FARM TO SCHOOL: AN EXPLORATION OF PURCHASING LOCAL FOODS FOR SCHOOL CAFETERIAS IN SOUTHEASTERN NORTH CAROLINA

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ABSTRACT

This thesis reports research on farm-to-school programs as a part of a community food system. With the shift of agricultural production from small farms to large agribusinesses, and food distribution from local markets to international companies, small scale agriculture is minimally utilized for institutional food purchasing. Community food systems are an alternative to large scale production and distribution where communities receive social, economic and environmental benefits from local food production and consumption. Farm-to-school programs are a component of community food systems that encourage school systems to purchase from local farmers. Through farm-to-school programs, students learn where their food comes from, how it was grown, and are more likely to consume fruits and vegetables. This thesis identifies barriers and challenges to implementation of farm-to-school programs in three North Carolina school systems. In addition, this thesis evaluates three farm-to-school programs operating in NC to identify successful practices that can be replicated within the studied school systems. Interviews with Child Nutrition Directors revealed cost, regulation and logistical barriers that must be addressed to implement a successful farm-to-school program. The three farm-to-school programs operating in NC were evaluated according to how well they met these challenges and barriers to provide recommendations for implementing a farm-to-school program in the studied area. The Southeastern NC Food System Council, a regional Council dedicated to increasing local food production and consumption within Southeastern NC, is optimally positioned to facilitate a farm-to-school program in these school systems. Through infrastructure development, providing technical assistance, garnering funds, educational awareness and policy advocacy, the SENCFS Council can support and facilitate the development of a farm-to-school program.
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INTRODUCTION

While many cities are in periods of economic expansion, many rural areas experience a loss of population and economic activity. This has been the case in the rural US South. With its reliance on industries that are now gradually being shipped overseas, the rural US South is in need of economic redevelopment. One way of increasing both jobs and the local economy in rural US areas is through the creation of community food systems. Community food systems emphasize production, distribution and consumption of foods within a given area in order to keep local dollars within a region or community. Community food systems can also create jobs needed for the processing and distribution of foods. One way to institute a community food system is through the use of institutional buyers who serve hundreds of meals per day and have a consistent demand for food.

The six southeastern most counties of North Carolina (Bladen, Brunswick, Columbus, New Hanover, Pender and Robeson) have seen substantial economic decline due to the loss of both manufacturing jobs and decreased agricultural viability. However, the rural landscape and proximity to two cities, Lumberton and Wilmington, provide an opportune situation for the implementation of a community food system. The climate and soil of Southeastern NC provide opportunities for diversification of agricultural production. In addition, all of the six counties in Southeastern NC contain public K-12 school systems that feed thousands of children five days a week. If food grown within these six counties were used in these school systems, not only would the children be eating fresher, more nutritious foods, but local food dollars and jobs would stay in the region. In order to implement such a system, public K-12 schools must be examined and analyzed to determine the feasibility and the best way for them to participate in a local food purchasing program. In addition, programs that currently incorporate local foods into public K-
12 schools must also be examined. Such research will suggest recommendations for policies and procedures to be implemented for Southeastern, NC public K-12 schools to purchase local foods from local farmers.
THEORY

The guiding theory for the research examined in this thesis is the political economy of rural development. The political and economic influences on the rural US South relegated the region to a peripheral status compared to the US North. Both world systems theory and dependency theory (henceforth collectively referred to as dependency theory) and the power elite theory, contribute to the analysis. Dependency theory emphasizes the dependent and exploitative relationship between the core and the periphery, and the power elite theory emphasizes how the decisions made by a small group of elites affected the southern, rural US population. While these theories do not account fully for the development of the rural US South, they are helpful in understanding those occurrences and influential factors that led to rural development.

Dependency theory is developed out of Wallerstein’s Marxian interpretation of the exchanges between core, or developed, and peripheral, or less developed, countries. In his evaluation of the capitalist world economy, Wallerstein saw domination in the form of economic forces rather than political or military forces (Wallerstein, 1974). Through this system, greater economic profits were produced than other modes of exploitation such as political domination (Ritzer, 2008). Those areas that are more developed make up the core and dominate the capitalist world-economy, exploiting the periphery.

