A High Road Community Economic Development Strategy for Rural Communities:

A Case Study of Sustainable Agriculture in Chatham County, North Carolina

by

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A Masters Project submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Regional Planning in the Department of City and Regional Planning.

Chapel Hill

2008

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Acronyms of Organizations

CCCC – Central Carolina Community College
CCCE – Carolina Center for Creative Economies
CFA – Community Farm Alliance
CFSA – Carolina Farm Stewardship Association
ECO – Eastern Carolina Organics
EDC – Economic Development Corporation
FDA – Food and Drug Administration
FPA – Farmland Protection Agency
LIFE – Locally Innovative Food Economies
NCSU – North Carolina State University
TLC – Triangle Land Conservancy
USDA – United States Department of Agriculture
CHAPTER ONE: INTRODUCTION

Conventional agriculture is a dying way of life in rural America. Agriculture, as it has been practiced for the last 100 years, can no longer sustain a farm family without being supplemented by off-farm employment; yet, farmers continue to farm because they have both an economic and personal investment in the lifestyle (Danbom, 1995; Ikerd, 1996). This situation is causing an economic crisis in rural communities that once depended on agricultural production to provide their economic base. Rural Americans are asking: What can be done to stem the flow of young people out of rural communities? Can or should the agricultural economic base that these communities were built on be preserved? Is there a way to rebuild not only rural economies, but also rural communities? Agriculture in its current condition can no longer provide a stable economic or social base, and as a result, economic developers are scrambling to find new strategies to revitalize agricultural communities.

Current literature and agricultural policy debates suggest that sustainable agriculture and local food systems may have the potential to rebuild the eroded economic and social bases of rural communities. Sustainable agriculture is a new approach to farming that is not only economically competitive, but also socially supportive and environmentally sound (Ikerd, 1996). Local food systems are created when sustainable agriculture is tied to a particular place, creating economic, ecological, and social connections between all types of participants in food supply chains. As the modern agriculture system approaches its economic and ecological limits, sustainable agriculture and local food systems offer an approach for sustainable, community-driven economic development (van der Ploeg, 2000).

Conventional agriculture followed the traditional path of industrial development in the United States, to the point of diminishing economic returns. Despite this, rural communities continue to rely on conventional agriculture as an economic driver because it uniformly fits the availability of cheap land and labor that is associated with rural areas. In contrast, sustainable agriculture and local food systems provide opportunities to tailor economic development to the unique resources and circumstances of local communities; they take into account the current conditions of rural economies and seek ways to encourage locally based and locally-derived opportunities for growth. Yet, economic development professionals generally rely on one-size-fits-all strategies for rural communities that fail to build upon the unique strengths and resources of each rural economy. Industrial recruitment schemes and incentive packages have mortgaged the future of more than one rural community, where economic developers hoped that simply creating more jobs would solve extensive community economic problems. But in most cases, traditional economic development strategies are failing in rural communities, because they take an approach to development that ultimately degrade local resources and are unable to integrate with community economic and social bases.

This paper examines the reasons why economic development professionals consider supporting sustainable agriculture and local food systems as strategies for locally based, community driven economic development in rural areas. The first two chapters will explore the economic, social, and environmental rationales for sustainable agriculture and local food systems as an economic development strategy, in theoretical terms. The next two chapters will then apply this rationale to a case study of Chatham County, North Carolina, to evaluate how well sustainable food
systems work as a development strategy in practice, given the theoretical rationale established in
the first half of this paper. The final chapter concludes by offering strategic recommendations
for improving Chatham County’s sustainable food system.

**Methodology**

In this paper I use the case study methodology to answer two key questions: why do rural
economies use sustainable agriculture and local food systems as economic development
strategies? and how well do these strategies work in practice? Case studies lend themselves to
answering “how” and “why” questions, because they allow the researcher to trace operational
linkages over time, particularly for contemporary phenomena (Yin, 1984). Robert Yin defines
the case study as an empirical inquiry that investigates a contemporary phenomenon within its
real-life context, when the boundaries between phenomenon and context are not clearly evident
and in which multiple sources of evidence are used (Yin, 1984, p. 24). Using the case study
technique, I planned to evaluate how well sustainable agriculture in Chatham County performs as
an economic development strategy in practice, when compared to the economic rationale for
sustainable agriculture in theory.

I identified Chatham County as the case study site based on three criteria. First, its proximity to
Chapel Hill allowed me to conduct face-to-face interviews with potential subjects and attend
relevant meetings. Second, Chatham County has earned a reputation as a leader in sustainable
agriculture, due to a critical mass of resident sustainable farmers, as well as relevant institutions
and market outlets. Third, residents of Chatham County identified sustainable agriculture as a
community value at several economic development forums held by the Kenan Institute for
Private Enterprise, which suggested that the non-agricultural community supported sustainable
agriculture and made the county a unique case for study.

Prior to beginning the collection of case study data, I conducted a review of relevant literature to
construct both the national and local contexts for sustainable agriculture and local food systems,
examining traditional strategies for rural economic development, as well as research on the effect
of community economic development and import substitution. I collected economic, social,
political, and cultural information about Chatham County in order to understand the unique mix
of strengths, weaknesses, assets, and challenges that local economic developers faced and
sustainable agriculture could build on. The information collected in the initial literature review
was supplemented throughout the case study, as increasing knowledge and awareness brought
my attention to new themes of importance in economic development and sustainable agriculture.

To conduct the case study, I drew information from a variety of sources. The primary source of
information came from qualitative interviews with three types of sustainable agriculture
participants: farmers, supporting institutions, and market intermediaries. In addition, I conducted
interviews with farmers who would be identified, in part or whole, as conventional or traditional
farmers. Interviews with this cohort of actors were used as a comparison group to establish
historical and contemporary agricultural context as it pertained to the study area. In all, I
interviewed 28 people in meetings that lasted from 30 to 120 minutes (average interview time
ranged from 45 to 60 minutes). These interviews took place in person and over the phone and
generally followed a standard interview protocol, depending on which participant group the
interviewee fell into. The interview protocols may be found in Appendix A. The majority of interviews were conducted with participants in Chatham County; however, a few additional interviews were conducted with people in Chapel Hill, Carrboro, Durham, and Raleigh who were identified as relevant participants in Chatham County’s sustainable agriculture system.

I used three methods for identifying potential interview candidates. First, I made contact with two key figures in Chatham’s agricultural system, Debbie Roos and William Perry, through the Carolina Center for Creative Economies (CCCE). Roos is the Sustainable Agriculture Extension Agent in Chatham County; although she serves farmers throughout the state, her position is funded by and located in Chatham County. Roos provides educational and advisory services to farmers specializing in sustainable agriculture, and is very knowledgeable about active participants in sustainable agriculture in Chatham County. As a semi-retired cattle farmer, Perry is an active member of the Silk Hope Ruritan Club, which puts on the Old Fashioned Farmer’s Day each year. Perry has lived in Chatham County most of his life and is very familiar with the Ruritan Club’s 86 members who farm. Roos and Perry each provided me with 8-15 names of farmers who had been practicing sustainable and/or conventional agriculture in the county for various periods of time spanning from a few years to five decades. These farmers provided the initial round of contacts for qualitative interviews.

Second, from the first round of interviews, I identified additional farmers, as well as supporting institutions and market intermediaries who were active in the state’s agricultural networks and relevant participants in agriculture in the region. In the first round of interviews, I asked farmers to indicate local institutions that they worked with or benefited from in order to identify institutions that supported both conventional and sustainable agriculture. I also asked farmers to identify the market outlets that they bought inputs from and supplied agricultural products to. This allowed me to see, by frequency of mention, which market outlets were preferred by both types of agriculture – sustainable and traditional. These institutions and marketing intermediaries formed the second round of interviews. Third, I used the Carolina Guide to Local and Sustainable Agriculture to identify additional sustainable farmers in Chatham County, beyond those mentioned by Roos and in interviews.

It is important to note the limitations of my case study methodology. Due to time and schedule restraints, only a limited number of participants could be interviewed. Interviewees tended to be people who were active participants in the sustainable agriculture system, and therefore, the opinions of less active and newer participants may be underrepresented. Limitations may also affect the representations of conventional agriculture, as well as participating sustainable agriculture institutions and marketing intermediaries. As a result of time constraints, it is highly likely that some relevant members of the community were not included in this study.

That said, the case study framework provided a deep glimpse into sustainable agriculture in Chatham County. While the case study may not present the whole picture, it presents an initial portrait from which to begin an evaluation of the success or failure of sustainable agriculture and local food systems as potential economic development strategies for rural communities. I greatly appreciate the time and effort that all participants put into sharing their thoughts and experiences with me, and I take full responsibility for any errors or misrepresentations that may be made.
Literature Review: High and Low Road Approaches to Agricultural Policy

In the 1970s and 1980s, the advent of worldwide industrial deregulation and new communication and transportation technology enabled manufacturing sectors to move beyond their national markets, creating a global economy of international trade. New markets opened up, creating opportunities for expanded trade, as well as increased industrial competition. As manufacturing sectors adjusted to the increased pressure of the global marketplace, they began basing their competitive strategies on one of two things: cost or quality (Piore, 2002). While this quality/cost (or high road/low road) dichotomy has mainly been applied to manufacturing strategies, it can provide a useful construct for framing and understanding the parallel rise of sustainable agriculture and decline of traditional agriculture.

The high road entails building competitive advantage on the basis of quality production and product differentiation. As firms increase the variety of their product offerings and foster dynamic, flexible labor practices, they can more readily adapt to changing market conditions (Piore, 2002). At the level of local development policy, communities compete based on the quality of their resources. In this view, high road strategies foster and augment the development of human and natural resources, creating a competitive advantage based on the diversity and dynamism of the economy’s resource base. Examples of high road strategies include workforce education and training, local infrastructure development, innovation, creativity, local entrepreneurship, and selectively recruiting complementary industrial facilities.

The low road, on the other hand, competes on the basis of cost. Competing on the basis of cost actually means cutting costs, which increases downward pressure on wages and benefits while increasing the speed and volume of production (Piore, 2002). The low road often exploits or degrades human and natural resources, pushing each beyond their natural productive capacities. Economies that compete on the basis of cost often attempt to recruit industrial sectors by offering low-wage employees, tax abatements, cheap land and natural resources, and environmentally and economically deregulated, non-union environments that allow firms to use and abuse the local resource base.

While economic development policy, in theory, espouses the wisdom of the high road for the future of the United States’ local and regional economies, in practice, economic development policy has demonstrated a distinct preference for low road strategies (Piore, 2002). Economies choose low road strategies because, in the immediate context, short-term benefits appear to outweigh long-term costs. The same seems to apply in agriculture. In the context of agricultural policy, conventional industrialized agriculture can be viewed as a low road strategy for rural economic development that has reached its systematic limits and is now causing more problems than it solves (Ikerd, 1996; Danbom, 1995). Conventional agriculture takes the low road by building its competitive advantage around cheap inputs, such as land, labor, and until recently, relatively inexpensive synthetic chemicals; as a result, conventional agricultural systems tend to

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1 Of course, the distinctions between high and low road strategies are often blurred and in reality, elements of both tend to co-exist in economic development policy and planning. Nonetheless, this framework is a useful lens through which to study and compare conventional and innovative agricultural practices.
exploit natural and social resources without regenerating them and thus, drive down the overall quality of life and environment in rural communities.

The next section will look more explicitly at how and why conventional agriculture became a low road development strategy in the 20th century. The final section will examine the potential opportunities that sustainable food systems present as a high road community economic development for rebuilding rural economic bases in the United States.

Conventional Agriculture: A Low Road Strategy

The term “conventional agriculture” (also identified here as industrialized agriculture) can be defined as “capital-intensive, large-scale, highly mechanized agriculture with monocultures of crops and extensive use of artificial fertilizers, herbicides and pesticides, with intensive animal husbandry” (Beus & Dunlap, 1990). Conventional agriculture has been the dominant paradigm of agricultural practice and policy for over 100 years, for good reason. When farmers began using scientific and mechanical innovations to apply to the industrial production model to agriculture, the potential economic rewards offered by this transformation were unprecedented. However, critics such as Ikerd, Danbom, Pollan, and Beus & Dunlap argue that by the 1980s, conventional agriculture passed the peak of its economically beneficial capacity and now creates an economic burden for farmers, whose livelihood is being eroded by a combination of diminishing returns, overproduction, and “price squeezes” from stagnant commodity rates and rising nonrenewable input prices (Ikerd, 1996; Danbom, 1995; Pollan, 2006a; Beus & Dunlap 1990).

Scientific and mechanical innovations of the early 20th century allowed farmers to unlock the biological limitations of their land and apply the industrial model to agricultural production (Pollan, 2006a; Danbom, 1995). Using these innovations, farmers could eschew former production models, based on biologically diverse cycles of growth and conservation of natural fertility, in favor of standardized and streamlined monocultures of commodity crop production. Synthetic fertilizer and mechanized cultivation led to volume production, where farmers captured cost savings from economies of scale and created unprecedented profits by increasing crop yields five and ten times over (Pollan, 2006a). During the first half of the 20th century, a farmer would have been crazy not to adopt conventional agricultural practices; in essence, any farmer who continued to use the traditional system of biologically derived production would have been working against his own best economic self-interest.

However, in the last thirty years, the unintended consequences and side effects of this strategy made it apparent that conventional agriculture no longer provides the same economic returns that it once had. Overproduction and declining prices drove down the actual economic returns that farmers received for their labor, while the intangible effects, such as environmental degradation and community disintegration, imposed additional costs on both the agricultural and non-agricultural segments of rural areas. For farmers who based their competitive advantage on cutting costs and volume production, getting bigger and increasing output were the only options for increasing their profit margin. As a result of applying this logic to a national and international system of agricultural production, farmers everywhere experienced diminishing returns as domestic and global overproduction drove commodity prices into the ground.
(Danbom, 1995; Pollan, 2006a). Unfortunately, the economic logic of conventional agriculture only exacerbated the problem; farmers responded to dropping prices by growing even more.

