food, these hubs cannot thrive. Conversely, without regional food hubs, it will be difficult for the farmers at each production node to find adequate markets. The food production node is the connecting point that brings farmers and food hubs into solid collaboration, but it also is the facility that focuses the attention of local farms on local markets. Food hubs also help bring farmers into collaboration, but cover a larger geography, and focus their distribution efforts on larger regional markets.

The map below (Figure 9) shows what this might look like in the future.

Emerging food production nodes in South Carolina
Already, food production nodes are emerging across the state, yet each is hampered by a lack of resources. Some examples:

- A resident initiative in **Chester** has obtained use of a historic building in the downtown area. This has been carefully refurbished to create an indoor market where farmers bring food to sell on Saturday mornings. Equipment has already been purchased to install a commercial kitchen on the site. In the future, organizers hope to build a cluster of farms adjacent to the market where food will be grown year-round in greenhouses and hoophouses. Organizers hope this will spur further food-oriented development in the urban core.

- Retiring Clemson extension agent York Glover is helping organize Gullah Co-op, a farmers' cooperative on **St. Helena's Island**. The farmers already market products together at the Bluffton Farmers' Market, and hope to launch their own market in a more visible location soon. They also plan to draw upon an existing commercial kitchen on the island for light processing. The Penn Center also has built considerable food production capacity.

- Hub City Farmers' Market is drawing up formal plans for an urban site in a low-income neighborhood of **Spartanburg** that would combine farms, a commercial kitchen, and storage areas. Although organizers currently consider this to be a "food hub," its primary importance (in our view) is as a facility that will encourage production of food in an urban setting, and as an educational facility that fosters healthy eating in the community. The site is close to the existing farmers' market so this will also strengthen food sales at the market.

Several other food initiatives that are already underway represent complementary efforts to build a web of relationships below the level of a regional food hub. Each contains some of the elements of a food production node – but this is not to suggest any should force themselves into that specific model. Still, each might be considered by the competitive grant program for support to expand their reach.

- Sea Islands Local Outlet (SILO) in **Habersham** is part of a new housing community west of Beaufort that aims to incorporate agricultural land into a development project. SILO began

by launching an "online farmers' market" where local shoppers can order directly from as many as 40 producers. Orders are filled at the SILO storefront each Friday: farmers bring their products in the morning, and these are apportioned into shopping bags according to each order. Customers pick up their orders on Friday afternoon, or in Palmetto Bluff on Tuesday afternoons. While currently SILO considers itself a "local grocer with two shopping methods," offering over 800 different products after two years in business, its long-term aim is to foster food production within the new development of Habersham. At that point, it may take on more of the quality of a food production node.

- Millgrove Farms near **Georgetown** runs a retail food store on the edge of the city that serves multiple functions, including helping to coordinate harvest and shipping among half a dozen local farms. The Charleston food hub GrowFood Carolina makes specific plans with each Georgetown grower to raise food that will meet the anticipated needs at the food hub, and then asks Millgrove owners, Ben and Carol Williams, to help coordinate the harvest with the growers. Products can be brought to the store to make up a shipment for GrowFood Carolina. Each farmer can also sell products to the store for retail sale.

Other examples may well exist; due to limitations of time and resources we were unable to learn about all of the activity currently underway; we regret any such omissions.

Examples from other states

In other states, successful food production "nodes" have led to stronger food "hubs" – though none would have used term "node" to describe what they do. In Southwest Wisconsin, a small group of young people moved to land that was considered marginal in 1970. In this remote, hilly area called the "Driftless Region," mechanization had never dominated agriculture to the same extent as it had on the flat prairies. The soil was sandy. Accordingly, land prices were relatively low. Slowly, against all economic odds, these young farmers developed an organic produce industry where none had existed, and at a time when very little popular attention was paid to local or organic food outside of this region. By 2009, this cluster of farmers was strong enough that some farmers were making six-figure incomes; another newer farmer was envisioning shipping fresh produce to major cities from St. Paul to Chicago.

When a factory shut down precipitously in the small town of Viroqua (population 5,000), several groups came together to form the Western Wisconsin Food Enterprise Center. After three years of organizational work, the center won a $2 million grant from the U.S. Economic Development Administration. This helped improve water systems in the plant, remove asbestos insulation, open up new windows, and frame in offices. Now two food distributors share the space along with several other businesses in the Enterprise Center. One of these distributors is shipping food to local schools, colleges, hospitals, and restaurants, and projects 2013 sales of $300,000. The second distributor is focused on urban markets, and has surpassed $1 million in sales. The creation of the local "node," then, led to formation of a food "hub."

Because of the region's focus on organic agriculture, it is also the home of Organic Valley, a nationwide cooperative with 1,800 farmer members (themselves organized into small local co-ops) and $1 billion in projected sales in 2013. However, this business primarily serves metropolitan markets; many local residents cannot afford this high quality milk for daily use. Organic Valley has a strong impact on improving farm income in Southwest Wisconsin, and is expanding into the

produce trade, but local residents also realize that futher steps need to be taken to actually feed local people with local foods.

Another "node' formed in the Flathead region of Montana, and led to the creation of a food "hub" in a small town. Here, a tribal college and its local nonprofit partners were able to procure money for a commercial kitchen near the reservation. The kitchen earns substantial fees for processing locally grown foods, but has always required subsidy from foundation grants, and so forth. Yet community members place high value on the Mission Mountain Food Enterprise Center: local cherry farmers bring in cherries to be frozen before shipment to markets nationally. One day a new commercial product was born when a nearby farmer raised a surplus of squash. The Enterprise Center did some experimenting, and discovered they could feasibly cut the squash into cubes, blanch the cubes, and seal them in a vacuum bag before freezing. They then contacted the local school to ask if they could use some frozen squash. The school was so pleased with the product that it has become a fixture in school lunches. Had there been no commercial kitchen, it would have been impossible for the region to develop this product for its own use so readily. The test of this kitchen, at this place and time, was not whether it turned a profit – the test was whether it was there, in place, ready to improvise when an opportunity presented itself.

Potential food production nodes of the future

Let's consider several examples of potential "nodes" in South Carolina. Each of these scenarios is imaginary. Certain elements of each scenario exist today in South Carolina, but their full potential will not be known until substantial investment is made in each location. None of these imaginary possibilities is likely to be constructed, nor is any of these intended to limit the visioning of local partners – each is simply meant to prompt South Carolina's thinking about the diverse ways a food production node could be organized.

Scenario One: Imagine an organic food processing firm that plans to open an individually quick-frozen (IQF) vegetable line in the mythical town of Greenfield, where it intends to freeze collards, sweet peas, okra, bell peppers, and cubed sweet potatoes for institutional markets. The firm has all the capital required to build the factory, and has identified markets across the Eastern Seaboard for its product. Yet it lacks one key resource: not enough farmers are raising the products the firm would like to process and sell. Learning of the state's competitive grants program for promoting local food systems, the firm approaches SCDA with a proposal: if the state will invest in the storage units (cold or room temperature) needed for small farms near the factory to store their production for use by the factory, the firm will donate enough produce each year (for a fixed number of years) to supply a local technical school cafeteria with as many of these five produce items as it needs from the farms' fields and greenhouses. A retired farmer with 500 acres of land nearby is invited to join the proposal. He has been thinking of renting his land to an organic farmer, but has found no one able to farm the land. The farmer agrees to lease 25 acres of his land to an organic farming training program, as long as at least half the food produced will be sold to local restaurants, grocers, and the technical school. A local nonprofit sponsors Clemson's New and Beginning Farmer Program to coach ten experienced farmworkers, who are skilled in agriculture but not in organic production, to work together as a team to convert the landowner's fields to organic production. Sensing a training opportunity, the technical college uses this project as a springboard for courses in organic agriculture, and also integrates local foods into its science and health curricula, based in part on what local foods are now available at the school cafeteria. The technical school marketing students develop a "Greenfield Grown" label that gains recognition as a regional brand by SCDA's Certified South Carolina Grown, but even more importantly, attracts consumer loyalty from Greenfield

residents. After bringing these diverse groups together to frame this plan, the nonprofit applies to the state competitive grant program for funding for training, storage facilities, and local market development. After ten years of producing food for local markets, one of the growers becomes successful enough that he makes an agreement with the farmer to buy 50 acres of the farmer's land to launch a permanent organic farm. He then sells collard greens, okra, and sweet potatoes to the IQF factory for export outside of the state, but also provides most of the collard greens eaten in Greenfield County. In exchange for the support he received, he agrees to train two new farmers who can raise other produce items for local sale.

Scenario Two: Imagine a farmer co-op involving 20 farm families in Sankofa, a settlement in the Pee Dee region. The co-op has been in existence for 20 years, and sells fresh turnip greens and collards to a local food manufacturer. The co-op already owns washing, packing, and storage facilities. However, several of the co-op's farmers recognize that children in their community do not eat as well as they need to: many are not eating enough, few have experience eating fresh greens, and few have cooking skills. The co-op writes a proposal to the state's competitive grant program asking for funds to coordinate nutrition and cooking classes at a commercial kitchen in a local church. Staff from the local food manufacturer will donate their time at the kitchen, seeing this as an investment in making sure it has a skilled labor force two decades from now. Local parents pay a nominal fee to process tomato sauce, pickles, and peppers for winter use; and one develops a commercial recipe for salsa. One of the co-op's farm families lives across the road from the church; the family promises to till five acres of land for use by the church in raising a diverse array of vegetables for sale to community members, or for processing in the kitchen. In year five of this initiative, the co-op returns to the state fund, applying for money to a can to distribute fresh collard greens to local grocers and schools; and also asking for money to improve a farm stand, across the street from the church, where local shoppers buy fresh produce.

Scenario Three: Imagine a group of neighbors who have met for five years to learn how to raise grass-fed beef for local restaurants. They decide they want to increase production, and raise food for a local school. Yet there is no USDA-certified processing plant nearby. The growers approach a small custom processor who is 20 miles away, and ask if he has thought of expanding his operation. The owner says he would love to, but does not have the capital, and is unsure he can find enough labor to run a larger plant. The farmers suggest that the meat processor work with them to apply to the state under the competitive grant program. Money would be devoted to building a new USDA-certified kill floor at the plant; in exchange for the grant the owner would agree to supply five nearby school districts for at least five years, and would train others who might want to build such a facility. The plan is that each farmer will bring his own steers to the plant, and a local trucker will take the carcasses to a larger meat packing plant that is three hours away. Each of the farmers is able to ship 3-6 steers per month to this slaughter facility, but the processor who cuts and wraps would prefer they bring in their animals in loads of 20. The driver agrees to drive the truck for the co-op if he is paid a certain amount per animal he ships. Each farmer agrees to ship a certain number of cattle each month through the co-op. Each animal will be identified with an ear tag so that the farmer can trace his own livestock through the system. The request to the competitive grant includes money to purchase a refrigerated tractor trailer for the driver; the funds will also be used to add a hanging rail to the truck that exactly matches one at the distant processing plant. This means that the hanging carcasses may be unloaded rapidly from the truck, reducing shipping costs. The driver returns two weeks later to carry the packaged meats to the school district.

Scenario Four: The Sea Island community of Sun Gold has a school garden program that has built community gardens at three elementary schools, one middle school, and one high school. The school nutrition service director has been working with science, mathematics, and health classes to integrate the garden into school curriculum – so students learn basic principles of biology by observing how plants grow in the garden, attain math skills by planning how many seedlings they need to plant to raise enough tomatoes for the school cafeteria, and learn the nutritional benefits of lycopene, a nutrient found in tomatoes. Researchers from a nearby college have found that students who learned how to work in the garden in grades 2 and 3 end up eating more nutritious meals through their school careers. They also have fewer behavioral issues than students without these skills. Accordingly, the community of Sun Gold sets a goal of making sure that in 20 years, every graduate of the high school will know basic food growing, cooking, and processing skills. The school nutrition director offers classes in nutrition in the afternoon, after school lunch hours are over. Each participating student obtains credit at the local technical college for training they successfully complete. Students also run a composting operation using waste from the school kitchen, and this compost is used to fertilize the school garden. Yet the demands of training all of the school's students each year require the school to expand its commercial kitchen, and requires the school to build a root cellar and freezer area to store the foods the students grow and process. The PTA applies to the state's competitive grant program, saying that adding these kitchen and storage facilities will ensure that in one generation, the school will be able to ensure that all students know how to eat well, and have access to healthy fresh foods. The state responds by asking the school to develop a clear plan for ensuring that students of all income levels in Sun Gold will have equal access to food.

Scenario Five: Imagine a land trust that sets aside 200 acres of land for agricultural use. Since the land trust is located in a medium-sized town, Palmetto City, the trust dedicates this land to feeding the population of the town – in fact, it writes a permanent easement stating that this land will be held in a conservation easement for agricultural use to fulfill local food demand. Attracting investment from private investors, the land trust builds greenhouses and hoophouses on 25 acres of this land. It has previously calculated that this many acres could grow enough greens to feed the entire population of Palmetto City. Reaching out to agricultural training programs such as Warren Wilson College in North Carolina, the Clemson student farm, and University of California – Santa Cruz, the land trust invites five graduates each year to lease the greenhouses for up to five years each, on condition they submit a brief business plan showing how they will grow food for local markets. The land trust also sets aside 75 acres of land so these emerging farmers might establish a permanent farm on leased land, once they have established a market share. The land trust then approaches the state's competitive grant program, asking for money to build a common washing, packing, and cooler facility that the farmers will share to safely wash greens according to Good Agricultural Practices (GAP) protocols. The grant request also asks for the funds to purchase a small van that can carry these fresh greens to local grocery stores and restaurants. As a matching donation, the land trust points to the investment it has already made in season extension, but also agrees to build a market stand on the property so farmers can sell produce under their own farm name to the public. The grant is made. After three years, the young farmers have been able to produce enough food that combined, they supply all of the salad greens used by the Palmetto City school nutrition program. After seven years, two of the farms are selling enough greens in the winter time that the GrowFood Carolina truck comes by the node once each week to take surplus production to Charleston, where it is sold to Bi-Lo Market.

Importantly, food nodes can create competitive advantages for locally produced foods by clustering several kinds of activity in each local region. Several small local businesses, trading with each other, and relying upon each other for support and mutual training, and reaching out to engage local customers, can build loyalty to local brands, productive skills, business acumen, strategic partnerships, and business activity that will promote the longer term goal of ensuring that South Carolina-grown food is consumed by South Carolina consumers.

It would seem that a successful cluster for food production could be built in each of 10-20 regions across the state in ways that suit local priorities. The State of South Carolina should put itself in the position of responding to, and leveraging, solid local activity that will emerge from diverse models, each of which suits local conditions. The state should not impose any single model, but should require solid business planning based on local conditions with unique but effective solutions in each community.

The most appropriate vehicle for funding development of such nodes would be a competitive grant program, administered by the state or by a community-based nonprofit. Several precedents exist for such funding.

Examples of successful competitive grant programs

One is the USDA Community Food Projects Competitive Grants Program. This is a $5 million fund of money nationally that is devoted to low-income communities devising their own local food systems to alleviate hunger. A summary of this program may be found at the WhyHunger web site: http://www.whyhunger.org/getinfo.

In North Carolina, Tobacco Trust Fund dollars were channeled into a Tobacco Community Reinvestment Fund, managed by RAFI-USA. This fund is more limited in scope than the one proposed for South Carolina; it has focused more on small grants to individuals, but also sets aside money for community projects. The approach taken by this fund is outlined below *(See Appendix F, page 116.)*

Such food production nodes might include the following essential elements, but every node wil reflect the unique capacities and needs of its own locale. For example when a historical building is available, and funds exist to fix it up, a node may form around a building site, as in Chester; when a food processor wants 200 acres of fresh produce, the node might form around the industrial food processor.

Core elements of a food production node

Core elements of a food production node would be unique to each place, but most nodes would want to make sure all farmers have access to the following facilities so that they are able to meet food safety protocols such as GAP. Many could be constructed from used equipment; farmers who are able to construct their own buildings may also save on costs:

- Hoophouses, greenhouses, or other season extension facilities.
- Irrigation including wells and drip irrigation systems.
- Training programs (such as the New and Beginning Farmer Program or adaptations).
- Washing, sorting, and packing facilities.
- Food storage (refrigerated and non-refrigerated).
- Local distribution capacity (refrigerated trucks, mobile markets, vans, etc.).

- Farm stand or small retail market to sell local consumer demand.

Local plans for food production nodes might also incorporate the following (or other) elements. Clearly, some of these elements may already be in place:

- Incubator farm with plots available for emerging farmers.
- Eventual access to farm land nearby for graduates of the training program, who could remain involved in local aggregation efforts and farm nearby.
- Training in soil-building.
- Community kitchen for training and/or small-scale value-added processing.
- Classrooms, meeting rooms, laboratories, or training facilities.
- Shared equipment where advisable.
- Individually owned or leased equipment as advisable.
- Marketing assistance.
- Business planning assistance.
- Small-scale processing appropriate to local markets (vacuum wrapping, perhaps flash freezing.
- Food transportation such as refrigerated trucks, logistics coordination, and distribution.
- Waste recycling and composting.
- Renewable energy production that fuels these facilities and machinery.
- Seed-saving equipment and storage.
- Knowledge bases that help local food leaders understand how to work effectively in local market conditions, reach out to producers and consumers, and make compelling cases to outside investors.
- Food safety training.
- Training in food preparation.
- Agri-tourism sites or coordination of on-farm visits.
- Software for planning planting cycles, direct food sales to local customers, etc.[22]

The specific mix of such ingredients would be determined by each node based on local conditions. State moneys would leverage local plans and investments.

The purpose of such food nodes shall be to increase community capacity to produce food for itself, create local efficiencies by clustering local activity in close proximity to each other, create permanent physical facilities that ensure access to food for local residents, foster local collaboration, and scale up production as appropriate for regional food hubs.

Note that these food nodes would not be new intermediaries that would require a cut of the value of what a farmer produces; they would be places where farmers could collaborate to prepare, and market their products directly to South Carolina consumers under their own labels (or a cooperative local label). Some might include retail sales area to help build local awareness and an income stream; but many might require subsidy for several years until a revenue base is established.

[22] Such software is already being beta-tested by Bytech in Greenville.

One vision for the South Carolina "food web" of the future:
Map of potential food nodes

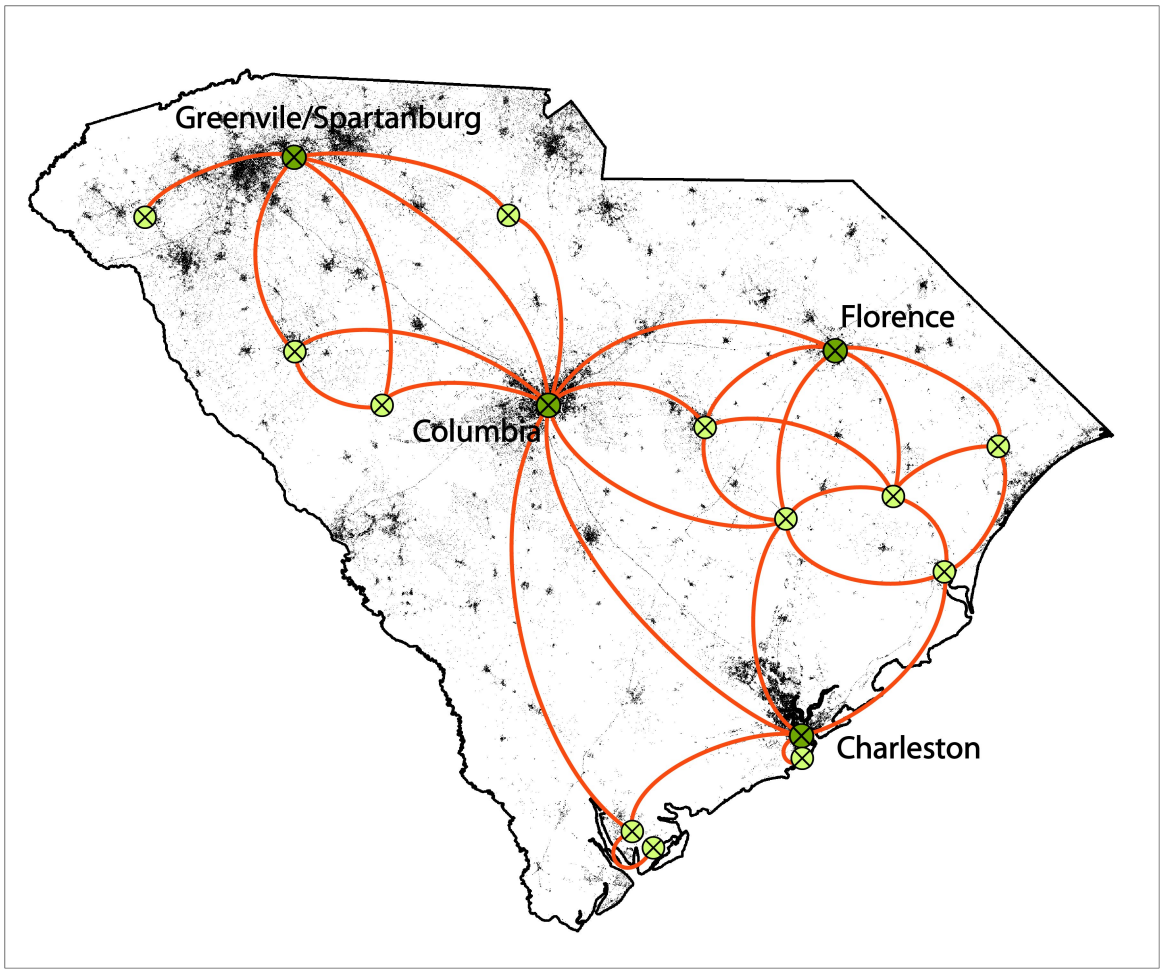

Figure 9: *Potential Food Nodes and Food Hubs for the future of South Carolina – Map by Adam Cox based on design by Crossroads Resource Center research team.*

Once a statewide network of food nodes has been effectively built, it will become more clear where larger aggregation centers should be sited. Indeed, the emerging food hub in Charleston desires to see more availability of on-farm storage and packing facilities to help them source food from local farms.

A host of local, regional, and state partners could offer to play important roles in the creation of such food nodes: processors, churches, faith-based organizations, public and private schools, community nonprofits, land trusts, food banks, South Carolina Department of Agriculture, technical colleges, Clemson Extension, South Carolina State University Extension, University of South Carolina, the South Carolina Farm Bureau, other colleges, technical colleges, economic development officials, county or city governments, academic researchers, foundations, private investors, and many more.

A list of communities where our research has found activity that might lend itself to creation of a food production node follows. No commitment to creating a "node" has been made by any group listed. This list is simply meant to illustrate that potential sites already exist.

Emerging & potential food nodes in South Carolina

July, 2013

No order of priority is intended; nor is this a complete list, nor would local players consider themselves food production "nodes" at this time.
Yet each community has activity that could lend itself to expansion into a formal node.

1. Beaufort (Sea Islands Local Outlet -- SILO)
2. Charleston (Lowcountry Local First incubator farm)
3. Chester (urban farm + indoor market + kitchen)
4. Clemson (student farm at Clemson)
5. Columbia (Clemson New & Beginning Farmer Program; potential Sandhill campus incubator farm)
6. Conway / Myrtle Beach (Clemson experiment station)
7. Florence (land trust, food bank)
8. Greenville (perhaps around Amy's Kitchen)
9. Greenwood (Piedmont Farmers' Marketing Co-op)
10. Georgetown (Millgrove Farm)
11. Greeleyville (Farmers' Cooperative and Community Improvement Association)
12. John's Island (middle school)
13. Nesmith (People's Farmers' Cooperative)
14. St. Helena's Island -- (Gullah Co-op and CDC); (Penn Center Small Farmers' Cooperative)
15. Saluda (perhaps around Titan Produce)
16. Spartanburg (Hub City Market + Urban farm)
17. Sumter (SCF Organic Farms)
18. Williamsburg County (existing co-ops)

This list could also include seafood processing for small fishermen
(Mt. Pleasant, Georgetown, Murrell's Inlet, Beaufort, St. Helena's, etc.)

Creating food nodes as outlined above would also give farmers more flexibility in planting and preparing crops for market, so this would serve as another way of reducing risk.

Two initiatives that are already underway in South Carolina will help foster food production nodes:

South Carolina New and Beginning Farmer Program, launched by Clemson, receives excellent reviews. The state should extend its funding if the federal Farm Bill does not allocate money for programs that have funded this work in the past. Satellite programs could be launched in several regions of the state, based on brief feasibility studies that document strong local interest, effective collaboration, and need. Education and knowledge infrastructure is futher discussed in Appendix C, page 99.

Clemson's Sandhill campus is exploring the creation of a similar incubator farm, that would be paired with that university's existing New and Beginning Farmer Program. While it is too early to predict the ultimate focus of this initiative, it is not difficult to imagine this farm serving as an incubator not only to dozens of farmers over the next few years, but also serving as an incubator of incubator farms elsewhere in the state. Meanwhile, it is also likely to serve as a facility that helps safetly wash, process, and store food for Columbia area residents for decades to come.

Lowcountry Local First has developed an **incubator farm model** that brings emerging farmers together to learn farming and marketing skills, develop business plans, share equipment, and prepare foods for direct and larger markets. South Carolina would do well to foster several such programs around the state, in response to local groups that organize an effective will to collaborate on training programs.

Lowcountry Local First has formed an incubator farm on land that was made available at low cost, with several emerging farmers now selling their produce at the Charleston Farmers's Market, and to local restaurants. This incubator program could easily serve as the nucleus of a broader food production node, where storage facilities could be built, a lasting commitment could be made to using the land for food production, and nearby fields could be set aside for graduates of the incubator farm to access when they want to launch their own farm.

See Appendix C for further discussion, page 99.

See Appendix D covering farm clusters and incubators, pages 102; Appendix E for potential node infrastructure and cost estimates, page 111; and Appendix F for food system infrastructure funding mechanisms, page 116.

At the strategic partners level:

Food hubs such as GrowFood Carolina (Charleston) are essential facilities. Food hub leaders think that perhaps three or four food hubs could be supported across the state. Yet a network of support must be built around each food hub, including farmers that produce for local markets, on-farm washing, packing, and storage capacity, and commitment from South Carolina eaters to buy local. Without such support, a new food hub may require years of subsidy.

Considerable foundational work must be accomplished at local levels to bring more farmers into production, to raise consumer awareness and create a commitment to local food purchasing. This will build a web of public and financial support for each hub – what might be called a "food web."

GrowFood Carolina started as a hub in part because of the availability of donated space; where such space or support is not available, it may be more advantageous to build local food nodes first. If resources allow, building food nodes and food hubs simultaneously is a workable strategy, balancing supply with demand in staged growth. A second critical factor in the launching of GrowFood Carolina was the prevailing focus on local foods among Charleston restaurants.

Lisa Turansky of the Coastal Conservation League, noted that the act of opening a food hub can easily help create the supply of food needed to make the business workable. "When GrowFood opened, some interviews suggested that there was not adequate existing supply for the food hub to thrive. However, as a result of having infrastructure in place, more farmers surfaced, existing farmers increased their acreage planted, and farmers felt more comfortable diversifying and planning."[23]

Food hub discussions are already underway in or near Florence, Horry County, Columbia, Greenville, Spartanburg, Chester, and elsewhere. The SC Food Policy Council may coordinate a conference and workshop covering the formation of food hubs.

Sara Clow, who was recruited from Pacific Organic Produce in San Francisco to run GrowFood Carolina by a local committee that had already established a business model, said that South Carolina has "an unlimited potential to become a large supplier of specialty agriculture," with its three growing seasons a year, fertile soil, and relatively low-cost land compared to other parts of the U.S. "In the 1800s, South Carolina was the largest producer of asparagus in the world," she added.

Clow argued that more research and education is needed to assist farmers to produce specialty crops, especially in organic production. A critical need for supplying hubs like GrowFood Carolina, she added, is for farmers to have on-farm infrastructure that will help them produce higher quality foods: drip irrigation systems, storage facilities, cooling rooms, packing sheds, and refrigerated transport. "Most of the stuff we get now arrives on open-bed trailers," she pointed out. She says it would be possible to design a standard kit that would be easy for any farm to place on their land. She added that existing federal Commodity Credit Corporation (CCC) moneys could be tapped to build such facilities.

[23] Lisa Turansky (2013) Memo from Coastal Conservation League to Jack Shuler, commenting on an early draft of this report. July 22.