Through this relationship of exploitation between the core and the periphery, peripheral countries are used for raw materials; core countries utilize these raw materials to manufacture products, which they sell for a profit (Ritzer, 2008; Kerbo, 2009; Bebbington, Dharmawan, Fahmi & Guggenheim, 2006). Often, these manufactured products are sold back to peripheral countries, rather than peripheral countries manufacturing goods and products from raw materials they already produce. This creates a change in the social and economic structures of the
periphery, hindering economic development and political autonomy. Through this system, natural resources in the periphery are often diminished, laborers are subjected to poor working conditions and individual rights are weakened (Khor, 1996). Another characteristic of the periphery is the use of forced labor, while the core is characterized by free, paid labor.

Thus, exploitation in the world-economy is determined by the divisions of labor in the world-economy. According to Wallerstein (1974), one’s location in the world system determines the development outcomes for the region.

Market mechanisms such as trade and foreign investment are utilized to maintain the relationship between the core and the periphery (Chase-Dunn & Grimes, 1995). Dependency theorists view open trade as detrimental to the periphery and favor protectionism or disengagement as a better policy for industrialization (Cardoso & Faletto, 1979). The periphery is often forced into a relationship where they must export a large portion of their natural resources and accept direct investments in order to import technology and inputs from the core (Khor, 1996). This system of dependence and exploitation puts the periphery in a vulnerable position to competitive producers elsewhere (McMichael, 2004). This is due to the variability in fertility of lands, wages, regulations and the mobility of firms.

Dependency theory can be used to understand the development of the rural US South. The position of the rural US South as a peripheral region, dependent upon slave labor for the maintenance of its economy through the production of agricultural products, put it in a position of inferiority and dependence upon the US North. The US North was able to influence its development and incorporation into the world-economy as a core region. However, unlike other peripheral regions, the US South benefited from trade laws as it was a part of a core nation despite being a peripheral region. Thus, it did not have the disadvantage of being made to
compete with other peripheral areas. However, recent changes in US trade laws encouraging free trade with other nations have hindered the economies of towns, counties and states located in the rural US South.

Another theory that can be used to inform the development of the rural US South is the power elite theory. This theory examines the self-interested decisions made by those elites who are in positions of power to exploit those in classes below them (Frank, 1967; Kerbo, 2009; Tardanico & Rosenberg, 2000). The population that makes up the power elite often contains fewer members than those in which they have power and influence over. It is often wealth and/or institutional positions that allow the power elite to maintain influence (Dye, 1996). According to Mills, some people (referencing the power elite), by concentration of information and control of power, are able to affect the everyday life of ordinary men and women (2000). These people that Mills references are often in command of major hierarchies including large corporate conglomerates, government and the military.

Decisions made in the US South by elites affected the development of the US South. For example, slavery was maintained as a form of economic prosperity by the elites. From slavery, sharecropping laws and policies influenced the growth and expansion of the US South, contributing to large, powerless and impoverished populations with limited skills. This encouraged the out-migration of some southerners to northern cities. The southern elites contributed to the industrialization and de-industrialization of the South, which changed the social and economic structure of the South. In addition, elites in positions of power have also contributed to the development and proliferation of agribusinesses which have dominated the agricultural industry. The power elites who control these agribusinesses are influential in shaping decisions affecting agricultural production and trade.
The power elite theory is important in understanding the influential factors contributing to the development of the US South. However, this theory tends to concentrate on the examination of the micro social relationships that have enabled elites to be in the position of elitism as well as their accumulation of power. For this analysis, it is more critical to examine the power that elites have exerted over populations, and how their display of power and influence has impacted the development of the US South.

As the history of the rural US South is examined, dependency theory and power elite theory can both be utilized to understand those factors that have influenced economic development. The early economic development of the US South centered around plantation economies from the African Slave Trade (Tardanico & Rosenberg, 2000). Slavery in the US South inhibited demand for the development of large cities, infrastructure and public services. Following the abolition of slavery, much of the US South remained rural, and power was concentrated in the hands of the elites.