The boom and bust cycle of the 1970s and 1980s illustrates this trend. In the early 1970s, the United States’ Secretary of Agriculture, Earl Butz, brokered a deal, which allowed the United States to sell its surplus wheat to the Soviets, who had been hit hard by years of drought and meager harvests. Butz encouraged farmers to “get bigger, get better, or get out,” and many did so by putting as much marginal land as possible into production and by borrowing against the skyrocketing price of land to buy more land and equipment. With new inroads to foreign markets and rising commodity prices, the Soviet wheat deal seemed to confirm that there were no limits to the economic returns that conventional agriculture could provide. However, by 1977, that confidence began to fade. Commodity prices fell as the market readjusted to farmers putting more land into production. In addition to domestic overproduction, farmers in the United States not only lost a market, but gained new competitors as Soviet production stabilized and other foreign countries entered the agricultural commodity markets after witnessing the United States’ success with conventional agriculture (Danbom 1995, Piore & Sabel 1984). These changes sparked an agricultural depression in 1980 that caused many farmers who had “gotten bigger” through debt financing to lose their homes and their farms once the bubble of increasing land values burst. The farmers who remained financially solvent responded to the crisis by further cutting costs and expanding their operations with the newly available land, in the hopes of regaining the profit margins that conventional agriculture provided at its peak.

By taking the low road approach and focusing on cutting costs, conventional agriculture perpetually experiences cycles of overproduction, dropping commodity prices, and exponentially inflated scales of production. As a result, farmers no longer reap additional economic benefits by increasing the size of their operations; many have reached the point where they have to get bigger simply to maintain the same level of economic prosperity. This sign of expanding simply to maintain current profit levels suggests that conventional agriculture passed the peak of its economically beneficial capacity and now offers only diminishing returns to farmers who continue to employ the logic of industrial production.

Furthermore, the increasing price squeeze between falling commodity prices and rising input costs aggravates the diminishing economic returns that farmers receive from the conventional agriculture system. Input costs are rising out of proportion with commodity prices for two reasons. First, as farm scale increases, farmers rely more on external inputs, which increases their fixed costs (Danbom, 1995; Beus & Dunlap, 1990). In particular, investment in expensive capital machinery forces farmers to use debt financing; debt service payments are often the highest and least flexible fixed cost that farmers face. Second, the prices of chemical inputs are tied to the price of petroleum, the nonrenewable resource from which many agricultural inputs are derived. As gas prices have increased exponentially in the last ten years, so have the cost of inputs like synthetic fertilizer (Pollan, 2006a). Conventional farmers in Chatham County said that the rising cost of fertilizer was the greatest constraint to their operational growth, as the input price skyrocketed from $200 to $500 a ton in only three years (Perry, Personal Interview, January 23, 2008; Hadley, Personal Interview, February 11, 2008; Stensvad, Personal Interview, February 13, 2008). Chemical inputs, derived from nonrenewable resources, form the foundation of conventional agricultural production; however, scarcity of nonrenewable resources
drives up the price of its associated products, laying the groundwork for an inevitable crisis in conventional agriculture, unless a solution for this unreliable dynamic can be found.

At the same time that the economic returns from conventional agriculture have been declining, the perceived threats of conventional agriculture to the environment, the natural resource base, the quality of life for farmers, and the social stability of rural communities have greatly increased (Ikerd, 1996; Ikerd, 2006). Indeed, the very innovations that unlocked the biological limitations of the land and increased agricultural productivity have become the primary focus of growing public concern (Ikerd, 1996). By applying industrial systems of production to natural processes, conventional agriculture has caused and exacerbated two key problems: degradation of the environment and the economic and social disintegration of rural communities.

With the publication of Rachel Carson’s book, *Silent Spring*, in 1962, the public became aware of the negative environmental externalities caused by conventional agricultural production for the first time (Kirschenmann, 2004). In particular, growing concern centered on the detrimental effects of large-scale use of synthetic fertilizers and pesticides. Carson’s book exposed the unmitigated negative environmental impact that resulted from chemical runoff into rivers, lakes, and water tables, degrading water and soil resources with unintended consequences that radiated beyond rural communities. Other agricultural practices associated with the large-scale, specialized industrialized system of conventional agriculture led to soil erosion and depletion, loss of biodiversity, and over-consumption of non-renewable fossil fuels (Ikerd, 1996). By degrading not only the environment, but also the natural resource base, conventional agriculture continues to draw criticism for its shift from a naturally regenerative system of production to one that uses more resources than it provides in return.

The economic and social decline of rural communities is also intrinsically linked to the rise of conventional agriculture. By making land more productive and production more efficient, conventional agriculture made it possible for fewer farms (and thus, fewer people) to produce more food than ever before (Ikerd, 1996). But sustainable communities need more than just production to survive; they also need productive people to provide the foundation for economic and social interaction. By reducing the need for human labor and knowledge as inputs in the industrialized system of production, conventional agriculture undermines the social, economic, and political structures of rural communities.

Data from the Decennial Census shows how conventional agriculture has altered the make-up of rural communities. Rural areas have experienced significant depopulation, as rural population declined from 36% of the total population in 1950 to 21% in 2000 (Census Bureau, 1980; Census Bureau, 2000). In addition, what remains of the rural population is becoming less and less associated with agriculture; by 2000, the nation’s farming population dropped to 1% of the total population, and made up only 5% of the total rural population. As a result, the rural population is less tied to the land and freer to follow the footloose trend of out-migration toward urbanized areas, creating a perpetual cycle of rural depopulation (Danbom, 1995).

Farm data from the Census of Agriculture also shows how the agricultural basis of rural communities is disintegrating. Between 1964 and 1997, the United States lost roughly 1.24 million farms; between 1997 and 2002 alone, the nation lost approximately 87,000 farms, or an
average of 17,382 farms per year (United States Department of Agriculture (USDA), 2002). The number of farmers has also been in steady decline for the same period. The number of rural residents who identified farming as their sole occupation dropped from 1.42 million in 1974 to 961,560 in 1997 (USDA, 1997). Although many of those who previously identified farming as their primary occupation may continue to farm on a reduced basis, the drop suggests that farming no longer provides an adequate livelihood as a sole occupation.

The average age of farm operators is increasing, as the current farming population is quickly approaching the age of retirement. The average age of farm operators has also been steadily creeping up for the last 40 years, from 51 years old in 1969 to 55 years of age in 2002 (USDA, 2002). The increasing age of farmers points out that younger people are either leaving or not entering the farming occupation. Younger generations no longer view agriculture as a viable career option, because diminishing economic returns, coupled with hard labor, the uncertain future of domestic agriculture, and increasing cost of living, make it next to impossible for farmers to achieve a desirable quality of life today without supplemental income. Many people simply do not want to work that hard, unless they have familial or cultural ties to agriculture. At a time when gross revenues just barely cover the costs of production in agriculture, it should not be surprising that fewer and fewer people are choosing to go into agriculture.

This trend has serious negative implications for rural areas and communities as the current farming population continues to age. In particular, the rate of farm loss will most likely increase at a dramatic rate if a new influx of younger farmers does not take over the next generation of farming. Increased farm loss will accelerate current trends of population loss, loss of open land and natural beauty, and loss of rural communities. As the rural population decreases in both farm and non-farm segments, support for rural economies, social structure, and public services decreases. Population loss means that fewer people are available to support fewer local businesses and pay for local taxes. As a result, businesses close down, schools are forced to downsize and consolidate over larger regions, and less money is available to invest in public infrastructure like roads, water, and sewer systems. In short, if current population and agricultural trends continue, the likely result is accelerated deterioration of rural, agriculturally dependent communities.

The conventional system of farming, as it currently operates, is no longer economically, environmentally, or socially regenerating. It has reached a point where farmers have few economic incentives to continue. Environmentally, regenerative methods like crop rotation and cover cropping have been lost or underutilized in favor of pulling as much from the land as possible to stay afloat. Socially, conventional farming leads to the depopulation and destabilization of rural communities. As a result, conventional agriculture cannot and does not provide a viable basis for economic development because, as a low road strategy of production, it has become economically, environmentally, and socially destructive.

*Sustainable Food Systems: A High Road Approach*

In contrast, the rise of sustainable agriculture and locally based food systems can be interpreted as an emerging shift to high road economic development strategies that allow rural communities to rebuild their social and economic bases while protecting and regenerating local resources.
Sustainable agriculture takes the high road by competing on the basis of diversified, quality production and building dynamic local economic, social, and natural resource bases.

Many rural communities embrace sustainable agriculture because theoretically, it encourages the development of human resources in ways that traditional development strategies do not. Sustainable agriculture should rely on local knowledge and experience for its economic and environmental success. Farmers who practice sustainable agriculture may also revalue agricultural labor by demanding that farming provide them with a sustainable income and desirable quality of life (Beus & Dunlap, 1990; Strange & Miller, 1994). Sustainable agriculture should also conserve and regenerate the natural resource base (Ikerd, 1996; Beus & Dunlap, 1990; Strange & Miller, 1994). By returning to natural cycles of low-input production, sustainable agriculture can respect the natural capacity of the land, which is still one of the greatest assets available to rural communities. Ensuring that the system of production can continue on indefinitely is a high priority for farmers that practice sustainable agriculture. Sustainable agriculture’s potential ability to add value and conserve local resource bases combines to support non-agricultural economic and social bases in rural communities, creating opportunities to develop dynamic rural economies that will attract additional development opportunities.

With its focus on more than just the economic bottom line, sustainable agriculture can best be viewed as a community economic development strategy. Community economic development prioritizes location-specific approaches to development over one-size-fits-all strategies like industrial recruitment (Haughton, 1999). Sustainable agriculture and local food systems provide this type of approach, because they are intrinsically linked with the resource base – the people and the land – of each location in which they are practiced. Furthermore, sustainable agriculture, like community economic development, values local knowledge, experience, and resources, because they are sources of power for local communities. By creating development strategies that are locally based and tied to the community and regional economy, sustainable food systems acknowledge natural constraints, develop existing assets, plug economic leaks, capture added value, and support local businesses. As a result, rural communities are using sustainable agriculture and local food systems to create local economies that are dynamic, equitable, and secure, providing challenging work and empowering all community members (Campbell, 2000).

This chapter has examined the parallel decline and rise of conventional and sustainable agricultural systems through the framework of low and high road development strategies. Conventional agriculture’s reliance on cutting costs and exploiting natural and human resource bases makes it a low road strategy, which has reached its systematic limits and now provides ever diminishing returns to American farmers. In contrast, sustainable agriculture offers an innovative high road strategy for development, which has the potential to rebuild the economic, ecological, and social bases of rural communities through its emphasis on locally based and locally-derived solutions to the problems of conventional agricultural production. The next chapter will explore sustainable food systems in more depth by laying out the theoretical economic, environmental, and social benefit rationales for implementing sustainable agriculture and local food systems as development strategies for rural communities.
CHAPTER TWO: SUSTAINABLE AGRICULTURE AND LOCAL FOOD SYSTEMS

This chapter will provide a more detailed definition of sustainable agriculture in theory and in practice, as well as the economic, environmental, and social benefit rationales for using sustainable agriculture as a high road development strategy. The next section will look at local food systems as a place-based application of sustainable agriculture.

Sustainable Agriculture in Theory and in Practice

The United States Department of Agriculture (USDA) defines sustainable agriculture as the “integrated system of plant and animal production practices having a site-specific application that will, over the long term satisfy human food and fiber needs, enhance environmental quality and the natural resource base upon which the agricultural economy depends, make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls, sustain the economic viability of farm operations, and enhance the quality of life for farmers and society as a whole” (Gold, 2007).

While the USDA offers perhaps the most technical definition of sustainable agriculture, any understanding of it must include three key elements: economic viability, environmental soundness, and social responsibility (Ikerd, 1996). Together, these three components encompass a holistic view of agriculture that takes into account both the tangible (economic) and intangible (environmental and social) costs of using the land to provide food. Furthermore, these components form an underlying philosophy that provides the foundation for a large array of alternative farming practices.

• **Economic viability**: Sustainable agriculture’s focus on including the intangible environmental and social benefits and costs of agriculture tends to overshadow the importance of economic viability. For all the good that sustainable agriculture practices might provide, they must still provide an economic profit, simply to survive (Ikerd, 1996; Strange & Miller, 1994). Being sustainable means being economically sustainable, because despite its holistic approach, sustainable agriculture is still a business. However, the economic focus is on creating enough profit to remain profitable and provide an equitable income, rather than on pushing the land beyond its natural productive capacity to maximize profits (Strange & Miller, 1994). Furthermore, economic sustainability means being viable and profitable for the long haul, rather than the short term (Ikerd, 1996; Beus & Dunlap, 1990). In order to ensure the cycle of regeneration, sustainable farmers apply reasonable limits to their own economic self-interest; by taking care of the land and respecting its natural limitations, farmers protect their own economic viability for generations to come.

• **Environmental soundness**: Sustainable agriculture recognizes that farms are biological systems, not mechanical ones, and that, as such, farmers have a responsibility to protect and build up the natural resource base that provides for them (Earles, 2005). Sustainable environmental approaches foster biodiversity; biodiversity protects the longevity of the food supply, enhances soil fertility through polycropping, crop rotations, and cover crops, and
mimics natural ecosystems (Earles, 2005; Ikerd, 1998; Strange & Miller, 1994). Sustainable agriculture also minimizes the use of resources that are external to the farm, particularly those derived from non-renewable resources like fossil fuels. “Farming with nature” allows sustainable farmers to follow natural cycles of growth, decay, and regeneration which provide the long-term basis for agriculture. Finally, farmers who adapt their operations to the site-specific assets and limitations of their land practice good stewardship that will enable future generations to follow in their footsteps (Berry, 1996).

• **Social responsibility:** The primary focus of the social component is that sustainable agriculture should provide an improved quality of life for farmers, their families, and the communities to which they belong. Sustainable agriculture should add value to the labor and productivity of farmers, and provide a sufficient income to guarantee a desirable quality of life for their families (Ikerd, 1996). Sustainable agriculture should foster networks of trust, interaction, and trade that support local communities by providing a renewed economic base and an increased supply of social capital (Ikerd, 1996; Beus & Dunlap, 1990). Social sustainability should also be equitable, providing healthy, culturally appropriate, and sufficient food for everyone, regardless of their ability to pay (Allen, 2004).