"My goal is to build a consistent and diverse supply of local food," Clow added. "Hopefully, if we build the supply, the demand will come along. I'm kind of a fan of smaller, regional food systems." She added that such local work is most likely to create the needed change. She sees her job not simply as moving produce, but also convening meetings, helping foster local production, and helping construct a regional food system. GrowFood Carolina works with about 40 growers around the state, and sells to over 100 restaurant and retail clients.

In its first full year of operation, GrowFood Carolina sold $260,000 of produce, and plans to sell a total of $450,000 this year. Clow projects that, drawing upon both private donations and operating income, the business can be a self-sufficient business in six years. While some investors seek a faster start, she adds that the business plays a key educational role as well. Indeed, one might evaluate the business as an educational service that generates substantial income, rather than simply as a business that requires financial support to break even.

Poultry processing

[See more detailed description in Appendix G, page 143]

While many farmers lamented that the state lacked small-to-medium sized USDA-certified poultry processing plants, especially for organic chickens, it does not seem that enough birds are currently being produced to justify building such a plant. There may also be limits to the number of skilled people with capital who wish to run such a processing plant. Moreover, skilled labor appears to be in short supply, and consumers may have difficulty committing themselves to direct purchases, given the easy availability of poultry at supermarkets at lower prices than speciality poultry commands.

Farmers are quite aware that they may process up to 1,000 chickens that they raise on their own farm, as long as they sell the birds directly to consumers or restaurants, under an exemption from state inspection. Fewer seem to be aware that state law apparently allows farmers to process up to 20,000 chickens on their own farm for these same direct markets, providing the farm opens its processing plant to state inspection (Interview with Clyde Hoskins, August 1, 2013).[24]

In the short term, then, the **state should encourage more on-farm processing of poultry** for direct sale to individuals and restaurants. Clearly, an on-farm processing plant with appropriate food safety facilities might be part of a plan for a food node – although current law would not allow a farmer to process birds for a neighboring farm. Further, individual farms that could show a practical path toward ramping up production might be given priority in state loan applications.

Proposed cost: No specific appropriation at this time.

[24] South Carolina Code of Laws Title 47 Chapter 19 Poultry Products Inspection Law http://www.scstatehouse.gov/code/t47c019.php

"Red" meat processing

[See Appendix H: Red Meat Slaughter and Packing, page 148]

It would seem that the key to expanding production for larger animal processing will be to increase livestock production commensurate with new processing capacity. Once production is expanded, it may be possible to construct a new plant, or expand an existing facility. At least one small-to-medium-sized USDA-certified meat processing business should be created, primarily through private investment, closer to where beef and pork are produced for local markets. An existing private firm may be encouraged to open a new branch, or a new firm may be invited into the state. This new facility should have the capacity and skill to process organic meats.

To launch such a business will not be easy; it will take a combination of a person willing and able to run a processing facility, a flow of livestock production that will make the business solvent, a suitable physical facility, investment capital, and connections to consumers.

Accordingly, we have outlined practical considerations for several options: a new facility, on-farm options, mobile slaughter units, or collaboratives that might reduce the costs of farmers bringing livestock to slaughter and processing.

New Commercial Slaughtering and Processing Facility

If there is sufficient supply is available to justify the launching of a new, commercial facility, it should be able to pass USDA inspection. A consulting firm performed a cost and revenue analysis based on a USDA provided floor plan for a "small" facility. This hypothetical facility would be 5,000 sq. ft. and would require a capital investment of $1.5 million. This feasibility study estimated a break-even point of almost 6,000 beef equivalents[25] per year (Shepstone Management Company, 2006). A larger facility, 10,000-15,000 sq. ft., would require an investment of $3-5 million and could accommodate 25,000 beef equivalents a year (Great Northern Corporation & Economic Development "On Call", 2005).

A producer interview confirmed that for larger markets, a mid-sized plant could be built as a separate facility off-farm (in a city or town) for $1.25 to $10 million. Yet, he added, "it is difficult to compete at this level." Getting to such a size involves extra cost, but with lower product differentiation, it is difficult to command a high price for the final product – and in these markets one is competing for sales with very large industrial processors who can process at nearly one-tenth the cost. In addition, skilled labor is difficult to locate.

Another Midwestern mid-sized slaughter/processing plant said that there is a break-even point where a packinghouse can make a profit. "Once you get to about 40 head of cattle per day (10,000 beef equivalents per year), you can have an honest living." He added that a facility could break even once it gets past 20 head per day (5,000 beef equivalents per year). The cost of building such a facility from scratch is $4-5 million, he said. Still, this meat packer cautioned that even once that money has been spent, an owner must have about $300,000 to $500,000 in working capital to launch the business, unless the firm is marketing its own products, in which case even more is required. Additional costs of maintaining an opening inventory of cattle, and being able to pay suppliers right away during the opening months, could easily add up to $3.5 million. Still, several such plants have

[25] 1 beef equivalent = 5 lambs or goats = 2.5 hogs, however this could vary by specific facility efficiencies.

opened up because a variety of investors – often the farms or a collaborative that supplies the cattle, or a distribution firm or a marketing company, will share these capital costs, reducing the burden on the plant itself.

An independent, in-depth feasibility study should be conducted before this avenue is pursued further. Many supply studies have discovered insufficient amounts of livestock to keep a facility open. One Michigan based study determined that a facility of this size operating at capacity would slaughter every cow, hog, goat, and lamb in the state within a year (Knudson & Peterson, 2007). Where smaller facilities that cater to independent farmers are found to be profitable, the shop plans typically include a retail market counter.

On-Farm Facilities

Livestock farmers in other states have come up with innovative approaches that may be useful as South Carolina ponders creating new paths for itself. Several farms across the U.S. have constructed USDA-certified processing plants on their own farms. These have primarily been devoted to production for higher-end markets; the relative inefficiency of processing on a small scale may not lend itself well to production for broader markets. Also, many of these on-farm processing plants are dedicated to slaughtering and packing meats raised only on the farm itself. Many are not open to bringing in other animals.

One experienced farmer in another state who built a processing plant on his own farm says that a small on-farm facility could be built for as little as $300,000 in start-up costs, including building and equipment. Yet he added that this would be a relatively small and inefficient plant; his own plant is in fairly close quarters and this causes him to devote considerable time to washing walls, ceilings, and floors to sanitize between processing runs. Nevertheless, he hires 12-14 FTE employees per year and can process nearly 2,300 hogs (920 beef equivalents) per year.

His recommendation would be to build a facility that costs $1 - $1.25 million; such an on-farm plant could have higher ceilings, greater floor space, and more labor-saving equipment. This would primarily serve a niche market, rather than a commodity market, because the success of such a plant depends upon charging premium prices for heritage animals. Unlike with poultry, an on-farm facility could cater to other independent farmers so long as the facility is inspected and licensed in the first place.

New Mobile (Large Animal) Slaughter Unit + Fabrication Facility

Like Mobile Poultry Processing Units (MPPU), Mobile Slaughter Units (MSU) are completely enclosed trailers featuring basic processing equipment. The animals are dispatched in the field, offal is composted on farm (where allowed), carcasses are dressed inside the trailer, moved to cold-storage, then transported back to a USDA inspected fabrication facility. A butcher and USDA inspector staff the trailer. Typically, units can remain in the field for two days, processing ten beef equivalents a day, before returning to a fabrication facility to unload. A new unit is estimated to cost $150,000.

A USDA inspected fabrication facility could be 2,500 sq. ft. with start-up costs between $300,000-400,000. The USDA provides plans for both the trailer and the fabrication facility.

Slaughter and Packer Collaborative

Michigan livestock producers have developed an interesting collaborative approach, due to the fact that several meat processors had begun addressing the needs of emerging quality foods markets. One firm, Byron Center Meats near Grand Rapids, in business since 1946, has invested in state-of-the-art equipment, and is considered by many farmers to be an exceptionally high-quality processor. Other smaller plants in the state have not attempted to compete with Byron Center, but have developed specialties of their own – perhaps an especially efficient smoker, or with special machinery that makes them the most competitive in that segment of the market.

To preserve the quality of the meats, and also to retain business at local plants, many farmers in Michigan and Indiana hire a slaughter facility close to their farms to perform the kill, and then ask Brouwer Meats (based in Hudsonville, southeast of Byron Center), to drive the carcass in a refrigerated truck to the Byron Center packinghouse. One Indiana farmer who hires this service says that the extra handing and shipping costs a little more, but he gets such a high-quality product that he considers it a "heck of a deal." In fact, he added, "Our efficiency increased," once he began working with Brouwer three years ago. The competitive edge for Dave Brouwer is that his refrigerated truck has a rail in the top, which is compatible with the hanging rail at Byron Center. He can back up his truck to the loading dock, and transfer the carcass seamlessly to the packing plant's cooler in a matter of minutes. Brouwer added that without such integrated equipment, this transfer would require much more time: "Otherwise, it's hard to carry a carcass into the [packing] building."

Brouwer added that eight local slaughter plants call him when they have enough animals to efficiently fill a truck for Byron. He gets paid a certain sum for each carcass he hauls. Each load requires the kill plant to communicate with the farmer, with Brouwer himself, and with the packing plant in Brouwer. "There's got to be communication through the whole system," Brouwer concluded.

Where food nodes are developed near livestock producers, a USDA standard kill-floor and cold storage should be considered. In this way, livestock producers could transport their animals a minimal distance to their food node. The animals would be slaughtered, dressed, and hung on a compatible rail in cold storage on-site. Once a critical mass of carcasses has accumulated, one refrigerated and railed truck could run to the desired packinghouse. Where efforts can be coordinated, a handful of farmers could bring in 5-10 heads in the same day for slaughter under inspection and timely transport.

A system such as this would require coordination across the state, between producers, food nodes, and packinghouses a like. Excellent communication and paperwork would be essential to making this system work, as well as compatible rail systems across all infrastructure.

Technical Training Opportunities for Students

Another innovative approach was devised by a small town in North Dakota, Hazen, in the mid-1980s. The local high school opened up a USDA-inspected slaughter and processing plant; high school students received credit for learning meat-handling skills, but more directly, also produced the hamburger used in school lunches. This plant is apparently no longer in operation.

Even if such a business (or a mobile unit) does not pay for itself in the initial years, it may be a valuable transition step toward creating a permanent processing facility as outlined above, since it

would allow more livestock farmers to make plans to produce livestock and build market share. But taking such a subsidized step should only be done on the basis of a realistic and thorough business plan leading toward a larger processing plant in the future.

Cost Comparisons

	Mobile	Small, On-Farm	Regional
Size	~280 sq. ft. trailer + 2,500 sq. ft. facility		~5,000 sq. ft. building
Construction Costs	~$500,000, including equipment	~$300,000, including equipment	~$150/sq. ft, $750,000
Equipment Costs	Embedded in construction costs	Embedded in construction costs	~$150,000
Operation Costs			~$2.4 m/yr
Labor	Hired	Producer/Hired	Hired
Capacity	8-15 beef/day	900 beef/yr	6,000 beef/yr
Regulatory	USDA-Inspected	USDA-Inspected	USDA-Inspected
Operation	Likely seasonal	Seasonal or year-round	Year round, daily
Cost to Producer[26]	$70-140/beef		$35-75/beef
Ownership	Trade organization	Producer or small LLC	Private or public entity

Plan of action:

1. For now, South Carolina should make do with existing slaughterhouses and packers, including those out of state, while exploring opportunities for both collaborative shipping, and for expansion of USDA-inspected meat slaughter and packing capacity.
2. A remote slaughter facility plus collaborative shipping would be most easily done by farmers putting livestock together on a common truck; this could mean that a load of, say, 20 cattle could be combined into a single load, from many small farms in one region. This would require trust on the part of farmers, some assurance that quality and identity of each animal could be preserved, and close monitoring by the packing house to ensure that each farmer received his or her own final product.
3. High schools, technical schools, universities, and nonprofits must develop training programs that help South Carolinians acquire skills in humane animal treatment, slaughtering and packing. If South Carolina wishes to purchase meat from its own farms, then residents must have the skills to do the processing.
4. The state may want to invest in on-farm slaughtering and processing facilities in the most remote locations, provided each operation would be (a) financially tenable, (b) open to hire by nearby farms, (c) meet safety standards and provide for USDA inspection, and (d) be part of a local collaboration that commits to ramping up production to higher levels for wider markets.

[26] This is based on reported "fees for kill-service" per head of beef and is not all-inclusive cost to the producer. For example, the regional facility cost per head does not account for transportation expenses. The mobile facility cost does account for transportation to a fabrication facility.

Proposed costs : $0.5 to 10 million per operation, depending on the size and scope of the operation. These totals include start-up costs as well as working capital requirements.

Seafood packing, processing and aggregation

Fishermen report that development pressure in the harbors where they moor their boats place them at risk because land that once held packing and freezing plants has been lost to housing or commercial development that considers fish processing a negative feature. Several have suggested creating a facility inland, on cheaper land but still close to harbors, where a fisherman's catch could be safely prepared for market. "I need a facility where I can process my seafood. With the facility I have, I cannot physically cut any more than I already do," said Mark Marhefka, a fisherman running Abundant Seafood, a 200-share Community Supported Fishery (Interview with Marhefka, June 8, 2013).

Frank Blum of the South Carolina Seafood Alliance pointed out that 90% of the seafood eaten in South Carolina is imported. "We are not going to compete [with outside suppliers] on price, we have to compete on the basis of having a healthier product that is local" (Interview with Blum, June 13, 2013). Meanwhile as in the agricultural industry, "Most of the seafood we harvest is shipped to the Northeast." In its efforts to build local markets, however, Blum added that his organization "created a monster. We ginned up a lot of interest, and then did not have the product we needed."

Time granted us for this study did not allow researchers to form a complete understanding of the seafood industry, but clearly the issues in this sector parallel those in the agricultural sector. It may be appropriate to extend the competitive grant program to fishermen, especially those making direct contact with consumers.

Proposed costs: Nothing at this time, unless the "food node" concept is extended to seafood to help fishermen balance supply and demand.

Grain cleaning and milling

Although several high-quality grain mills are already in operation in the state, several growers reported that a lack of milling capacity hampers their ability to grow for South Carolina markets. Considerable farmland could be devoted to grits production if more capacity existed to clean grain for food use (more stringent than feed grain use). Many organic producers are forced to have grain cleaned in North Carolina, Illinois, or Vermont in order to meet food-grade standards. This eliminates their profit margin, and also reduces the amount of value created in-state.

In the short term, smaller-scale grain milling operations may emerge from food production nodes, helping to build sufficient in-state volume that larger facilities may be constructed.

In the long term, the state should explore supporting efforts by private parties to build mid-sized and larger plants that show they can effectively reach South Carolina markets.

Proposed costs: None at this time.

Organic grain production for South Carolina livestock
Given the rising interest in organic food, and consumers' expanding demand for higher-quality meats produced by a nearby farm, more encouragement should be given to organic grain producers. Woodbury County, Iowa, for example adopted a policy that the county would forego property taxes for up to five years for a specified number of farms if they converted to organic production. Organic grain production and storage would enable South Carolina livestock producers to pursue organic certification. Supportive grain-cleaning and storage facilities would also be essential, as indicated immediately above.

In the short term, smaller-scale organic farms at food production nodes would be able to supply local livestock producers, yet this has been inhibited by high grain prices in recent years – both because farmers obtain good prices for conventional corn, but also because high prices for organic grain place considerable burden on organic livestock operations.

In the long term, the state should support educational initiatives that extend training to farmers who wish for organic grain production, and should connect organic grain producers with farms that need to buy organic grain through greater coordination, stronger networking, and perhaps software platforms that assist farmers and buyers to connect.

Proposed costs: At this stage, included in cost estimates for training and coordination.

Vegetable processing for local markets
Flash freezing, vacuum-sealing, canning, and other preparation strategies should be built that process South Carolina produce for local consumers and local markets. Some of these may be appropriate at a smaller scale, perhaps in the commercial kitchen of a food node or food hub, but ultimately, economies of size will suggest the creation, in the long-term, of larger facilities.

For local production at food production nodes, see above. For larger-scale opportunities, see the Large Volume and Global Aggregation levels, below.

Proposed costs: None at this time, except as funding is provided to solid proposals to the competitive grants program.

At the large volume aggregation and distribution level:

Broadline distributors
Several broadline distributors, among them Senn Brothers, Limehouse Produce, and Marvin's Produce, have expressed interest in sourcing locally grown foods to meet strong consumer demand within South Carolina. The above list is certainly not exhaustive; not all produce dealers could be contacted in the time available. These three were selected because each has appeared at community meetings in their local region to explore the possibilities of local sourcing.

Each says it is experiencing strong demand for local food, and each views the creation of food hubs as the essential step that will funnel the large quantities they require to their warehouses. Yet each is also caught up enough in the daily demands of moving produce through their system amidst a highly

competitive marketplace that each relies on food hubs, nonprofits, agencies, or other parties to construct the sales volume they require. They may be able to take the lead in purchasing quantities of produce, but until those quantities are available in aggregated form, there seems to be little these firms can do on their own.

Senn Brothers is uniquely placed since it is a broadline distributor that serves primarily the state of South Carolina (along with the Charlotte, North Carolina area), and considers itself the only distributor supplying restaurants in Columbia. Senn Brothers also operates an automated produce chopping facility purchased from a Hong Kong vendor (Robert Moore and Gregg Senn, June 19, 2013). Limehouse Produce has strong historical roots in the Charleston area, and sources food from South Carolina farms into area supermarkets through the Certified South Carolina Grown program (Interview with Fennell, May 22, 2013). Marvin's Produce has joined food hub discussions in the Greenville-Spartanburg area (Interview with Diana Vossbrinck, July 3, 2013).

Lessons learned in the Twin Cities market of Minnesota are instructive in this discussion; with a thriving $170 million cooperative grocery sector, Minnesota enjoys the presence of Cooperative Partners Warehouse (CPW), a subsidiary of one of the co-op groceries. The distribution firm is itself a $20 million business, with its own trucks constantly on the road to and from California, and able to access food internationally through several vendors. Yet in local trade, CPW also relies on farmers who deliver product directly to their loading dock, and also relies upon small local distributors who carry small quantities of fresh product to local customers. The co-op also cross docks with broadline distributors. This very dense overlay of relationships gives all parties great flexibility, and allows sourcing foods locally while integrating into the global product stream.[27]

In a vastly different context, Piazza Produce in Indianapolis has been aggressive in training smaller farms how to comply with Good Agricultural Practices (GAPs). This engagement helps increase the volume of local produce available, but is still limited by the ability of small farmers to produce enough for the broadline market.[28]

Many of the larger distributors in the South Carolina energtically ship South Carolina grown products, but focus their marketing on the eastern seaboard more than targeting the state itself. Few are engaged in community-based planning for transforming local food systems.

Proposed cost: Nothing at this time; but the growth of food production nodes and food hubs will be simultaneously an investment in this strategy. Additional marketing of South Carolina grown products will also help boost consumer demand.

Food manufacturers

Additional processing capacity, either at existing firms or new ones, may be required to create new product lines that are meant primarily for South Carolina markets.

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[27] Meter, Ken (2009). *Mapping the Minnesota Food Industry.* Crossroads Resource Center. Available at http://www.crcworks.org/mnfood.pdf

[28] Meter, Ken (2012). *Hoosier Farmer? Emerging Food Systems in Indiana.* Compiled by Crossroads Resource Center for the Indiana State Department of Health. Available at http://www.crcworks.org/infood.pdf.

The California firm **Amy's Kitchen** purchased a building in Greenville hoping to open an organic food processing plant, but has delayed opening the facility because the firm believes there needs to be a stronger base of organic production in the state to make such a plant viable.

The firm's Southeastern contact, Organic Agriculture Manager John Aselage (Interview with Aselage, July 10, 2013) said the firm is working with a student at Clemson University, primarily at the coastal experiment station, to research the processing qualities of organic produce raised in the state. It is also developing a better understanding of which varieties will grow best here, and how weed control can best be managed. The firm has also worked with McCall Farms to test product development.

Aselage added that the potential in South Carolina for organic production is great. "South Carolina has a large reservoir of land, now raising pine trees, that could be rapidly certified as organic."

Aselage said that "Alot of young farmers are getting involved in organic agriculture at a small scale, and we could support them. The problem is, what kind of infrastructure do they have on their farms? How many are GAP (food safety) certified? Do they have the right equipment? Could several farms share equipment? Someone selling greens can earn as much $40,000 to $70,000 per acre. That is a nice chunk of change for someone with 10-20 acres. Yet if they get bigger than that, they outstrip the market for the local food hub."

Aselage added that Amy's Kitchen typically works with bigger farmers, but "right now there is no strong motivation among larger farms to move to organic production, as long as corn prices are so high. We're not very attractive now." Yet it is also a matter of conviction for the farmer. "If you don't *feel* it, there is no reason to go organic."

He likes the farm incubator model that supports the Dirt Works Alliance near Charleston, and thinks the state should make more land available for such training farms. Overall, he says, Amy's Kitchen does not need that many acres to support its processing facility, "perhaps 200 acres. We're more like a *kitchen* than a *plant*." He would like to see a "cluster of small growers near a small-scale processing plant."

He visited WP Rawl to see their state-of-the-art facility, and said he wishes Amy's could have a similar production line. "We use six different cuts of broccoli alone," he added. He approached WP Rawl about cutting produce for Amy's Kitchen, but said they were "One of the best in the country, but pretty busy." The firm has not yet found a price point that works for both parties, he added.

Proposed cost: Nothing at this time. The state should, however, pursue conversations with Amy's Kitchen about engaging in the creation of a food production node near their Greenville plant.

At the global anonymous aggregation and distribution level:

South Carolina participates fully in global food trade, both by shipping products to eastern seabord states, and by purchasing fresh produce from faraway locations such as California, Florida, Georgia, North Carolina, Canada, and Mexico.

The global level of the food system will not be a major focus of this analysis, which is more dedicated to the concerns of small growers meeting local markets. Still, our interviews suggested two promising opportunities, outlined below.

As with any large-scale project immersed in global markets, one primary question for evaluating potential impacts is to what extent South Carolina benefits from a proposed development, relative to external stakeholders. To advance the goal of this initiative, growth in larger processing firms — which should be encouraged for its own reasons — should help advance the local food production strategy outlined above. For example, growth in vegetable processing might suggest that a larger firm serve as the core of an incubator farm or a farm cluster in its own region. Shared warehouse, cooler, and distribution facilities may promote both purposes at once.

The global system operates for fundamentally different reasons than the purposes of the Making Small Farms into Big Business initiative. The driving force of the global system is to transfer food great distances in a very short time, and to make it available to consumers at the lowest possible costs. The global system does this very expertly. The growth of this sector has also been advanced by public policy that supports the premise that long-distance food trade is universally good.

Yet consumers are increasingly seeking a relationship with a farmer, to buy food that comes from farms they know, and to purchase food in ways that help strengthen the local economy. This is a fundamentally different purpose than that of the global aggregation system. There may well be ways for the two to complement each other (in some cases, for example, global food purchases are used by institutional buyers to fill in when local sources are not available), in general, the very presence of imported food at South Carolina markets makes it difficult for in-state farmers to build a niche, because low-cost items are widely available. In order to "Mak[e] Small Farms into Big Business," South Carolina will need to invest in ways that create efficiencies for this local trade, just as it has done to create efficiencies for broader trade.

As Chalmers Carr, CEO of Titan Foods, pointed out, "Niche markets only work in direct and local sales. They do not work in our [larger] industry" (Interview with Carr, July 23, 2013).

Fruit & Vegetable processing

With a 170-year history of growing produce, **McCall Farms** in Effingham sells processed fruit and vegetables from coast to coast. McCall maintains its own 2,000-acre farm, and contracts with growers farming 15,000 acres from Pennsylvania to Florida. The firm raises and processes tomatoes, okra, corn, squash, beans, peas, peaches, peanuts, greens and other products. Most of the produce the firm processes comes from the coastal plains, a 40-mile wide belt of sandy loam soil that runs the width of South Carolina and into neighboring states as well.

The company manufactures about 40 different products under the Margaret Holmes, Glory Foods and Peanut Patch brands. McCall also processes for private-label brands and sells to national manufacturers such as Nestle and Campbell's. Eighty percent of the firm's products are canned, with most of the rest frozen, but the firm also sells fresh greens to Michigan until that state's own season kicks in.

The firm announced a $10.6-million, 50,000-square-foot expansion in Florence County last year, which the firm hoped would create 80 new jobs, which would be a ten-percent increase in total

employment at the firm.[29] The addition is intended to allow the firm to add new production lines, and move to twenty-four-hour production. One year earlier, the firm had built a new distribution facility. While the firm funded the investment itself, the state offered investment credits once hiring goals were met.

McCall's Henry Swink (Interview with Swink, May 30, 2013) said that the McCall now has plenty of capacity, in fact, he added that nationally there is an overcapacity of manufacturing facilities, with large firms competing over the same markets. Yet he said the firm is "very, very competitive" in these markets.

The state assistance that would help the firm the most in these national markets, Swink added, is marketing. He praised the Certified South Carolina grown marketing initiative, and pointed out that "it is critical that the customer know which product is South Carolina grown." Swink added that the state had also sent marketing staff to larger buyers such as Wal-Mart to create new shelf designs. "They are really helping us get to customers," Swink added. He would like to have more shelf-danglers (small ads that are hung on supermarket shelves) spotlighting South Carolina-grown products. He also thinks the state needs to educate consumers about when the growing season is, so they will know when South Carolina products become available.

Swink's second priority is to get more consistent production from its South Carolina farms. The most important step in this direction would be better quality center-pivot irrigation; state loans could help the farmers who supply McCall to purchase these systems. "We have to have a consistent supply," Swink added. Indeed, this is one of the reasons McCall purchases from other states – so it can follow the harvest as it moves north each growing season.

While the firm's organic production is small, "it is what we need to be doing because there is a demand for it." Yet the firm has encountered difficulty farming organically due to pest, disease, and weed control. Swink also added that "local is huge. If you want to help South Carolina farmers, get more local product to retailers and restaurants."

Another large produce firm in the state is **WP Rawl** in Pelion. Launched in the 1920s as a peach farm, it has grown into a vertically integrated company with 400 employees. It is renowned for its world-class cutting and dicing machinery that allows the firm to process almost any product available. Yet it also has built market power by integrating the entire growing process, from seed to grocer, with its own distribution fleet. Nine family members help run the firm.

WP Rawl supplies major grocery chains nationally, including most of the firms that have stores in South Carolina. WP Rawl sells fresh bulk produce, plastic-wrapped cut greens through its Nature's Greens label, and clamshells containing cut produce through its Versatile Veggies line. The firm is also entering the organic market.

To date, it has not been possible to interview anyone from the firm, so this write up depends on information from the company web site.[30]

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[29] South Carolina Department of Commerce (2002). "$10.6 million investment expected to create 80 new jobs." News release, July 19. Available at: http://sccommerce.com/news/press-releases/mccall-farms-inc-expanding-florence-county.

[30] http://rawl.net/home.html, viewed August 3, 2013.

A strategic plan written for **Saluda County** by Clemson University scholars recommended that new food processing businesses be launched in Saluda County (Hughes. *et al.*, 2012, p. 49).[31] Recognizing the importance of the peach industry in the region, a primary focus was on peach products, but scholars also suggested it would be important to add processing of other fruits and vegetables in order to ensure that such a plant could run at capacity year-round.

The report added that recent developments in the peach industry made it possible to store fresh-cut peaches for as long as 15 days before processing, opening up the possibility of packing ready-to-eat peach slices as snacks. Authors felt this would also be a good way to make use of peaches that are smaller than the fresh market typically desires. **Titan Produce** in Ridge Spring, the largest packer in the U.S. outside of California, was reported as test marketing fresh-cut peaches for snack packages.

Since the report came out, Titan's focus has shifted to processing peach purée. CEO Chalmers Carr told interviewers (Interview with Carr, July 23, 2013) that a strong domestic market exists for peach purée, which is used by PepsiCo, as well as baby food manufacturers. 60% of the existing product is currently imported, he added. Titan is currently making peach purée in its R&D lab, and evaluating market opportunities. Carr hopes to have a commercially viable product available for sale by 2015, if not earlier. He added that much of the inspiration for this new product came out of the Clemson report.

Carr said that once this product was firmly established, he would like Titan to move into individually quick-frozen (IQF) vegetable packing, and then he sees potential retail opportunities as well. The shortage of labor is the limiting factor in expanding vegetable processing, he added, but since that is a national issue, he felt there was little the state could do to remediate this.