During this period, the industrial revolution began to take place. In the US South, the industrial revolution centered around the cotton production complex (Tardanico & Rosenberg, 2000). In addition, the US South became a prime area for the location of manufacturing plants. Labor and land were cheap, workers were not organized into unions, there were no stringent business regulations, and southern politicians provided economic incentives to those companies that were willing to locate or re-locate to the South (Tardanico & Rosenberg, 2000; Glasmeier & Leinchenko, 2000). These southern politicians that lured manufacturing companies to the South exemplified Mill’s description of the power elite and their vast influence over the majority rural population. The development of the South around these manufacturing branch plants owned by wealthy northerners, kept employment opportunities to minimal wages and inhibited
development of rural regions. Thus, those elites in power, both the southern politicians and the northern company owners had significant influence over the development and employment opportunities for rural southern residents.

Similar transformations of the agricultural industry included shifts from small, independent farms to large agribusinesses owned by those with resources and power to scale. Mechanization of agricultural production began to shift the way in which food and other commodities were produced (Slocum, 1962; Schaeffer, 1997; Weitz, 1971; Lehman & Krebs, 1996; Kerbo, 2009; Buttel, 1980). Machines replaced farm workers, leaving a population of workers in need of jobs manufacturing plants could supply. Rather than locate within close proximity, manufacturing plants located in small rural towns. This contributed to the lack of development of large cities in the US South. Thus, low-wage, low-skilled jobs dominated the US south with little opportunity for upward advancement as little investment was made in education, infrastructure and public services (Tardanico & Rosenberg, 2000).

While manufacturing contributed significantly to the development of the US rural South after the industrial revolution, agriculture remained important to the political economy. Small and family farms played an integral part in rural town economies (Schaeffer, 1997). Many small businesses were dependent upon small farms such as feed stores, equipment stores, and brokers. However, drastic changes in agricultural production lead to the decline (or marginalization) of both small and family farms as well as those businesses dependent upon them. These changes in agricultural production included: 1) mechanization; 2) input dependence; 3) emergence of large processors; and 4) political changes.

Transformations in agricultural production resulted due to a variety of factors. As previously mentioned, the mechanization of farming through the use of tractors and other equipment
replaced many workers (Slocum, 1962; Schaeffer, 1997; Weitz, 1971; Lehman & Krebs, 1996; Kerbo, 2009; Buttel, 1980; Jager, 2004). In addition, inputs such as fertilizers, pesticides, fuel and genetically modified seeds were also developed to enhance agricultural production without manual labor. These two developments created competition among farmers and were the first indication of a threat to small and family farms. Not only did they inhibit the economic security of those workers who were replaced by machines, they also hindered the ability of farms without the capacity to invest in machines and inputs to compete with those farms that were able to make such investments. Machines and inputs enabled farms to sell their products at lower prices while maintaining a profit.

As small and family farms were out-competed, the process of farm consolidation and concentration of farm ownership began to take place (Barkley, 1976; Perrett, 2007). Those farms, profiting from investments in machines and inputs, were able to buy-out farms that could not compete with them. This led to the consolidation of farmland and the loss of farms. The number of farms in North Carolina has gone from 300,000 in 1950 to 50,000 in 2004 (North Carolina Rural Economic Development Center, 2006).

Another factor that influenced changes in agriculture was the advent of large processors. Processors are capital intensive industries that process raw agricultural materials into packaged food products for retail sale (Slocum, 1962). As small farms diminished, so did small processors and brokers. Large processors made demands upon farmers that only large farms were often able to meet (Barkley, 1976; Perrett, 2007). They demanded uniform products that they could buy at low-prices. Since small farms could not supply them with these products, markets for their products were diminished. These large processors have enabled large manufacturers and distributors of food to dominate the food industry. Today, vertically integrated, global
agribusinesses dominate the production, processing and distribution of 95% of the food in the US (Lehman & Krebs, 1996). These companies exert much political power in agricultural policy making as well as in the control of prices and supplies.