The goal of sustainable agriculture is to produce food in ways that can be continued indefinitely (Strange & Miller, 1994). As a result, sustainable agriculture is not based on a rigidly defined set of practices. However, most sustainable operations share a few key characteristics. First, the size of a sustainable farm should be determined by biological function; the “right size” is the size that allows a given task to be performed most efficiently (Ikerd, 1998; Ikerd, 2006). Second, sustainable agriculture is site-specific, dynamic, and adaptable. Third, sustainable agriculture is information, knowledge, and management intensive rather than management extensive; essentially, it substitutes labor for capital investment (Ikerd, 1996).

Sustainable agriculture manifests these goals and characteristics in a wide variety of agricultural practices that emphasize reducing chemical dependency and using low-impact ecological methods (see Table 1 below). However, not every farm must utilize all of these methods. In fact, sustainable agriculture may demonstrate more variation between farms than similarity. Variation is further evidenced by the different approaches, including organic agriculture, regenerative agriculture, ecoagriculture, permaculture, biodynamics, agroecology, natural farming, and low-input farming, that fall under the sustainable agriculture umbrella (Beus & Dunlap, 1990). While no one factor makes one farm more sustainable than another, Table 2 provides a few example of economic, ecological, and social criteria that can be useful for evaluating sustainability in agricultural operations.
The Economic Rationale for Sustainable Food Systems

Sustainable agriculture adds value to the agricultural economy by securing a higher price through niche markets and using fewer external inputs to cut costs. Local food systems substitute locally produced food for imported food, providing farmers with a larger share of the consumer’s food dollar and keeping the money that local consumers spend in the local economy. Farmers currently earn only 10% of each dollar spent on food; the rest of that dollar goes to processing, manufacturing, packaging, and distributing food, often adding value to agricultural products.

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<tr>
<th>Enhanced Soil Structure and Fertility</th>
<th>Water Quality Protection</th>
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<tr>
<td>Maintain ground cover year-round by using cover crops and mulches and by leaving crop residues in the field.</td>
<td>Use soil-building practices that increase soil organic matter and support a biologically active humus complex</td>
</tr>
<tr>
<td>Treat the soil not only as a physical and chemical substrate but as a living entity; manage the soil organisms to preserve their healthy diversity.</td>
<td>Provide buffer areas between fields and water bodies to protect against nutrient and sediment movement into lakes and streams.</td>
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<tr>
<td>Reduce the use of synthetic fertilizers by increasin on-farm nutrient cycling.</td>
<td>Use soil conservation practices that reduce the potential for water runoff and erosion.</td>
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<tr>
<td>Minimize or eliminate tillage.</td>
<td>Plant catch crops or cover crops that take up nutrients that may otherwise leach into the subsoil.</td>
</tr>
<tr>
<td>Make fertilization decisions based on soil tests.</td>
<td>Manage irrigation to enhance nutrient uptake and decrease nutrient leaching.</td>
</tr>
<tr>
<td>Maintain ground cover year-round by using cover crops and mulches and by leaving crop residues in the field.</td>
<td>Produce livestock in pasture-based systems.</td>
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<tr>
<th>Ecological Pest Management</th>
<th>Maximizing Biodiversity</th>
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<tr>
<td>Prevent pest problems by building healthy, biologically active soil; by creating habitat for beneficial organisms; and by choosing appropriate plant cultivars.</td>
<td>Use hedgerows, insectary plants, cover crops, and water reservoirs to attract and support populations of beneficial insects, bats, and birds.</td>
</tr>
<tr>
<td>View the farm as a component of an ecosystem, and take actions to restore and enhance pest-predator balances; base interventions on crop monitoring and economic damage thresholds.</td>
<td>Abandon monocropping in favor of crop rotations, intercropping, and companion planting.</td>
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<td>Identify and understand the pest species life cycle and ecology before applying chemicals; foster habitats the discourage pests and welcome their natural enemies</td>
<td>Integrate crop and livestock diversity production.</td>
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<tr>
<td>Use pesticides on an as-needed basis after biological and cultural controls have failed to keep pest populations below economically damaging levels</td>
<td>Plant off-season cover crops.</td>
</tr>
<tr>
<td>Surface and ground water quality</td>
<td>Manage pastures to support a diverse selection of forage plants.</td>
</tr>
<tr>
<td>Economic competitiveness or costs</td>
<td>Availability and quality of food and fiber</td>
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<tr>
<td>Farm profitability</td>
<td>Employment opportunities</td>
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<td>Return on investment</td>
<td>Rural landscapes</td>
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<tr>
<td>Income variability</td>
<td>Self esteem of farmers</td>
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<tr>
<td>Financial Risks</td>
<td>Ethics of farmers</td>
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<tr>
<td>Food costs</td>
<td>Self-perceived quality of life</td>
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| Table 1: Examples of sustainable agriculture practices |


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<th>Environmental:</th>
<th>Economic:</th>
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<tr>
<td>Surface and ground water quality</td>
<td>Economic competiveness or costs</td>
<td>Availability and quality of food and fiber</td>
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<td>Soil and water conservation</td>
<td>Farm profitability</td>
<td>Employment opportunities</td>
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<td>Energy efficiency</td>
<td>Return on investment</td>
<td>Rural landscapes</td>
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<td>Farm safety</td>
<td>Income variability</td>
<td>Self esteem of farmers</td>
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<tr>
<td>Food safety</td>
<td>Food costs</td>
<td>Self-perceived quality of life</td>
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| Table 2: Examples of evaluation criteria for sustainability |


The Economic Rationale for Sustainable Food Systems
outside of the region (Danbom, 1995). By increasing farmers’ incomes and the amount of money circulating in the local economy, sustainable agriculture and local food systems build the local economic base.

Sustainable agriculture and local food systems allow farmers to add value to their products in several ways. First, farmers can add value to their products by selling to niche markets, which are too small to be served effectively by generic, mass production methods, and offer higher prices because they meet specific consumer demands (Ikerd, 1996). Consumers may pay more for a higher variety or quality of food that is not available through conventional retail outlets. Second, farmers who use environmentally sound methods may also add value by reducing their reliance on external inputs (van der Ploeg, 2000). By conserving and reusing more internal farm resources, sustainable farms minimize their fixed expenses, reduce the portion of profits going towards production costs, and often receive a higher price for an environmentally safer product. Third, local food systems allow consumers to reconnect to their food system and feel responsible for the economic viability of local farmers who provide their food. As relationships of responsibility and trust develop, consumers may pay more to support ‘their’ local farmers (Hinrichs, 2003). Finally, farmers can increase the value of their agricultural products by processing or distributing the final product themselves. By cutting out the middlemen, farmers can reclaim more of the consumer’s food dollar for themselves.

Local food systems increase the wealth building capacity of local economies by acting as an import substitution strategy. Import substitution replaces imports from outside of the local region with products that are produced within the local economy (Bellows & Hamm, 2001; Jacobs, 1984; Persky, 1993). The emphasis on “local” food provides the foundation for substitution; Chatham County farmers that sell through local market outlets are local entrepreneurial small businesses that substitute their products for products produced outside of the county. Many Chatham residents support these small agricultural businesses by buying local products, rather than shopping outside of the county, or buying food produced outside of the region from local markets. Thus, when local food systems are supported by both local farmers and local consumers, they capture wealth that otherwise would have left the local economy.

A study of Southeast Minnesota provides an excellent example of how much money local economies lose in the conventional food supply system. Ken Meter, an expert in tracking the flow of food dollars, examined the economics of conventional food and farming systems in Southeast Minnesota. Meter found that in the region, 8,436 farms sold $866 million in farm products in 1997, but spent $947 million raising that food – an $81 million deficit (Meter & Rosales, 2001). He also estimates that farmers spent about $400 million in inputs and credit that went to distant suppliers outside of the region. Finally, he found that 303,256 resident of Southeast Minnesota spent $506 million buying food – which came almost entirely from producers outside of the state. Only $2 million went directly to local farmers through direct marketing channels. Meter estimates that between these figures, roughly $800 million per year flows out of the Southeastern Minnesota agricultural region as local families grow and buy food (Meter & Rosales, 2001).

By tracking the flow of regional versus non-regional money, food dollar analysis calls attention to the alarming rate at which local money is leaving local economies under the conventional
agricultural system and eroding the local capacity for wealth creation (Meter & Rosales, 2001). While food processing does make up 20% of the region’s manufacturing income, it only provides local wealth if corporate ownership is locally based in the region and local workers are earning adequate incomes (Meter & Rosales, 2001, p. 5). While local money may support local retail outlets, manufacturing, and input suppliers, only a small fraction of the money stays in the local economy, as income, unless the firms are locally based.

In their 2003 report, Bringing Kentucky’s Food and Farm Economy Home, the Community Farm Alliance (CFA) traced how much money was leaving the state to purchase food produced elsewhere. Using the 1983 Cornucopia Project report from the Rodale Institute as a baseline, the CFA measured how much of the state’s food supply was produced by Kentucky farmers then, and compared it to levels of current production. The study found that in 1980, Kentucky imported 63% of its food, which cost the state $1.8 billion in imports. If Kentucky farmers had produced that food, each farm could have potentially earned an additional income of $17,000. The Cornucopia Project was intended to raise consumer awareness of where food came from and the economic ramifications of relying so heavily on outside production. But by 2003, the CFA found that, largely, nothing had changed. Kentucky was still losing the majority of its agricultural value by sending products outside of the state for processing and finishing; most of the finished product value is added in these two stages. So, even though Kentucky farmers produce more agricultural products than state demand requires in some sectors, very little of that production actually goes to meeting demand because the conventional supply chain sends products out-of-state for the value-added stages of production (Blobaum & Plath, 2003).

The CFA’s premise for doing the study was to argue that, at a historical moment when the state’s small tobacco farmers wanted to transition into food production, Kentucky could revitalize its agricultural economic base by producing the majority of its food within the state. By showing that most of Kentucky’s agricultural produce left the state for value-added stages of production, the CFA convinced the state legislature to create a system that helped local farmers produce food for local demand. At the heart of their argument was the idea that sustainable agriculture and local food systems would capture local wealth that was currently leaving the state, and redirect it into local and state economic growth.

As both the Southeast Minnesota and Kentucky examples point out, the conventional agricultural system is still a strong economic driver in rural communities, but very little of that revenue contributes to an increased quality of life for farmers or the creation of local wealth. Local food systems allow farmers to capture a greater share of consumers’ food dollars, which increases their incomes and personal wealth. As local businessmen who rely on local consumers, sustainable farmers may have a stronger commitment to the local economy; as a result, they are more likely to spend their money and invest their savings in the local economy. This commitment to the local economy creates a multiplier benefit that further expands local wealth. Consumers that participate in local food systems stop the economic leakages that result when people buy imported products (Jacobs, 1984). By supporting local rather than imported foods, consumers keep their food dollars circulating in the local economy (Meter & Rosales, 2001). As that money circulates, it has multiplier benefits that increase not only farmer incomes, but also the incomes of businesses that the farmers support with their increased incomes. This economic
logic forms the basis for using sustainable agriculture and local food systems as a strategy for building local rural economies.

The Environmental and Social Rationale for Sustainable Food Systems

The early origins of sustainable agriculture began as early as the 1840s, when a scientist named Justin von Liebig broke down the biological composition of a plant’s relationship with the soil (Pollan, 2006a). In his book Chemistry in the Application to Agriculture and Physiology, he spelled out what chemicals a plant needed to grow and argued that chemical fertilizers could provide them while maintaining the same level of productivity, without the labor-intensive use of manure (Pollan, 2006a; Kirschenmann, 2004). Von Liebig’s work created the foundation for chemical applications that later scientists would turn into fertilizers, pesticides and herbicides. However, the use of chemicals and the industrial system they enabled treated farming as a mechanical, rather than a biological system; while the chemicals could make plants grow, they failed to take into account the plant’s symbiotic biological relationship with the soil.

Beginning in the 1940s, a number of agriculturists began writing in reaction to the fundamental practices and assumptions of the industrial system. In particular, movements like humus farming and complex farming systems took issue with how chemical application breached the natural relationship between plants and soil. These movements arose in direct response to the industrialization of agriculture, which broke agriculture down to its most essential components to create an efficient system of production. However, leaders like Albert Howard and D. Browne recognized that farming, as a biological system, could not be reduced to the sum of its parts; instead it was a dynamic living system that depended on symbiotic biological interactions to continually regenerate itself (Kirschenmann, 2004).

The birth of the modern environmental movement took place with Rachel Carson’s book, Silent Spring, a groundbreaking work on the effects of pesticides on nature and human health (Kirschenmann, 2004). With Carson’s book as its foundation, the environmental movement that grew up in the 1970s and 1980s focused on the negative natural externalities of the industrialized agricultural system (Kirschenmann, 2004; Ikerd, 1996). Crop nutrients and pesticides began to show up in groundwater and surface water from field runoff, growing levels of soil degradation and loss were verified, and traces of pesticide residue were increasingly documented in the food supply (Kirschenmann, 2004). Combined with the depletion of water and natural energy sources, the attention on environmental degradation and resource shortages began to bring public awareness to unintended consequences of the industrial agriculture system.

On the consumption side, increased fears from regular food scares and a rising awareness of the consequences of industrial agriculture caused consumers to mistrust the lack of transparency in the industrial agriculture system. Food scares, caused when diseases like salmonella or Escherichia coli (E. coli) are found in the food system and publicized by regional, state, and national recalls, have called the safety of industrial agriculture and its processing system into question. Outbreaks have most commonly been associated with poultry, beef and pork. One of the most famous outbreaks occurred in 1993, when meat contaminated with E. coli in several Jack in the Box restaurants killed four children (Burros, 2006a). Following that outbreak, the USDA, which is responsible for regulating meat, eggs, and dairy, began cracking down on meat...
processing plants to decrease E. coli in the food supply. But despite the renewed intensity of regulatory control, E. coli and salmonella are found in the food supply with increasing frequency. In 2007, 21 recalls were made for contaminated meat; this number is up significantly from eight in 2006 and five in 2005 (Martin, 2008). On February 17, 2008, the USDA recalled of 143 million pounds of tainted meat, the largest recall in history. Perhaps the most disturbing finding from this example is that 37 million pounds of the recalled beef went to schools, where the tainted meat was served in lunch programs.