Carr added that "I'm the largest bell pepper producer in the state," but Titan still gets squeezed by competitive pressures along the eastern seaboard. Peppers are brought in from Georgia before his peppers are ready, and by the time South Carolina peppers are heading to the market, New Jersey producers are about to ship. "There is not enough window." This makes value-added vegetable processing attractive.

Titan now grows about 350 acres of vegetables, Carr added, and "I could see us doubling or tripling those acres quite easily." Yet the limiting factor is labor; not enough people are qualified or available to work in the fields, and "we're not doing a good job [as a society] of educating current or future growers."

Food safety regulations do pose obstacles to his processing plans, Carr added. "I never realized how much DHEC needed to be involved" in planning for the production plant, he said, with its precise requirements for cleaning. Yet his main concern was ensuring that stronger educational programs were available to make sure that growers can develop solid food safety protocols.

Titan is self-financing this multi-million product development, and Carr said he does not feel a need to have state investment funds available, although of course he would welcome having access to

[31] Hughes, D.W.; Swindall, D.; Macdonald, S.; & Purcell, E. (2012). Saluda County: An Agribusiness Strategic Plan with an emphasis on value-added processing. Clemson University Center for Economic Development, November.

them, "probably when we get to retail." More feasability studies or other R&D is always valuable, he added. He could also see a role for the state to build a couple of pilot processing centers.

South Carolina Department of Agriculture is also exploring the possibility of prisoner labor engaging in fruit and vegetable processing at a facility owned by South Carolina Department of Commerce. As of this writing, these recommendations have not yet been finalized.

Many other processors also do business in the state, but it was not possible to arrange interviews with all of them given the time limits of this study.

Proposed cost: Nothing at this time.

The State should explore working with one of these firms to invite each to become partners with local stakeholders in creating "farm clusters" near their processing facilities.

Additional moneys devoted to marketing South Carolina grown products may also help these firms sell their products in local markets.

Peanut processing

A feasability study for a peanut processing plant suggested this would be a prime commercial opportunity for the state.[32] Peanuts, the study concluded, would be an excellent crop to substitute for cotton (Isengildina, 2010, p. 3), and indeed production has increased rapidly since 2002. South Carolina now ranks as the sixth-largest peanut producing state.

"However," the study added, "further growth in the state is hindered by the absence of peanut shelling facility." Currently, it added, peanut growers lose money because their farms are a long distance from the primary shellers, located in Southwestern Georgia, Northeastern North Carolina, and Southeastern Virginia.

The state's farms could readily supply as much as 85,000 tons per year, the report stated. While such a facility could be built in a number of locations, the study recommended that prime locations would be either Calhoun or Orangeburg County. The analysis concluded that a peanut shelling facility could produce over 500 jobs producing peanuts, and another 400 jobs in related industries, including the 45 at the shelling firm itself.

The required investment to build a new processing facility was projected to be $28 million. Annual revenue was projected to be $61.6 million, and the plant would purchase about $35 million of peanuts per year at prevailing prices. Total economic impact was projected to be $84 million per year, with $32 million added to the South Carolina Gross Domestic Product. The authors projected that the plant would repay its investors after five years. This project has not yet been pursued.

Proposed cost: Nothing at this time, although state leaders may want to re-open this discussion.

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[32] Isengildina, O., Ferreira, W., & Hughes, D. (2010?). "Feasibility analysis for a peanut shelling facility in South Carolina." Prepared for the South Carolina Farm Bureau.

Supportive State Policy:

As the instigator of the Making Small Farms into Big Business initiative, state officials will also want to focus attention on building infrastructure that will create effective coordination of food service activity at all levels. Suggestions for creating this capacity follow.

- **Create a statewide knowledge base** with a thorough list of growers producing for local markets, and integrating lessons learned as food activity widens across the state.

- **Invest in educational and training infrastructure** (community-level, nonprofits, technical colleges, land grants, the state itself). Food production nodes, with their engagement of local partners, will be a primary vehicle for animating a community-level activity that draws people into training opportunities for growing food, handling food safely, and eating local foods as they are available; resident engagement at the household level will also spark demand for more training. See *Appendix C: A Review of Food and Agriculture Education and Knowledge Infrastructure, page 99*.

- **More effectively coordinate local food activity** across all parts of the state, through the South Carolina Food Policy Council and/or a "community of practice" engaging food leaders from diverse sectors and locations. Several good examples for such an approach exist, including the Regional Food Systems Working Group at Iowa State University, and the Center for Environmental Farming Systems (CEFS) at North Carolina State University and North Carolina A&T State University. The appropriate model for South Carolina should be developed by the South Carolina Food Policy Council in conversation with diverse stakeholders; potential sponsors for such a coordination strategy might well be the Palmetto Agribusiness Council, another nonprofit, or Clemson University.

- **Strengthen the Certified South Carolina Grown** program to ensure that food sold in the state is **identified by the specific farm** (or farmer collaborative) where it was produced.

- Interview respondents also suggested that the Certified South Carolina Grown program should be expanded to **allow opportunities for regional branding** of foods (for example the Catawba region, or Lowcountry region), or for South Carolina farmers to participate in multi-state regional branding (such as a Piedmont label).

- **Create a product liability insurance pool** for any South Carolina grower following Good Agricultural Practices (GAPs) or USDA organic production standards. Any farm thus certified would be eligible to purchase insurance as a member of this pool. SCDA has been exploring this type of insurance already; several private vendors were contacted to see if they would offer such an insurance program. Some of these vendors suggested that new state laws may need to be written to enable them to offer such a policy; this could not be confirmed but the state should research this question. Group product liability insurance has been purchased by farmer groups in other states. One issue highlighted by SCDA officials is that to qualify for group rates, it may be necessary to have members be part of a formal group, such as the South Carolina Fruit and Vegetable Association, the South Carolina Farm Bureau, a co-op, or nonprofit organization. It also seems plausible that registration with

Certified South Carolina Grown may also qualify a farm as part of a membership pool, although this marketing program does not include food safety certification.

- **Harmonize state and local food safety regulations**, and develop a mechanism for intervening should county officials oppose food innovation. Although the State is well aware of many issues that have arisen, and early steps have been taken, many farmers have frustrating stories to tell about regulation at all levels, including federal. There is little the state can do about federal issues, except in those cases where federal officials give differing interpretations of the law; a state food-safety ombudsman could intervene to at least make sure one consistent policy is applied. At the state level, farmers mention that because their food item is categorized one way or another it falls under unfair scrutiny (for example a lavender farmer who was asked to sell his flowers for an ice cream flavoring – but it had to come from an approved source. In conversations with state officials the farmer could find no process for becoming an approved source for lavender. Moreover, once the lavender was dried it was considered a "processed' product and subject so higher scrutiny. A fisherman related that he is subject to DNR rules for "aquaculture" but is subject to federal regulation when catching wild fish, and subject to FDA scrutiny as soon as the fish hits the dock. "There is no agency to help us out at that point."). State officials have allegedly offered incomplete or conflicting accounts of state tax policies, rules and regulations. Costs of obtaining compliance are often restrictive. For example, approved food labels, farmers report, have run as high as $200 per label, which is prohibitive when one has several processed products to sell. One value-adding farmer also complained that it required from 8 to 14 months to receive approval for a label. Further, the state (or counties) may also wish to create special zoning for agricultural enterprises – one farmer complained that when he sought to set up a sales barn, he was thwarted by county zoning restrictions that required him to construct a hurricane-proof building; he was told to remove all of his screw fasteners and replace them with nails. He gave up and moved the operation to another facility in a different county. Another farmer/businessman offered a lengthy account of how county officials, in an apparent effort to frustrate his plans, required him first to build a new septic tank for a retail farm store, then told him he could connect to the sewer, and then told him he could have used the septic system in the first place, but did not require nearly as much capacity as he had been ordered to build. This maneuvering cost him more than two hundred thousand dollars, he said. As one official commented: "Small farms are such an easy target" [of legal proceedings], since many do not have attorneys, have not followed the legal system closely, or do not have enough income to press a legal case. Moreover, this official added, officials, attorneys, and legal authorities often know little about the realities farmers face. We recommend a **food-safety ombudsman** who would have the state's full commitment behind him to intervene to create solutions that favor local foods development in ways that do not compromise public safety; such an official would be empowered to remove unneccesary or arbitrary obstacles at the state or county levels. Ultimately, food safety codes must be harmonized at all levels, and must be scale-appropriate: a small farm should not face the same safety tests (or costs) as a larger farm.

- Some interview respondents noted that GAP certification costs can be prohibitively high, because each individual crop must be certified for post-harvest handling; these farmers suggested that perhaps **GAP certification under Certified South Carolina Grown might be adapted to cover an entire farm** to reduce compliance costs. While some believe this is

not allowed by USDA, the Carolina Farm Stewardship Association says it has been able to establish this precedent in North Carolina.[33]

In the short term, funding for these initiatives is most likely to come from the Rural Infrastructure Authority, but over the long-term, it would be advisable to have a stream of funding over the next 10-20 years to expand the work outlined here, and bring it to deeper levels. Such funding will be obtained from private sources, foundations, or through state channels such as the Conservation Bank. Federal dollars may also be available to help advance this vision. *Appendix F, page 116, further discusses food systems funding mechanisms.*

Potential regions for local branding in South Carolina

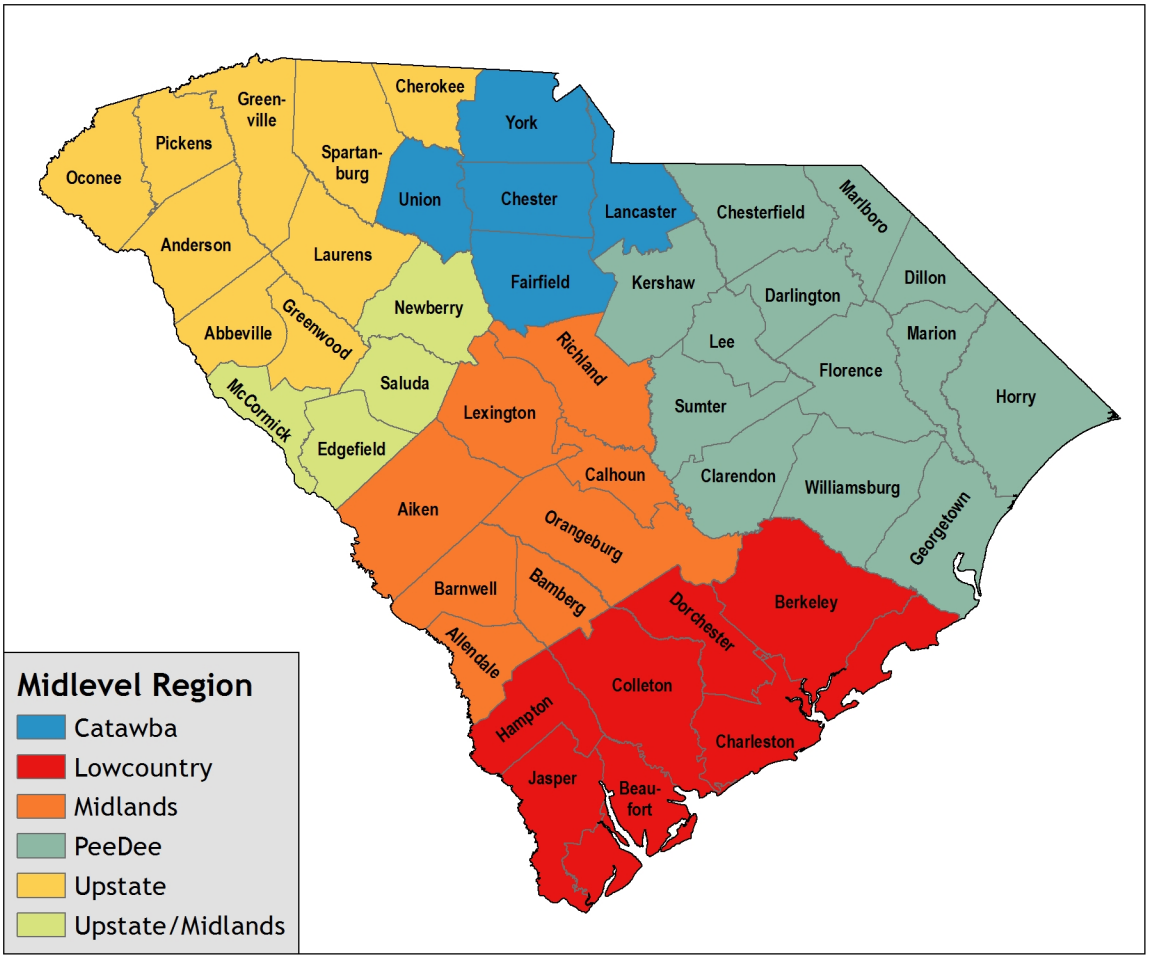


Figure 10: *Potential regions that could be defined in South Carolina to promote greater local branding – Map by Adam Cox; regions defined by Lisa Turansky and Megan Phillips Goldenburg with input from several local stakeholders. Local definitions may vary.*

[33] http://www.carolinafarmstewards.org/wp-content/uploads/2013/07/CFSA_GAPS-web.pdf

Conclusions

Through its Making Small Farms into Big Business initiative, South Carolina has created an extraordinary and historical opportunity for itself: to establish the conditions under which local farmers can grow, and local processors can produce, food for South Carolina residents.

This will be long term work. Current infrastructure, and prevailing economic conditions, work against the state's purpose. Thousands of competing producers ship quality foods into the state daily – so consumers have plentiful and easy options for eating without insisting that food be grown in-state.

Even in this agricultural state, consumers have only limited knowledge of standard fresh food items. Many are eating badly; more than two thirds of the population is overweight. Diabetes rates are rising. Few consumers eat minimum rates of produce items. Few farmers are currently raising food for local markets.

State investment will be required to accomplish multiple purposes: (1) to foster a civic culture that asserts that the state can feed itself, (2) to commit the state to effective action in expanding local foods markets, (3) to create the physical and intellectual infrastructure that makes local food trade more efficient, and (4) to ensure that all residents gain productive skills in farming, food preparation, and eating well.

This strategic plan focuses on achieving South Carolina's hopes. With targeted investment in farm clusters (food production nodes) at the local level, including facilities that allow farmers to safely harvest, wash, sort, store, and showcase foods to local consumers, the state will energize activity that is already underway in communities across the state. New farmers will be trained through complementary programs, and incubator farms will help foster a spirit of collaboration.

The state will invest in less tangible infrastructure as well: in coordination efforts that bring food leaders together for more effective collaboration, and less duplication of effort. Marketing campaigns will highlight both the health and economic potentials for local food consumption. The Certified South Carolina Grown program will ensure that consumers know the specific farm that grew the South Carolina food they eat.

This blend of approaches is specially designed to complement each other in reaching the state's desired outcomes. One set of activity will reinforce the other, and solid, productive networks of engaged citizens will build both loyalty to foods that were grown by state farmers, and also stronger loyalty to the state they are proud to call home. This set of connections will create a stronger economy in South Carolina – to the tune of several billions of new economic activity.

Appendix A: Specialty Farmer Survey — Methodology and Results

Methodology

The survey contained a variety of types of questions, including multiple choice, check-all-that-apply, open-ended questions requiring text answers, and 5-point scales[34] (for example, "On a scale of 1-5, what is your level of interest in…?").

The answers to the open-ended questions were directly reported, with minor and careful deletions to remove information that might identify an individual respondent.

Multiple-choice questions, where only one answer was allowed, are reported as a function of "# of Respondents," or the number of people who took the survey, and "% of Respondents," the percent of people who took the survey and answered that specific question.

Check-all-that-apply questions are reported as a function of both "respondents" and "responses," where "respondents" refers to the number of people who took the survey and "responses" refers to the total number of answers provided (for example, if person A checks 3 options, and person B checks 2 options, a total of 5 answers, or responses, were provided for that question). In this situation, "% of Respondents" will total to a number greater than 100% since each respondent provides multiple responses.

The 5-point, forced-response Likert scales were used for two purposes: (a) to gauge the relative interest of the respondents in having access to various educational opportunities and infrastructure investments, and (b) to solicit their views about the relative importance of a variety of challenges to expanding their own operations. These questions ask the respondent to choose a number between 1 and 5 that represents their interest in a provided option, where 1 represents "Not at All" and 5 represents "Extremely." Since 3 is designated as "Moderately" and is not a neutral designation, the survey respondent is forced to take a position. The answers to these questions are reported as a function of the number of respondents that took each position on each option, and as a function of weighted analysis. The weighted analysis involves assigning a relative value to each position (Not At All = 0, Slightly = 1, Moderately = 2, Very = 3, Extremely = 4). The weighted total is the number of respondents taking each position multiplied by the assigned value, and then all the products for each option are summed together. The weighted total facilitates comparison of relative interest across options. Weighted averages are calculated in similar fashion and are also provided as a means of comparison.

[34] Technically known as a forced-response Likert scale.

Data and Results

Response by County

CR	Fruits	Veg	County	# of Respondents	% of Respondents
	*	*	Anderson	6	11%
		*	Beaufort	3	5%
			Berkeley	2	4%
	*	*	Charleston	5	9%
	*		Cherokee	1	2%
		*	Chester	1	2%
	*	*	Chesterfield	2	4%
			Clarendon	1	2%
		*	Darlington	2	4%
*			Dillon	1	2%
		*	Dorchester	2	4%
		*	Florence	7	12%
	*	*	Greenville	1	2%
			Greenwood	1	2%
		*	Horry	1	2%
*			Kershaw	2	4%
*	*	*	Lexington	2	4%
			Marlboro	1	2%
			Newberry	2	4%
	*	*	Oconee	1	2%
*	*	*	Orangeburg	2	4%
		*	Pickens	4	7%
			Richland	3	5%
	*	*	Saluda	1	2%
	*	*	Spartanburg	1	2%
		*	Williamsburg	2	4%

** denotes the top commodity-producing counties by cash receipts (cr), over 200 acres of orchards (f), or over 150 acres in vegetables (v), as measured by NASS 2007; No responses from Bamberg (v), Calhoun (f), Colleton (v), Clarendon (v), Barnwell (v), Allendale (f,v), Aiken (f,v), Edgefield (f,v), Sumter (v), or York(cr,f,v) County farmers.*

Counties with the larger numbers of respondents appear to correlate with proximity to urban markets in Charleston, prime agricultural land near Florence, and engagement with CFSA in the Up Country. There may also be a relationship to membership in other farmer networks that is difficult to discern from these data.

Age of Principal Operator

Categories	# of Respondents	% of Respondents
Under 30 years	2	3%
30-39 years	9	15%
40-49 years	13	22%
50-59 years	19	32%
60 years and above	17	28%

Average age of South Carolina Principal Operator: 59 years (2007 Ag Census)

Over half of respondents are age 50 or over.

Gender of Principal Operator

	# of Respondent	% of Respondents	%, 2007 Ag Census
Male	40	67%	84%
Female	20	33%	16%

Women were more highly represented in this survey than farm ownership patterns would suggest.

Years of Operation

Years of Farm Operation	# of Respondents	% of Respondents
Less than 1 year	3	5%
1-5 years	15	25%
6-10 years	6	10%
11-20 years	7	12%
20-40 years	7	12%
40 years or more	22	37%

One concentration of growers were farms with more than 40 years' experience, involving more than one of every three respondents; a significant number of farms with less than five years' experience also filled out the survey.

Number of Farms, by Size

Size of Farm by Acres	# of farms, Survey	% of farms, Survey	# of farms, 2007 Ag Census	% of farms, 2007 Ag Census
1-9	12	20%	1970	8%
10-49	14	23%	8959	35%
50-179	17	28%	9033	35%
180-499	8	13%	3981	15%
500-999	2	3%	1059	4%
1000-1999	1	2%	553	2%
2000+	6	10%	312	1%

Number of Farms, by Percent of Farm Acres Left Fallow

	# of Respondents	% of Respondents
0%	13	22%
1-25%	7	12%
26-50%	12	20%
51-75%	15	25%
76%-100%	13	22%

Sixty individuals responded, representing 60 farms and 27,104 total acres (compared to 26,500 farms and 4.9 million total acres, as recorded by NASS in 2011). Average farm size for the state of South Carolina as a whole is 185 acres (ERS 2011). The average farm size represented in the survey is 452 acres with 331 acres in production, and 121 fallow acres; however, this does not represent a "typical" farm operation.

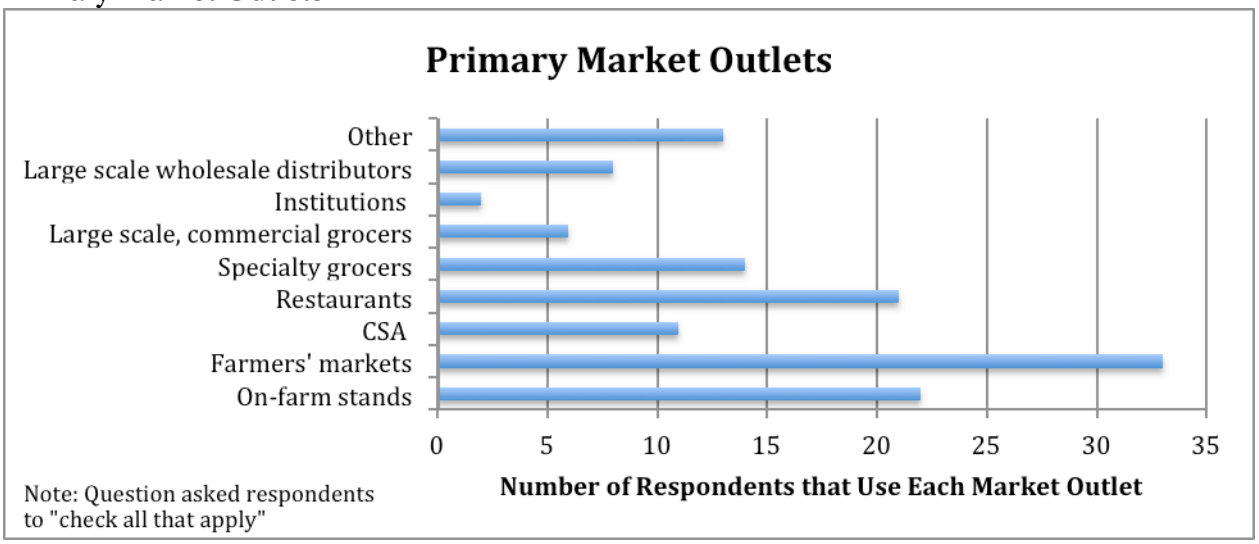
Primary Market Outlets

Primary Market Outlet	# of Responses	% of Respondents	% of Responses
On-farm stands	22	37%	17%
Farmers' markets	33	55%	25%
CSA	11	18%	8%
Restaurants	21	35%	16%
Specialty grocers	14	23%	11%
Large scale, commercial grocers	6	10%	5%
Institutions	2	3%	2%
Large scale wholesale distributors	8	13%	6%
Other	13	22%	10%
Total (given check all that apply)	130	*	100%

**% of Respondents total is greater that 100% due to the ability to "check all that apply"*

Direct sales are the most frequently used market channels for farmers who responded. CSA farms were relatively few in number, in this sample. This may also reflect a higher work load that made it difficult for CSA farms to take time to respond.

Primary Market Outlets



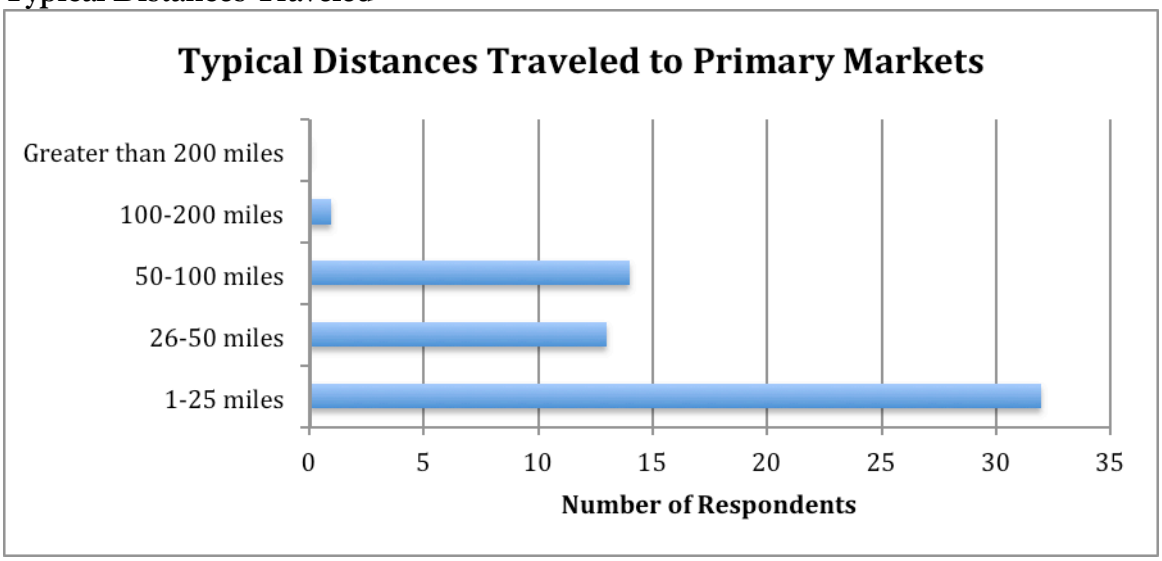
Those that responded with "other" supplied the following answers:

- Friends and family
- Internet (3 responses)
- Milk plant
- Livestock (2 responses)
- Food hub
- GrowFood Carolina (3 responses)
- Word of Mouth
- Herbalist

Distance to Primary Markets

	# of Responses	% of Respondents
1-25 miles	32	53%
26-50 miles	13	22%
50-100 miles	14	23%
100-200 miles	1	2%
Greater than 200 miles	0	0%
Total	60	100%

Typical Distances Traveled



Interest in Expansion

Survey Response	# of Respondents	% of Respondents
Yes, I am interested in expansion through investing in training or infrastructure.	28	47%
No, I am satisfied with my current operation and I have no desire to change it.	7	12%
Maybe, depending on the opportunity.	24	41%

Interestingly, 6 of the 7 farmers that indicated no interest in expanding are over 60 years old. The 7th respondent is between 40 and 49 years old. Furthermore, three of the seven comments left regarding reasons for not expanding referenced retirement and age.

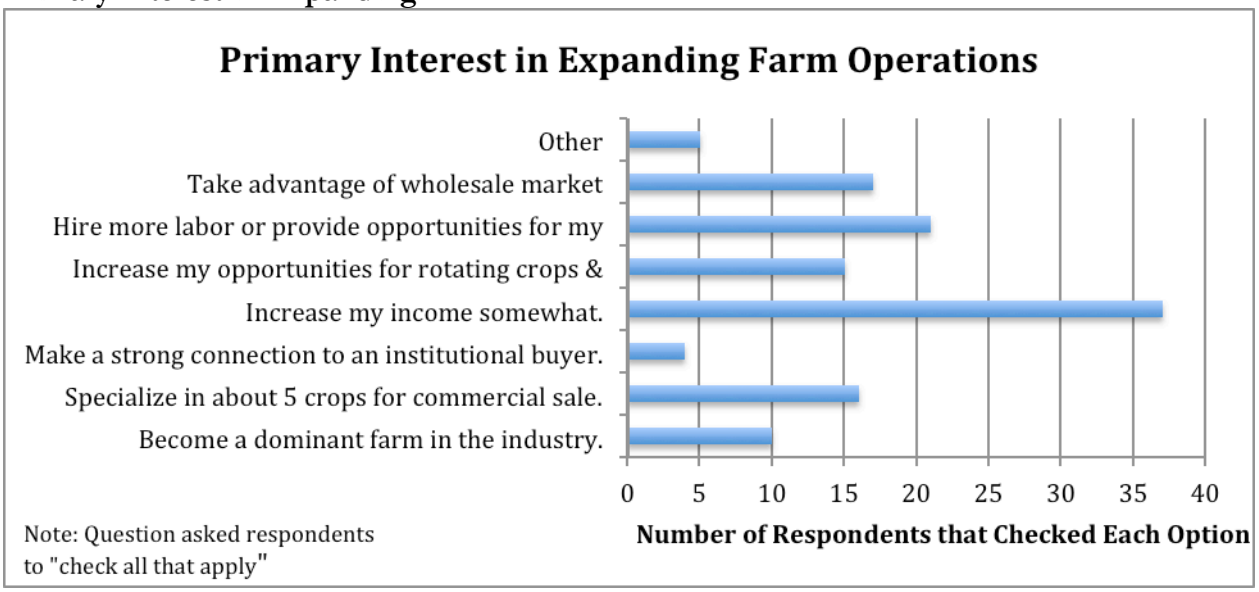
Primary Reasons for Expanding

Primary Reason for Expansion	# of Responses	% of Respondents	% of Responses
Become a dominant farm in the industry.	10	19%	8%
Specialize in about 5 crops for commercial sale.	16	30%	13%
Make a strong connection to an institutional buyer.	4	8%	3%
Increase my income somewhat.	37	70%	30%
Increase my opportunities for rotating crops & livestock.	15	28%	12%
Hire more labor or provide opportunities for my family.	21	40%	17%
Take advantage of wholesale market opportunities.	17	32%	14%
Other	5	9%	4%
Total (given check all that apply)	125	*	100%

**% of Respondents total is greater that 100% due to the ability to "check all that apply"*

Farmers who responded hold limited goals for expansion.