Lastly, political influences affected changes in agricultural production. Federal policies were put into place to control the prices of agricultural commodities in the world market (Schaeffer, 1997; Slocum, 1962; Buttel, 1980). For example, as the US engaged in World War I and World War II, it became the main supplier of food on a global scale. Thus, to increase agricultural production, loans were given to farmers to buy land and make investments in equipment and inputs to increase their farming operations. Conversely, when US supplies were no longer needed, farmers were given subsidies to keep land out of production in order to keep the supply low so that prices of agricultural commodities would not fall. However, these subsidies were selectively allocated to those large-scale farming productions (Schaeffer, 1997; Lehman & Krebs, 1996; Kerbo, 2009; Tardanico & Rosenberg, 2000; Slocum, 1962; Allen, FitzSimmons, Goodman & Warner, 2003; Buttel, 1980). These policies, and others like them, have been enabled through the lobbying power of large-scale farming operations.

The restructuring of agriculture in the rural US South through mechanization of agricultural production, agribusiness development and policy-making to favor agribusinesses are trends that can be understood through dependency theory. Small farmers were marginalized to a great extent through technological advances, which created a need for expansion to gain profit. Consolidated farming operations developed into agribusinesses, which used their wealth and privilege to influence policy to support their agendas. The process through which small farmers are marginalized and forced into a system of low wages with little opportunity for upward
mobility through expanded markets is a process of exploitation that emerges with the application of dependency theory.

Examining this process in the context of dependency theory, markets are maintained through a process of export-driven production. While the markets were not always foreign, as emphasized in Cardoso & Falleto’s (1979) analysis, they provided little capital back into southern, rural economies. Rather, capital was returned to the wealthy agribusiness owners. Thus, as the power elite theory is applied, it is evident that these wealthy and powerfully positioned agribusiness owners were able to use these advantages to manipulate production, markets and policies to serve their interests, further marginalizing rural farmers.

Agriculture and manufacturing have been important to the development of the rural US South, but both have now left the rural South in a state of underdevelopment. The emergence of the large farm corporation has depleted small farming communities (Slocum, 1962), and job opportunities have been restricted to low-wage, low-skill jobs (Tardanico & Rosenberg, 2000). Lack of investment in infrastructure such as railroads and highways inhibited the mobilization of rural residents. In addition, lack of investments in public services and education diminished opportunities for residents of the rural South. Thus, poor health, limited education and persistent poverty were legacies of small, rural towns.

Today, rural towns are further threatened by trade liberalization. US trade policies like the General Agreement on Tariffs and Trade (GATT) and the North American Free Trade Agreement (NAFTA) have allowed US companies to re-locate in other countries where cheap labor and less stringent regulations can be found (Tardanico & Rosenberg, 2000; Glasmeier & Leinchenko, 2000). North Carolina experienced a 27% decline in manufacturing jobs between
1990 and 2003, a loss of over 200,000 jobs. (North Carolina Rural Economic Development Center, 2006).

Due to the considerable amount of job loss experienced in rural North Carolina, the Jobs for the Future Project was created in 2002 in order to provide a comprehensive approach to development in rural communities across NC (Hossfeld, Legerton & Dumas, 2004). This project concentrates both on policy and program recommendations in order to achieve rural economic restructuring and development. The Jobs for the Future Project identifies agriculture as one of several challenged sectors that presents a possibility for economic development in North Carolina. One solution is through the development of a community food system. North Carolina has a large agriculture tradition, with much land still available for farming and many farmers still knowledgeable about how to cultivate the land.

Due to the problems associated with peripheral development in a global world economy, many scholars are calling for a re-localization of production and consumption (Lehman & Krebs, 1996). It has been suggested that such a process would allow for democratic participation, economic prosperity, ecological conservation and cultural preservation (McMichael, 1996). The Jobs for the Future Project can be categorized as an attempt to re-localize agricultural production and consumption in order to gain regional economic growth.