Incidences of contamination in produce and processed foods are growing in frequency as well; in fact, produce is responsible for more outbreaks of foodborne disease than meat, poultry, fish, eggs, and milk combined (Burrows, 2006c). The Centers for Disease Control found that the number of produce-related outbreaks rose from 29 in 1997 to 86 in 2004 (Burros, 2006d). In 2006, E. coli contaminated fresh spinach that was used for prepackaged salad mixes, killed three people and sickened over 200 throughout 19 states (Sander, 2006). Contaminated foods, coupled with a national distribution system, show the potential for spreading disease on a national basis when the industrial agriculture system doesn’t work (Pollan, 2006b). With the increasing incidence of foodborne disease outbreaks and the high profile they garner in the national media, consumers are losing faith in the safety of the food supply and the system that produces it.

These food scares have exposed the gross inadequacies of the food regulatory system in the United States. Marian Burros, a journalist for the New York Times, said that the system has been described as the regulatory equivalent of the Model T. The outbreak of tainted spinach acted as a catalyst, causing consumers, government officials, and industry experts to call for a close review of the Food and Drug Administration (FDA) (Burros, 2006c). However, the review exposed a highly precarious situation: despite being responsible for regulation of an estimated 80% of the food supply, the FDA has half of the budget of the USDA and only employs 1,962 food inspectors for 57,000 food processing plants, compared to the USDA’s 7,700 inspectors for 6,500 meat and poultry plants (Burros, 2001; Martin, 2006). At a time when the amount of imported horticulture products has risen by 145%, the country’s major regulatory agency has been forced to cut back its workforce and budget, from $48 million in 2003 to $25 million in 2006. Many critics are calling the nation’s bureaucratic regulatory system, spread over 15 federal agencies and regulated by 35 different laws, a ticking time bomb and consumers are becoming much more aware of the situation.

In addition to the insecurity and doubt that the food scares are fostering, popular literature like Michael Pollan’s 2006 book, The Omnivore’s Dilemma, exposes the negative economic, social, and environmental side effects of industrial agriculture to average citizens. Pollan’s book takes readers on a journey down three food supply chains to expose the negative health, economic, and environmental externalities of current agricultural production – heavy reliance on fossil fuels, the potential for food contamination in confined feeding operations, and the legacy of industrialized corn production. By juxtaposing conventional agriculture with industrial organic and sustainable organic food supply chains, Pollan offers readers an easily accessible narrative intended to shed light onto the mysterious production of food today. In addition, he attempts to provide an alternative that allows consumers to take back control of their food and health choices, while minimizing the negative impacts that are associated with agriculture today.
The parallel developments and shifts in both industrial and sustainable agriculture have resulted in a system where neither farmers nor consumers feel secure or confident in their safety, their longevity, or their place in the system. Farmers want a system that is economically, environmentally, and socially more equitable and beneficial, considering the work they put in. Consumers want more transparency and accountability from a food supply system that is more economically, environmentally, and socially sustainable. Sustainable agriculture, when coupled with local food systems, provides that system.

**Local Food Systems: Place-Based Application of Sustainable Agriculture**

Local food systems are the natural vehicle for connecting farmers and consumers who are interested in the alternative paradigm that sustainable agriculture offers. Local food systems, like sustainable agriculture, have no set definition because each local system develops as a response to the needs of the local community. However, a few broad definitions help frame this analysis of local food systems. Gail Feenstra, an advocate for local food system development in California, says that local food systems “are rooted in particular places, aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices and enhance social equity and democracy for all members of the community” (Feenstra, 1997). More broadly, Clare Hinrichs argues that local food offers a “banner under which people attempt to counteract trends of economic concentration, social disempowerment, and environmental degradation” (Hinrichs, 2003).

However, the CFA, a grassroots farm advocacy group in Kentucky, has become a leader in local food systems by developing the LIFE concept. LIFE stands for local innovative food economies. The CFA argues that the basic idea of local foods is to create a system where people grow and eat food closer to home (Blobaum & Plath, 2003). The CFA’s concept ties together the best interests of farmers and consumers, allowing farmers to make a living from their farms by capturing a greater share of each food dollar, providing consumers with fresher and more nutritious food at a lower cost and building the local economy by keeping more of local wealth local (Blobaum & Plath, 2003).

“Local” itself is essentially a fluid and ongoing negotiation between farmers, consumers, and market outlets about how best to meet the diverse and balanced food needs of the local community in an economically, environmentally, and socially sustainable way. Many systems use a flexible definition of local, arguing that closer is better, rather than imposing a distance limit. For example, Chapel Hill residents may consider buying fruits and vegetables from South Carolina preferable to buying fruits and vegetables produced in Florida. With this flexibility, local communities can balance prioritizing the local economy with meeting their needs.

Local food systems can take any number of different forms. In particular, farmers’ markets, community supported agriculture schemes, food cooperatives, farm stands, pick your own operations, and restaurants that feature local foods are market outlets that are typically associated with local food systems. From a strategy perspective, local food approaches might include direct marketing, shorter food supply chains, point of origin labeling, and region-specific foods (Hinrichs, 2003). While some of these strategies, popular especially in Europe, focus more on the “recovery of regional distinction and the ‘invention of tradition’”, in the United States, local
food systems attempt to diversify the food supply and agricultural systems (Hinrichs, 2003). The CFA argues that in local food systems, economic cooperation, diversity, balance, and adaptability are key, because a diversity of crops, markets, and relationships, marked by cooperation, creates systems that are more adaptable and responsive to the land (Blobaum & Plath, 2003).

In recent years, local food systems have risen in prominence because they offer an alternative to centralized food supply chains that exclude consumers from the growth, processing, and manufacturing of their food. In contrast, as the basis for a decentralized food system, local foods provide opportunities for transparency, accountability, and relationships of trust between farmers and consumers (Pollan, 2006b; Hinrichs, 2000). Especially in systems characterized by direct markets like community supported agriculture shares or farmers’ markets, consumers can meet the people who grow their food. These short supply chains allow for conversation about production methods and farm visits, where consumers can confirm with their own eyes that the farmers treat their livestock humanely, raise crops in ecologically sound ways, and process their products in clean, safe environments. Such an interaction is next to impossible in the industrial food chain, as Pollan demonstrates in The Omnivore’s Dilemma. Local food systems have thus risen in popularity among consumers because they allow for community surveillance of the food supply, which offers a far greater perception of safety for some consumers than organic, the previous shorthand for safe, healthy, sustainably produced food, can provide.

As a cautionary note, local food systems are not inherently safer than conventional food systems. In “Avoiding the Local Food Trap”, Born and Purcell argue that there is a local trap, reflected in “the tendency of food activists and researchers to assume something inherent about the local scale. Local is assumed to be desirable; it is preferred a priori to larger scales” (Born & Purcell, 2006, p. 196). While in theory, local food systems are dedicated to sustainability, the local scale itself has no inherent power to make the agricultural system more economically viable, more environmentally sounds, or more socially just. For example, some critics argue that local food systems magnify existing inequalities of access to fresh, healthy food by serving mainly the upper and middle classes, rather than providing new access to food-insecure social groups (Allen, 2004; Bellows & Hamm, 2001). The local scale should be viewed as one strategy for responding to the failures of industrial food supply chains, rather than as a system that is inherently more sustainable or desirable because of its association with supposedly inherent positive qualities.

Thus far, this paper has looked at the theoretical rationale of how and why sustainable agriculture and local food systems should benefit rural economies and communities economically, environmentally, and socially. In the next two chapters, I present a case study of Chatham County, North Carolina, to examine how well sustainable agriculture and local food systems actually perform as a high road community economic development strategy in practical terms.
Chapter 3: Chatham County – A High Road Case Study

Chatham County, North Carolina has gained a reputation over the last 30 years as an epicenter of sustainable food systems – due to its critical mass of sustainable farmers, local food advocates, and supportive institutions and market intermediaries. In this chapter, we will examine the efficacy of sustainable food systems through the lens of Chatham’s experience.

To evaluate how well sustainable agriculture and local food systems work as high road economic development strategies, two questions must be answered: what works? and what does not? Development of the local resource base and a supportive institutional system are the two key successes of sustainable agriculture and local food systems in Chatham County.

Sustainable food systems have been highly successful at developing local resources, which is a key motivation for local economic policy to embrace high road strategies. In particular, sustainable agriculture and local foods allowed local people to develop innovative and specialized strategies that add value to agricultural production and renew the county’s agricultural economic base. In addition, the sustainable food movement in Chatham County has fostered a unique, interconnected system of supporting institutions that reinforces resource development while using education and advocacy to create some important linkages between the agricultural and non-agricultural segments of the community and economy. While these linkages are necessary to create a dynamic and diversified economic base, Chatham County’s inability to develop a comprehensive set of forward and backward linkages has significantly limited the system’s capacity to fully integrate into and support the county economy.

This chapter provides both a general and agricultural overview of Chatham County, setting the stage for the story of how and why sustainable agriculture and local food systems arose as an economic development strategy in the area. Then, the case study looks at the evolution of local sustainable agriculture, by examining how a combination of sustainable farmers, supporting institutions, and market intermediaries created unique interactions that helped develop locally-based knowledge, work experience, and skill sets that have become invaluable resources for Chatham County. Finally, by examining forward and backward linkages, the case study evaluates how well Chatham County’s sustainable food system has been integrated into and enhanced the county’s mainstream economy.

Setting the Stage: A Broad View of Chatham County

Chatham County is located in central North Carolina between the Piedmont Triad and the Raleigh-Durham-Chapel Hill Triangle. The county has a land area of 682 square miles and its largest city, Siler City, is located on the western side of the county. In 2006, Chatham County had a population of 60,052 (STATSIndiana, 2008). The county is growing rapidly; since 1990, the county’s population has grown 54% (STATSIndiana, 2008). The majority of Chatham County’s residents are white, while 17.1% of county residents are African American, and 11.4% are Hispanic (STATSIndiana, 2008). However, demographic trends suggest that the Hispanic population is increasing quickly, which creates a rich diversity of cultures throughout the county.

Chatham County has the third highest per capita income in the state ($38,426) and the fifth highest median income ($48,946). In contrast, Chatham County had the lowest weekly wage
($556) in 2006 of the surrounding counties (Jolley, 2008). This discrepancy between high resident incomes and low wages from jobs within the county supports the finding that Chatham County has a high out-commuting rate; 55% of residents commute out of the county for work, drawn to higher paying employment in the Triangle and Triad metropolitan regions (Jolley, 2008). This data, coupled with the increasing growth rate, suggests that Chatham County is quickly developing into a bedroom community for Chapel Hill, Raleigh, and Greensboro.

Chatham County has a very well educated resident population. According to the 2000 Census, 77.9% of county residents have a high school diploma and 27.6% have a college degree or higher (STATSIndiana, 2008). Chatham County has the tenth highest rate of college degrees in the state, which is a great asset to the county in terms of developing new employment.

**Conventional Agriculture in Chatham County**

Agricultural statistics and interviews with farmers show that poultry and cattle are not only the biggest agricultural sectors in the area, but that they are also very important economic drivers in Chatham County. In 2005, livestock, dairy, and poultry brought in $122.1 million in cash receipts. This emphasis on cattle is further reflected in the sheer number of animals raised. Chatham County was number one in the state for producing 17,000 beef cattle in 2006, and third in all cattle production in the state (North Carolina Department of Agriculture and Consumer Services, 2007). But while the cattle industry may have a competitive advantage in Chatham County, poultry production is clearly the leading economic industry in the area. Poultry provides roughly $116 million in farm income per year in Chatham County – it is by far the most economically beneficial agricultural industry in cash receipts alone (Groce, 2000). The county produced 32.4 million broilers and 719,000 additional chickens in 2006 (North Carolina Department of Agriculture and Consumer Services, 2007). Farmers in the county grow broilers under contract for Townsend Chicken and Pilgrim’s Pride, two large-scale poultry processing plants located within the county. Approximately 480 farmers have integrator contracts with local processors, where the company owns the birds and provides feed and other inputs to farmers, who own the poultry houses and land (Groce, 2000).

Poultry and cattle do so well in Chatham County for two reasons. First, poultry and cattle are complementary livestock options, and second, the erosion-prone soil in the county is not conducive to crop production. The history of agriculture in Chatham County bears this out. Prior to the twentieth century, most farms operated on a subsistence basis, providing food for the family and not much else (Groce, 2000). Farms also grew some small grains, which were not particularly suited to local soil or topography, causing severe erosion; today, grain crops have a small part in agricultural economy of Chatham County (in 2005, cash receipts for crops totaled $6.21 million, a small fraction of the $131.8 million total) (Groce, 2000; North Carolina Department of Agriculture and Consumer Services, 2007).

Chatham County underwent its first major agricultural transition with the introduction of large-scale poultry production in the 1940s. Poultry provided a new and lucrative source of income for farmers who had only raised a few chickens before; soon, farmers throughout the county were

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2 Surrounding counties include Alamance, Durham, Guilford, Lee, Orange, Randolph, and Wake.
putting up large poultry houses to take advantage of the new trade. The poultry industry led to hatcheries, feed mills, processing plants, and transportation infrastructure for shipping finished products out to the expanding national market (Groce, 2000). These supporting businesses provided additional employment and income that were welcome in Chatham County. In addition, food manufacturing provides almost half of the manufacturing employment, with 2,376 employees and an average wage of $23,327 (Employment Security Commission of North Carolina, 2006). The county relies on Townsend and Pilgrim’s Pride, two chicken processing plants to provide the majority of these jobs, especially near Siler City (Groce, Personal Interview, February 13, 2008).

The second major agricultural shift came when farmers recognized that chicken manure from the poultry houses could enhance the soil’s fertility. Chicken manure was particularly good for growing fields of lush, green grasses, which provided pastureland for cattle and helped to stabilize the erosion problem. In this way, poultry and cattle are complementary; large-scale production of poultry provides the mass quantities of manure needed to fertilize Chatham County’s particular type of soil and provide grass, which is a much more lucrative crop than small grains when it is used for cattle forage. As one farmer said, he considers himself a grass farmer and a beef salesman.

The third major shift took place less than 30 years ago, when cattle production shifted from dairy to beef production. At the height of the dairy boom in the 1960s, Chatham County had 50-60 working dairies; today, only five dairy operations remain in the county (Perry, Personal Interview, January 23, 2008). However, overproduction of milk in the late 1980s led the federal government to offer dairy farmers a buyout. Dairy cattle farmers transitioned to beef cattle production. It was a natural transition for many dairy farmers, since they already had the pastureland and experience with cattle. As a result, cattle production has become the second most profitable agricultural industry in Chatham County.