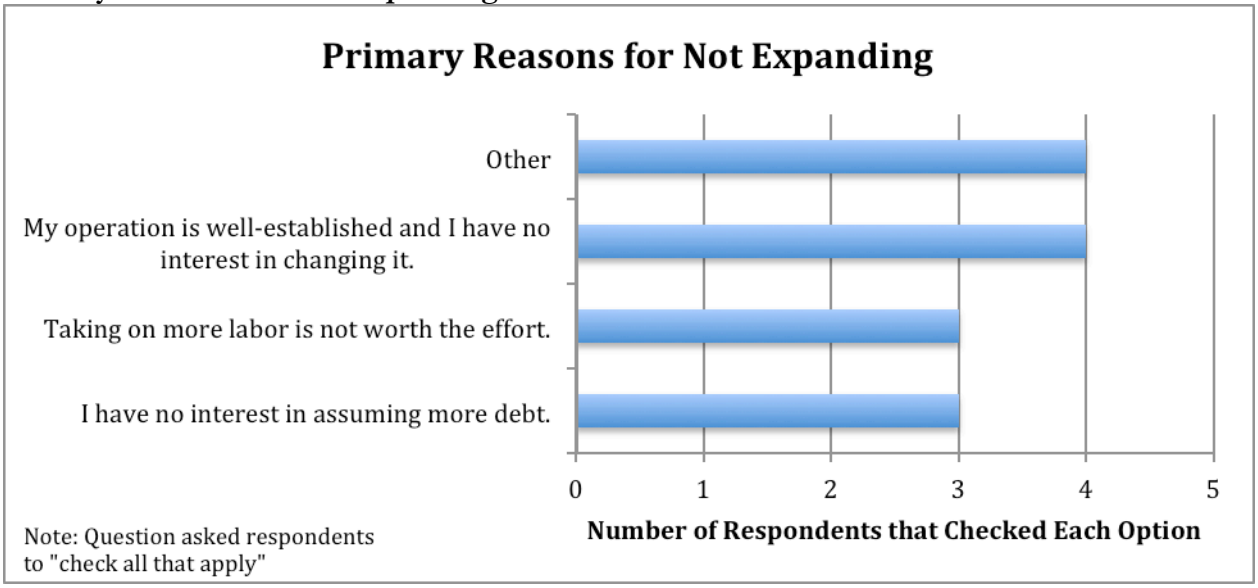
Primary Interest in Expanding



Those that responded with "other" supplied the following answers:

- CSA opportunities
- Grow more mushrooms
- Provide high quality produce to SC residents
- Increase supply and development of value added products
- Bring awareness to heritage breeds and heirloom veggies

Primary Reasons for Not Expanding



The number of farms responding to this question was so limited that no clear patterns emerge from the data. More important, perhaps, are the specific comments made:

Those that responded with "other" supplied the following answers:

- I do not want to get rich. I just want to make a living and be part of my community
- Retired-- hobby farm
- I am semi retired.
- There is limit to what one man can say grace over and be responsible to maintaining and improving our soils and the environment.
- This size operation is all that I can handle at my age. It demands almost more than I can give.
- We are caterer as well as a farm. Currently we grow for our operation and to sell in markets as well as a 40 member CSA. After several years of evaluation, we can maximize our profits by concentrating on catering and creating value added items, and loss on truck/market sales.
- Happiness is roof over our head, significant relationships and doing something that contributes to my community and having time to enjoy what I do. At the end of the day I can look back with pride and say I did that.

Although 13 farms reported being at 100% capacity, only 7 farms reported no interest in expanding their operation. Respondents with no desire to expand their operation were not surveyed further.

Opportunities for Expansion

Level of Interest in Various Training and Education Opportunities

	Not At All (w=0)	Slightly (w=1)	Moderately (w=2)	Very (w=3)	Extremely (w=4)	Weighted Total	Weighted Average
Crop planning for restaurants and institutional sales (schools, hospitals, etc.)	16	6	13	10	6	86	1.62
Nutrient management for vegetable systems (soil testing, increasing fertility, purchasing inputs)	10	5	11	12	14	119	2.25
Nutrient management and forage crop mixes for livestock (soil testing, increasing fertility, purchasing inputs)	17	5	6	12	11	97	1.83
High tunnel production practices and fertility management	7	9	9	16	11	119	2.25
Cover crops: how to integrate into vegetable cropping systems	9	5	13	10	15	121	2.28
Using native pollinators (e.g., bees) in production systems	9	6	9	15	12	117	2.21
Pest management for common vegetable insects	9	3	8	21	11	126	2.38
Pesticide training (chemicals or organics — equipment, calibration, record-keeping, storage, worker protection)	9	8	16	13	6	103	1.94
Compost systems (compost testing, understanding nutrient content and impact on crops)	8	5	9	14	13	117	2.21
Finding stock for livestock systems	21	6	6	8	8	74	1.40
How to effectively scale up production	3	3	20	13	12	130	2.45
GAP/HAACP/Food Safety training	10	5	16	11	6	94	1.77
Business management and enterprise planning (record keeping, labor management, taxes, etc.)	5	7	19	11	8	110	2.08
Marketing and branding	5	3	13	18	11	127	2.40
Forming or strengthening cooperatives	9	9	10	11	12	110	2.08
Other	4	0	2	1	0	7	0.13

Respondents were somewhat divided in their interest in learning production planning for larger markets, with 16 farms very interested, and 16 farms lacking interest of any kind.

Those that responded with "other" supplied the following answers:

- Granting writing and resources
- Organic farming
- Do not allow any agendas to risk our private property rights that would limit what we grow, who we sell to and how much we sell, and where to.
- Irrigation help
- Ours is a fiber business. Always looking for markets to expand our products.

Level of Interest in Various Infrastructure Investments

	Not At All (w=0)	Slightly (w=1)	Moderately (w=2)	Very (w=3)	Extremely (w=4)	Weighted Total	Weighted Average
High tunnels or greenhouses	12	8	10	13	10	107	2.02
On-farm washing and packing house	13	9	7	11	12	104	1.96
On-farm cold storage	9	4	10	15	14	125	2.36
Box truck for local distribution	18	10	11	6	7	78	1.47
Refrigerated box truck for regional distribution	20	6	8	9	8	81	1.53
Community kitchen for value-added processing	17	9	6	9	10	88	1.66
Aggregation and distribution center	18	7	16	7	3	72	1.36
Close access to produce auction or farmers' market center	9	15	14	8	4	83	1.57
Mobile processing for poultry	32	3	4	2	10	57	1.08
Mobile flash freezing unit for produce	25	8	5	5	8	65	1.23
Shared off-farm produce processing facility (washing, chopping, freezing, packing, storage, etc.)	16	10	10	6	7	76	1.43
Commercial produce processor nearby	23	11	7	4	5	57	1.08
Meat processor closer to farm	25	3	6	6	10	73	1.38
Dairy processing plant closer to farm	32	7	7	0	2	29	0.55
Other	4	0	0	0	2	8	0.15

Interest in aggregation was low.

Interest in meat and poultry was low in terms of the overall sample, but relatively strong given the small number of farms involved in livestock production.

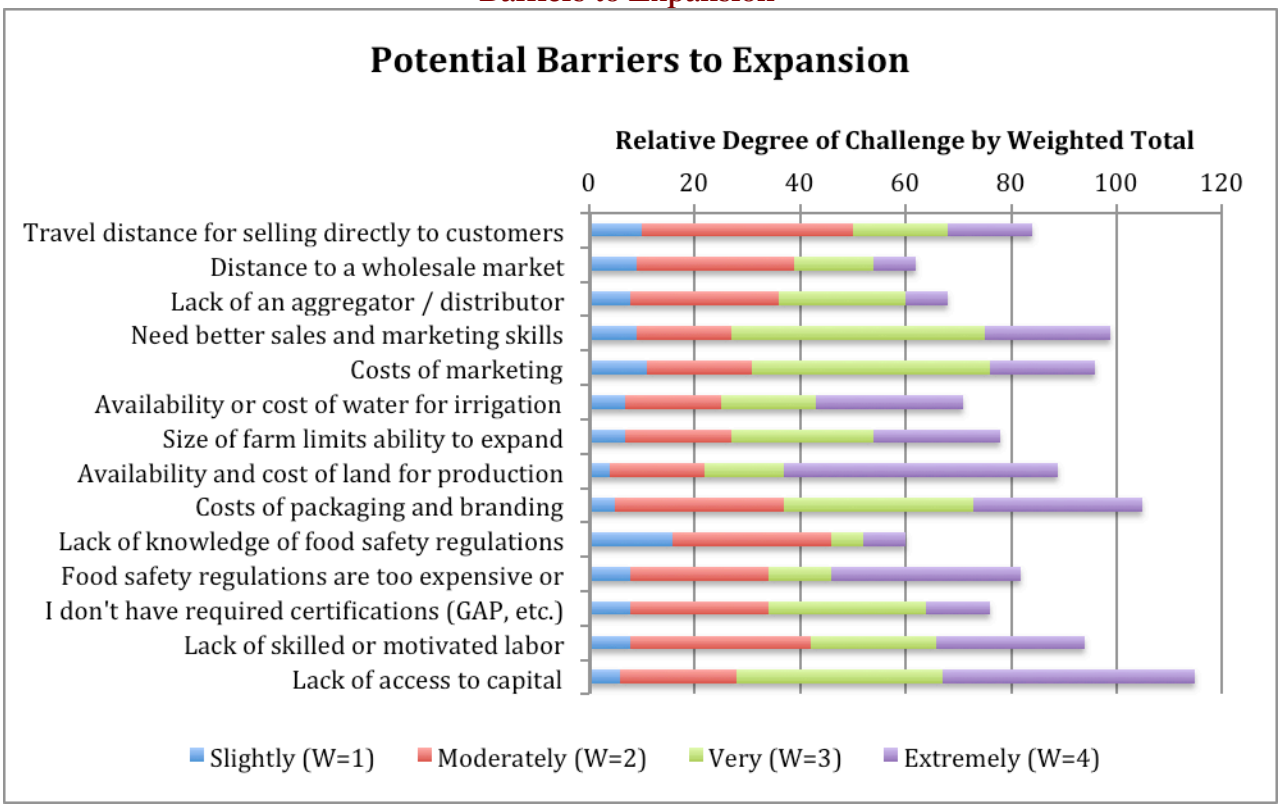
Those that responded with "other" supplied the following answers:

- Having a peanut sheller or a closer buying point.
- Interested in a fiber processing textile mill in SC. Processing from raw fleece to yarn or goods made from that fleece in SC.
- Farm foods distribution.
- A multi species processing facility located in close proximity to my up state farms. with proper certifications for all meat to include Organic certification.
- A processing plant close to farm.

Potential Opportunities

Given the small sample size, it is difficult to reach solid conclusions about the most important opportunities. Nevertheless, the data suggest that despite limited interest in expansion, farmers are open to exploring new opportunities, especially in learning new skills and techniques.

Barriers to Expansion



Lack of access to capital is the paramount concern, although this is not necessarily statistically more significant that cost items identified. All of the top barriers mentioned reflect limited access to financial resources.

Respondents clearly indicated strong concern with the potential costs involved in marketing or packaging products — this could apply to both direct sales and larger sales channels.

	Not At All (w=0)	Slightly (w=1)	Moderately (w=2)	Very (w=3)	Extremely (w=4)	Weighted Total	Weighted Average
Travel distance for selling directly to customers	10	10	20	6	4	84	1.58
Distance to a wholesale market	17	9	15	5	2	62	1.17
Lack of an aggregator / distributor	18	8	14	8	2	68	1.28
Need better sales and marketing skills	9	9	9	16	6	99	1.87
Costs of marketing	7	11	10	15	5	96	1.81
Availability or cost of water for irrigation	20	7	9	6	7	71	1.34
Size of farm limits ability to expand	18	7	10	9	6	78	1.47

Availability and cost of land for production	19	4	9	5	13	89	1.68
Costs of packaging and branding	9	5	16	12	8	105	1.98
Lack of knowledge of food safety regulations	14	16	15	2	2	60	1.13
Food safety regulations are too expensive or burdensome	15	8	13	4	9	82	1.55
I don't have required certifications (GAP, etc.)	15	8	13	10	3	76	1.43
Lack of skilled or motivated labor	9	8	17	8	7	94	1.77
Lack of access to capital	8	6	11	13	12	115	2.17
Other	4	0	0	0	2	8	0.15

Those that responded with "other" supplied the following answers:

- It is very difficult to shift mindset from "big" to local, small farms. Finding product liability insurance, as a small farm, has been difficult. Finding a meat processor, willing to work with small farms, has been difficult, and results in very expensive trips several hours away, adding to the cost of the product. Our South Carolinians need access to healthy, locally grown food that is affordable. And until small farmers are supported better, and are considered a priority, it will continue to be an uphill battle.
- Time!
- As a 68 year-old female beginning farmer (the land was farmed for all of those years, but I was away), I have physical limitations, which make finding good farm help necessary to my expansion. My son is currently working with me, but he is not available all the time. So far, I have not found an able bodied person who wants to work on a farm [here]. This is the major barrier to expansion.
- Probably, not necessarily the labor itself, but the costs associated with labor such as payroll taxes, paperwork required for state and federal gov., cost of workers comp and other liability insurance, record keeping in general.
- Biggest problem for me is the distance I have to travel to have my birds processed- it is not cost effective for me to drive to Kingstree not once but twice to have birds done- you have to drive there drop off by 8 in the morning then come back a week later- I can not manage a fall flock with this added cost
- Labor to help do the job. Can't afford to hire anyone yet.
- Lack of USDA slaughtering plants.
- Available capital to purchase specialized mushroom production equipment to compete with Pennsylvania and California.
- Capital for expansion is the biggest barrier, in my particular situation I need to purchase at least 100 head of livestock to satisfy the markets that I have already created or have access to.
- High cost of fiber processing.

Additional Comments about Challenges and Opportunities to Expanding Specialty Crop Operations

- The biggest issue we've faced is expanding while keeping current crops in production. We have hired contractors for some of the work on building cold storage and packing facilities, but in an effort to keep costs down, we are doing a lot of the construction ourselves.
- We don't have a very good farmers market in Moncks Corner. The rules are not enforced and it has become a free spot to set up a roadside vegetable stand every day of the week for a few who buy from Colombia.
- I am fortunate to have had NRCS help in getting a high tunnel and drip irrigation for the 4 acres I am transitioning to organic vegetable production. I have purchased a very old used walk-in cooler but have not gotten it set up. When I can afford the concrete pad and a shed for the cooler and a processing area, I will complete that phase of my operation.
- Lack of facility for value added items and regulations associated with the production of value added products.
- There needs to be more USDA slaughtering plants for small producers at competitive cost.
- It would be great to allow farmers to apply and compete to receive grants or funds designed to enhance the production of organic produce and livestock in SC. Personally I have been growing mushrooms here for 20 years, and NC has tobacco funds to help alternative farmers, such as mushroom farm startups, and I have seen NC surge ahead of us, leaving me feeling like we can do more to support specialty crops like mushrooms. I am the leader in the industry, supplying growers with laboratory grade spawn, and most of it goes to NC!
- There is a strong need for a processing facility. In the interest of Animal Welfare (not good for the animals to transport 2 or 3 hours) and the cost of fuel, and time off farm. Fuel for travel to processing is my biggest expense for the farm operation, taking away money that could be used to expand the operation.
- Unless you grow or make a very special/unique product. Don't believe a small farm can survive and prosper. Must take on responsibility and direct market products to consumer. Will go broke wholesaling.

Appendix B: Colorado "Eat Five, Buy Five" Campaign Poster

Design & Artwork by Carrie Cline

Appendix C: A Review of Food and Agriculture Education and Knowledge Infrastructure

Current State of Things

All the capital and physical infrastructure in the world won't help much unless people have the skills and knowledge to use it effectively and efficiently. Although the land-grant universities (Clemson University and South Carolina State University) have a long history of providing education regarding the practice of agriculture, innovations in the industry require innovations in education. With this in mind, the 2008 Farm Bill appropriated additional monies for beginning farmer education programs under the idea that new programs and new ideas are necessary to train the next generation of farmers.

The average age of South Carolina's farmers was 59 years old in 2007 (USDA, 2007) and one interviewee expressed a concern that most of her older partner farmers would retire the day before the new Food Safety Modernization Act goes into effect (Thomas, 2013). Either of these conditions alone will leave a gap in experience and expertise as the typical next generation of farmer was not raised on a farm or has an educational background in farming.

Access to education, networking (peer-to-peer learning), technical assistance, and training came up in nearly every interview over the course of this study. For example, the manager of a grants program insisted that public money cannot be invested in private business unless a business planning class is required. During an interview about increasing meat packing capacity in the state, the interviewee mentioned that his peers, in other states, meet regularly to discuss the state of things, and he had an interest in doing the same. From interviews about farm-to-school, to interviews about food hubs, to interviews about food safety, nearly every person described a need for crop planning, food safety, food handling, and business planning education. Even the Crossroads Resource Center conducted survey of 60 South Carolina specialty crop producers showed a stronger interest in educational resources than specific infrastructure (*See Appendix A, p. 84*).

Quite a few food and agriculture education programs already in exist in South Carolina. Their preservation, security, and even expansion will be vital to ensure that South Carolina has a rich and robust agricultural future. New opportunities also exist for increasing South Carolina's knowledge infrastructure.

South Carolina New and Beginning Farmers Program, Clemson University

The South Carolina New and Beginning Farmers Program (SCNBFP), a partnership between Clemson University's Institute for Economic and Community Development (CIECD), Carolina Farm Stewardship Association (CFSA), LowCountry Local First (LLF), and BizBuilderSC, is a 10 week program designed to teach food entrepreneurs business building basics such as marketing and branding, legal structures, managing and mentoring, and record keeping, for example. It was funded for three years (2010-2013) with a Beginning Farmer and Rancher Development Program grant. With the pending expiration of the extended 2008 Farm Bill and no clear 2013 Farm Bill in sight, funding for the continuation of this program is uncertain.

However, the impacts are clear. Over the course of three years, 78 businesses participated in the course, with some businesses being represented by more than one operator/owner.

A Clemson Ph.D. candidate, who is studying New and Beginning Farmers Program graduates, reports a real concern for the future of the program. One of her primary findings is the value of networking that the class provided. Nearly all the graduates interviewed expressed an appreciation for meeting farmers in similar situations and that these farmers continue to be their best sources for information and advice about farming. Particularly in rural areas with undeveloped local food systems, the weekly meetings were essential to feeling a sense of connectivity. Graduates expressed a desire to see the program continue especially if there would be opportunities to attend additional educational workshops and network with new students (Maroney, 2013).

Two and Four Year Degree Programs
Several two and four year sustainable agriculture degree programs exist in the state, including the following:

- Clemson University's Sustainable Agriculture program
- Orangeburg-Calhoun Technical College's Soils and Sustainable Crops Transfer Program (designed to transfer entirely to Clemson's School of Agriculture, Forestry and, Life Sciences)
- Piedmont Technical College's Introduction to Sustainable Agriculture course in the Diversified Agriculture Major

Short-Term Certification Programs
In addition to degree programs, the colleges and Clemson offer a variety of short-term courses including the following:

- Trident Technical College's Horticultural Sustainability Certificate (Berkley and Dorchester Counties
- York Technical College Sustainable Agriculture Certificate Program (Chester, Lancaster, and York Counties)
- Orangeburg-Calhoun Technical College's Sustainable Agriculture Certificate
- Clemson Extension's 6-week Sustainable Small Farms and Backyards (Cherokee, Greenville, Oconee, and Spartanburg Counties)

Extension Workshops
Between having an Extension agent in all 46 counties and five research and education facilities around the state, Clemson Extension offers a variety of workshops suited for home gardeners and producers alike.

Additional Existing Knowledge Infrastructure
In addition to the educational opportunities listed above, a few other educational services exist across the state. For example, Lowcountry Local First's Dirt Works Incubator Farm, which offers 1-2 acres of land, equipment, and mentorship over the course of three years to participants. Although its not an official service offered, GrowFood Carolina provides quite a bit of indirect education to its farmer providers.

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Appendix D: Clusters and Incubators

Economic Theory of Clusters

Clustering of businesses is a long-supported economic development approach in which businesses in similar fields locate close to one another to cooperate, share resources and information, even though at times they may also compete with each other. Drawing upon common infrastructure, they often create special efficiencies due to their ability to reduce overhead costs.

A shopping mall is one example of such a business cluster; Detroit built its automotive might in the 1920s by locating amidst a cluster of small towns that manufactured components (wagons, wheels, glass, etc.) that would be useful in assembling an automobile. As one expert said, "Clusters are increasingly seen as key to the creation and exploitation of regional innovation and competitiveness" (Braiser et al., 2007, 1). Connection across firms and industries supports competition, productivity, innovation, and new business formation (Porter, 2000, 5).

Cluster participants generally share common needs, opportunities, constraints, and obstacles to productivity. The cluster itself can provide a constructive environment for dialogue among related companies, their suppliers, government, and other institutions. Clusters are geographically based and often connected irrevocably to a particular location (Porter, 2000, 5).

Clusters have many positive social and economic impacts on the community in which they are located. They tend to improve wages, economic growth and worker training opportunities. They also often attract workers to the region, and help retain them even when the workers seek alternative employment because there are many similar firms nearby (Braiser et al., 2007, 3-4).

Clusters also tend to foster entrepreneurial activity. The presence of a cluster allows better access to information, infrastructure, an established customer base and existing relationships for new businesses. It also lowers perceived risk for entrepreneurs because there are multiple nearby opportunities within the industry (Porter, 2000, 25). To the extent linkages are made among local businesses, increasing the flow of local commerce economic multipliers are also likely to increase.

There are other positive impacts beyond these economic benefits. There is a well-documented positive correlation between social capital and the extent of locally owned business in an area. This applies specifically to agricultural businesses as well. Communities that rely predominately on small family-run farms enjoyed appreciably higher levels of social and economic welfare than those that rely mostly on industrial farms. Communities characterized by smaller farms often have lower rates of crime and income inequality, higher rates of democratic participation and better access to social services (Lobão & Stofferahn, 2008; Goldschmidt, 1978).

Further, there is documentation showing stronger social networks in communities with other types of clusters (Flora and Flora, 1993). There are also several anecdotal examples of environmental and cultural benefits resulting from farm clusters in the academic literature (Salamon *et al.*, 1998; Hilchey, 2006).

Both the academic literature and anecdotal testimony suggest that farm clusters work best when there exists a standing and identified market for their products. A major aspect of creating a successful cluster is securing solid ties to a market, be it a retail outlet, restaurant, farmers market or

an institution. As Donald explains, the sustainable food movement is by and large a consumer-driven process (2008); clusters appear to be a way of both building consumer loyalty and maintaining it over time.

Though there are many examples of business clusters in the academic literature and in the real world, this is not as well documented as a strategy specifically for agriculture. However, a highly competitive, localized, specialized, and capital and infrastructure-intensive industry such as sustainable agriculture could benefit greatly from its application.

Though the academic literature has just begun to chronicle the existence of small farm clusters, there are many successful examples functioning in the market today.

Findings of The Small Farms Industry Clusters Project

Braiser, *et al.* conducted a set of interviews with farm clusters across the Northeast as part of an academic undertaking known as the Small Farms Industry Clusters Project. These academics discovered many economic and community benefits from these agricultural clusters. Notably, representatives from each cluster mentioned higher income and multiplier effects from being part of the cluster. Many clusters also spawned other supportive businesses, such as equipment dealers and processing plants.

The project also characterized the elements that make agricultural clusters successful: a functional agricultural cluster has a clear vision or mission, often related to community development and/or sustainability. There must also be an organizational framework, and a leadership structure that upholds that framework. Collaboration and communication between members is crucial, and there should be a regular, systematized outlet for this communication. Trust must exist between stakeholders in order to compete and collaborate at the same time.

Braiser and her colleagues also identified some key characteristics of the members of a farm cluster. They tend to be geographically close, with shared interests, be they financial, environmental or social. Cluster members benefit from what they call a "shared sense of fate;" that is, the recognition of their dependence on one another and the ability they have to help and be helped. Though clusters are variable in their location, size and specific mission, these overall identifiers help define and clarify the makeup of a successful cluster.

Examples of Farm Clusters

Pioneer Valley Heritage Grain Project

Several solid examples of food-business clusters function in the market today. One such cluster is the Pioneer Valley Heritage Grain Project in western Massachusetts. It is a project of the New England Small Farms Institute (NESFI), a nonprofit organization that works to improve the sustainable regional food system. The Institute recognized a growing market for locally grown "heritage grains," such as spelt, rye, and barley. This change in demand came partially in response to global price increases, but also emerged out of consumer desires for locally grown food. Many farmers in the Pioneer Valley in Massachusetts had already started shifting their production towards these grains. NESFI opted to help manage this shift, and to aid farmers in this process. NESFI established an intentional cluster that shares processing equipment and storage facilities. It also created training opportunities and opened market access for the farmers. This initiative was funded by a grant from the Massachusetts Agricultural Innovation Center, a subsidiary of the Massachusetts

Department of Agricultural Resources, as well as an in-kind contribution from NESFI. The total startup budget was $133,522 (Pioneer Valley Grain Project Proposal, 2009).

Tuscarora Organic Growers

Another successful, and renowned, farm cluster is the Tuscarora Organic Growers Cooperative (TOG). TOG was founded in 1988 when several small organic farmers began co-marketing their produce. In 2013, the Coop planned for 28 member farmers and 17 nonmember farmers to sell over 100,000 cases of produce, primarily to the Washington, DC, metro area. TOG sells to retailers, restaurants and individual buyers. They currently have a full time staff of four who run sales and marketing, as well as 18 part time employees who manage shipping and delivery (Tuscarora Organic Growers, 2008).

"We work for the farmers," said TOG's account manager Jeff Taylor. TOG offers farmers three main services: marketing of produce; production coordination; and quality assurance for buyers. They aim to get the highest value for their producers and a consistently high quality standard for the retailer and restaurants that buy their products. The presence of a longstanding reputation and brand is a critical part of the coop's success. TOG also runs what Taylor calls a "pass through facility," which includes a refrigerator and dry storage.

Unlike other clusters, TOG has no outside funding. The farmers who started the coop made small investments over time to build the facility and staff employees. Today, farmers who sell their produce through TOG get 75% of the sale price of their product. The remaining 25% goes back to TOG's operations budget. It is a for-profit enterprise.

Taylor noted the importance of having non-farmers managing the day-to-day operations. He attributed this to the highly independent nature of many farmers, and the resentment that built up early on before the coop hired employees. The success of TOG, he said, comes from its adherence to cooperative principles, and its autonomous, market-based structure. Tuscarora Organic Growers is a solid example of a successful cluster that combines a social mission and smart business sense to support local farmers (Jeff Taylor, August 9, 2013).

The Meat Suite

There are many types of farm clusters. Some share equipment, some work together on marketing, many aggregate their products to reach larger markets. One creative example is called Meat Suite, a program of Cornell Cooperative Extension in Ithaca, New York. The project was recently launched through a USDA Farmers' Market Promotion Program grant of $80,000 plus private donations from foundations and private citizens. Through Meat Suite, consumers rent commercial freezer space when buying bulk meat quantities. This relieves pressure on both small producers and consumers who lack storage space. It is an innovative way to break down the logistical barriers between small farmers and individual consumers. This is a relatively new project so more time must pass before we can judge its overall success, but it is a strong example of the creativity of farm clusters (Cornell Cooperative Extension, 2012).