Restructuring agriculture to concentrate on sustainable production for local consumption\(^1\) would keep food dollars within the region, create jobs to support local agricultural production through local processing and distribution, and give residents greater opportunity to eat fresher,\(^1\)

\(^1\) Connections with Blau’s theory of power and exchange examining subordination and superordination can be drawn here (Blau, 1964). Persons or groups enter into power relations as subordinates, when they require resources that can only be obtained via another person or group, which becomes the superordinate. As Southern rural farmers expand their markets to include alternatives, they will not need to remain subordinate to agribusinesses.
more nutritious foods. This agriculture restructuring would mean emphasizing small and medium sized farms, which are most capable of growing sustainably and most likely to participate in a local food system program due to their need for expanded markets.
BACKGROUND

The Southeastern NC Food System (SENCFS) Council developed from the Jobs for the Future Project to address economic development in Southeastern North Carolina through the restructuring of agriculture by means of community food systems (Hossfeld & Legerton, 2006). It is a partnership of public and private institutions and agencies among six counties in Southeastern NC. Southeastern NC is the most ethnically diverse and impoverished region in rural North Carolina and the rural United States. Three of the counties in the region, are considered counties of persistent poverty in NC. The region contains both rural and urban counties to maximize market opportunities. The six counties are home to more American Indians than any other region east of the Mississippi river; the two main tribes are the Lumbee and the Waccamaw Siouan. There is also a significant poor African American population in the region. African Americans make up 24% of the six county population; 30% are below the poverty line. With rising poverty rates and increasing job loss of both manufacturing and agricultural jobs, the Jobs for the Future Project through the SENCFS Council aims to restructure the regional economy.

The SENCFS Council was formed in 2006 by Dr. Leslie Hossfeld of UNCW and Rev. Mac Legerton of the Center for Community Action who garnered the support of cooperative extension agents, farmers’ market managers, non-profit organizations, the Food Bank of Central and Eastern NC, city and county governments, local businesses and farmers. The goals of the SENCFS Council include increasing the sales of local farm production, expanding local farm production and markets for local products, creating institutional buying agreements, educating and training new farmers, conducting a ‘buy local’ campaign, and improving the local economy through the sales of local farm products. The SENCFS Council places emphasis on improving
the circumstances of limited resource farmers. Limited resource farmers are defined by the United States Department of Agriculture as those farmers who have less than $155,000 in sales and whose income is below the poverty line (United States Department of Agriculture Natural Resources Conservation Service, 2008). Other definitions of limited resource farmers include those farmers who are women and minorities. The SENCFS Council is inclusive of all of these definitions for limited resource farmers and is dedicated to improving the farming and financial situation of all farmers who fit into the category of limited resource farmer.

The Council has over 100 members on the listserv with 30 members attending each monthly meeting. The Council has received funding from the Golden Leaf Foundation, the Southern Sustainable Agriculture Working Group, and Southern Sustainable Research and Education. The Council is organized into six committees, which address limited resource farmer development, youth and community gardens, community food assessments, institutional buying, marketing and resource development, and farmers’ markets.

The SENCFS Council meets monthly as a regional council. Projects of the SENCFS Council that have developed out of committees include the following: the assessment committee has begun a community food assessment; the marketing and resource development committee has begun logo and website development; the limited resource farmer committee has identified education and training needs of the farmers, and workshops for farmer development have been hosted by the SENCFS Council; the community garden committee is currently working on three community garden projects in the City of Wilmington; the institutional buying committee is examining infrastructure for creating institutional buying relationships; and the farmers’ market committee is working to increase the viability of farmers’ markets throughout the region.
There are two part-time staff members working on behalf of the Council, a Coordinator and a Marketing and Development Specialist; Dr. Hossfeld and Rev. Legerton serve as interim Co-Executive Directors. Staff members work closely with the Council to carry out the objectives of the Council. The research reported in this thesis was conducted by the Coordinator of the SENCFS Council in order to inform institutional buying through farm-to-school programs. It is one part of a community food assessment project of the SENCFS Council.

Proposed plans for development of the Council include county level councils to address community food system projects on a county level that are representative of the county demographics by race, gender, income and occupation.
LITERATURE REVIEW

There is growing interest in establishing community food systems in the US and abroad. A community food system is a system in which food is produced, processed, distributed and consumed within a single geographic region producing positive social, environmental and economic benefits (Wilkins & Eames-Sheavly, n.d.). Community food systems allow for the access of healthy, safe food that is grown, processed and distributed in an environmentally sound manner, and that contribute to local economies and sense of place. The social benefits that can be produced through the establishment of a community food system include greater community cohesion from increased interaction among growers, processors, distributors, and buyers within a local division of labor, which produces a collective understanding of the importance of the production and consumption of local foods (Ritzer, 2008). Increased equity in the food system as well as increased access to more nutritious foods are other social benefits that result from community food systems.