Today, the county has 1,128 farms and approximately 200 square miles in farmland (Groce, Personal Interview, February 13, 2008; Groce, 2000). The average farm size is 105 acres, and the average age of Chatham County farmers is 57 (North Carolina Department of Agriculture and Consumer Services, 2007). Interviews with poultry and cattle farmers in the county revealed that many of these family farms have been in Chatham County for multiple generations. Despite their large scale and contracts with companies like Townsend and Pilgrim’s Pride, these operations are family farms, with a long and proud history of contributing to the economic and social growth of Chatham County.

**The Rise of Sustainable Agriculture in Chatham County**

While conventional farming continues to play a vital role in the local economy, Chatham County has also witnessed the rise of an entirely different way of farming in the area. Beginning about 30 years ago, a new breed of farmers began moving to the area with the intention of farming sustainably and producing food for local consumption. These farmers were pioneers, developing the first pesticide-free and sustainable agriculture operations in the county, well before organic became popular. Sustainable farmers in Chatham County grow and produce a wide variety of horticultural and animal products, including free-range chickens and eggs, grass-fed beef,
organic milk, flowers and greenhouse products, sheep, heirloom and traditional vegetables, fruits, processed food products, and baked goods. These sustainable farms operate on a small scale, producing their annual income on no more than 10-15 acres of production land; most harvest less than five acres, observing the rule that, in sustainable agriculture, one person can generally attend only one acre of production land (C. Jones, Personal Interview, January 30, 2008; Dow, Personal Interview, February 4, 2008). The majority of the farmers interviewed have been farming for more than 20 years; only two, however, have been farming for less than five years. Finally, when asked why they chose Chatham County as their location, more than half said that they either inherited land or bought it when land prices were still cheap; additional location motivations included the area’s proximity to Chapel Hill and the Triangle and various personal reasons.

Although each farmer framed their reasons for choosing to go into sustainable agriculture in different terms, themes like a personal desire for the lifestyle, additional economic control, wanting to produce healthy and/or environmentally friendly food, and filling market gaps arose as commonly shared motivations. Farmers fell fairly evenly into two groups: farmers who grew up farming and farmers with no previous agricultural experience. Of the farmers who grew up farming, many cited a growing awareness of the negative environmental externalities and a desire for more economic control (wanting to sell locally produced food or add value to their crops) as their motivation for moving away from conventional agriculture into sustainable agriculture. In the other group, farmers said that they used previous gardening experience, reading materials, classes, and collaboration with more experienced farmers to supplement their lack of experience. Encouraged by the 1960s Back to the Earth movement and a desire to reconnect with the land, many farmers wanted the active lifestyle that farming offered and found that sustainable agriculture provided an avenue to couple their personal environmental beliefs with producing quality food for local markets.

Chatham County’s leading sustainable farmers were distinctly ahead of their time, especially for the South; as a result, they remained on the margins of the area’s agricultural community and economy during their early years of production, filling gaps in the larger, more progressive regional economy around the Triangle. Interestingly, their collective status as outsiders forged a bond between many of these new farmers, allowing them to cooperate and support each other. The community of small farmers that grew in Chatham County shared information, which expanded the knowledge base of the whole and protected their collective market value through cooperation, rather than undercutting one another, as the local market for fresh, local food slowly grew.

A primary characteristic of these small, management-intensive farms was that their operators were innovative and creative. While about half of sustainable farmers grew up on farms, those that lacked previous farming experience educated themselves primarily through trial and error, reading and asking questions of more experienced farmers (both conventional and sustainable); 20 and 30 years ago, when many of these farmers started out, traditional agricultural education and extension services provided little in the way of guidance for sustainable and organic methods. However, trial and error served sustainable farmers well, forcing them to continually try new things and be innovative; indeed, it not only educated them, but helped them hone their business development and marketing skills. As one farmer, Cathy Jones of Perrywinkle Farms,
said, the only barrier to her farm’s growth and success was hers (C. Jones, Personal communication, January 30, 2008). By this, she meant that her business’ growth was only limited by her personal ability to sell what she produced. This attitude, echoed by many of the more experienced farmers, shows that their personal independence, innovation, and persistence was essential to the success of their businesses. As these small farmers tested new methods and matched them to expanding market niches over several years and decades, they became extremely market savvy and creative, adept at identifying and meeting the needs of diverse niche markets.

**The Development of Sustainable Food Systems Institutions and Market Intermediaries**

Over time, this group of small, sustainable farmers coalesced into a support network for agricultural education, information exchange, and market development that is the underpinning of Chatham County’s sustainable agriculture community. Bill Dow, who runs Ayshire Farms, was a part of the original group that started the Carrboro Farmers’ Market 30 years ago; today, he participates in the market along with farmers Cathy Jones, Fleming Pfann of Celebrity Dairy, and Danny Denson and the LeTendres of Sunny Slope Greenhouses. Many of these farmers provide the backbone for sustainable agriculture in Chatham County and are being joined by newer farmers like Amy Sugg of Bonlee Grown Farm, Judith Lessler of Harland’s Creek Farm, and many growing start-ups. These farmers led the way in starting Chatham County’s own farmers’ markets, opening market connections with local restaurants, and supporting Chatham Marketplace. Jim LeTendre, who received his agricultural education from the community college system, collaborated with Harvey Harmon, a leading sustainable farmer at the time, to create the framework for Central Carolina Community College’s sustainable agriculture program, after seeing the need for information sharing and hands-on experience between old and new farmers in Chatham County (Kohanowich, Personal Interview, February 6, 2008). In addition, several of Chatham County’s sustainable farmers sit on farmers’ market boards, institutional advisory councils, and special interest committees, whose memberships overlap with one another, creating both formal and informal opportunities for collaboration, cooperation, and idea-sharing. This network has fostered and provided the support for several key sustainable agriculture institutions, including sustainable agriculture extension services, Carolina Farm Stewardship Association, and the sustainable agriculture curriculum at Central Carolina Community College.

**Sustainable Agriculture Extension Services**

The North Carolina Cooperative Extension has supported farmers in Chatham County, providing research-based knowledge to increase economic prosperity, environmental stewardship and quality of life, since its creation in 1914. However, Chatham County is lucky to be the headquarters of one of the state’s only Sustainable Agriculture Extension Agents, Debbie Roos. Roos was hired in 2001 and is responsible for advising farmers on sustainable and organic agricultural production, alternative agricultural enterprises, conventional fruit and vegetable production, and beekeeping. Roos’ position is particularly unique because it is fully funded by Chatham County. North Carolina extension agent positions are usually funded through a 50-50 cost-share program between North Carolina State University (NCSU) and the agent’s host county. When NCSU had budget problems and decided to cut their share of funding for the
sustainable agriculture agent position entirely in 2000, the county government opted to fund 100% of the sustainable agriculture extension agent position, in order to continue the services that they deemed so valuable (Groce, Personal Interview, February 18, 2008). Chatham County’s government listened when sustainable farmers and their advocates argued that the sustainable agriculture agent provided essential education and research services, which benefited both the agricultural and non-agricultural members of the county by providing continuity and support to the sustainable food community. This kind of institutional commitment, by both the sustainable agriculture community and local government, shows how important sustainable agriculture is to Chatham County.

In her six years in Chatham, Roos has become an invaluable resource for farmers throughout the state. She created the Growing Small Farms website in 2002 as a centralized location to provide information about grower resources, educational workshops, farm tours, farmers markets, and marketing tips after a survey revealed that 95% of farmers use the Internet. In 2007, the Carolina Farm Stewardship Association recognized her as the Extension Agent of the Year for all of her hard and diligent work assisting sustainable farmers. Roos’ innovative skills and hard work will provide farmers with over 35 workshops in 2008, including farm tours and practical demonstrations in production, marketing, and business development. Many farmers say that the sustainable agriculture extension position finally fills a gap in institutionalized education and research that was missing for so many years.

Roos’ educational role is not limited to solely advising farmers; she also advises and works with, both formally and informally, other support institutions including the community college’s sustainable agriculture program, Chatham County’s farmers markets, and Carolina Farm Stewardship. The relationship is mutually reinforcing; key members of these organizations, in addition to local farmers, sit on Roos’ advisory board to help her determine local educational priorities and direct her extension services to best serve sustainable agriculture in Chatham County and throughout the state.

Carolina Farm Stewardship

The Carolina Farm Stewardship Association is “a membership-based organization of more than 900 farmers, processors, gardeners, businesses and individuals in North and South Carolina who are committed to sustainable agriculture and the development of locally based, organic food systems” (CFSA Website). In 1979, a group of farmers, gardeners, and consumers created the CFSA to foster the growth and distribution of organic food in North and South Carolina. Because of the prevalence of leading organic and local farmers in Chatham County, the organization chose Pittsboro, North Carolina, as its headquarters. The CFSA began by providing a mixture of technical and business development assistance, organic certification standards, and consumer awareness to farmers and consumers – today, their focus remains fairly similar, meeting an educational and advocacy need for farmers and consumers that are committed to healthy food and farms in their region. According to their website, “CFSA provides support of local and organic food systems through promotion and marketing assistance; education and advocacy efforts; and information sharing/networking. This is accomplished through several means, including the bi-monthly membership newsletter Stewardship News, this website, local Farm Tours, local Organic Growers' and Gardeners’ Schools, Regional Consumer Resource
Guides to Local and Organic Food, our Annual Sustainable Agriculture Conference, active regional chapters, Membership Directory, Apprentice Referral Service, Elementary School Sustainable Gardening Curriculum, Organic Certification education, policy advocacy, research on marketing and production of organic crops, public and media outreach, coalition-building with like-minded organizations and businesses, and technical assistance to farmers.” Indeed, CFSA is an invaluable resource to farmers and consumers alike who share the CFSA’s mission of promoting organic and local foods in North Carolina.

*Sustainable Agriculture Program at Central Carolina Community College*

The Sustainable Agriculture Program at Central Carolina Community College (CCCC), also in Pittsboro, is another phenomenal resource for sustainable farmers. The program provides both continuing education and curriculum courses to meet the educational needs of the community, for both new and established sustainable farmers. The program started in 1995, when a group of new farmers approached some of the more experienced sustainable growers in Chatham and asked them to share their advice and experience. LeTendre, inspired by his own agricultural education in the community college system, worked with Harmon, a leading local organic farmer, to organize a continuing education program, where established farmers shared their skills with farmers that were just starting out. The continuing education program began from that collaborative community impetus and continues to provide classes that match existing skill sets with the needs of newer members of the local community.

In 2002, the college further institutionalized the local knowledge by starting a curriculum program. The original partnership that advised the development of the curriculum program included 30 to 50 members, representing organizations such as the CFSA, the Rural Advancement Foundation, Extension Services, the Livestock Breed Conservancy, NCSU, North Carolina Agricultural and Technological State University, and NC Real. The partnership urged the community college to formalize local educational resources to provide new farmers with experience and marketable skill sets that would augment their entrepreneurial efforts and expand the foundation for linking sustainable food systems to local communities and their economic bases. As the first program of its kind in North Carolina, the sustainable agriculture curriculum at CCCC helped cement Chatham County’s reputation as an creative and lucrative center of sustainable food system development.

The college now offers sustainable agriculture certificates and an associate’s degree to new farmers. As the only sustainable agriculture curriculum in the entire state, CCCC attracts people from all over the state and outside with its remarkable program. The particular strength of the sustainable agriculture program at CCCC is that it brings together the myriad local resources and local knowledge of sustainable farming that Chatham County has become known for, and provides a hands-on, educational experience that not only increases the capacity of the existing farm network, but also expands that network by sharing with and teaching new farmers, thus ensuring the longevity of local agricultural knowledge in Chatham County. As part of the strong institutional network in Chatham County, CCCC and the other organizations featured in this section are integral to supporting local sustainable farmers and connecting them with the market outlets featured in the next section.
**Emerging Market Intermediaries**

While this emerging network of institutional support organizations has been essential for the growth of sustainable agriculture, market outlets for fresh and local produce have both laid and reinforced the foundation for local food systems in Chatham County. Just as so few conventional educational resources were geared to organic and sustainable methods 20 to 30 years ago, early sustainable pioneers often found that few conventional market outlets were open or appropriate for their agricultural products. These farmers relied heavily on their own marketing skills to create markets, often selling directly from the farm or developing buying relationships with local restaurants and smaller markets. The Carrboro Farmers’ Market provided the initial outlet for many of Chatham County’s early sustainable farmers to sell their products directly to the public. The market’s proximity to Chapel Hill and the University of North Carolina provided a market of people with progressive mentalities and extra disposable income – over the years, the growth in demand for fresh and local food has been fostered by the support of this market demographic. In 1988, Weaver Street Market opened to provide healthy, fresh, fair, and environmentally safe food in Carrboro; their mission statement includes a commitment to buy locally from producers who use ecologically sound and socially fair methods. Their local purchasing policy made them one of the first retail outlets in the area to source products from the local community, and as their business has grown, Weaver Street Market has become a widely and well-known example of how to incorporate local foods into cooperative retail markets.

As interest and support for local, healthy food has grown, so too did the market outlets that supported local farmers. Since the beginning of the Carrboro Farmers’ Market, markets have also started in Durham, Raleigh, Fearrington Village, Pittsboro, Siler City, Sanford, and Saxapahaw. This increase in farmers’ markets provided new outlets for the growing population of sustainable farmers in Chatham County, and has been instrumental in building the reputation of Chatham County as a supportive, central location for small farmers. In particular, the markets in Fearrington, Pittsboro, and Siler City provide opportunities for farmers that are new to sustainable farming to enter the supply side of the local food system. In 2005, Chatham Marketplace opened, following Weaver Street Market’s example, to provide local residents with locally grown and produced food. Chatham Marketplace wholeheartedly embraces the local food systems concept and purchases as many products as possible from within a 250-mile radius. The market is committed to supporting not only local farmers, but also the local economy and community as a whole. Together, Chatham Marketplace and the county’s farmers’ markets form the supply-side foundation for supporting sustainable agriculture and local foods in Chatham County.