The Role of Incubators

Clusters can arise in many different contexts. However, the presence of a farm incubator (that is, a farm site where a group of emerging farmers can practice their growing and marketing skills) can be hugely useful. Incubators help not only to train emerging farmers needed for a successful cluster, they also tend to establish a collaborative, clearly defined vision among them. Thus, an incubator

provides the formalized network that can be critical in engineering a sustainable cluster. There are a substantial number of successful incubators across the U.S., and their numbers are growing. As interest and demand for sustainable food grows, more incubators appear to be providing new farmers with many of the resources they need to meet this demand (Niewolny & Lillard, 2010).

The Agriculture and Land-Based Training Association
One impressive example of a successful incubator is the Agriculture and Land-Based Training Association (ALBA) in Monterey County, California. ALBA was founded in 2001. It works with limited-resource and aspiring farmers, mostly Latinos, by providing them with information and technical assistance that is often unavailable through traditional extension agencies. ALBA owns two training farms and employs seven people full time.

One farm hosts the Small Farm Education Program. Here, beginning farmers learn about organic farming, business planning, and marketing, and also cultivate a handful of crops on small plots. During the farmer's tenure, ALBA aims to help them establish small farm businesses and then transition to other locations. ALBA also owns a secondary farm where more established local Latino farmers lease land in order to learn new strategies that can be adapted elsewhere. In 2010 alone, ALBA graduated 44 farmers, who started 25 independent farm businesses. ALBA also runs a retail store, which sells the farmers' produce to the general public.

ALBA is funded through many sources, including federal grants, foundation grants, and donations from private citizens. In FY2010, it received $980,000 in grants from more than 12 private foundations and 5 federal agencies. According to their website, "ALBA's current goal is to increase its ability to leverage its assets and build on its experience and partnerships to continue delivering quality programs and become self-sustaining, assuring a continuing legacy of rural economic development."

The Farm Business Development Center
Another exciting example of a successful farm incubator is the Farm Business Development Center at Prairie Crossing Farm (FBDC) in Grayslake, Illinois, which is about 40 miles from downtown Chicago. This is a unique example because the Center and the Farm are part of a larger conservation Community, Prairie Crossing. The community includes a housing development, a for-profit organic farm, and a charter school in addition to the incubator and teaching farm. The Liberty Prairie Foundation supports the development financially. One-half of a percent of the value of the sale of each home in the development goes to support the FBDC. The foundation's executive director also noted that this incubator did not have the same financial constraints that many others face, because it already owned the land upon conception and therefore did not require the same amount of startup capital as others might (Brad Leibov, July 31, 2013).

The FBDC runs on forty acres. Beginning farmers participate in courses and training for up to five years, in addition to leasing small parcels of land from the FBDC. One unique and crucial aspect of this incubator is the presence of an organic, family farm, which also leases land from Prairie Crossing. According to Leibov, the farmers on this land serve as mentors and teachers to the beginning farmers as part of their lease agreement.

The Intervale Center
One of the oldest examples of an incubator is the Intervale Center located outside of Burlington, Vermont. The Center was founded in 1988 as a nonprofit aimed at rehabilitating suburban farmland.

The farm incubator component began in 1990. Today, the Center runs a food hub (which aggregates and sells food from multiple small farms), business development programs for existing farmers, and a farm incubator.

The Farms Program leases land, equipment, greenhouses, irrigation and storage facilities to small farms on 135 acres of land. Each year, between one and three new farm businesses join the program, receiving subsidized rental rates, business planning support and mentorship from established growers. The Intervale Center dedicates about one-third of its available farmland to incubator farmers and the remaining two-thirds to mentor farms. The Center charges new farmers a subsidized leasing rate for three years. For the remaining two years, incubator farms must pay full rates. After five years, incubator farms are required to relocate their farm.

After several years of owning equipment in common, Intervale decided to vest responsibility for purchasing and maintaining farm equipment into the hands of one of the center's farmers with especially solid skills in maintenance. For Intervale it was recognition that the center itself did not have the required skills, but this was also a realization among the farmers that owning equipment in common did not always lead to the best results.

In addition to the incubator program, the Intervale Center runs a farm business planning program, Success on Farms. This program supplies and assistance to help farmers support expand their markets, increase revenues and achieve other quality of life goals to ensure they stay in farming.

Additionally, the Intervale Center runs a food hub that primarily handles CSA share distributions for its member farmers. The CSA model offers farmers a relatively stable market, fair prices, and advanced working capital. Intervale also provides technical assistance and support, enabling farmers to grow and process more food, diversify production, and develop innovative specialty products (The Intervale Center, 2013).

The Center is aided by its location in Vermont, one of the national centers of local and sustainable food activity. With many small food businesses and supportive nonprofits, and a legislature that is sensitive to agricultural concerns, a wealth of mutually reinforcing activity has emerged (Schmidt, *et al.*, 2011, 158).

Big River Farms (a project of the Minnesota Food Association)

Another farm incubator program in Minnesota runs a multi-cultural training program, combined with supportive infrastructure and a distribution network. MFA's Executive Director Glen Hill (Hill, July 12, 2013) explains that the incubator project "bridges cultures, and that is the future." Yet Hill also realizes that this approach requires "more inventive training" because of cultural influences.

Hill added that in the beginning, MFA simply ran a training program, but building physical infrastructure "makes everything else go easier." Each component requires different approaches, he said. "Training needs to be hands on, while for the incubation, we provide the space, but the farmer is on their own."

Big River Farms currently has two walk-in coolers, each about 16 x 16 feet (built from kits), and added a second washing line so farmers would have easier access to equipment when they were

ready to harvest – a necessity especially since many farmers hold off-farm jobs, and have a limited time window for harvesting.

Big River purchased both large and small tractors for different farming tasks, invested heavily in fencing to keep deer and other animals at bay, and dug a new well for irrigation. The farm also has both a greenhouse and hoophouses, so farmers could maximize retained value by growing their own seedlings.

Based on his experience Hill estimated that a good starting size for an incubator farm would be five farmers, which offers a critical mass for farmers to learn from each other. Each farmer should have access to 3-5 acres, or "just to the point where the farm would have to start hiring labor." Farmers are expected to transition to buying their own land, but finding available land can be challenging.

Big River currently sells about $90,000 of produce from 6-7 acres of land. This is sold through CSA shares, as well as aggregating produce sales to commercial accounts. A recent evaluation of the farm showed that individual farmers had increased their gross from $3,000/acre to $12,000/acre through participation in the program, but Hill added that actual results depend on market fluctuations, weather, and other intangibles.

National Incubator Farm Training Initiative (NIFTI)
This national clearinghouse and training initiative was launched in Massachusetts in collaboration with Tufts University. Its New Entry Sustainable Farming Project held a workshop at Clemson's Sandhill campus this summer, in hopes of fostering a farm incubator at that site. NIFTI's coordinator is Eva Agudelo Winther.

General Characteristics of Incubators
Though incubators are varied and diverse, there are several general characteristics that seem to apply to most incubators. First of all, the most crucial aspect is the availability of ample land. All of the successful incubators included in this report own a significant amount of land, which allows for several incubator farms as well as mentor farms. It also seems that the presence or proximity of successful farm businesses is highly helpful to an incubator. Effective mentors also play a crucial role in farm startups (Niewolny & Lillard, 2010).

Many incubators also grew out of a larger organization, or had significant support from one. Cooperative extensions, foundations, housing developments like Prairie Crossing, conservation organizations, and local governments have all supported or started incubators. Given the substantial startup costs involved in an incubator, it seems that support from a larger entity with a higher tolerance for risk is incredibly helpful. Incubators do exist separate from such entities, but they seem to have encountered more difficulty.

In general, incubators require effective collaboration, and require support from a wide range of stakeholders. Another important aspect of food incubators is their adherence to a larger mission or value system. Similarly to food clusters, incubators tend to pursue societal goals that go beyond economics. Many incubators, such as ALBA, aim to bring marginalized populations into farming occupations. These groups attempt to combat the barriers that exist for immigrants, racial minorities, and women attempting to start farm businesses. Others focus on sustainability or community development, but there is generally a larger driving mission.

An exciting development in the incubator of arenas is the growing availability of information for new farmers. Traditionally, extension services were the main source for information on farming technology. However, today as more people seek to enter farming, new sources have become available to them. Many existing incubators run online information centers, while other resources are purely online. Some useful examples of farming clearinghouses are the New England Small Farm Project, the New Entry Sustainable Farming Project and start2farm.gov, which is an initiative out of Beginning Farmer and Rancher Development Program of the United States Department of Agriculture.

The New Hampshire Coalition for Sustaining Agriculture and UNH Cooperative Extension has created a tracker to rate a location on its friendliness to farm startup businesses based on criteria such as zoning regulations, Right to Farm laws and the inclusion of farming in economic development activity.[35]

As interest and market demand for sustainable food grows, small and beginning farmers will need continuing and increasing support to start their businesses. A farm incubator provides this support and is a strong model for investment in local and sustainable farming.

Conclusions

Farm clusters and farm incubators are two solid strategies for bolstering the local food economies of South Carolina. Several such initiatives are already functioning in the U.S. today, and the communities in which they are located are experiencing many economic and social benefits. Though the history and makeup of these organizations can vary widely, there are many important lessons to be gleaned from them. Effective collaboration, mutual trust, and open communication is key to their successes.

Yet farm incubators, new farm businesses and farm clusters all require major infrastructural inputs: The availability of a mill for grain farmers, a processing center for vegetable farmers, or a responsive and effective distribution network can be the difference between a successful farm and a failed one. If left to the "market" alone, creation of these facilities will be left primarily to those with existing wealth, access to credit, off-farm income, or some other form of stored capital. State action would open up these opportunities to more communities, potentially allowing for greater collaboration and more lasting economic impacts.

In the case of South Carolina, clustering should be an effective strategy for creating local efficiencies; that is, efficiencies that favor local trade. This will be an critical complement to prior policies that favored import or export trade, but failed to build lasting capacity, connection, and wealth in rural communities.

South Carolina also holds all of the key ingredients required to make farm incubators a lasting element of infrastructure for continually training new generations of farmers over time. If an incubator were not viewed simply as a project to be funded over the short-term, but as an essential educational facility that can foster the creation and adoption of new farming techniques, a lasting culture of collaboration and social connection, and effective new local economic channels, effective clusters of farm and food businesses could be formed across the state.

[35] Available at http://cecf1.unh.edu/sustainable/farmfrnd.cfm

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Appendix E: Potential Food Production Node Components and Costs

The following pages show one potential design for a food production node. This is only one of numerous possibilities, and is meant only to illustrate the concept visually to help spark more detailed site plans for speccific sites in South Carolina.

This represents a basic module for an on-farm packing facility on a shared-use farm; this concept might be adapted for use at various other sites.

Assumptions of this prototype are:

1. 30 acres of open farm land is available.
2. This acreage is home to an incubator farm (or shared-use farm) with five plots of five acres each.
3. Five farmers each work five acres of land to grow produce.
4. The five farmers share common use of a packing shed, located adjacent to each farm, and have access to greenhouses for raising seedlings, or for season extension.
5. A brand new pole barn with a concrete floor is built to house the facility.
6. Water service is available for field plots, hoop houses, and the packing shed.
7. The facility has washing stations, hydrocoolers, and staging areas for preparing fresh items.
8. Three temperature-controlled storage facilities are built, for storing diverse products (e.g., root crops at slight chill, more perishable items at cooler temperatures, with two levels of humidity).
9. The packing shed also has storage and loading dock areas.
10. A light processing kitchen is available for farmers who wish to produce value-added products on site.
11. A shared office space allows each farmer some access to desk space with computers, etc.
12. All equipment is new.
13. A restroom is constructed.
14. More detailed design work would be required to fashion this to any particular site.

The land use suggested here is for illustration only, and may not meet local codes in some counties.

Note also that costs are based on generic estimates; actual costs may differ in South Carolina. This is especially true of taxes and interest charges, which do not reflect South Carolina policies.

Farmers who have the ability to build their own building, or who can re-use an old barn, or who can repurpose existing equipment, may be able to reduce the costs listed here. On the other hand, actual prices could be higher depending on the site chosen, and market conditions at the time of construction.

Estimated total cost is about $350,000. Yet a similar design has been prepared for a farm in Minnesota that adapts an existing building, and relies upon the farmer to do most of the construction, which runs about $175,000.

Designers added that a nonprofit developer that performed its own construction management would also be able to reduce costs signficantly (See P&O allocation).

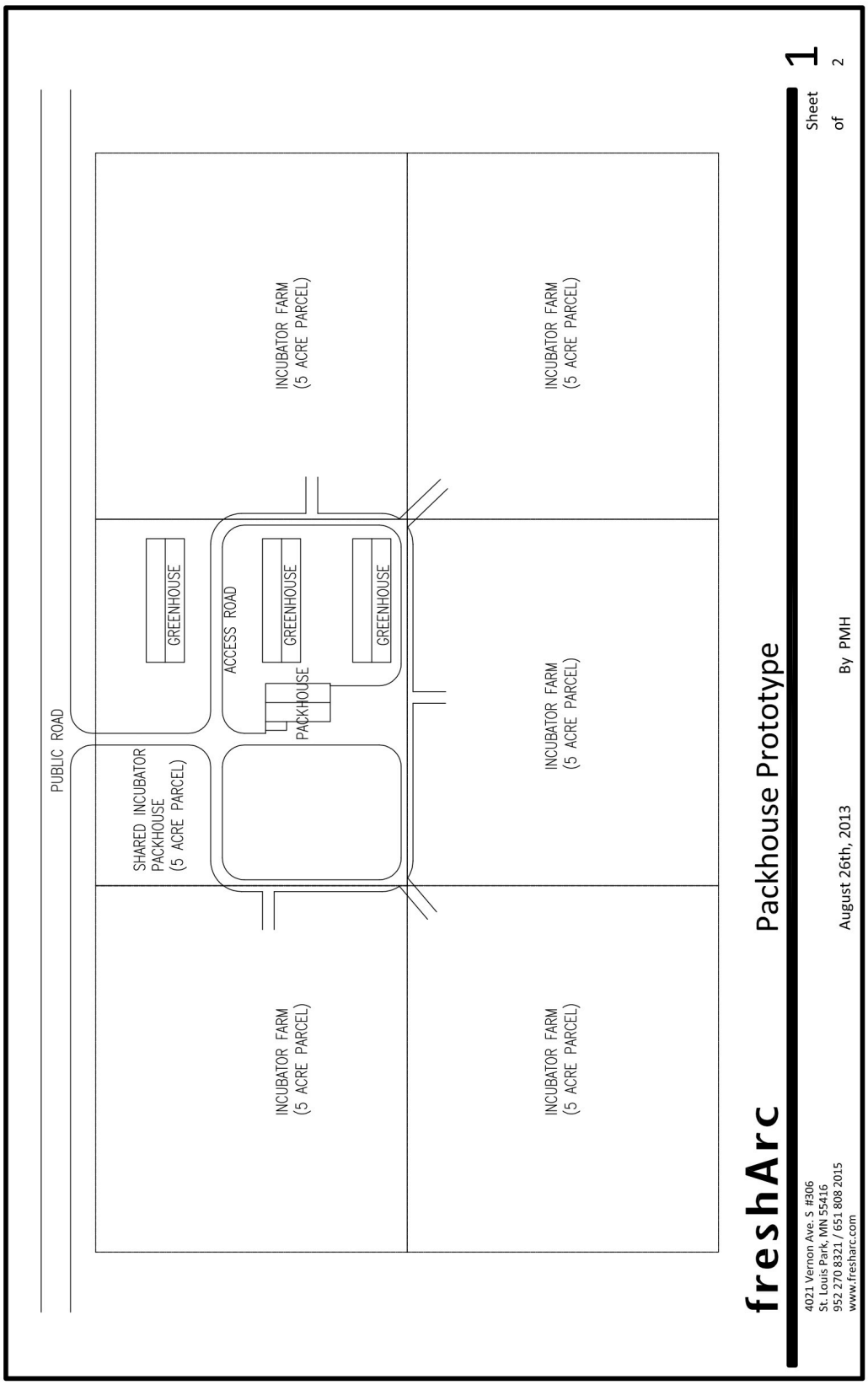
Diagrams and cost estimates were developed by freshArc, a design and consulting firm in St. Louis Park, Minnesota. The firm graciously donated staff time to create these examples for this study, at the request of, and with design input from, Ken Meter of Crossroads Resource Center, who created the "food production node" concept.

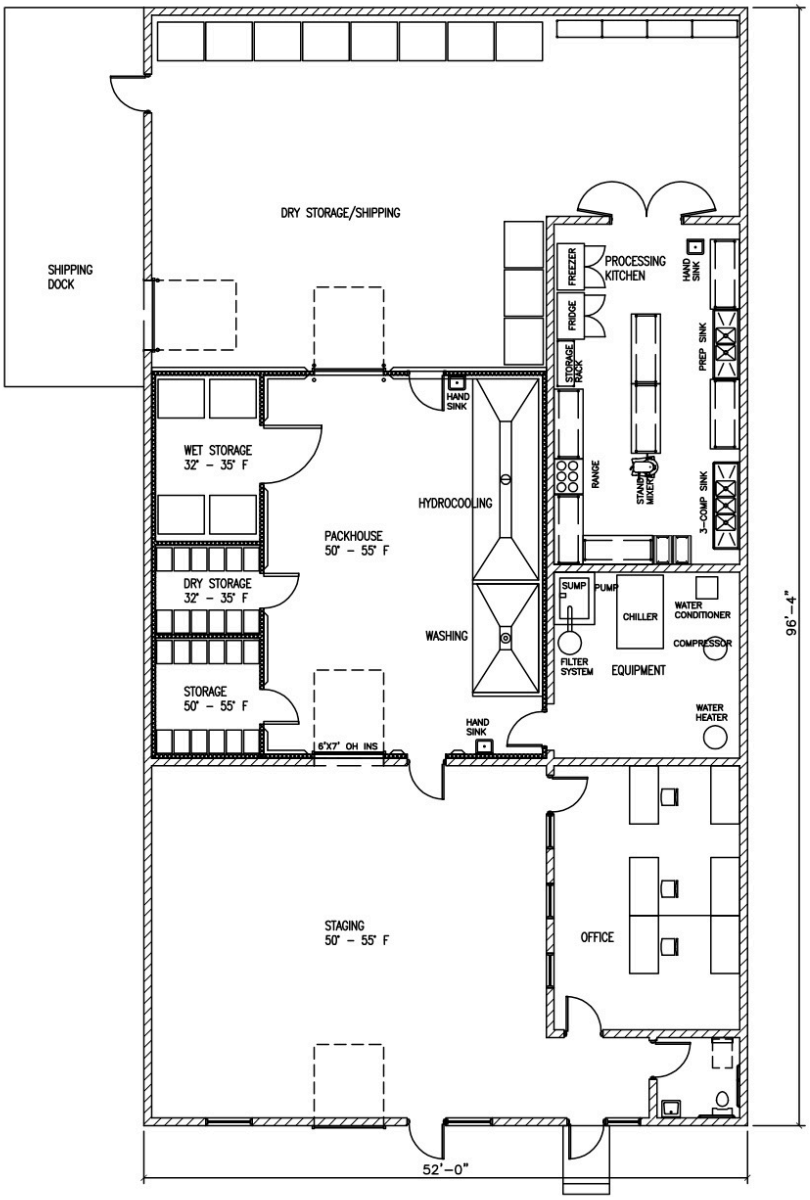
Three pages follow:

1. Schematic diagram for an incubator farm or shared-use land parcel of 30 acres.

2. Prototype design for a shared-use packing shed for this farm.

3. Estimated costs for building this packing shed on open land. Adaptation of an existing building might involve lower or greater cost.


PUBLIC ROAD
SHARED INCUBATOR PACKHOUSE (5 ACRE PARCEL)
GREENHOUSE
ACCESS ROAD
GREENHOUSE
GREENHOUSE
PACKHOUSE
INCUBATOR FARM (5 ACRE PARCEL)
INCUBATOR FARM (5 ACRE PARCEL)
INCUBATOR FARM (5 ACRE PARCEL)
INCUBATOR FARM (5 ACRE PARCEL)
INCUBATOR FARM (5 ACRE PARCEL)
freshArc
4021 Vernon Ave. S #306
St. Louis Park, MN 55416
952 270 8321 / 651 808 2015
www.freshArc.com
Packhouse Prototype
August 26th, 2013
By PMH
Sheet 1 of 2



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www.fresharc.com

Packhouse Prototype

Floor Plan

8/26/13 PMH NOT TO SCALE

Sheet 2 of 2

Const. Cost Estimate			8/26/13						freshArc St. Louis Park, MN	
Food Node: Hoop Houses, Packhouse and Kitchen										
Projected Construction Cost			**Base**			**P&O**		**T&I**	**Total**	
			$289,025.00			$43,353.75		$19,942.73	$352,321.48	
General Conditions										
No.	**Section**	**Item**	**Unit**	**Quantity**	**Cost / unit**	**Cost**	**Labor hours**	**Rate**	**Total**	**Remarks**
1		Design				$0	100	$75	$7,500	
2		Engineering				$0	24	$100	$2,400	
3		Project mgr / sup				$0	200	$50	$10,000	
		Subtotal							$19,900	.
Site										
No.	**Section**	**Item**	**Unit**	**Quantity**	**Cost / unit**	**Cost**	**Labor hours**	**Rate**	**Total**	**Remarks**
4		Survey / layout				$0	48	$50	$2,400	
		Water Service	Unit	6	$2,400	$14,400			$14,400	
5		Grading	E&L			$0	48	$400	$19,200	
		Subtotal							$36,000	.
Packhouse Shell										
No.	**Section**	**Item**	**Unit**	**Quantity**	**Cost / unit**	**Cost**	**Labor hours**	**Rate**	**Total**	**Remarks**
6		Metal Building	Mtl Bldg	1	$35,000	$35,000	160	$30	$39,800	
7		Concrete	CY	120	$110	$13,200	80	$30	$15,600	
8		Overhead Doors	Unit	2	$1,200	$2,400	8	$30	$2,640	
9		Swing Doors	Unit	3	$350	$1,050	9	$30	$1,320	
		Subtotal							$59,360	.
Greenhouses/Hoop Houses										
No.	**Section**	**Item**	**Unit**	**Quantity**	**Cost / unit**	**Cost**	**Labor hours**	**Rate**	**Total**	**Remarks**
10		30'x120' Hoop House	Unit	3	$6,500	$19,500			$19,500	
11		Water Service	Lump	3	$1,000	$3,000			$3,000	
		Subtotal							$19,500	.
Packhouse Equipment/Finishes/Utilities										
No.	**Section**	**Item**	**Unit**	**Quantity**	**Cost / unit**	**Cost**	**Labor hours**	**Rate**	**Total**	**Remarks**
12		Cooler Boxes	Unit	3	$12,000	$36,000	48	$30	$37,440	
13		Finishes	Lump	1	$6,000	$6,000	120	$30	$9,600	
14		Electrical	Lump	1	$7,000	$7,000	120	$55	$13,600	
15		Mechanical & Plumbi	Lump	1	$38,000	$38,000	120	$50	$44,000	incl. rest room
16		Overhead Doors	Unit	2	$1,200	$2,400	8	$25	$2,600	
17		Swing Doors	Unit	6	$350	$2,100	9	$25	$2,325	
		Subtotal							$109,565	.
Kitchen										
No.	**Section**	**Item**	**Unit**	**Quantity**	**Cost / unit**	**Cost**	**Labor hours**	**Rate**	**Total**	**Remarks**
18		20 quart mixer	Unit	1	$1,200.00	$1,200			$1,200	
19		Refrigerator/Freezer	Unit	2	$900	$1,800			$1,800	
20		2 & 3 comp sinks	Unit	2	$600	$1,200			$1,200	
21		Hand sinks	Unit	1	$100	$100			$100	
22		Range and Hood	Unit	1	$9,500	$9,500			$9,500	
23		Flooring		1	$4,500	$4,500	100	$45	$9,000	
24		Wall/Ceiling Finishes		1	$6,800	$6,800	80	$30	$9,200	
25		Mechanical/Plumbing		1	$2,400	$2,400	80	$50	$6,400	
26		Electrical		1	$3,000	$3,000	60	$55	$6,300	
		Subtotal							$44,700	.

Appendix F: Food Systems Infrastructure Investment Funds Models

Our survey of South Carolina specialty crop producers identified "lack of capital" as the primary barrier to farming and expanding farm operations (*Appendix A, p. 84*). This echoed the findings of a national survey conducted by the National Young Farmers' Coalition two years earlier (Lusher Shute, 2011).

Yet our survey also found that farmers are reluctant to take on new debt. In many cases this is because farmers perceive that the risks they face -- from unpredictable weather, to fluctuating markets, and rapidly changing markets, are often not recognized by financial institutions that are accustomed to a predictable cash flow. Particularly in the case of new and beginning farmers, a grants program for on-farm, capital investments is more appropriate. One interviewed, established South Carolina rancher named access to start-up capital as a primary barrier to growing the food system, and proclaimed a desire for a state funded grants program for new farmers. She, of course, would not be eligible for this program (her second wish was for a slaughtering facility closer to her ranch!)

Indeed, many food projects also pose barriers to lenders, since they offer low returns, are high risk, and are often put forward by firms that lack liquidity. Yet this is primarily to say that these pioneering farms and food businesses lack supportive infrastructure that embraces (and reduces or shares) the inherent risk of launching new businesses in emerging markets.

Moreover, the banking system itself is also unsure of how to place itself in relation to farm or food-business debt. As one large grower in South Carolina put it, "Agriculture does not fit into any lender's equation." Many lenders simply have no clear way of evaluating potential loans, because finance mechanisms are not engineered to consider food investments. Many banks are owned by holding companies, or a corporate group that does not allow local bank officials to deviate from established policy. The demands of the secondary market require standardization of loans (and risk calculations) in ways that often preclude innovative investment.

Even traditional agriculture banks, providers of operating loans to large commodity producers, may struggle with evaluating a diversified, specialty crop operation or an innovative business plan (Peters Moschetti & Phillips, 2012). Several South Carolina growers reported in interviews, for example, that it is difficult to obtain bank loans since they are both farmer and processor; banking templates assume a business is specialized to provide one service or the other. "When I am considered a manufacturer, I am given no credit for the inventory I have [in the fields]," one lamented. "Because I don't fit into the box, I am considered high risk." Farmers also report difficulty since they have shied away from taking on debt, and thus have little track record to show a lender, and little liquid capital since most of what they have is tied up in their operation.

During a broad examination of food-systems funding conducted by RSF Social Finance, several gaps were identified in various sectors. Notably, while most grant funding is directed at non-profits providing support services to food and farm entrepreneurs, it is the entrepreneurs who assume the

financial risk. Some producers may obtain patient loans if they have social connections that allow them to reach out to people of means (internet platforms such as Kickstarter have played an important role), but the farmer may still lack resources for purchasing land, obtaining technical assistance, or for contingencies. In the processing, aggregation, and distributor sector, grant funding may support market creation and promotion, Farm-to-Institution programming, planning for value-added food businesses, and internet platforms, but only those with ample capital of their own are able to assume the risk of launching a new business. Processing facilities for two very distinct enterprises -- meat slaughtering and processing, or fruit and vegetable processing and storage, are typically quite expensive. They are desperately needed in order to build local food trade, but face the same limited financing options. Where financing for retail channels exists, it exists for non-profits addressing low access in low-income areas. The RSF report calls for additional private investment in this sector, with an emphasis on educating investors regarding the community benefits of such an investment, so they will not expect the profit margins other investors aim to obtain (Foley, Goodman, & McElroy, 2012).

Cooperatives often make a determined effort to bridge these gaps by pooling member capital; yet the idea of cooperation is better received in some South Carolina communities than in others. Moreover, in a fast-paced society it can be difficult for co-op members to settle into the patient discussions required to form solid, respectful co-ops. Some co-ops that have been formed operate in name only, with one person holding the reins and little buy-in from other members. Despite these difficulties, however, co-ops are often the most rapid way to pool capital. They are an especially attractive structure when the prevailing economy is floundering; indeed co-ops have emerged in waves during economic downturns, and may be less attractive when investors perceive that the mainstream economy can reward them well.

Moreover, given the intricacies of the food system and its various sectors, access to capital is not the only issue plaguing farmers. Many require technical assistance to use their capital effectively; such help may facilitate project financing, or provide guidance as businesses expand. Where funding mechanisms either require the formation of a business development team as part of the application process or can provide access to a team, funding goals are more likely to be fulfilled (St. Onge, Sawyer, Kahler, & Perkins, 2011; Peters Moschetti & Phillips, 2012; Cortese, 2011). Furthermore, a manager of a state-sponsored, on-farm infrastructure fund reports that the business planning class requirements for her program are essential to the producers' success and that most producers express deep appreciation for the requirement. During the program exit interviews, the producers report that the business planning class was more valuable than the cash itself. She went on to recommend that no public monies should be given away without a business planning class requirement or at least a financial technical assistance team made available (Hayes K. , 2013).