Community food systems create bonds and relationships between the consumer and farmers. Consumers are able to identify where their food comes from, establishing a greater connection to their community (Wright, 2006; McCamant, 2007; Ostrom, 2006; Norberg-Hodge, Merrifield & Gorelick, 2002; Sharp & Smith, 2003; Feagan, 2007; Wilkins & Eames- Sheavly, n.d.). Farmers’ markets and community supported agriculture are forms that community food systems can take that provide arenas for interaction and exchange between consumers and farmers, creating both a sense of place and purpose.

Along with community cohesion, community food systems encourage a change in the dominant food production, distribution and consumption processes (Allen, 2004). Community

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2 This is taken from Durkheim’s theory of solidarity in the Division of Labor in Society (1893).
food systems support the small-scale farmer over the large agribusiness, contributing to a more equitable distribution of wages and enhanced working conditions for farm laborers (Wilkins & Eames-Sheavly, n.d.; Norberg-Hodge et al., 2002; Allen, 2004). Farmers are able to retain a greater percentage of the food dollars spent when they enter into direct buying relationships with consumers through community food systems. Community food systems also encourage fair wages for farm laborers. Farmers retain a greater percentage of the food dollars spend on local products and are able to pay farm laborers fair wages. In addition, community food systems promote social justice discourse and democratic engagement into the food production system by the community at large (Allen, 2004). By doing so, farm wages are monitored by community members, ensuring that fair and just practices are instituted. Better working conditions for farm laborers are also provided for through limited exposure to chemical fertilizers and insecticides common in monoculture agribusiness.

Another social benefit that can result from community food systems is increased access to healthier, more nutritious foods, which produce positive health benefits. Community food systems aim not only to achieve equitable distribution of profit, but also equitable distribution of food access (Wilkins & Eames-Sheavly, n.d.; Allen, 2004). One goal of a community food system is to achieve community food security, which consists of all community members having the ability to access affordable, nutritious foods (Pothukuchi, Joseph, Burton & Fisher, 2002; Winne, Joseph & Fisher, 1997). Low-income areas tend to be devoid of outlets for fresh fruits and vegetables (Community Farm Alliance, 2007; Pothukuchi et al., 2002; Azuma, 2007; Conroy & McDavis-Conway, 2006). They also tend to offer lower quality food for higher prices. Food outlets in low-income communities frequently consist of convenient stores and fast food restaurants. However, through community food systems, communities can increase their access
to fresh fruits and vegetables, a critical element to nutritional health, as low fruit and vegetable consumption is one of the top ten risk factors leading to attributable mortality (World Health Organization, 2003).

In addition to social benefits, community food systems may also have many environmental benefits. Community food systems decrease air pollution created through the transportation of foods, by keeping food produced locally, consumed locally (Wilkins & Eames- Sheavly, n.d.; Norberg-Hodge et, al., 2002; Wright, 2006). On average, our food travels 1300 hundred miles from farmer to consumer. Most community food systems incorporate food within a 250 mile radius. This is the distance a farmer can travel to and from in one day. Farmland preservation is another environmental benefit of community food systems. Community food systems create a need and demand for more farms and thus farmland preservation (Norberg-Hodge et, al., 2002; Dillon, 2007). Preserving open space also provides carbon absorbing foliage that cleans the air and retains nutrients in the soil.

Community food systems typically encourage sustainable, bio-diverse production. Sustainable production enhances the environment in a variety of ways. For example, small-scale farmers are able to increase yields through growing many crops together, naturally deterring pests associated with large-scale monoculture production, which significantly decreases the need for heavy pesticides, fertilizers and other petro-chemicals. This also decreases the chances for food-borne illnesses, especially large scale outbreaks. Sustainable production encourages preservation of the natural environment by building up the soil through natural amendments like compost and manure and does not leach chemicals into the ground and ground water.