As this section has shown, the individuals, institutions, and market intermediaries that form Chatham County’s sustainable food movement encourage the development of human and natural resources as a high road economic development strategy to fill gaps and create new opportunities for their rural economy. These actors add value to their work by supporting, cooperating, and collaborating with one another to increase their market niche and social acceptance within the conventional agriculture and non-agriculture segments of the county. The presence of so many supportive institutions and market intermediaries suggests that the community truly values the community economic development contribution that the sustainable food system makes to the
county. The next section will look at how well the sustainable food system is integrated into the local economy, by examining the forward and backward linkages that sustainable farmers make, or don’t make, with other economic actors in the area.

**Economic Integration of Chatham County’s Sustainable Food System**

While social and institutional support are important, the backward and forward linkages that sustainable agriculture makes with the local economy are a more important determinant of sustainable agriculture’s success as a locally-based economic development strategy. Backward linkages determine how many inputs a farmer purchases from a local manufacturer or retailer; when inputs are manufactured and sold locally, a greater percentage of the value added to that input remains within the local economy. When farmers have to buy inputs produced outside the local region, the local economy essentially leaks that money. Similarly, when consumers purchase food produced outside of the region, their disposable income leaks out of the local economy. Local food systems are important, then, because by creating forward linkages to market outlets, they plug the leak of local money leaving the community.

Backward and forward linkages are essential to the success of any economic development strategy because they prevent the flow of local money outside of the region and redirect it to additional local businesses that benefit from a multiplier effect. When a farmer purchases inputs from a local manufacturer, the value of that input stays in the community as income for the retail worker and any employees involved in producing the input; that income then goes on to circulate to additional employees through the purchase of additional goods. In Chatham County, sustainable farmers have been very successful at making certain kinds of forward linkages, particularly with alternative markets like farmers’ and co-op markets; however, they have yet to break into more mainstream market outlets like grocery stores, particularly in the local region. In addition, due to a lack of locally available inputs, few backward linkages have been made between local businesses and Chatham County’s sustainable agriculture community. As a result, despite its reputation in the area of sustainable food system development, Chatham County is not capturing the full economic potential of sustainable agriculture and local foods as development strategies.

**Backward Linkages: Are Inputs Locally Sourced?**

Interviews with farmers revealed that very few inputs, especially specialized inputs that are environmentally safer or necessary for organic production, are available or produced locally in Chatham County. Although the county relies on manufacturing to provide 20% of its local employment, there are nearly no manufacturing firms that produce fertilizer, soil amendments, seeds, or other basic raw agricultural inputs. Only Brooks Contractor in Goldston, North Carolina, manufactures compost from regional waste. Considering the agricultural history and orientation of Chatham County, this is a significant gap in terms of replacing imports with locally produced goods. Garner, North Carolina, is the closest location that provides the necessary types and variety of seeds that sustainable farmers need; however, many find it more convenient to order their seeds from established companies in Maine. Farmers said that they were going to Laurinberg, North Carolina, and Virginia for feather meal and other soil amendments, Roxboro, North Carolina, for fertilizers, and Goldston for compost. Those raising
chickens for organic meat and eggs had to have flocks shipped in from as far away as Indiana and Arizona.

Most of the sustainable farmers said that they were currently buying their inputs from the closest available producer; almost everyone said they would be willing to buy local, if local businesses met the same quality, price, and variety standards as their current sources. However, some mentioned certain limitations that made it unlikely that they would change, even if a similar provider did start up locally. Several farmers, including Jones and Dow, said that they preferred and would continue to buy their seeds from established seed houses outside of the state; because seeds cost so little to ship and established businesses offer incomparable variety, they said that it was unlikely that a local start-up seed business could provide the same inputs with any cost advantage. In the case of larger inputs, like soil amendments, compost, and hay, several farmers said they would be enthusiastic to switch to a local provider, because these types of inputs do not vary significantly and would have greatly reduced transportation costs if they could be sourced locally. However, there are currently no manufacturers to provide these inputs, regardless of demand, within Chatham County.

Livestock and poultry processing facilities are another essential link in the supply chain that is missing in Chatham County. A few conventional farmers are switching to grass-fed and/or organic beef, but there are no local facilities that cater to either their small scale production or deal exclusively with niche market products (to avoid cross-contamination) (Andrews, Personal Interview, January 23, 2008). Lynn Andrews, a poultry farmer just getting into grass-fed beef production, said that he has no choice but to take his beef to Virginia for processing; as a farmer who wants to be able to show his customers every stage of production, the lack of local, small-scale specialized processing facilities is a serious gap in Chatham County’s agriculture and business infrastructure (Andrews, Personal Interview, January 23, 2008). Other farmers raise chickens, sheep, and goats. Currently, their only options involve selling the animal whole, leaving the state to find a small-scale processor, or going to Abdoul Chaudry’s new processing facility. Halal Meat Company, owned by Chaudry, has been processing local meat for 11 years; recently, it shut down to expand and get certified for organic processing (Jolley, Personal Communication, February 11, 2008). However, demand is so great that, even after expanding, Halal Meat Company will have a waiting list as soon as it reopens (C. Jones, Personal Interview, January 30, 2008; Lessler, Personal Interview, January 30, 2008). Jones, who raises chickens, said that no local firms cater to farmers with flocks of 500 to 1000 chickens, creating a significant barrier to her ability to direct-market poultry. Agricultural service providers, like processing facilities, are often overlooked when thinking about sustainable agriculture, because most products are fresh and go straight to market without processing. As this distinct need demonstrates, agricultural service providers are as necessary as input providers to create backward linkages between sustainable farmers and the local economy.

A key barrier to recognizing the economic potential of sustainable farming and local food systems is the lack of availability of necessary inputs, both generally and on a local scale. While some sustainable farmers said that they bought a small amount of their inputs from local stores, like Southern States, local retail outlets usually sell inputs that are produced outside of the region and imported. This lack of locally produced raw inputs and agricultural services means that Chatham County leaks almost all of the economic benefit of input and upstream processing
purchases to corporations and regions that manufacture goods or provide services outside of the local region. Since Chatham County’s sustainable farmers are currently forced to buy their specialized raw inputs outside of the county and even outside of the state, the county doesn’t realize the retail-related economic benefits of additional income that results from selling imported goods through stores like Southern State. This inability to supply agricultural inputs and processing, for both conventional and sustainable farming, presents a serious weakness in the county’s effort to implement an import substitution strategy.

In spite of this, the good news is that market demand exists. Most farmers expressed a strong interest in purchasing locally produced and locally sold raw inputs. In fact, many farmers with a commitment to the buying local concept identified buying inputs locally as a necessary component of sustainable food system development. Farmers did agree that locally produced inputs would need to be price-, variety-, and quality-competitive with their current suppliers, in order to justify making the switch to buying from local input providers. However, producing raw inputs locally could have a cost advantage in the reduction of transportation costs (particularly for bulky inputs like fertilizer and soil amendments). As fuel prices rise, local production of inputs will be more desirable as a method of reducing the transportation and overall costs of agricultural raw inputs, for both sustainable and conventional farming systems.

**Forward Linkages: Limitations to Local Markets?**

As demand for fresh, local food continues to grow in the Triangle, farmers will have an essentially limitless market for selling their products; opportunities for making forward linkages abound, especially with the growth of farmers’ markets and Chatham Marketplace, in particular. In fact, most farmers expressed a disinclination to expand their operations, since they were already approaching the limit of their personal and operational growing capacity. As the market outlet section revealed, farmers have a variety of options for selling their produce, and many in Chatham County sell both in and out of the county at farmers’ markets, to restaurants and catering services, and through cooperative markets.

A few key factors determine where and how farmers sell their products. One factor is price – most farmers agreed that they like selling at farmers’ markets because they can cut out the middleman and get the full retail price for their products. While cooperative markets like Chatham Marketplace may cut into the farmer’s profit, some growers appreciate selling to them because they don’t have the time or experience to direct market their products to the public – cooperative markets fill that need by showcasing local foods for their regular customers.

Another factor is the maturity of local direct marketing outlets, like farmers’ markets. Many of the farmers who were pioneers helped start the Carrboro Farmers’ Market and prefer to sell there because they have an established clientele that is willing to pay higher prices that cover their time at the market and transportation costs. Because of the limited space of the more established markets, newer farmers may sell through the younger markets in Chatham County because they have openings for new vendors. With farmers’ markets in Pittsboro, Fearrington Village, and Siler City, as well as Chatham Marketplace, the opportunities for selling and buying locally produced food in Chatham County are continually expanding. In addition, many of the farmers
who sell outside of the county are bringing in additional income from the lucrative markets in Carrboro, Chapel Hill, and Durham.

A major drawback to using sustainable agriculture as an import substitution strategy is that local foods have not yet made their way into local chain retail outlets. Currently, it is not cost effective for farmers or retail chain stores to form supply relationships, despite how desirable it may be from a social or environmental point of view. This lack of availability of local foods in retail groceries creates an accessibility issue – as a result, only consumers with the time and money to buy food from farmers’ markets and coop grocers can buy local food, but the majority of consumers do not shop in these market outlets regularly.

As a result, the limited nature of forward linkages means that the county is still losing a significant amount of money when consumers buy food in retail outlets that is produced outside the region and imported. In order for local foods to become a successful economic development strategy that captures a higher proportion of each food dollar, farmers and retail stores must find a way to make mainstream distribution of local foods cost-effective for everyone, including consumers.

Finding such a solution faces two major barriers. First, sustainable farmers generally operate on a scale that is too small to regularly provide the quantity of product that is needed for wholesale to retail market outlets. In addition, selling their products on a wholesale scale is unappealing to most farmers, because they receive a better price from directly marketing their products. Second, retail market outlets have little incentive to purchase their supplies from multiple farmers, when they can purchase from a large wholesale distributor that offers greater convenience and better prices. Furthermore, most chain retail stores do not currently have a commitment to providing locally produced foods, the way a local cooperative market might; without this type of commitment to supporting local farmers, communities, and economies, retail stores cannot justify the extra financial expense and time commitment that purchasing locally requires.

This chapter has looked at the extent to which sustainable agriculture and local food systems are embedded in Chatham County. As a high road strategy, the sustainable agriculture community of individuals, institutions, and market intermediaries has done a tremendous job of laying the foundation for developing the county’s human resources. The work of key leaders over the past 30 years has led to the creation of a supportive institutional infrastructure, development of locally-based educational and training resources, and a growing market within the county that supports sustainable agriculture and local foods socially and economically. A close examination of forward and backward linkages reveals that Chatham County’s sustainable food system has failed to make extensive mainstream ties within the local economy. As a result, Chatham County has not been able to capture the full economic potential of the local sustainable food system, nor create additional development opportunities from it. In the next and final chapter, this paper will turn to strategic recommendations for closing the gaps in Chatham County’s sustainable agriculture system.
CHAPTER 4: STRATEGIC RECOMMENDATIONS AND CONCLUSIONS

As the focus on the sustainable food community and its supporting institutions and market intermediaries has shown, Chatham County has a very strong social network that enhances agriculture-related human resources in the county. However, the lack of forward and backward linkages demonstrates that, despite its social development strengths, Chatham County’s sustainable food system has not been able to develop the economic resources it requires to become fully self-sustaining on a local level. In addition, members of the community indicated that the county has a deep and dire need to update its public infrastructure base and create strategies to protect the local land base from urban development. Without strategies to conserve and build up the economic and natural resources that support agriculture in Chatham County, it will become increasingly difficult for agriculture of any kind to continue and prosper in the future.

As the only agency dedicated to economic development, Chatham County’s Economic Development Corporation (EDC) is a natural ally for the sustainable food community to work with in implementing these strategies. The EDC’s mission is “[t]o enhance the quality of life in Chatham County through the promotion of economic activities including the attraction of new business and industries and the retention and expansion of existing businesses and industries” (Horne, 2007). The EDC is currently looking for ways to diversify the county economy by moving away from low road development strategies, such as recruiting manufacturing sectors on the basis of low cost labor and land, and toward new high road approaches. The EDC is shifting its focus toward attracting innovative industries associated with clean/green technology, local tourism, the arts, and sustainable agriculture, which will enhance Chatham County’s reputation as a creative community. The EDC’s recruitment skills can be used to help the sustainable food system attract industries and make connections that will build the forward and backward economic linkages that Chatham County currently lacks. In addition, the EDC could provide a strategic link between the county government and the sustainable food community, advocating for public infrastructure improvements and partnering with non-governmental institutions to protect the county’s land base through conservation strategies. Many members of the agricultural community expressed a desire that agriculture, and sustainable agriculture in particular, be taken more seriously as an economic development strategy for Chatham County. A stronger relationship between the EDC and the sustainable food community would take the first steps toward establishing the legitimacy of sustainable agriculture as a local community economic development strategy in the county.

This chapter will provide two types of recommendations for improving the economic development potential of Chatham County’s sustainable food system. The first type includes recommendations that enhance economic resources by creating forward and backward linkages, while the second type considers strategies for improving and conserving the local natural resource base. These recommendations are made as strategies that the EDC should pursue to support and encourage the future development of sustainable agriculture in the county as a locally based economic development strategy. The chapter will conclude with a final analysis of the burgeoning sustainable food cluster that is developing in Chatham County and its prospects for the future.
Recommendations to Enhance Chatham County’s Agricultural Economic Resource Base

Develop Deeper Backward Linkages

The first type of recommendations that the EDC should consider concern the lack of forward and backward linkages necessary to fully integrate the sustainable food system with the local mainstream economy. Currently, the county’s most desperate need is for locally based businesses that cater to the specialized input needs of the sustainable agriculture community. To remedy this shortcoming, the EDC could target small business development and industry recruitment to support the growth of industries that could produce and supply agricultural inputs locally. The EDC’s mission statement demonstrates the county’s desire to attract more industry, and manufacturing in particular. Thus, to capture the maximum benefits of this focus in the context of developing sustainable agriculture locally, it would be logical for the EDC to target manufacturing industries that complement Chatham County’s agricultural background.

Industries that specifically produce and supply agricultural inputs within the county would fill the need for backward linkages between local businesses and the sustainable agriculture community. Agriculturally-related manufacturing firms would not only create new income, but also stop the leakage that occurs when sustainable farmers buy inputs outside of the county and state. Input suppliers are a crucial missing link in the successful development of the sustainable agriculture economic development strategy. Interviews with local farmers revealed just how stark the gap is between local input needs and locally based suppliers – most are only able to purchase compost locally.