In order to bridge the gap between food-systems enterprises and financial capital, special funds have been developed across the country. Since each was developed to address unique investment issues in their own regions, they different quite a bit from each other.

The following summaries highlight state-sponsored funding mechanisms that target specialty-crop production, aggregation, or retail sale. Yet it should not be overlooked that investment circles have emerged at the household, community, or sub-state level as well.

Summaries of Other Funds

Tobacco Trust Fund Commission, North Carolina

http://www.tobaccotrustfund.org

Over the course of the 20th Century, tobacco usage sharply declined in the United States in response to better medical information and changing public opinion. One outcome of this shift was a set of lawsuits brought by states against tobacco companies for health care costs associated with tobacco use. The result of these lawsuits was the1998 Tobacco Master Settlement Agreement, which established a twenty-five-year, $206 billion plan for cigarette manufacturers to reimburse states for tobacco-related health-care costs. The companies also agreed to restrictions on advertising and marketing their products. To offset the resulting sales losses, the companies agreed to pay an additional $5.15 billion to tobacco farmers, quota holders, and tobacco-growing states. The Tobacco Transition Payment Program, also known as the buy-out, established ten years of payments to ease the transition to a system less dependent on tobacco.

The 46 states that received settlement money chose to invest it in a myriad of ways. Much of the money was used for anti-tobacco campaigns, but some states also used it for other public projects. The National Governors Association released a report outlining each state's plan for their settlement funds (National Governors Association 2000). North Carolina's investments were the following:

- Establish a non-profit corporation to assist farming communities and two trust funds (listed below)
- 50% of settlement payments to a nonprofit corporation for economic-impact assistance to tobacco-dependent regions of the state
- 25% to a trust fund to be established by the General Assembly for tobacco producers, allotment holders, and persons engaged in tobacco-related businesses
- 25 % to a trust fund to be established by the General Assembly for health-related interests (NGA 2000, 41).

The economic impact assistance proportion of the fund was to be used for educational assistance, job training and research. The nonprofit corporation, the North Carolina Tobacco Trust Fund Commission (TTFC) assists tobacco farmers, tobacco quota holders, individuals displaced from tobacco-related employment, and persons engaged in tobacco-related businesses (North Carolina Tobacco Trust Fund Commission, 2007, 11).

Between 2001 and 2006, the Commission invested a total of $53.8 million in 33 development programs, including the creation of multiple agricultural enterprises, the conservation of ecological resources, and the founding of several farmers' markets. The Commission estimates that nearly 600 jobs were created directly from these programs, and that almost 12,000 workers received job related training.

The North Carolina Tobacco Trust Fund created a funding mechanism that has funded rural development initiatives in that state for over 16 years. Funds have been administered by RAFI-USA in Pittsboro. Starting with local funding, RAFI-moved to a statewide effort when the North Carolina legislature mandated that funds must be available to every county. Funding is allocated year-by-year.

At times, the competitive grant program has had as much as $2 million to give out in a single year. That amount had diminished to $225,000 by 2012, as the program phases out (Schroeder, July 11, 2013). Farms, food businesses, and community projects are all eligible.

In 2011, Andrew Brod, senior researcher at University of North Carolina – Greensboro, compiled an economic evaluation of RAFI's statewide funding program, which began in 2008. He found that the Tobacco Communities Reinvestment Fund had offered 367 grants totaling $3.6 million over the three years 2009-2011 (Brod, 2011).[36] Seven of every eight grants were allocated to individuals. RAFI estimates that 1,300 jobs (including farm ownership jobs) were directly created by the grants (Brod, 6), and claims another 2,800 jobs were created indirectly. Most grants were given in the western part of the state (Bereitschaft, p. 4).[37]

Joseph Schroeder, who managed the grant program for RAFI for several years, said that the key to the success of the fund, from his perspective, was that RAFI established a very solid review process from the beginning. This allowed the fund to develop a very unique approach, allowing grants to be allocated directly to individual farms and business owners. Schroeder added that "there is a tension that exists where public moneys are given to individuals," but this is addressed in multiple ways. First, any project funded must be relevant to the community near the grantee. Each recipient is also required, as a condition of the grant, to teach others what they have done. Further, grants are small, with a limit of $10,000 that can be awarded to any one person or business, and a total of $30,000 to a community collaboration. Typically, TCRF does not offer grants for trucks or equipment.

"What makes the program successful is that we are rewarding farmers who already know what they want to do – those who invest everything they have into the farm," Schroeder said. Each farm applicant must already be earning more than half of their personal income from farming. Nor will the fund give money to any project that relies on grant funds for administration. Yet this is not just a matter of financial investment, it is also a case of rewarding farmers who are passionate about an idea. Although no cost share is required from the farmer, "the average farmer doubles the investment we give them."

Schroeder says the fund places a strong emphasis on collaborations. As manager of the fund, he did considerable work to help individuals and collaboratives prepare applications, but was not involved in funding decisions. "We spend a lot of energy with the farmer on the front end," he added. "Each applicant has to show a path to sustainability."

Golden Leaf Foundation, North Carolina

http://www.goldenleaf.org

Similar to TTFC, the Golden Leaf Foundation was created by the state legislature with MSA funds and with the goal of strengthening the state's economy through diverse, open-form grants making in several priority areas, including agriculture. Currently Golden Leaf has received $1 billion in MSA funds and has funded 1,133 grants, totaling more than $498 million.

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[36] Brod, A. (2011). The Economic Impact of RAFI-USA's Tobacco Communities Reinvestment Fund since 2008." University of North Carolina – Greensboro, Center for Business and Economic Research, April.

[37] Bereitschaft, B. & Brod, A. (2011). A GIS Chartbook: RAFI-USA's Tobacco Communities Reinvestment Fund." University of North Carolina – Greensboro, Center for Business and Economic Research, April.

Pennsylvania Fresh Food Financing Initiative, Pennsylvania
http://www.trfund.com/financing/Healthy_food/FreshFoodFinancing.html
The State of Pennsylvania, in partnership with The Reinvestment Fund, The Food Trust, and the city's Urban Affairs Coalition, created a financing initiative that provides loans and grants to grocery store development in underserved areas. Seeded by a $30 million grant from the State of Pennsylvania, an additional $145 million was invested through the broader partnership. All funds were deployed over six years. During that time, 206 applications were received, and 88 projects were financed including $73.2 million in loans and $12.1 million in grants. Approved projects were expected to create 5,023 jobs and open 1.67 million square feet of commercial retail space. Our team was unable to verify whether these results had been confirmed.

Farm Viability Enhancement Program and Matching Enterprise Grants for Agriculture Program, Massachusetts
http://www.mass.gov/eea/agencies/agr/about/divisions/fvep.html
http://www.mass.gov/eea/agencies/agr/about/divisions/mega.html
In response to the collapsing dairy industry in New England, Massachusetts started the Farm Viability Enhancement Program. Originally, this program provided farmers with a lump sum of money in exchange for a temporary agriculture land conservation easement. This granted money was intended to provide the farmers with the financial opportunity to re-tool and diversify their operations. In its current form, interested farmers apply for the program and upon selection, go through a business planning process. During this business planning process, a team of experts assesses the farm's financial records, management practices, equipment, buildings, and natural resources, and then makes recommendations with the goal of increasing the farm's viability. If the farmer is willing to prioritize the recommendations, then he or she places a set amount of land under a five or ten year agriculture conservation easement. A grant is awarded to the farmer as a function of the amount of land and length of contract. Since the program's inception in 1996, 452 farms have been placed under a conservation easement, totaling 37,134 acres. The program invests an average of $441 per acre and leverages an additional $323 per acre.

In order to address the particularly unique needs of beginning farmers, the Massachusetts Department of Agriculture created the Matching Enterprise Grants for Agriculture Program (MEGA). This program was born out of the same thinking around the Farm Viability Enhancement Program, however, it does not require a land easement or that the farmer even owns his or her land. This program provides up to $10,000 in one-to-one matching cash for fixed capital improvements or equipment purchases by new farmers. The program offers technical assistance and requires business planning class attendance, with a preference for farmers with the ability to scale up or build a commercially viable business. Farmers must have between one and five years of commercial experience and must be able to demonstrate long term, secure access to land. Approximately 10-12 grants are given each year. To date, the program has granted $250,000 and has estimated a total of $650,000 has been leveraged in the three years that is has been in effect.

Flexible Capital Fund, Vermont
http://www.vsjf.org/what-we-do/flexible-capital-fund/about-flexible-capital
Recognizing that Vermont companies tend to be smaller and more rural than typical candidates for equity financing, the Farm-to-Plate Investment Fund was formed through several public and private partnerships. Also known as the "flex fund," this program provides flexible risk capital and technical

assistance to entrepreneurs addressing gaps in the sustainable agriculture supply chain. This organization, the Vermont Sustainable Jobs Fund, also occasionally awards grants.

Recommendations for South Carolina

Crossroads Resource Center recommends that South Carolina develop both loan and grant opportunities that work in complementary ways.

Our overall framework is based on creating a competitive grant program, using state funds, that will strengthen the formation of clusters of farms, with supportive infrastructure, that will locate washing, packing, storage, and distribution capacity in close proximity to farms, helping them sell to both very local and broader markets. South Carolina should house this program in a suitable organization or agency, which will convene a statewide panel of reviewers knowledgeable in food systems work from diverse perspectives. Proposals should be judged on the following several criteria:

- Documented engagement of local residents and other stakeholders;
- Evidence of clear partnerships among farmers and multiple players in the local food system, operating out of considerable mutual respect and flexibility to local conditions;
- The relevance and clarity of proposed activities to the state's goal of ensuring that South Carolina farms can sell food to South Carolina markets;
- The ability of each applicant to carry out the proposed activities; and
- The ability to leverage private investment, at least in the future.

In addition, both loans and grants may be appropriate to help individual farmers purchase suitable equipment and infrastructure for their farms. As in North Carolina and Massachusetts, any grants to individuals should be limited to $10,000 or less, and should require some matching investment from the recipient in terms of sweat equity or capital investment; this might be a 10% or 20% match, but certainly should be less than a 50% match. North Carolina's experience suggests that such grants may best be allocated to those who exhibit a clear personal commitment, and strong passion for the work involved. Once again, one or more review committees that represent diverse stakeholders in the state food system should be convened to consider grant and loan applications. Grants may be considered separately from loans, or in combination, as these committees decide is appropriate.

Where existing funding mechanisms are already in place, additional funds should be allocated by the state for specialty crop agriculture investments. For example, it has been suggested that the South Carolina Conservation Bank might be the conduit for the programs recommended above; moreover, the South Carolina Rural Investment Authority can allocate funds specifically under their "Economic Impact Program."

Application materials for the North Carolina Tobacco Communities Reinvestment Fund follow. These were graciously shared by Rural Advancement Fund International (RAFI).

Sample Competitive Grant Application Form -- TCRF (NC)

Tobacco Communities Reinvestment Fund

2013 Demonstration Grant Program

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INFORMATION AND GUIDELINES

****Application Deadline: December 5, 2012****

The Tobacco Communities Reinvestment Fund (TCRF) aims to assist farmers and rural communities to develop new sources of agricultural income through provision of cost-share grants. TCRF is supported exclusively by a grant from the NC Tobacco Trust Fund Commission. The program awards grants of up to $8,000 to individual farmers, or $10,000 for collaborative farmer projects in North Carolina. ***Please read the eligibility requirements carefully as they have changed from previous years.***

Farmer Eligibility:

1. Farmers must be earning at least 50% of their personal income from their farm operation.
2. Past Grantees who have received a grant from RAFI-USA or the Tobacco Trust Fund Commission are not eligible to apply.

- *Priority will be given to projects that demonstrate a way to replace lost tobacco income.*
- *High priority will be given to innovative projects that show a new direction or opportunity for farmers in North Carolina.*

Collaborative Farmer Project Eligibility:

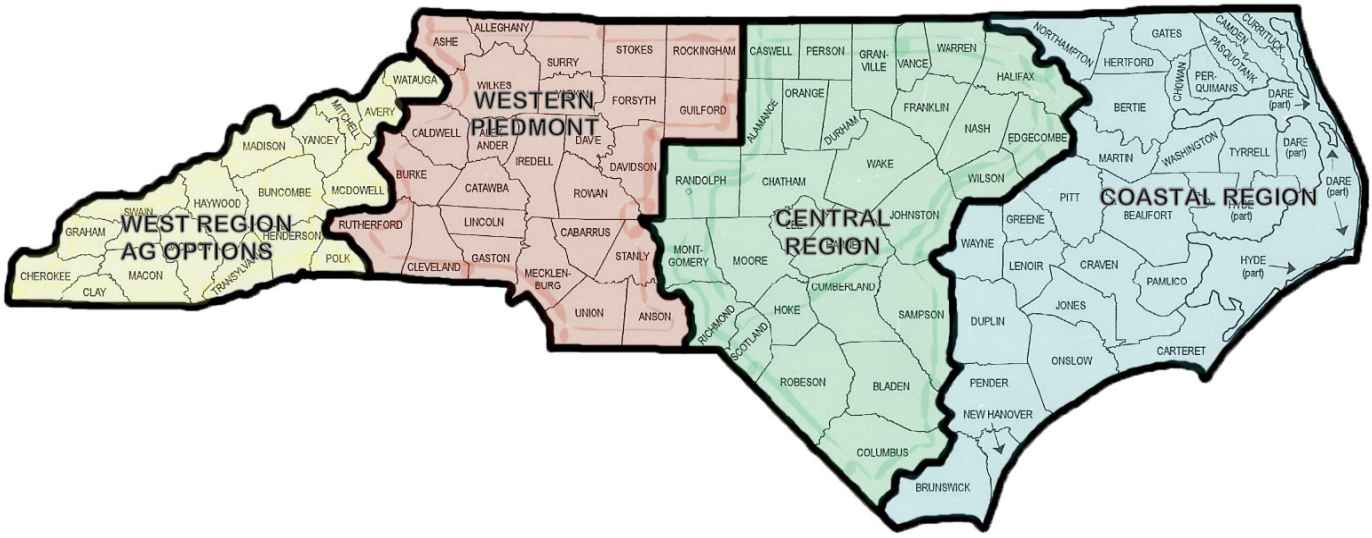
1. An eligible "collaborative farmer project" may be a group of farmers, farm coops, farmer associations, churches, local business, civic organizations or combinations of these.
2. The proposed collaborative farmer project must include at least three (3) *eligible* North Carolina farmers, as defined above.
3. Eligible farmers must be active in the leadership of the proposed project.

The TCRF programs aims to support innovative, replicable farm-based enterprises. We are interested in funding projects that:
• have a likelihood of generating new farm income;
• establish new markets for local products and services;
• develop new uses for existing greenhouses, tobacco facilities and equipment;
• add value to existing farm products by processing, packaging or marketing in a special or innovative way;
• maintain or create quality employment opportunities, including self-employment or opportunities for home-based businesses; or
• make optimal use of on-farm and natural resources.

To see a description of projects funded by the TCRF programs in previous years visit: www.ncfarmgrants.org.

REGIONS SERVED

RAFI-USA administers the grant program for farmers and collaborative farmer groups located in the Western Piedmont, Central Region and Coastal Region as defined by the map below. A grant program for farmers located in the West Region of the state is administered by WNC Ag Options.



Who to Contact:

West Region

Jennifer Ferre, WNC Ag Options
Tel: (828) 333-4277
http://wncagoptions.org/home

Western Piedmont, Central Region & Coastal Region

Joe Schroeder, RAFI-USA
Tel: (919) 542-1396, Ext. 208
Email: joe@rafiusa.org
http://www.ncfarmgrants.org

PLEASE READ CAREFULLY

APPLICATION: Tobacco Communities Reinvestment Fund Demonstration grants are awarded on a competitive basis. You must submit an application in order to be considered for a grant. Application materials are available online at www.ncfarmgrants.org or by contacting RAFI-USA at 919-542-1396 ext. 208. *You may download a copy of the application and complete the application on your computer using Microsoft Word, or you may print out a hard copy and fill-out by hand.*

DEADLINE: All Applications are due in the RAFI-USA office on December 5, 2012 by 5:00 p.m.

Important: Emailed and/or faxed will NOT be accepted. Please send **hardcopies** only. Proposals arriving after the deadline will not be considered for funding.

EARLYBIRD REVIEW: Applicants may request an advance review of their proposals for feedback by emailing in the proposal AS SOON AS POSSIBLE but no later than by November 14, 2012. RAFI-USA staff will contact applicants who have submitted by the Early bird deadline with suggestions for improving their applications. Applicants are encouraged to apply early.

AWARD DECISIONS

The Reinvestment Fund Review Board reviews the applications and makes recommendations of projects to be funded. The Reinvestment Fund Review Board members include farmers with backgrounds in tobacco and/or income diversification, university researchers, marketing specialists, lending experts, and church and community leaders. *Farmers who serve on the board are not eligible for grants.* An evaluation worksheet is included with the application, which allows you to see the criteria the reviewers will use to evaluate your proposal. Applicants will be notified of the status of their application by February 27, 2013.

IMPORTANT DATES!

Early Bird Deadline	**November 14, 2012**
Application Deadline	**December 5, 2012**
Award Notification	**February 27, 2013**

PAYMENTS AND REPORTS: Contracts will be sent to the new grantees after the award announcement. A first payment of 75% of the grant award will be made after the contracts are signed. A second payment of 20% will be made date (TBA), assuming adequate progress is made toward project goals. The final payment of 5% of the award amount will be made date (TBA) after all project activities have been

completed. Grant winners are required to submit an Interim Project Report and a Final Report.

COST-SHARE MUST BE LISTED: Cost-share is the farmer or community contribution to the project. Cost-share can be either direct in terms of actual cash expenditures or in-kind in terms of labor, equipment, etc. Cost-share must be shown in the budget.

Grant funds can be used to offset costs for:

- specialized equipment;
- retrofitting and adaptation of existing equipment;
- supply needs;
- sampling, analysis, scouting;
- outreach expenses;
- to investigate the feasibility of a new project;
- new marketing, handling or processing operations.
- Labor for contractors and employees

Grant funds **CANNOT** be used for:

- purchase of livestock;
- new, general-use farm equipment.

Personal funds to buy items that will be used in the new enterprise count as cost-share. Also, you may be able to count certain in-kind contributions, such as the value of the time and labor that you and your cooperators put into the project and fair market value for equipment used in the project. **No set cost-share amount is required.**

OUTREACH: Farmers and communities who are awarded grants are required to conduct outreach to educate others about their projects. This can be done by hosting farm tours or field days, having articles written about the project, or making presentations at a farm or community meeting. RAFI staff will help grant recipients with outreach upon request but it is the recipients responsibility to plan and schedule outreach events.

COOPERATORS: Cooperators are not required but increase the likelihood of success of your project. Cooperators may include other farmers, marketing, and production specialists, extension agents, crop consultants, non-profit organizations, business and other agricultural advisors. The best cooperators bring needed expertise to the project and have a clear role in helping the project succeed.

Tobacco Communities Reinvestment Fund
Rural Advancement Foundation International-USA
274 Pittsboro Elementary School Road·PO Box 640·Pittsboro, NC 27312·
919-542-1396 www.rafiusa.org

COVER SHEET
2013 TCRF Grant Application *(Individual Farmer)*

Please read the instructions and eligibility guidelines prior to completing this application. *

APPLICATIONS MUST BE IN THE RAFI-USA OFFICE BY 5:00 PM ON DEC. 5, 2012

Project Title: _____

Applicant: (First & Last Name): _____

Mailing Address: _____

City: _____ **Zip:** _____

Phone: _____ **Email:** _____

Fax: _____ **Website**: _____

Daytime message phone or cell phone: _____

1. **Percentage of *personal income* generated from your farm operation:** _____ %

2. **What percent of your income came from tobacco at the time of the Master Settlement Agreement** (Crop year 1997-1998)**?** _____ %

3. **Do you or your farming operation carry liability insurance**? ___ YES ____ NO

4. **Will this project create an opportunity for a new generation of farmers in your family to be employed on the farm?** ___ YES ____ NO

5. **Have you received a past grant from RAFI-USA or the Tobacco Trust Fund Commission?** ___ YES ____ NO

6. **Are you a former Quota Holder?** ___ YES ____ NO

7. **Are you a former Tobacco Grower?** ___ YES ____ NO

8. **Where is your farm located? County: _____**

How much money are you requesting from RAFI-USA (up to $8,000)?
$_____

Please try to answer the questions in the space provided. Be sure to type or print clearly.

1. Briefly describe your project.

2. What is new or innovative about your project? How is your project different than what others in your community are already doing? Are you aware of other farmers who are doing something similar? If so, where are they located and what are they doing?

3. Describe in detail your plan for completing your project. Tell us what specific tasks need to be completed and give dates by which you will complete those tasks.

4. How will the new project fit into your existing farming operation? Will labor requirements for the new project conflict with your existing workload? How will you handle the additional workload? Will the project require you to hire additional labor? If so, how many hours and at what wage rate?

5. What research have you done to determine if this project will work? Why do you believe that this project can be successful?

6. How have you determined that there is a market demand for the products? Briefly describe your marketing strategy.

7. If your project is successful, what might other farmers learn from your experience? Is this an enterprise that could be duplicated by others without causing too much competition?

8. A requirement of receiving a grant from RAFI-USA is to conduct outreach to other growers about the results of your project. How will you let other farmers know about your experience with your project?

9. Tell us about yourself. What is your farm and off-farm experience? What skills do you have that will be useful to the successful completion of your project?

10. In what areas do you believe you will need assistance in order to successfully complete your project? Who have you identified to assist you in those areas? Are those individuals aware of your project and have they agreed to help you?

11. What is your goal for the project? If you are successful, how will the project contribute to keeping you or others sustainably employed on the farm?

12. How much income do you expect to generate from the project annually? What other sources of income will you have during the course of this project?

12b. Are you leveraging funds from other sources aside from yourself? If yes, please note the sources.

BUDGET FORM

Use the following pages to estimate your budget. Please list all of your expected expenses in the appropriate categories and calculate a total on the last page. Your budget should clearly show how grant funds will be used on your project. Grant awards can be up to $8,000.

Items that you list under the **Grant Contribution** heading are those for which you will use grant funds provided by the Tobacco Communities Reinvestment Fund.

Items that you list under the **Cost-share** heading are your contribution to the project. Cost-share contribution can be either direct in terms of actual cash expenditures or in-kind in terms of the value of your labor, equipment, land, etc. that you will use for the project. *No set amount of cost-share is required.*

1. Analysis, Consultants, Subcontractors, and Other Off-farm Services

Grant Contribution

Item	Quantity	Cost per Unit	Total
Example: Well Driller	*1*	*N/A*	*$$$$$*
Total grant contribution for Analysis, Consultants, Subcontractors, and Other Off-farm Services:			

Cost-share Contribution

Item	Quantity	Cost per Unit	Total
Total cost-share contribution for Analysis, Consultants, Subcontractors, and Other Off-farm Services:			

2. Personnel Salaries **Note: Only labor directly related to the grant activities completed by contractors and employees over and above normal farm operations is eligible for funding.*

Grant Contribution

Employee	# of Hours	Hourly Wage	Total
Total grant contribution for Personnel Salaries:			

Cost-share Contribution

Employee	# of Hours	Hourly Wage	Total
Total cost-share contribution for Personnel Salaries:			

3. Use of Farm Equipment (for equipment rental)

Grant Contribution

Equipment Item	Acres in Project	Charge per Acre/Hour	Total
Example: Auger	*?? Acres*	*Rental rates*	*$$$$$*
Total grant contribution for Use of Farm Equipment:			

Cost-share Contribution

Equipment Item	Acres in Project	Charge per Acre	Total
Total cost-share contribution for Use of Farm Equipment:			

4. Supplies, Materials and Equipment (We do not fund general use equipment)

Grant Contribution

Item	Quantity	Cost per Unit	Total
Total grant contribution for Supplies and Materials:			

Cost-share Contribution

Item	Quantity	Cost per Unit	Total
Total cost-share contribution for Supplies and Materials:			

5. Travel

Grant Contribution

From/To	Miles per Trip	Cost per Mile	Total
Total grant contribution for Travel:			

Cost-share Contribution

From/To	Miles per Trip	Cost per Mile	Total
Total cost-share contribution for Travel:			

6. Marketing

Grant Contribution

Item	# of Units	Cost per Unit	Total
Total grant contribution for Communication:			

Cost-share Contribution

Item	# of Units	Cost per Unit	Total
Total cost-share contribution for Communication:			

7. Outreach and Education Events (For example: Cost related to hosting a farm tour)

Grant Contribution

Item	# of Units	Cost per Unit	Total
Total grant contribution for Outreach:			

Cost-share Contribution

Item	# of Units	Cost per Unit	Total
Total cost-share contribution for Outreach:			

BUDGET SUMMARY FORM

Please use this worksheet to summarize the information from the previous pages.

Grant Contribution by line item:

Line Item	Grant Contribution	Cost-share Contribution
1. Analysis, Consultants, Subcontractors, and Other Off-farm Services		
2. Personnel Salaries for contractors and employees		
3. Use of Farm Equipment		
4. Supplies and Materials		
5. Travel		
6. Marketing		
7. Outreach and Education		
TOTAL CONTRIBUTION		

Please, transfer the total amount of grant contribution to the Amount Requested line on the cover sheet of the application packet. If applicable, please list other sources of funding for the project:

_____

_____

SIGNATURES

Thank you for your effort in completing the application form. Please, sign the proposal.

_____

Signature Date

Please complete and return to the RAFI-USA office by 5pm on December 5, 2012. Faxed and/or emailed applications will not be accepted.

Mail to: (No fax or email)
Tobacco Communities Reinvestment Fund
RAFI-USA
P.O. Box 640
274 Elementary School Road
Pittsboro, NC 27312

The Tobacco Communities Reinvestment Fund is supported exclusively by a grant from the North Carolina Tobacco Trust Fund Commission.

This is a copy of the evaluation worksheet the review committee will be using to score the grant applications.

APPLICATION EVALUATION WORKSHEET (Used by the Review Committee)

Point Scale:
1-2 is a low score that reflects a low percentage or low quality or small outcome.
3-4 is a moderate score that reflects 50% or average quality or moderate outcome.
6-7 reflects a high percentage or excellent quality, big outcome or return.

1. Does the project benefit farmers who earned a significant percentage of income from tobacco at the time of the Master Settlement Agreement (1998)? (7 points)	_____
2. Will this project create an opportunity for the next generation to be employed on the farm?	_____
3. If successful, will the project contribute a significant amount of income to farmer participants? (7 points)	_____
4. If successful, will the project help to maintain existing farm employment or create new farm employment opportunities? (7 points)	_____
5. Has the applicant adequately researched the production and processing requirements of the product? (6 points)	_____
6. Has the applicant evaluated the market potential for the product? Does the applicant have a sufficient market? (6 points)	_____
7. Does the applicant have the appropriate skills to carry out the project? Has the applicant identified cooperators to supplement gaps in the applicant's skills and abilities? (6 points)	_____
8. Is it clear who will lead and carry out project activities? (6 points)	_____
9. Is the budget realistic? (6 points)	_____
10. Is the project innovative? Does the project represent a new direction or opportunity for farmers? (7 points)	_____
11. If successful, will the experiences of the project be useful to other groups of farmers in developing new income sources? Can the project be expanded to include additional farm families (7 points)	_____
12. Has the applicant developed an appropriate outreach plan for the project? (7 points)	_____
13. Will cost-share support from RAFI enable the project to become financially self-supporting within a reasonable amount of time? (6 points)	_____
TOTAL:	_____

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Appendix G: Poultry Processing

Current State of Things

Despite the prevalence of large-scale poultry producers and processors present in South Carolina, the small-scale niche sector lacks forward momentum. One interviewee, who interviewed many South Carolina New and Beginning Farmer program graduates, reported that meat producers feel as though they have taken a step back in their operations due to the lack of processing facilities. One producer, in particular, has returned to selling live animals instead of shouldering the processing costs on their own. This interviewee also reported that farmers have received considerable misinformation about on-farm processing exemptions. Several producers have been told by state officials that they cannot process on their own farm at all (Maroney, 2013).