Lastly, community food systems produce economic benefits. Community food systems keep food dollars circulating within a community and can produce a multiplier effect that leads to job
creation and economic growth. A greater percentage of each food dollar spent in local food purchasing is returned to the farmer (Allen, 2004; Meter & Rosales, 2001; Department of City and Regional Planning UNC- Chapel Hill, 2008). This increases farmers’ incomes and keeps money in the local economy, which can lead to the strengthening of rural economic bases. An economic impact study in Iowa showed that the farmers’ markets contributed up to $20 million in sales to the economy and created another $12 million in direct and indirect economic activity (Otto & Varner, 2005). The Seattle farmers’ markets also generated nearly $87 million in gross revenue in 2002, which in turn generated taxes and jobs for the city (MacIntosh & Griffey, 2004). These direct market systems capture local wealth that would have otherwise left the community (Department of City and Regional Planning UNC- Chapel Hill, 2008).

There is significant potential for local economies to benefit from the circulation of local dollars from local food production and distribution. A report by the Appalachian Sustainable Agriculture Program reported that if just half of the population in Western, NC spent $11 on locally-grown food during the growing season, than over $36.5 million would stay in the local economy (Kirby, Jackson & Perrett, 2007). In contrast, regions lose millions of dollars each year through importing foods or because farmers are not fully reimbursed for their farm expenses (Meter, 2008).

Economic analysis of the anticipated outcomes of the Southeastern NC Food System Council, through the establishment of a community food system, showed significantly improved economic well-being (Hossfeld & Legerton, 2006). The annual economic impact of 100 agricultural jobs created (projected outcome of the SENCFS Council), using a model measuring economic ripple effects, estimated $63.2 million dollars in economic activity for the region, 600 new jobs created, $13.5 million in wages and salaries, $1.65 million in self-employment income,
$6.28 million in payments made to people owning stock, serving as creditors and renting property, and $1.08 million in county property tax collections.

Community food systems also produce multiplier effects (Meter, 2008; Pirog, 2007; Kirby et al., 2007). Knowing that there are expanded markets through community food systems, farmers are more likely to increase and expand their operations (Dillon, 2007). With an increased demand for local foods, there will also be an increased demand for local processing, storage and distribution. An economic modeling project in Iowa revealed that by increasing the production and direct marketing of local fruits and vegetables, industrial output, labor income and available jobs would also increase (Swenson, 2006). Industrial output refers to sales value of production, labor income refers to the income generated by labor in wages, salaries and cash-like benefits, and available jobs refers to the job positions available. Local multiplier effects also increase local economic spending (Kirby et al., 2007). Money that would be spent on non-local products is re-directed to local products, which can have a significant impact on a local economy. This happens as agricultural profits are re-circulated into the community through the purchases of local products and services.

Because of the many benefits that community food systems can have for local economies, the environment and communities, many people are seeking to implement them where they live. There are a variety ways in which community food systems can be instituted. Initiatives have included community or school gardens, community supported agriculture programs (CSA’s), farmers’ markets, and direct marketing to restaurants and institutions. All of these initiatives require different strategies and tactics for implementation according to their different goals. This current project will focus on direct marketing to institutions. There are many advantages to incorporating institutions into community food system programs. Institutions provide a large,
secure market for farmers with predictable demand, eliminating many of the risks involved with growing new crops speculatively (Department of City and Regional Planning UNC- Chapel Hill, 2008).

Institutions are some of the largest purchasers of food, especially in rural areas. Public schools, universities, community colleges, hospitals and prisons are examples of institutional buyers that consistently serve hundreds to thousands of meals per day. Institutions once relied on local products to serve their customers; however, national food processors and distributors are the major suppliers of food to institutions today (Bellows, Dufour & Bachmann, 2003). In order to change this process and enable local producers to sell their food to institutions, program coordination, local processors, and local distribution centers must be established. When farmers sell to local institutions, they gain access to reliable markets and allow consumers within these intuitions exposure to healthier, more nutritious foods (Department of City and Regional Planning UNC- Chapel Hill, 2008). Additionally, through a local purchasing relationship, institutions invest directly into the local economy.

Public schools are institutional buyers that present opportunities for local food purchasing initiatives (Joshi, Azuma & Feenstra, 2008). Farm-to-school programs enable farmers to access new markets through schools and provide arenas for schools to educate their students about local food and agriculture (Farm to School, 2006). Today, it is estimated that there are over 2,000 programs in 39 states where public K-12 schools are buying local produce. Both schools and small farmers benefit in farm-to-school programs (United States Department of Agriculture Food and Nutrition Service, 2000).