Brooks Contractor, a retail composting business in Goldston, is currently the only Chatham County business that manufactures any type of sustainable agriculture-related input in the county. Yet Brooks provides an innovative example of the type of input manufacturing businesses that the EDC should pursue. As one of the largest privately owned composting facilities in North Carolina, Brooks uses food waste from restaurants, grocery stores, and institutions to create organic topsoil, compost, and soil amendments for landscape businesses and gardeners. Recently, Brooks has begun experimenting with different kinds of non-food waste materials, including leaves and paper products, to create different products and recycle more local waste. In 2003, Brooks employed 12 full-time people and a handful of part-time employees to process 700 tons of recycled matter (Worley, 2003). In addition to manufacturing agricultural inputs, Brooks provides a cost-effective strategy for recycling waste in the region; businesses and the county have found that it is cheaper in transportation and storage fees to compost than to reduce capacities of existing landfills. Half of the sustainable farmers interviewed said that they buy compost from Brooks, because it is the closest local supplier, which reduces transportation costs. However, as a small business, Brooks has already reached its operational capacity in terms of collecting and processing local waste (Bloom, 2007). As a result, the county may experience renewed demand and shortages for the services and products that this type of business provides in the near future. Brooks is a good example of the type of small manufacturing business that the county should recruit, because, as a local service and input provider, it creates innovative solutions to meet both agricultural and non-agricultural local needs. By serving both types of needs, Brooks is able to develop ties to other local businesses that enhance the health and robustness of the local economy.
Chatham County’s reputation as a center of sustainable agriculture development provides a competitive advantage that the EDC should use to recruit small input providers like Brooks. Most of the sustainable farmers interviewed said that they would buy more of their inputs locally if they were available; thus, Chatham County’s sustainable agriculture community offers input manufacturers an established and growing local market for their products. With its supportive social network of institutions and market intermediaries, Chatham County would be the ideal start-up location for small, innovative agriculturally-related manufacturing businesses. The EDC should take these local advantages into consideration when targeting their small business development and recruitment activities for the county.

Broader Forward Linkages

In addition to spurring the development of agricultural manufacturing industries, the EDC should also develop strategies to connect farmers to local chain retail outlets. In order to offer a comprehensive economic development strategy based on sustainable agriculture and local food systems, Chatham County must make local foods available to as many people and through as many market outlets as possible. As a result, creating forward linkages by breaking into local retail chain outlets is the next important step in the economic development strategy.

Information-sharing mechanisms are one strategy that can be useful for connecting local farmers with market outlets like local retail chains. In fact, information-sharing mechanisms could have additional benefits, like making consumers more aware of where local food is being sold in the county, or helping new farmers find markets for specific products. Essentially, information-sharing mechanisms do as the name implies – utilizing broad, diverse partnerships, they connect multiple information sources to meet the needs the involved parties. In terms of agricultural information sharing, several states have developed MarketMaker websites that provide a good example of a technologically innovative, easy to use mechanism that connects consumers, farmers, and markets throughout the state. The MarketMaker concept began as a partnership between cooperative extension services, state universities, state government offices, and food retailers to create a centralized, easily accessible location for information about participants in the food supply chain. The website started as a means to connect farmers with value-added products to retail outlets – it contains comprehensive demographic and business data that users can query and map to find a business or market that suits their needs. The website includes case studies that teach users how to customize the query functions to meet different scenarios, such as finding a new market for cattle, increasing value-added manufacturing output, and connecting a local chef with organic produce. The website allows users to search by market (household type, education, foreign born, race, income, and income by race) or business (eating and drinking places, food retailer, farmers’ market, processor, producer/farmer, wholesaler, and winery). Further, customization allows users to select a location (city, county, state) to narrow their search to the relevant community.

While MarketMaker may not be tailored to the specific needs of Chatham County, it offers an innovative example of an information-sharing mechanism that could be adapted to the needs of local farmers, consumers, restaurants, markets, and retail chains. Time and cost inefficiencies were one of the key concerns that restaurant and purchasing representatives identified when
making the decision to purchase locally produced food. They preferred buying from one source, where they could make one simple call – buying locally required spending time to contact multiple providers and organizing distribution themselves. A tool like MarketMaker has the potential to bring farmers and market outlets together in one convenient space, where they can utilize the Internet to coordinate sales and distribution with greater efficiency. In addition, by including consumers and agricultural support institutions, a tool like MarketMaker could be adapted to include marketing events and consumer education and awareness. The benefit of an information-sharing mechanism like MarketMaker is that it is limited only by the range of participants and their interests, and can be limitless when its development is informed by the needs and wants of a local community like Chatham County.

The EDC could also support businesses that connect farmers with local retail markets, like distribution and wholesaler businesses that can collect products from farmers and assemble them into sales lots that match the quantities and types of food that retail outlets want. Eastern Carolina Organics (ECO), a company located in Pittsboro, North Carolina, provides this very type of business service. ECO started in 2004 with the intent to provide outlets for medium and large organic growers, who were too big to meet their financial needs by selling through farmers’ markets, but didn’t have the time to directly market their products to larger outlets. ECO acts as a marketing representative – they don’t buy products from farmers, but instead coordinate supply and demand between producers and market outlets to coordinate wholesale distribution of organic goods to larger markets like Whole Foods. For a 20% margin, the ECO staff boosts sales, represents and markets products, handles the logistics of packaging and delivery, and handles billing for their customers. While a 20% margin may seem high for many small farmers, it essentially covers the cost of operation and provides a small return to farmers who support the business as cooperative members. Currently, ECO coordinates products from farmers throughout North Carolina, in order to get a diversity of products that can be grown in the varying climates throughout the state, and delivers throughout the Triangle region with their own fleet of bio-diesel trucks. In addition, they will package deliveries for shipment of customers’ products in trucks that go as far north as Boston and as far south as Florida.

Despite being a young business, ECO’s success as an innovative distribution and marketing business makes them a good example of the type of businesses that the EDC should encourage. ECO is innovative because they developed a business strategy that connects a niche product like organic produce with standard consumer market outlets like retail grocery stores. They have been successful because they understand and cater to the needs of farmers who lack the time to market their products and engage larger market outlets. As ECO moves toward becoming a full service marketing representative, they build a reputation as an efficient distributor that provides products with consistent quality and regular supply. This reputation allows them to expand their market, while easing the marketing burden on the farmers. Their goal is to make it so that all the farmer has to do is show up with produce grown to ECO’s standards, and they will have a retail market for that product. ECO is a model to follow, because they have been successful at finding a way to breach the disconnect between farmers that produce organic and sustainable food and the retail markets where most consumers shop. Finding solutions like this for Chatham County’s farmers is key to developing strong forward linkages between the community’s sustainable agriculture and local food system and the mainstream economy.
Recommendations to Conserve and Improve Chatham’s Natural Resource Base

The second type of recommendation that the EDC should consider relates to strategies that would conserve and enhance the county’s most important natural resources – land and water. Due to its proximity to the Triangle, Chatham County is currently experiencing unprecedented development pressure, which, in addition to last year’s drought, is placing excessive stress on the county’s land base and public infrastructure. The sustainable agriculture community identified land conservation and public water infrastructure improvements as key issues that the county government must address to ensure the longevity of the sustainable food system in Chatham County. If the EDC fails to implement strategies relieve the stress on Chatham County’s natural resource base, they risk jeopardizing the long-term sustainability of the county’s agricultural economic base. An important side benefit of implementing these strategies, however, is that the EDC will further support the sustainable agriculture institutional support base by creating new links with county government agencies and land conservation organizations.

Land Conservation Strategies

Because agriculture is only sustainable as long as there are people who want to farm and need land to farm on, the EDC needs to foster relationships with organizations like the Triangle Land Conservancy and farmers who are developing farm incubators. Considering the intense development pressure that Chatham County is facing, it is of the utmost importance for the future of the entire agricultural community that the EDC support land conservation efforts and agricultural succession planning strategies.

For the last 25 years, the Triangle Land Conservancy (TLC) has been working in six counties to put land into conservation easements that would protect it from development in the rapidly growing Triangle region. In Chatham County, TLC has saved 4,000 acres, 1,000 of which are working farmland; most of this land was donated by people who wanted to protect their land base. In 2004, the Farmland Protection Agency (FPA), a sub agency of the TLC, began taking more proactive steps to help farmers protect their land base. Recognizing that, even if they wanted to, few farmers could afford to donate their land, the FPA began developing the infrastructure to help farmers sell the development rights of their property. By voluntarily selling the right to develop their land to TLC for a fair, reasonable price, farmers can ensure that their land stays in agricultural production for the long term. The FPA is currently working out a transfer system, so that farmers who want to sell their development rights can continue working their land until they choose to retire.

The key to making this sort of development rights transfer program work is educating the community. Purchasing development rights requires investment from private and public sources, including county, state, and federal governments. To gain support for this type of initiative, the TLC needs the commitment of a community that values farming – both the tangible and intangible benefits of agriculture – and is willing to pay farmers to give up their right to develop that land. To secure this commitment, the TLC began the Working Lands Initiative to create a farmland protection plan and set up the structure needed to help farmers voluntarily sell their development rights. The farmland protection plan will inventory the existing needs and assets of Chatham County’s farming community and attempt to demonstrate the additional intangible
benefit that agriculture provides to the community. So far, the TLC has helped one farmer in Silk Hope sell his development rights on 170 acres for $1 million; they hope to expand the program in the near future (T. Jones, Personal Interview, February 6, 2008). For farmers who want to stay in agriculture but are at risk of losing their land base, the TLC’s initiative gives them options. If they sell their development rights, they retain the right to continue working the land; however, they also have a source of capital to reinvest in new land and new operations to build up their business.

The TLC, along with several leading farmers and agricultural institutions, also recognizes that, for farmers without an inherited land base, finding land to farm on in Chatham County has become too expensive. People interested in sustainable agriculture can come to Chatham County to receive training, but then have to look outside of the county to find land that is within their price range. Even with the average age of farmers rising and some thinking of retiring in the near future, experienced farmers will have a difficult time transitioning their land to a younger farmer, because the appreciation of their working land has automatically priced many newer farmers out of the market. This creates a serious problem in terms of succession planning for one of Chatham County’s greatest natural resources, its agricultural open lands.

One strategy that combines land conservation, succession planning, and helping new farmers find land in Chatham County is to build farm incubators. Several groups are cooperating on different initiatives to provide old and new farmers with options for local transference of working land. The TLC’s Working Lands Initiative is the first step in creating a foundation for the Small Farm Lease Program and a farm incubator program. The Small Farm Lease Program would take land donated or sold to TLC and lease it to small farmers for a fair and reasonable fee, in exchange for keeping the land in working agriculture. Leases could provide the flexibility that new small farmers need, while protecting the land from development. In addition, the FPA is partnering with the Extension Services, CFSA, Orange County Agricultural Economic Development representative, and local farmers to create agreements with local development projects that would set aside land inside of new residential developments for a farm incubator program. This type of agreement would offer the qualities that Chatham County residents have identified as valuable by preserving the agricultural character of the area, protecting natural open spaces, and making Chatham County a creative, unique place to live. Furthermore, it would encourage the growth of the sustainable agriculture community, which Chatham County residents have also identified as a social, environmental, and economic goal for the future growth of their county.

As an additional benefit of building relationships with organizations like TLC, the EDC will develop a better understanding of what is going on in the agricultural community and help them identify complementary development opportunities. The EDC can support local institutions and the sustainable agriculture community by becoming more active in and aware of the advisory councils that serve these institutions. Extension agents, the sustainable agriculture curriculum program, the CFSA, all three local farmers’ markets, and Chatham Marketplace all have advisory or member boards that would welcome the involvement of economic developer professionals in Chatham County. Building relationships with key agricultural institutions and supporting land conservation and succession planning efforts are worthwhile investments for the EDC to make in
Chatham County because they will ensure the longevity of both the sustainable and conventional agriculture industries.

Water Infrastructure Improvement Strategies

The ramifications of last year’s drought have had significant consequences for agriculture, and conventional and sustainable farmers alike are concerned about their access to water for the coming year. Almost every farmer interviewed mentioned the availability of water as a significant barrier to their continued growth as agricultural producers. Because of their distance from municipal water systems, many farmers rely on personal wells or open water sources on their property to provide water for farming operations. County regulation of these water sources, as well as improvements to the county’s public water infrastructure systems, will significantly impact the direction of agriculture in Chatham County in the near future.

For example, Fleming Pfann of Celebrity Dairy envisions turning her highly successful operation into a number of small farm incubators when she retires. Her plan includes an irrigation pond, to be shared among the incubators, which would be more sustainable than drilling five individual wells. However, the county has not yet approved Pfann’s pond permit; Pfann said that if the county turned down her permit, it would send the message that the county does not care about seeing sustainable agriculture grow in Chatham County (Pfann, Personal Interview, January 30, 2008).

The EDC could support the sustainable agriculture community by advocating for regulations and improvements that meet their specific water needs. Most sustainable farmers already use conservation methods to store excess rainwater and minimize water waste with irrigation; however, when an extreme circumstance like the 2007 drought occurs, farmers are often hit harder than the average citizen. In these cases, the EDC could help by advocating for financial and physical assistance for drilling new wells or creating special water districts. While it is beyond the scope of this paper to examine all of the potential water regulations and improvements that would serve Chatham County’s agricultural community, the EDC should take the first step by advocating on the behalf of farmers for increased water provision and quality. After all, the continuation and expansion of agriculture in general depends on the ensured availability of water in the future; without water, Chatham County cannot rely on sustainable agriculture to provide a long-term local economic development strategy.

Conclusion: Sustainable Agriculture as an Emerging Cluster

Chatham County offers an excellent case study for evaluating how well sustainable agriculture and local food systems provide potential economic, social, and environmental benefits to rural communities as a locally based economic development strategy. Clearly, Chatham County’s interconnected social support network is the greatest strength of its sustainable food community; the cooperation and exchange of information, skills, and support between local farmers, institutions, and market intermediaries provides the foundation for sustainable agriculture’s long-term success in Chatham County. The economic and environmental elements are still developing, but further cooperation between the sustainable agriculture community, county
government, and local conservation groups could lay the groundwork for creating stronger economic linkages and protecting local natural resources in the future.