Current USDA-certified poultry processors in South Carolina

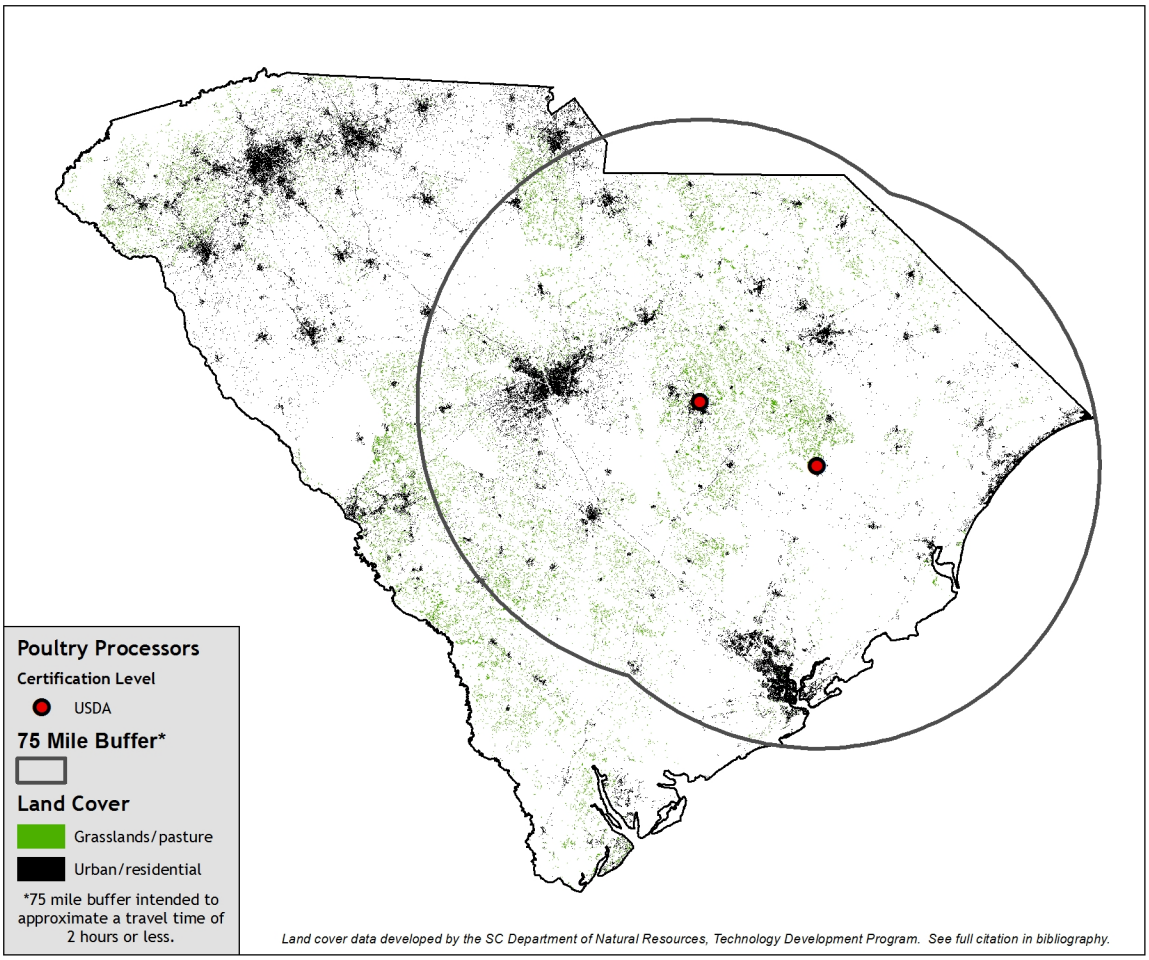

Figure 11: *Current USDA-certified poultry processors in South Carolina – Map by Adam Cox. Circles show approximate region within two hours' travel time from processing plant.*

USDA Facilities
The largest-scale poultry processing plants in South Carolina are essentially dedicated to larger poultry operations. They do not factor in this discussion since they are not reaching out to smaller farms for business.

Outside of these, there are two federally inspected poultry slaughtering and processing facilities in South Carolina — Williamsburg Packing Co in Kingstree and the Palmetto Pigeon Plant in Sumter. Both of these facilities are located in roughly the northeast quadrant of South Carolina. This creates a significant travel burdens for any producers to the south or west. Growers report that any journey of more than two hours takes a toll on their birds, and most would prefer a shorter distance for logistical ease.

Williamsburg wins high regard among farmers for its devoted efforts to work flexibly with farmers. There appears to be a need for additional trained laborers. The packing house itself reports that it is running about at capacity and has a 15-bird minimum. It handles beef, pork, and other meats as well.

Palmetto Pigeon Plant has a long history with South Carolina and it was originally established as a squab farm and processor. It continues to be one of the largest providers of squab for culinary markets and research pigeons for institutions. Despite its name, Palmetto Pigeon does offer custom processing by appointment for a variety of birds including chickens and turkeys. At a processing rate of 8,000 birds a day, it is unlikely to cater to particularly small producers.

State Facilities
No USDA-exempt, state-inspected facilities exist in South Carolina that provide slaughtering, processing, and packing services for small-niche producers.

On-Farm Exemption
South Carolina's Poultry Products Inspection Law of 1969 (South Carolina Code, below) does allow for several on-farm processing exemptions. This law exempts any small producer processing less than 250 turkeys, or 1,000 chickens, raised on the farm itself, and sold only inside the state (to individual consumers or restaurants, or hotels for use in their own dining rooms) from provisions of the law. The law also appears to allow farmers who process 5,000 turkeys or 20,000 chickens raised on their own farm to sell directly to these same markets in the state. To do so, the farm must open itself to safety inspection. A third exemption allows a non-licensed slaughterer to process birds that will be consumed by the producer, his family, and his non-paying guests.

The number of producers slaughtering poultry on-farm is not known, however, nearly every interview covering meat production discussed the lack of processing capacity in South Carolina.. Many farms know how to do processing, but want to sell more than the 1,000-bird limit, or are interested in reaching institutional markets that require USDA-certified poultry.

Opportunities and Recommendations

Additional poultry processing capacity is needed in South Carolina and this should be considered a top-level priority. Some educational programming and training around on-farm processing will increase small producers' abilities to process their own birds.

Producers wishing to process more than 50-100 birds at a time will likely prefer to use some sort of commercial processing operation. Several options for constructing these operations are available and are outlined below.

Mobile Processing, Approximate Cost $90,0000-$110,000 per mobile unit ($320-390/sq. ft.)
Mobile Poultry Processing Units (MPPU) are self contained, typically completely enclosed, trailers featuring slaughtering and processing equipment. In most cases, these units are owned by nonprofits, universities, departments of agriculture, or other public institutions, and are transported from one farm to another where the farmer and their staff are responsible for providing the labor. MPPUs are mostly geared towards poultry producers processing 100-500 birds at a time and located in regions with limited access to processing facilities. Most facilities are outfitted for turkey processing as well. One MPPU in Kentucky is also used for aquaculture processing.

The first couple of MPPUs in the country were faced with a series of regulatory hurdles and gray areas. In response, the USDA's Food Safety and Inspection Service released new guidelines stating that rented slaughtering and processing equipment that is used on the grower's farm still qualifies for the 1,000/20,000 producer exemption (Inspection & Enforcement Initiatives Staff , 2006). Poultry processed under this exemption is limited to direct sales within the state and is still subject to state laws.

For example, the Kentucky Health Services required that slaughtering and processing take place in separate facilities. Thus, the Kentucky MPPU couples with on-farm docking stations. Birds are slaughtered in the docking station and then passed into the trailer for further processing (Michigan State University Extension, 2013). Other MPPU designs merely separate the trailer into two sections to accommodate this requirement. Most MPPUs only require the producer to provide a level parking pad, electricity, water, propane, and trained staff.

Although a cost-benefit analysis across multiple MPPU models and scenarios has not been conducted, many units have been in operation for years in states across the country, including Kentucky, New York, Vermont, Massachusetts, Montana, and Washington. Most organizations report that MPPUs at least cover the operating costs of program while others have reported increased profits for the organization and the producers. The Massachusetts unit, operated by the New England Small Farm Institute, has processed 14,000 chickens, the equivalent of $300,000 in producer income, in the four years it has been in operation (Tufts University, n.d.). Others report a $1-2 savings per bird as a result of using a mobile processing unit versus traveling to distant brick-and-mortar facilities.

It appears that most mobile units were built and operated as an experiment and under the mentality of "build it and they will come." Where units were built by an enterprising and skilled individuals, units cost between $5,000-10,000 using recycled and resourced equipment plus the labor hours, the truck, and licensing. Custom built new trailers and equipment cost around $90,000-110,000 plus the truck and licensing. Most business models only include insurance and licensing as continued fixed costs; most of the operational costs are passed onto the producer (water, propane, electricity, disposal). Where a public institution owns the unit, the institution typically absorbs the cost of coordination, which includes driving the unit to mobile sites. Typically, a transportation fee is charged based on mileage and training is offered on a fee-for-service basis.

Small, On-farm Facility, Approximate Cost up to $75,000 ($125/sq. ft.)
A common producer solution to a lack of nearby processing facilities is to just build one. Indeed, many processing facility owners are their own anchor customers. In order to process on-farm under USDA exemption, producers must process less than 20,000 of their own birds in a calendar year and are limited to intrastate sales directly to household consumers, restaurants, hotels, and boardinghouses for use in their own dining rooms, or in the preparation of meals for sale to direct consumers. The Center for Agriculture Development and Entrepreneurship reports that where a facility is owned by a legally incorporated cooperative, each member of the cooperative may process up to 20,000 of their own birds in the same facility.

One study of a 20' x 30' pole barn capable of passing USDA inspection for interstate sales and processing 20,000 birds a year compares the on-farm facility to a traditional USDA inspected facility located 50 miles away. Processing on-farm resulted in a 46% savings in energy costs alone per batch of 500 birds; However, to justify the cost of building the facility in the first place, versus using a nearby facility, 11,000 birds per year must be processed on-site. Where commercial processing facilities are located further than 50 miles away, fewer birds need to be processed to justify the cost.

Similarly, a cooperatively owned and operated facility would place less pressure on each producer to supply a set number of birds each year. At an estimated rate of 150 birds per day, 37,000 chickens could be processed per year under a normal work schedule. The total capital cost for this facility is estimated at $75,000, with operating costs between $1.26 per bird for 20,000 birds a year and $2.92 per bird for 5,000 birds a year. At the 20,000 per year level, producers can save $0.48 per bird (The Center for Agricultural Development & Entrepreneurship, n.d.). Presumably costs would be lowered if the producer or cooperative had access to an existing building.

Commercial Regional Facility, Approximate Cost $450,000 ($250/sq. ft.)
Where producers are sufficiently concentrated in certain regions, a commercial USDA-inspected facility may become a viable option for increasing processing capacity. This type of facility would allow operations to run at full capacity under USDA inspection and producers can sell their product both across state lines, and to broadline distributors.

One feasibility study evaluated three different building designs in order to construct a facility that could process 1,000 chickens a day at a rate of approximately 200 chickens an hour, although the facility will also process turkeys and rabbits. The research team decided that a 44' x 24' building was too small, while a 125' x 60' building was too expensive ($1.4 million for construction only, or $192/sq. ft.). The team settled on a 60' x 30' design where construction costs were estimated at $450,000. Equipment costs were estimated at $93,000 to start and operating costs were estimated at $102,500 a year. Given current and projected demand in the area, it was estimated that the facility would operate at a loss for three to five years, starting with a first-year shortfall of $20,000 (Smithson Mills, 2007).

Cost Comparisons

	Mobile	Small, On-Farm	Regional
Size	~280 sq. ft. trailer	~600 sq. ft. pole barn	~1,800 sq. ft. building
Construction Costs	~$90,000	~$45,000	~$450,000

Equipment Costs	Embedded in construction costs	~$30,000	~$93,000
Operation Costs	~$3,000-10,000/yr	~$25,000/yr	~$100,000/yr
Labor	Producer	Producer/Hired	Hired
Capacity	50-200 chickens/day	150-200 chickens/day	1,000 chickens/day
Regulatory	Exempt	Exempt	USDA-Inspected
Operation	Likely seasonal	Seasonal or year-round	Year round, daily
Cost to Producer[38]	$0.75-2.75/chicken depending on batch size	$1.25-2.00/chicken depending on batch size	$1.75-2.25/chicken based on 500 bird batches
Ownership	Public institution	Producer or small LLC	Private or public entity

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[38] This is based on reported "fees for service" and is not all-inclusive cost to the producer. For example, the regional facility cost per bird does not account for transportation expenses. The mobile facility cost does not account for producer labor. On-farm cost to producer does account for labor and construction costs amortized over 10 years.

Appendix H: Red Meat Slaughter and Packing

To understand current conditions, two packing houses were interviewed, and farmers were asked about their experiences with the meat packers they use. While there are an abundant number of custom processors and three slaughter and processing facilities that cater to niche markets, several producers from the Upstate report taking their animals across state lines for processing instead of traveling to coastal regions where existing facilities are located. The following section reviews existing options for South Carolina livestock producers and previous efforts to increase processing capacity in the state.

USDA Facilities

Williamsburg Packing, in Kingstree, is the packing firm most mentioned by livestock farmers in our interviews. Generally, people feel the company is very good to work with, and does high-quality processing. "We will do whatever the customer wants," said Sep Harvin, owner (Harvin, June 12, 2013). This leads the firm into custom processing, sausage making, vacuum-wrapped cuts, and special cuts of beef, pork, chicken, water buffalo, and more. The firm also sells wholesale, selling chicken sausage to Whole Foods, and occasionally launching a product in cooperation with a farmer. Harvin says his customers come from as close as 30 minutes away, and as far as six hours away, with an average distance of two to three hours.

The most common complaint from farmers about Williamsburg has nothing to do with the quality of its work; rather it is that the packing house is too far away from their farm. Red meat farmers said that they prefer to be closer to the packing house, both to save fuel costs and travel time, but also because after traveling 1.5 hours or more, their livestock begin to lose weight and become fatigued. Then yield and quality suffer.

Moreover, each batch of livestock involves two separate trips – one to the slaughter and packing house to convey the live animal to the facility, and another several days or weeks later to pick up the finished, aged, frozen product. For a farmer on the western edge of the state, this means two trips of more than six hours each for every batch of animals. Some ship one animal at a time this way.

Williamsburg's Sep Harvin said there was an answer to that concern (Harvin, June 12, 2013). He works with several growers from Virginia to Florida who drive even further than South Carolina farmers to get to Kingstree. These growers have compartmentalized their trailer into two parts: one for freezer units to store the processed meats, and another for the live animal that is being delivered for the kill. With this specialized trailer, producers deliver live animals and take away final product in the same trip. This reduces the cost of travel by half, Harvin added, and works well for these growers.

Yet Harvin acknowledged, "In some areas there is a shortage of processing capacity." He thinks there is room in the market for another processor that would pursue the market for naturally raised animals, but there have to be more animals grown to justify the costs of opening such a facility.

Harvin said, "We're trying to add capacity," since the business is growing steadily. Yet when he pursued a state low-interest loan, he decided that with the extra fees, charges, and scrutiny involved,

the loan was not competitive. Ultimately, he turned to a private bank. Harvin would also like to install a composting system to reduce his rendering costs.

Harvin also expressed interest in networking with other processors. He has attended meetings in North Carolina where processors meet each other, have training opportunities, and discuss common issues. He would like to attend more such meetings in South Carolina.

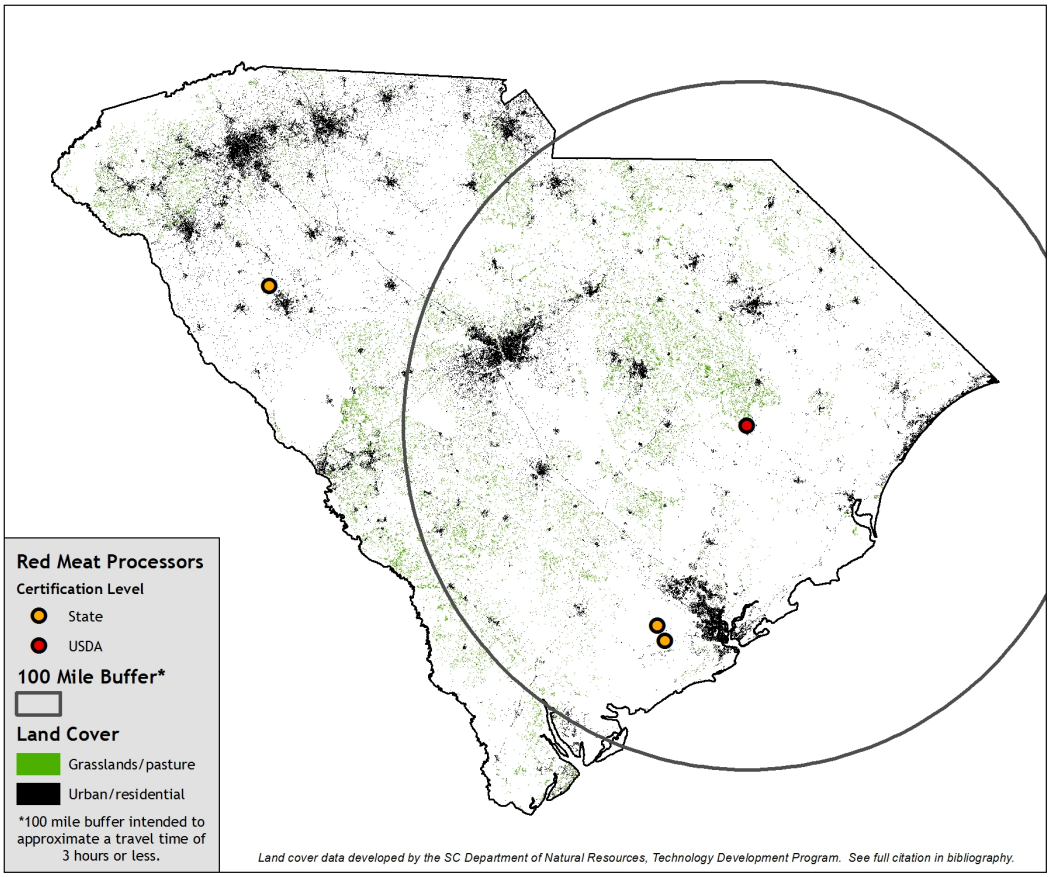

Figure 12: *Most state cattle and hog producers have one option for USDA processing – Map by Adam Cox*

State-Inspected Facilities

Cordray Meats, located 15 minutes out of Charleston, primarily processes venison from mid-August to January, but also raises its own cattle. Cordray primarily sells beef to nearby consumers who purchase a share in their animals in a CSA-like arrangement. The firm also offers a limited amount of custom beef processing. Cordray is not a kill plant. Beef is processed primarily when venison is out of season. Cordray also custom-processes wild hogs and alligators during this slower period.

Cordray has explored expansion of its beef processing capacity. The firm says it would "like to expand" but is not sure what the state could do to make this possible (Claudia Cordray, June 12, 2013). Since state meat inspection is more stringent than federal, Cordray added, "it would be an expensive process." She added that "there is definitely a need for [new processing]." Yet for the firm to expand, she added, "it would change the way we do things tremendously." The firm looked into obtaining a federal Value-Added Producer Grant to expand their plant, but found it to be "a

daunting task. We had to have matching funds – but if we had that much money, we would have been able to do this on our own."

Cordray added that "We went down the path of looking into a mobile slaughtering unit. We knew we could do everything after the kill [at our own shop]. But the distances involved would not make it possible. There were so few farms. Once we ran the numbers we saw it just wouldn't work."

Informants in South Carolina also reported that **Burbage Meats** in Ravenel had expressed interest in expanding to meet local processing demand. Currently, Burbage does custom slaughter and packing of cattle and hogs, but on a limited basis.

Barnwell County Economic Development Council is also exploring the possibility of adding red meat processing capacity, perhaps as a mobile slaughter unit, and perhaps as a fixed-site plant in an industrial park.

Previous Considerations

USDA Rural Development also considered the feasibility of starting a **mobile meat processing business** (Miller interview, July 24, 2013). That study concluded that a mobile unit would be more economical than a fixed processing unit, but would take away from existing businesses if opened.

Williamsburg's Sep Harvin added, "There is a perception that a mobile unit will be more cost-effective." He says the firm looked into the possibility and concluded, "That is not the case" (Harvin, June 12, 2013). "There are some places where you would have to drive eight hours to get to the farm and back. And you would still need to have cooler space on the farm for the farmer to store the carcass after the harvest, so they can bring it to us for cutting and packaging." However, part of the appeal of a mobile slaughter unit is that the slaughter animals can be taken to any of a number of processors, packers, and butchers. Once the animal has been dispatched and hung in a suitable environment, the producer has many more options.

Several meat experts in other states were contacted for this study, and there was a consensus among them that mobile slaughter units tend to work best in the most remote places where transportation is very difficult or expensive. Those conditions would not apply in South Carolina, in general, although there may be special conditions that warrant such a unit. One meat packer added, however, that while a mobile unit could be a way for one or two people to make a living, "it is not a way of scaling up production."

A 2011 agribusiness strategic plan for Barnwell County strongly recommends a large animal slaughter facility. The report concluded that there is sufficient supply and demand to further investigate a facility located in Barnwell County (Hughes, et al., 2011). Although a full-scale facility in Barnwell County would serve that region, producers in the Upstate region would still face excessive time travel burdens. A facility located in Saluda or Columbia would likely serve a greater market, including Barnwell.

Custom and On-Farm Exemptions

In South Carolina, on-farm slaughtering and processing of livestock is allowed for the private use of the producer, his family, and his non-paying guests. A licensed processor can process and pack the meat once the animal has been dispatched on-farm, but it must be labeled, "NOT FOR SALE".

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Appendix I: Selected Fruit and Vegetable Crop Production Maps

Top vegetable-producing counties in South Carolina (2007)

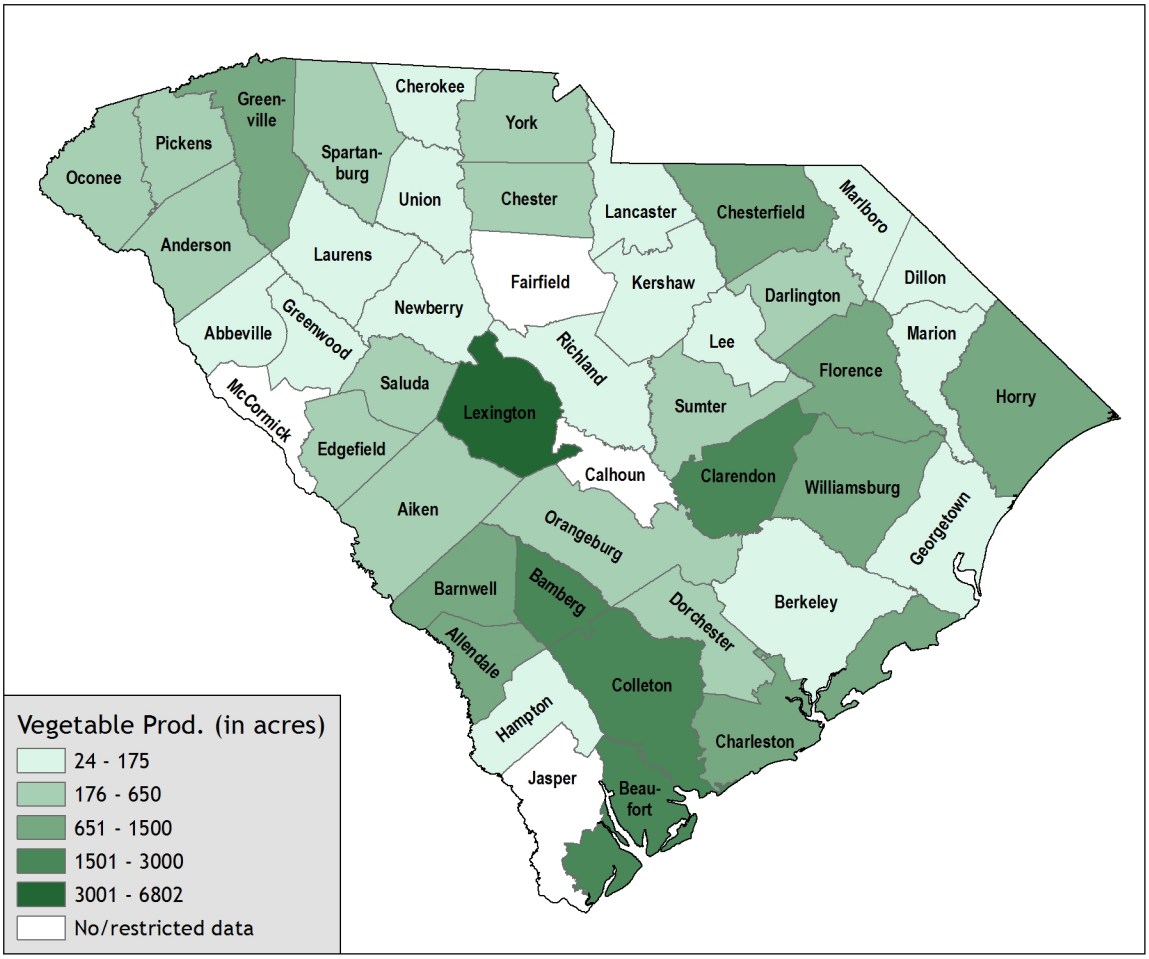

Figure 13: *Top vegetable-producing counties in South Carolina (2007) – Map by Adam Cox*

Top vegetable-producing counties in South Carolina (2007)

County	Farms	Acres
Lexington	54	6,802
Bamberg	32	2,774
Colleton	42	2,279
Beaufort	18	2,146
Clarendon	41	1,789
Charleston	33	1,097
Chesterfield	71	926
Greenville	92	854
Horry	42	823

Barnwell	42		780
Williamsburg	71		736
Allendale	20		723
Florence	31		714
Orangeburg	60		603
Aiken	87		496
Saluda	18		430
Spartanburg	66		296
Edgefield	20		288
Anderson	91		271
Dorchester	19		260
Sumter	29		248
Darlington	21		236
York	56		225
Pickens	50		206
Oconee	57		188
Chester	34		178
Dillon	14		125
Cherokee	13		112
Hampton	11		112
Kershaw	15		102
Lee	17		98
Laurens	39		91
Georgetown	16		83
Berkeley	22		82
Marion	16		67
Marlboro	19		64
Abbeville	23		61
Richland	29		61
Newberry	17		54
Lancaster	23		51
Union	6		27
Greenwood	19		24
Calhoun	11	(D)	
Fairfield	5	(D)	
Jasper	5	(D)	
McCormick	3	(D)	

Note: (D) means data has been suppressed by USDA in an effort to protect the confidentiality of growers, where the number of acres planted might reveal the identity of one of the farms.

Source: USDA NASS, Census of Agriculture, 2007.

Top counties in South Carolina with orchards (2007)

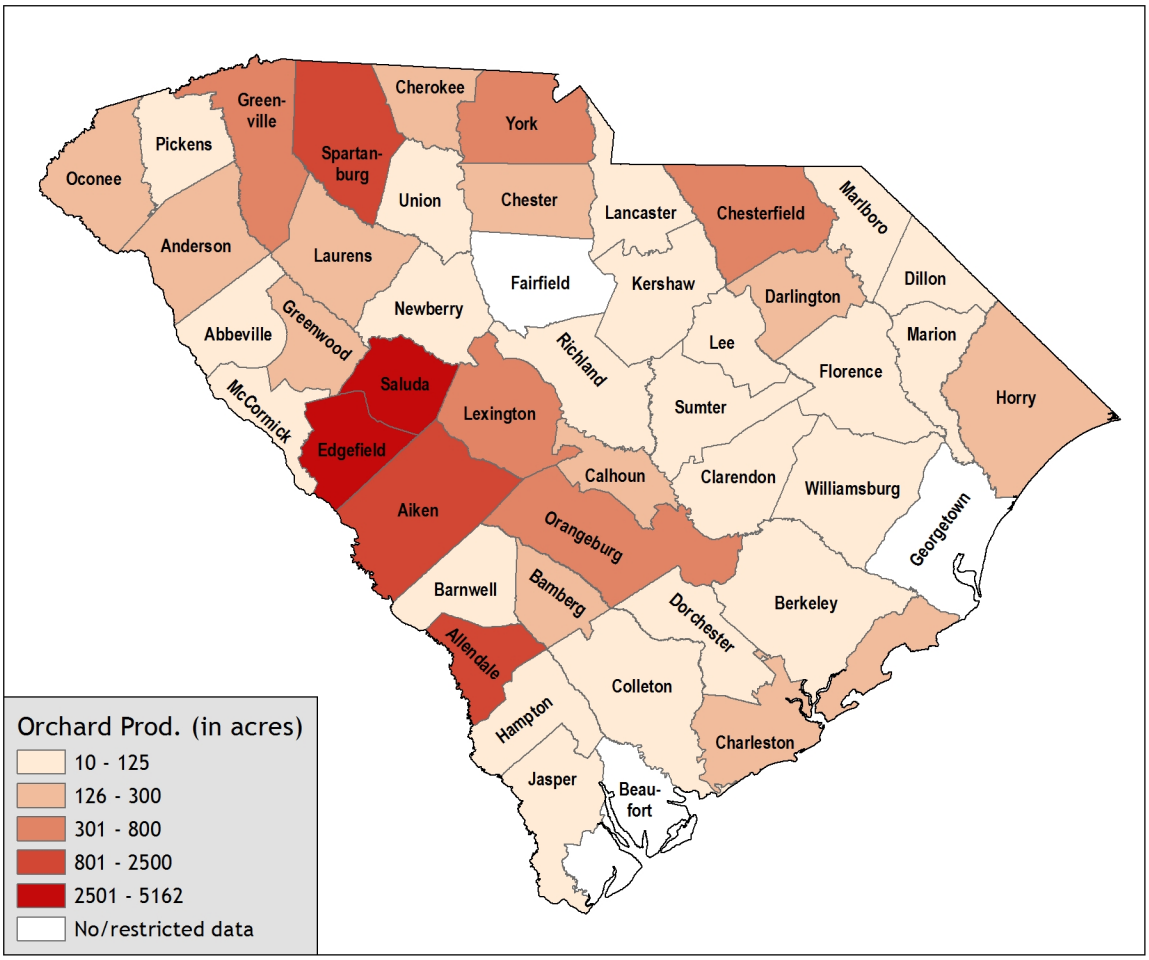

Figure 14: *Top counties in South Carolina with orchards (2007) – Map by Adam Cox*

Top counties in South Carolina with orchards (2007)

County	Farms	Acres
Saluda	18	5,162
Edgefield	43	4,854
Spartanburg	99	2,369
Aiken	85	1,845
Allendale	16	1,429
Greenville	60	785
Chesterfield	25	678
Orangeburg	35	499
Lexington	56	411
York	46	397
Anderson	50	297
Calhoun	23	260
Charleston	40	255
Cherokee	12	227
Oconee	56	225
Bamberg	22	169

Greenwood	25	148
Laurens	29	147
Horry	29	144
Darlington	14	137
Chester	22	135
Dorchester	17	125
Barnwell	13	121
Newberry	27	108
Sumter	26	100
Dillon	6	97
Richland	19	95
Clarendon	11	91
Pickens	24	90
Florence	27	83
Abbeville	21	79
Lancaster	21	75
Hampton	12	73
Kershaw	12	69
Williamsburg	16	69
Colleton	7	52
Marion	10	43
Marlboro	8	30
Jasper	7	29
McCormick	4	28
Berkeley	9	21
Union	4	17
Lee	4	13
Beaufort	7	(D)
Fairfield	3	(D)
Georgetown	5	(D)

Note: (D) means data has been suppressed by USDA in an effort to protect the confidentiality of growers, where the number of acres planted might reveal the identity of one of the farms.

Source: USDA NASS, Census of Agriculture, 2007.

Top peach-producing counties in South Carolina (2007)

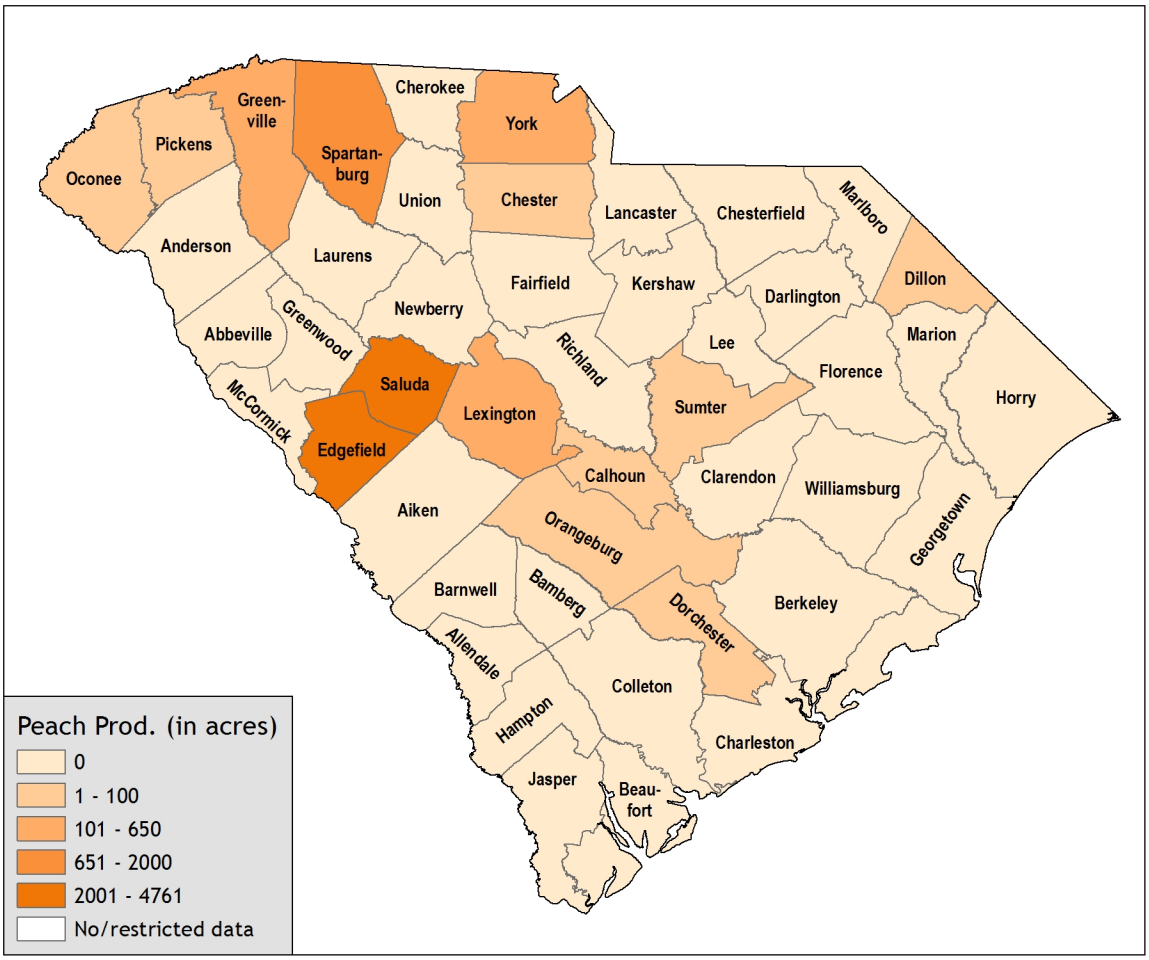

Figure 15: *Top peach-producing counties in South Carolina (2007)* – ***Map by Adam Cox***

Top peach-producing counties in South Carolina (2007)

County	Farms	Acres
Saluda	12	4,761
Edgefield	16	4,724
Spartanburg	64	1,915
Greenville	31	650
York	17	298
Lexington	13	116
Orangeburg	4	79
Chester	11	76
Oconee	20	54
Calhoun	6	19
Sumter	5	14
Dillon	4	9
Dorchester	4	5
Pickens	5	1
Abbeville	4	(D)
Aiken	14	(D)

Allendale	1	(D)
Anderson	9	(D)
Bamberg	1	(D)
Berkeley	2	(D)
Charleston	2	(D)
Cherokee	4	(D)
Chesterfield	5	(D)
Clarendon	2	(D)
Colleton	1	(D)
Darlington	2	(D)
Fairfield	2	(D)
Greenwood	2	(D)
Horry	2	(D)
Kershaw	2	(D)
Lancaster	2	(D)
Laurens	3	(D)
Marion	3	(D)
Marlboro	1	(D)
Newberry	2	(D)
Richland	4	(D)
Williamsburg	1	(D)

Note: (D) means data has been suppressed by USDA in an effort to protect the confidentiality of growers, where the number of acres planted might reveal the identity of one of the farms.

Source: USDA NASS, Census of Agriculture, 2007.

Top berry-producing counties in South Carolina (2007)

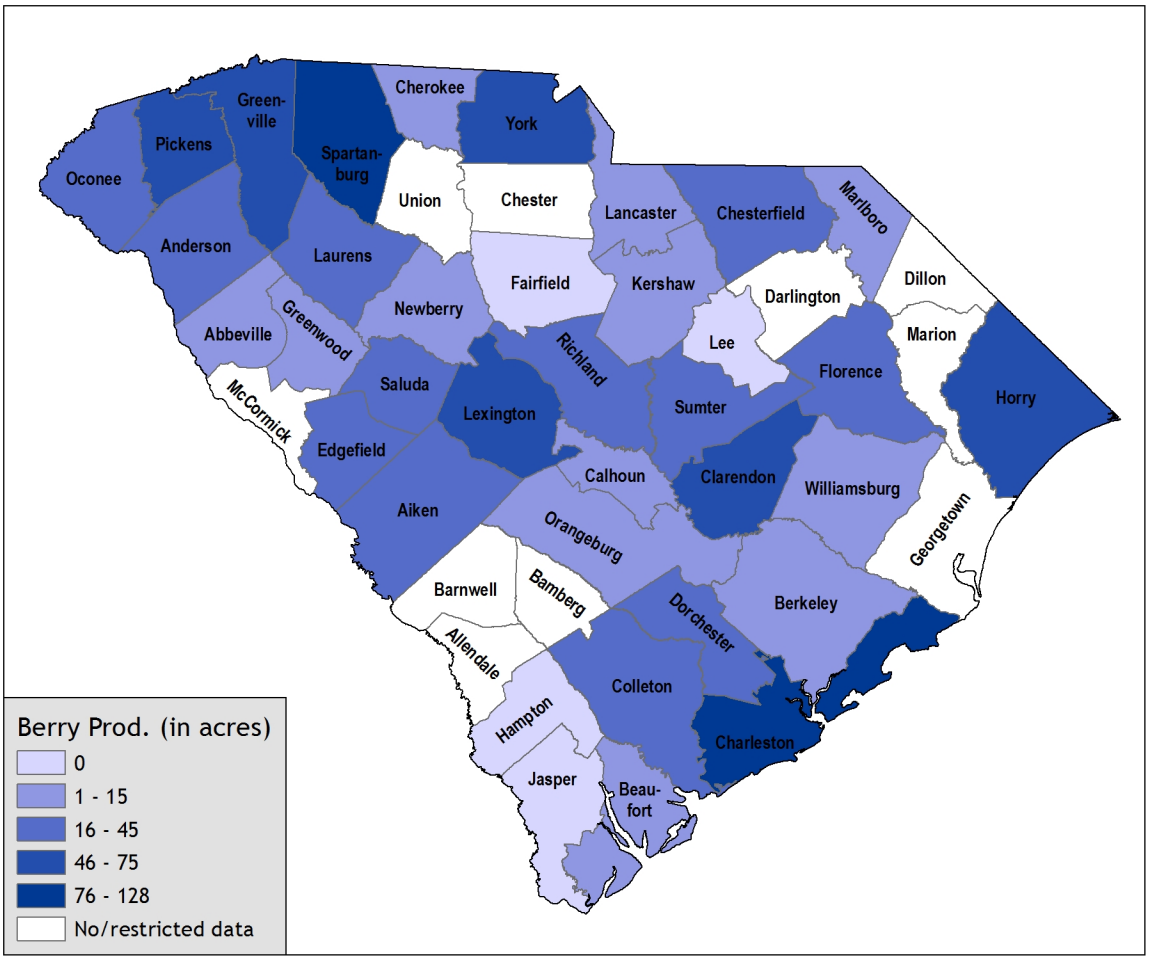

Figure 16: *Top berry-producing counties in South Carolina (2007) – Map* ***by Adam Cox***

Top berry-producing counties in South Carolina (2007)

Counties	Farms	Acres
Charleston	27	128
Spartanburg	29	105
Horry	10	68
Greenville	31	58
Clarendon	5	54
Lexington	13	53
Pickens	20	52
York	17	47
Aiken	24	33
Laurens	7	28
Edgefield	7	27
Florence	6	27
Richland	6	23
Saluda	10	23
Anderson	22	22

Chesterfield	10	22
Sumter	12	22
Colleton	13	19
Dorchester	9	19
Oconee	23	18
Beaufort	13	14
Orangeburg	6	13
Cherokee	8	12
Abbeville	8	11
Kershaw	5	8
Marlboro	3	8
Berkeley	9	7
Greenwood	5	5
Williamsburg	4	4
Newberry	7	3
Lancaster	3	2
Calhoun	3	1
Dillon	4	(Z)
Allendale	2	(D)
Bamberg	2	(D)
Barnwell	1	(D)
Chester	3	(D)
Darlington	2	(D)
Georgetown	1	(D)
McCormick	1	(D)
Marion	3	(D)
Union	1	(D)

Note: (D) means data has been suppressed by USDA in an effort to protect the confidentiality of growers, where the number of acres planted might reveal the identity of one of the farms. (Z) means no data was reported to NASS.

Source: USDA NASS, Census of Agriculture, 2007.

Top peanut-producing counties in South Carolina (2007)

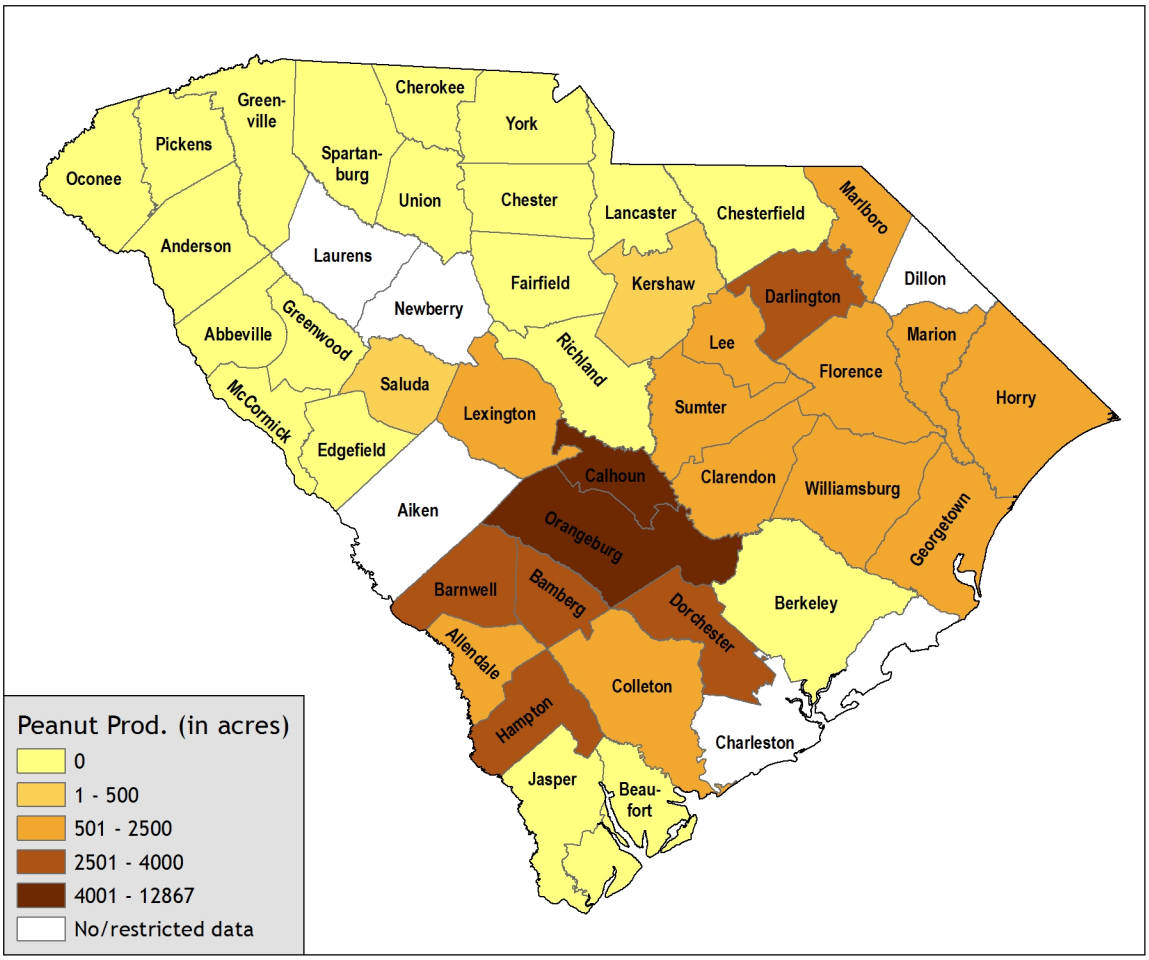

Figure 17: *Top peanut-producing counties in South Carolina (2007) – Map by Adam Cox*

Top peanut-producing counties in South Carolina (2007)

County	Farms	Acres
Orangeburg	61	12,867
Calhoun	32	10,477
Hampton	24	3,693
Bamberg	15	3,125
Dorchester	26	2,921
Barnwell	20	2,909
Darlington	7	2,822
Allendale	18	2,454
Williamsburg	20	2,263
Lee	11	2,195
Lexington	13	1,954
Florence	13	1,581
Marion	6	1,246
Marlboro	5	978
Horry	9	893

Sumter	7		812
Colleton	4		766
Clarendon	12		762
Georgetown	6		588
Kershaw	4		5
Saluda	3		3
Aiken	3	(D)	
Charleston	1	(D)	
Dillon	4	(D)	
Laurens	1	(D)	
Newberry	2	(D)	

Note: (D) means data has been suppressed by USDA in an effort to protect the confidentiality of growers, where the number of acres planted might reveal the identity of one of the farms.

Source: USDA NASS, Census of Agriculture, 2007.

Appendix J: Geospatial Data Sources

Prepared by Adam Cox

General elevation map *(above Purpose statement on page 4 at front of report):*
National Elevation Dataset, courtesy of U.S. Geological Survey
Land Cover data, courtesy of SC Department of Natural Resources, Technology Development Program, SC GAP Analysis Project.

Other data sources:
South Carolina Cooperative Fish and Wildlife Research Unit, USGS Biological Resources Division; SC DNR, SC GAP Analysis Project (2001). Land cover data. Accessed through http://www.dnr.sc.gov/GIS/gap/mapping.html: July 28th, 2013

[*Additional information:* It is understood that, while the S.C. Department of Natural Resources and its suppliers of information have no indication or reason to believe that there are inaccuracies or defects in information incorporated in the base map, the S.C. Department of Natural Resources and its suppliers make *no representation of any kind, including but not limited to Warranties of merchantability or fitness for a particular use, nor are any such warranties to be implied, with respect to the information or data, furnished herein.* Information provided by the South Carolina Department of Natural Resources. Further information is available by contacting the Spatial Data Manager, Technology Development Program or e-mail gisman@dnr.sc.gov].

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Glossary

Commonly used definitions for some terms used in discussions about food systems

Abattoir: An abattoir is a slaughterhouse or a building for butchering. All operations must be under government regulation. The largest abattoirs are those of the meatpacking industry.

Access to healthy food: We define "access" as having four critical components: physical access (do I live close to a healthy food retailer or do I have consistent, reliable transportation to reach them?); financial access (is the food affordable for me?); nutritional access (is there enough food available that could provide me with a well-rounded, balanced, healthy diet?); and cultural access (is the food provided culturally relevant? Do I know what it is and how to cook it?). Having "access" is not as powerful as producing food for oneself, or being able to choose which foods one has access to.

Animal Unit (AU): An animal unit (AU) is a measure used to quantify livestock for permitting, environmental impact assessment, and input provisioning. The goal of using AU is to ensure comparable standards regardless of the size of the animal, feed intake per animal and the amount of manure production per animal. The definition varies depending on the jurisdiction. The simplest and most broadly used definition describes one animal unit as one 1,000-pound mature cow and her suckling offspring, or their equivalent.

CSA (Community Supported Agriculture): Consists of a community of individuals or families who make financial pledges to a farm (typically small or mid-sized). In turn, each receives a share of produce throughout the growing season. The consumers' interests in safe food and connections to the land and grower are met, and farmers find stable markets, receive fair prices, and achieve some economic security against crop failure. While fresh, seasonal produce is the essence of most CSA shares, some programs also include flowers, honey, eggs, cheese, poultry and other meats. Goods are typically picked up by the consumer at the farm or delivered by the farm to a central location where shareholders can then pick up their individual baskets.

Commodity Crops: Commodity crops are crops grown, typically in large volume and at high intensity, specifically for the purpose of sale to the commodities market (as opposed to direct consumption or processing.) The most common commodity crops in the United States are corn, soybeans, and wheat; some areas also grow other commodities such as cotton, sorghum, tobacco, sugar beets, and non-wheat cereal grains. Many commodity crops re-enter the food production industry in some way: as oils, sweeteners, fillers and starches, or as animal feed for meat, milk, and egg production. They are also used in industrial manufacturing processes and even as substrate for producing biofuels.

Conservation Easement: Conservation easements are legal agreements that prevent current and future owners of a particular land parcel from engaging in specific behaviors (often development) that are considered a threat to the conservation of the land in its current state, or compel the owners to maintain certain attributes of the land. The agreement is made between the current owner and a governmental agency or land trust, which acts as the enforcer of the agreement. The land possesses a certain characteristic considered desirable from a conservation perspective, such as forest,

wetlands, or agricultural use, and the owner receives certain tax breaks for entering into the agreement. Conservation easements are often used as a tool for agricultural land protection.

Cooperative Extension Service: The Cooperative Extension System operates as part of the National Institute of Food and Agriculture (NIFA), an agency within the U.S. Department of Agriculture (USDA). The Cooperative Extension System "is a nationwide, non-credit educational network" providing practical, research-based information to address rural community and agriculture related issues. Its goal is to solve public needs using college or university resources through non-formal, non-credit programs. The system operates at local or regional offices.

Crop Insurance: purchased by agricultural producers, including farmers, ranchers, and others to protect themselves against either the loss of their crops due to natural disasters, such as hail, drought, and floods, or the loss of revenue due to declines in the prices of agricultural commodities. The two general categories of crop insurance are called crop-yield insurance and crop-revenue insurance. Much of the discussion in South Carolina has focused on product-liability insurance to cover food safety risks.

Direct Marketing: Direct marketing refers to the seller of goods marketing and selling product to the end user or consumer, with no interventions by middlemen. In agriculture, farmers that sell their products at farmers' markets or through CSA programs are participating in direct marketing sales. Direct marketing can also offer the producer a higher percentage of the food dollar.

Direct Payments/Subsidies - Payments made to farmers by the Department of Agriculture under one or more federal programs.

EBT (Electronic Benefit Transfer): an electronic system that allows a food-benefits recipient to authorize transfer of their government benefits from a Federal account to a retailer account to pay for products received.

Farm Bill: Legislation enacted by Congress in response to the distressed circumstances of U.S. farmers during the Great Depression. The Farm Bill initially set production limits and offered subsidies to farmers as a means of boosting prices. A version of the initial bill lives on and is modified and renewed every few years by the Congress. At the writing of this report, the 2008 farm bill was extended from September, 2012 to September, 2013.

Farm-to-school: Programs that work to bring locally produced fruit, vegetables, dairy, and meat into school lunch cafeterias and salad bars in order to provide fresh, healthy meal choices to students, support local farmers, and provide nutrition literacy and education. Students learn about the path of food from farm to fork, and the impacts that their food choices have on the environment.

Food Desert: A district (rural, urban, or suburban) with little or no access to foods needed to maintain a healthy diet. These areas may at times be "food swamps," districts with an abundance of fast-food stores or convenience stores. Some low-income residents dislike being identified with a "desert" so the term is not universally praised.

Food Hub: A business or organization that actively manages the aggregation, distribution, and marketing of course-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand.

Food Production Node: A cluster of farms in close proximity to each other, working in collaboration and using common food production infrastructure. Development of food production nodes should create permanent physical facilities that ensure productive capacity exists to raise and process food for local residents, to foster local collaboration, and to scale up production as appropriate for regional food hubs. The purpose of such food nodes shall be to increase community capacity to produce food for itself, create local efficiencies, and serve the specific needs of the entities forming the cluster.

Food Policy Council (FPC): Food Policy Councils bring together stakeholders from diverse food-related sectors to examine how the food system is operating and to develop recommendations on how to improve it. FPCs may take many forms, but are typically either commissioned by state or local government, or predominately a grassroots effort.

Food System: The food system includes every process involved in feeding a community: growing, harvesting, packaging, transporting, marketing, selling, consuming and recycling food and food packaging.

Free and Reduced Price Meal/Lunch: Eligibility in Free and Reduced Price Meal programs is determined by total gross household income of the student's family. According to guidelines released by the Food and Nutrition Service of the USDA, to be eligible for free meals, the household must report an income of 130% or less of the Federal Poverty Level (which is adjusted by household size) and to be eligible for reduced-price meals the household must report an income of 185% or less of the Federal Poverty Level.

Good Agricultural Practices: Good Agricultural Practices (GAP) are sets of regulations and practices designed to improve the safety and quality of produce. GAP certification typically focuses on four components of the safety of food production and processing: soil, water, hands, and surfaces. GAP guidelines provide guidance on such things as manure safety, water source testing, provision and cleanliness of restrooms for workers, food surface hygiene, and the development of a food safety plan.

Hoop House: Hoop houses are greenhouse-like structures, which consist of a series of metal or plastic hoops with thick, translucent, plastic sheets stretched over the tops. Like greenhouses, hoop houses protect plants and extend the growing season by creating a warmer environment for plants. Hoop houses provide an opportunity to grow different varieties of plants that would otherwise be unsuccessful in a particular climate.

Local: of or belonging to or characteristic of a particular locality or neighborhood; relating to or applicable to or concerned with the administration of a city or town or district rather than a larger area.

Organic Certification: Bearing the USDA Organic label means that the specified food or food product was grown, processed and packaged in accordance with the guidelines set forth by the certifying agency. In the United States the certifying agency is the United States Department of

Agriculture's National Organic Program. Meeting the guidelines allows for the use of the USDA Organic seal to be displayed on the packaging or signage and determines the wording that can be used on the package to describe the product. Any product bearing the seal must contain at least 95% organic ingredients. Products stating "made with organic ingredients must contain at least 70% organic ingredients, while products with less than 70% can only list the ingredients on the information panel. Use of the label by certified producers is voluntary.

Region: areas can be broadly divided by physical characteristics (Physical geography), human impact characteristics (Human geography), and the interaction of humanity and the environment (Environmental geography). Geographic regions and subregions are mostly described by their imprecisely defined, and sometimes transitory boundaries, except in human geography where jurisdiction areas such as national borders are clearly defined in law.

Small Farm: For this study, a "small farm" is one that participates directly in initiatives that create new, relational commerce and strategic partnerships trading locally produced food.

SNAP: As of Oct. 1, 2008, Supplemental Nutrition Assistance Program (SNAP) is the new name for the Federal Food Stamp Program. SNAP helps low-income people and families buy the food they need for good health. You apply for benefits by completing a state application form. Benefits are provided on an electronic card that is used like an ATM card and accepted at most grocery stores.

Specialty Crops: Defined by the United States Department of Agriculture as intensively cultivated "fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture)." (USDA, 2008) In practice, the designation specialty crops is used to differentiate commercial production of fruit and vegetable crops from bulk commodities like corn and wheat. As concern over the paucity of fruits and vegetables in the average American's diet has grown, there has been increased pressure on the federal government to extend its support to specialty crop producers to encourage a shift in production from commodity crops. In 2004, President George W. Bush signed the Specialty Crop Competitiveness Act to support state-level grants for technical assistance to specialty crop producers and an expeditious review of specialty crop export regulations.

Subsidies: See direct payments

WIC: The Special Supplemental Nutrition Program for Women, Infants, and Children - better known as the WIC Program - serves to safeguard the health of low-income women, infants, and children up to age 5 who are at nutritional risk by providing nutritious foods to supplement diets, information on healthy eating, and referrals to health care.