Chatham County also provides such an interesting case study because, in developing the sustainable agriculture system over the last 30 years, the local community has also developed a home-grown cluster. Michael Porter defines clusters as “geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate” (Porter, 2000, p. 15). Developing clusters has become an important strategy in economic development policy. The loosely cooperative, yet competitive, interactions of firms and supporting institutions allows local economies to capture positive externalities like linkages, complementarities, and spillovers, in terms of information, technology, skills, marketing, and customer needs that cut across individual firms and industries (Porter, 2000). Cluster participants also share similar needs, opportunities, and constraints to productivity; as a result, policy investments that benefit the cluster tend to create exponential benefits for the greater economy, because linkages and spillovers multiply benefits as policy investments ripple through the cluster and outward. For local economies, developing clusters has become a desirable economic development goal because the specialized nature of cluster participants, like specialized educational institutions or specific input providers, create a locally embedded competitive advantage that is unlikely to be traded or available elsewhere (Porter, 2000).

Chatham County has a competitive advantage in the locally embedded supporting institutions that provide education, advocacy, and training for the sustainable food cluster. It is notable that 30 years of grassroots efforts by a growing handful of independent farmers has led to the development of resources like the Sustainable Agriculture Extension Agent position, the CFSA, and CCCC’s Sustainable Agriculture curriculum and continuing education program, which are locally based and available only in Chatham County.

- Chatham County has a location-based advantage in serving as the home base of the Sustainable Extension Agent. As the only Sustainable Agriculture Extension Agent in North Carolina, Roos serves farmers throughout the state, but farmers in Chatham County can more readily access her knowledge and services through their proximity to her base of operations. Furthermore, Chatham County farmers can develop mutual relationships of information exchange and education by interacting with Roos on a regular and face-to-face basis.

- The CFSA, which is headquartered in Pittsboro, provides essential consumer education and sustainable agriculture advocacy services to farmers in North and South Carolina. However, because the CFSA is located in the heart of Chatham County’s sustainable agriculture cluster, the majority of their activism benefits local farm tours. Activities like the bi-annual farm tours and loose partnerships with other organizations like Chatham Extension Services, Chatham Marketplace, and the TLC create linkages and spillovers that benefit Chatham County farmers primarily because of their close proximity to and personal relationships with the CFSA.
The Sustainable Agriculture program at CCCC is currently the only curriculum of its kind in North Carolina. As a result, it attracts people from all over the state and country with its growing reputation as a quality education and training program. In addition to its ability to attract new blood to the cluster, it also provides an essential forum for exchanging and developing information, skills, technology, and research for agricultural innovation, business development, and cooperative marketing strategies. Chatham County farmers both teach and learn from the curriculum and continuing education program, creating a cyclically reinforcing source of local knowledge and experience that is embedded in the particular circumstances, strengths, and weaknesses of the local community.

Drawing on Annalee Saxenian’s research on open labor markets and learning in Silicon Valley, it seems likely that Chatham County developed its competitive advantage in a similar way. Like Silicon Valley, Chatham County lacked prior traditions in its respective cluster field, which provided ample room for experimentation when traditional agricultural resources did not meet the needs of the county’s early sustainable farmers (Saxenian, 1996). Many of these farmers testified that experimentation, failure, and information exchange were their primary tools for learning in the early years of the sustainable agriculture movement in Chatham County. As a result, they developed a sense of community from their shared circumstances and experiences, which evolved into a network for sharing and mutual support; this social network ensured the rapid transmission of knowledge and skills throughout the local region (Saxenian, 1996). Informal communication provided a more valuable source of information during this formative period, when formal sources like extension research were geared more toward conventional agricultural practice (Saxenian, 1996). As the community and its informal store of information grew, Chatham County’s sustainable food system mobilized its members to formalize their own knowledge and experiences through the creation and collaboration of supporting educational, training, and advocacy institutions. The sustainable food cluster owes its competitive advantage to evolutionary development of early social networks into formal, established institutions that support the growth of sustainable agriculture and local foods in Chatham County.

This paper has presented the development of sustainable agriculture and local food systems in Chatham County as a case study of a high road community economic development strategy for rural communities. On the one hand, the sustainable food system was highly successful at developing local human resources through the creation of supporting educational, advocacy, and training institutions. However, on the other hand, the current lack of linkages between the sustainable food system and the mainstream economy presents a significant obstacle to capturing the full economic potential of sustainable agriculture as a community economic development strategy. If the Chatham County EDC implements the recommendations in this paper, it would make great strides in ensuring the long-term viability of sustainable agriculture as an innovative economic development strategy for the county. Chatham County’s sustainable food system is a unique case of an agriculturally-based high road development strategy with a locally-based competitive advantage that potentially has great promise for future development.
Bibliography


Appendix A: Interview Protocols

Farmer Protocol Questions

Farming Overview
How long have you been farming? In Chatham?
How did you get started?
What made you want to farm?
How/where did you learn to farm?
What do you produce?
How much of your income comes from the farm?
How many people do you employ (full-time, part-time, interns, etc)?
Who do you sell to? Where? Why/how did you pick these outlets?
What outlets do you sell through?
Do you partner with anyone to sell (buying firms, selling cooperatives, farmers’ markets, local markets)?
Who do you buy inputs from? Where?

Personal and Institutional Changes
Have you made any major transitional changes in the way you farm/produce?
What were the turning points? What drove change?
Who assisted/helped you make the change (Institutions)?
Have you partnered with anyone or groups to make change?
What were the challenges to making changes?
Did changes open up any new opportunities for you as a farmer?

Economic Linkages
What do you consider the local market?
How much would you say you sell locally?
Would you like to expand local sales in the future?
Are there challenges/barriers to you selling locally?
How much of your inputs do you buy locally? What do you buy locally?
Would you buy more inputs locally if they were available?
What keeps you from buying more locally?
Who are key links in the supply chain for you?
Are there gaps in the supply chain?
Are there services that the county or other local institutions could provide to fill these gaps or help you grow your business?
Institution Protocol Questions

_Institutional Overview_
What does this institution do?
What is your role with this institution?
What is your relationship with local farmers?
How did this program begin?
What was the motivation/reason behind starting this institution?
Why is this institution in Chatham? What made this institution choose Chatham as a base?
How far does the institution’s service area extend?

_Major Changes_
Has the institution undergone any major transitions/changes in its history?
What motivated the change?
Did any outside institutions/groups play a part in that change?

_Partnerships with Local Agriculture Networks_
Do you work with any other institutions to provide services?
What partnerships are key to the work you do?
Have those relationships changed over time? How?
What kinds of support does this institution provide to local farmers?
Has the nature of that support changed over time? How?
Are there challenges to building effective local partnerships/networks?
Have any particular institutional relationships opened up new opportunities?
Market Intermediary Protocol Questions

Business Overview
Describe what this business does/sells?
What is your role in this business?

Buying/Selling Locally Grown Food
What amount of your inputs/supplies do you buy from local producers?
How do you define local?
When did you begin buying from local producers?
How did you begin buying from local producers? Do you approach them or vice versa?
Do you buy based on what’s available or do you ask producers to grow certain things?
Are there challenges to buying locally?
How does purchasing work for your business? Has this method changed over time?
What led to that change, if any?
How stable/formal are buying relationships between the business and local producers?
Is purchasing locally economically beneficial for your business? Why/how?
Is it economically beneficial for local producers to sell to you? Why?
Can you identify any turning points that led you to change your purchasing behavior? What kind of changes were made?
Are there any reasons related to the area (Chatham, the Triangle) that led you to buy from local producers?
Would you like to expand the amount of local purchasing you do?
Are there barriers to doing so?
What would help you overcome barriers to buying locally?
Has selling local food created any new opportunities for your business?

Institutional Networks/Partnerships
Do you work with any other businesses/institutions to buy for your business?
Do you partner with any other businesses/institutions to showcase locally grown food?
Do you showcase/advertise local food in your business?
Do you participate in any promotions/events to advertise local purchasing or agriculture?
## Appendix B: Interview Contacts

<table>
<thead>
<tr>
<th>Interview Contact</th>
<th>Farm/Association</th>
<th>Location</th>
<th>Interview Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debbie Roos</td>
<td>Chatham Extension</td>
<td>Pittsboro</td>
<td>1/23/08</td>
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<tr>
<td>Lynn Andrews</td>
<td>Chesnutt Hill Poultry Farm</td>
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<td>1/23/08</td>
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<td>Neil Lindley</td>
<td>Lindley Dairy</td>
<td>Snow Camp</td>
<td>1/23/08</td>
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<td>William Perry</td>
<td>Perry Farms</td>
<td>Siler City</td>
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<td>Amy Sugg</td>
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<td>Judy Lessler</td>
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<td>Bill Dow</td>
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<td>Judy Hogan</td>
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<td>Moncure</td>
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<td>Robin Kohanowich</td>
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<td>Tandy Jones</td>
<td>Triangle Land Conservancy</td>
<td>Multi-Counties</td>
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<td>David Della</td>
<td>Chatham Marketplace</td>
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<td>Elizabeth</td>
<td>Sage and Swift Catering</td>
<td>Durham</td>
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<td>Harry Leblanc</td>
<td>Beausol Gardens</td>
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<tr>
<td>Shannon Clark</td>
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<td>Silk Hope</td>
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<td>Guy Loeffler</td>
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<td>Andrea Reusing</td>
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<td>Gary Moon</td>
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</tr>
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<td><strong>Centralization</strong></td>
<td>• National/international production, processing, and marketing</td>
<td>• More local/regional production, processing, and marketing</td>
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<tr>
<td></td>
<td>• Concentrated populations; fewer farmers</td>
<td>• Dispersed populations; more farmers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Concentrated control of land, resources and capital</td>
<td>• Dispersed control of land, resources and capital</td>
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<td><strong>Dependence</strong></td>
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<td>• Smaller, low-capital production units and technology</td>
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<td>• Reduced reliance on external sources of energy, inputs, and credit</td>
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<td></td>
<td>• Consumerism and dependence on the market</td>
<td>• More personal and community self-sufficiency</td>
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<td></td>
<td>• Primary emphasis on science, specialists and experts</td>
<td>• Primary emphasis on personal knowledge, skills, and local wisdom</td>
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</tr>
<tr>
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<td>• Lack of cooperation; self-interest</td>
<td>• Increased cooperation</td>
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</tr>
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<td></td>
<td>• Farm traditions and rural culture outdated</td>
<td>• Preservation of farm traditions and rural culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Small rural communities no necessary to agriculture</td>
<td>• Small rural communities essential to agriculture</td>
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<td></td>
<td>• Farm work a drudgery; labor an input to be minimized</td>
<td>• Farm work rewarding; labor and essential to be made meaningful</td>
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<td></td>
<td>• Farming is a business only</td>
<td>• Farming is a way of life as well as a business</td>
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<td></td>
<td>• Primary emphasis on speed, quantity, and profit</td>
<td>• Primary emphasis on permanence, quality, and beauty</td>
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<td><strong>Domination of nature</strong></td>
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<td></td>
<td>• Nature consists primarily of resources to be used</td>
<td>• Nature is valued primarily for its own sake</td>
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<td>• Life-cycle incomplete; decay (recycling wastes) neglected</td>
<td>• Life-cycle complete; growth and decay balanced</td>
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<td>• Human-made systems imposed on nature</td>
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<td></td>
<td>• Production maintained by agricultural chemicals</td>
<td>• Production maintained by development of healthy soil</td>
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<td></td>
<td>• Highly processed, nutrient-fortified food</td>
<td>• Minimally processed, naturally nutritious food</td>
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<td><strong>Specialization</strong></td>
<td>• Narrow genetic base</td>
<td>• Broad genetic base</td>
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<td>• Most plants grown in monocultures</td>
<td>• More plants grown in polycultures</td>
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<td></td>
<td>• Single-cropping in succession</td>
<td>• Multiple crops in complementary rotations</td>
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<tr>
<td></td>
<td>• Standardized production systems</td>
<td>• Locally adapted production systems</td>
<td></td>
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<tr>
<td></td>
<td>• Highly specialized, reductionist science and technology</td>
<td>• Interdisciplinary, systems-oriented science and technology</td>
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<tr>
<td><strong>Exploitation</strong></td>
<td>• External costs often ignored</td>
<td>• All external costs must be considered</td>
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<td></td>
<td>• Short-term benefits outweigh long-term consequences</td>
<td>• Short-term and long-term outcomes equally important</td>
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<td></td>
<td>• Based on heavy use of nonrenewable resources</td>
<td>• Based on renewable resources; nonrenewable resources conserved</td>
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<td></td>
<td>• Great confidence in science and technology</td>
<td>• Limited confidence in science and technology</td>
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<tr>
<td></td>
<td>• High consumption to maintain economic growth</td>
<td>• Consumption restrained to benefit future generations</td>
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<tr>
<td></td>
<td>• Financial success; busy lifestyles; materialism</td>
<td>• Self-discovery; simpler lifestyles; nonmaterialism</td>
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<tr>
<td><strong>Decentralization</strong></td>
<td>• More local/regional production, processing, and marketing</td>
<td>• Dispersed populations; more farmers</td>
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<tr>
<td></td>
<td>• Dispersed control of land, resources and capital</td>
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<tr>
<td><strong>Independence</strong></td>
<td>• Smaller, low-capital production units and technology</td>
<td>• Reduced reliance on external sources of energy, inputs, and credit</td>
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<td></td>
<td>• More personal and community self-sufficiency</td>
<td>• More personal and community self-sufficiency</td>
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<tr>
<td></td>
<td>• Primary emphasis on personal knowledge, skills, and local wisdom</td>
<td>• Primary emphasis on permanence, quality, and beauty</td>
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<tr>
<td><strong>Diversity</strong></td>
<td>• Broad genetic base</td>
<td>• More plants grown in polycultures</td>
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<td></td>
<td>• Multiple crops in complementary rotations</td>
<td>• Integration of crops and livestock</td>
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<tr>
<td></td>
<td>• Locally adapted production systems</td>
<td>• Locally adapted production systems</td>
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<td></td>
<td>• Interdisciplinary, systems-oriented science and technology</td>
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