School meals play an important role in the dietary health of many low-income students (Burlington Food Council, 2004). Students from low-income families are at increased risk of
being food insecure or lacking adequate access to foods in order to fulfill basic dietary needs. School meals allow students, especially low-income students, the opportunity to gain nutrients that are critical for meeting daily dietary needs.

While there are assumed associations between good nutrition and academic achievement (American Dietetic Association, 2003; Alderman, Behrman, Lavy & Menon, 2001), a meta-analysis of studies researching the affects of nutrition on school success found that a causal relationship cannot be established between good nutrition and academic success (Behrman, 1996). Mediating factors such as behavior, income and environmental circumstances inhibit the ability to show causality due to the difficulty of identifying and measuring all of these factors. However, both nutrition education and nutritious meals can be accessed in public schools contributing not only to a nutrient rich diet, but also lifestyle skills to maintain such a diet. Farm-to-school programs have been shown to increase intake of nutritious foods (Allen & Guthman, 2006). They also grant access to all children regardless of socio-economic status, offering them the benefits of fresh fruits and vegetables, which can be difficult to access in low-income communities.

Research shows that the food provided by small, local farmers is fresher and has more nutrient retention than that provided by distant markets (Bellows et, al., 2003). Fresh products tend to be more flavorful and contain less chemical contaminants and additives (Dillon, 2007). Research also shows that students are given the educational opportunity to learn about where and how food is grown through farm-to-school programs (Dillon, 2007; Izumi, Rostant, Moss & Hamm, 2006; Bellows et, al., 2003; Harmon, 2004; Burlington Food Council, 2004). Some farm-to-school programs allow students to partake in hands-on activities such as gardening, field trips to farms, and bringing farmers to the classroom in order to learn about nutrition. Many other
curricula have also been developed through farm-to-school programs that incorporate math, reading and science (Burlington Food Council, 2004). Through hands-on activities, preference for fresh fruits and vegetables is often increased (Izumi et al., 2006). These activities are important because preference has been shown to be one of the strongest predictors of fruit and vegetable consumption.

With the current epidemic of childhood obesity, it is critical that students are provided with healthy options and that healthy eating is promoted (Izumi et al., 2006). During the school year, students eat at least five meals at school per week, up to 40% of their meals, through the National School Lunch Program (Dillon, 2007). Thus, schools are strategically positioned to utilize their school lunch program to promote healthy eating (Izumi et al., 2006). Incorporating local foods into schools’ meals is beneficial to student health (Izumi et al., 2006; Allen & Guthman, 2006).

In order for farmers to sell to schools, much planning and coordination is needed between numerous constituents. The federal government regulates and administers the National School Lunch Program; however, state and local governments and agencies are also integral to the implementation of these programs (Dillon, 2007). Farm-to-school programs are specific to the community and area in which they are instituted due to purchasing and procurement policies and procedures, distribution networks, school kitchen facilities and labor (Dillon, 2007; Bellows et al., 2003; Harmon, 2004; Burlington Food Council, 2004; Izumi et al., 2006). Navigating these issues requires that researchers address barriers before steps can be taken to implement a farm-to-school program (United States Department of Agriculture Food and Nutrition Service, 2000; Bellows et al., 2003; Burlington Food Council, 2004).

Both schools and farmers face critical constraints in their ability to participate in farm-to-school programs (Dillon, 2007; Harmon, 2004; Bellows et al., 2003; Izumi et al., 2006;
Research conducted with public school food service directors in Michigan found that federal and state procurement regulations, lack of products available during certain times of the year, and lack of local producers within close proximity were barriers to public schools buying local foods (Izumi et al., 2006). Other concerns included cost, reliable supply, food safety, delivery, quality and the effort required to buy local produce. Allen and Guthman (2006) identified getting the produce from the farm to the school (delivery) as the biggest operational challenge in farm-to-school programs. Logistical and management concerns in a National Sustainable Agriculture Information Service Study included finding the types of food consumed by school children locally, availability of kitchen and storage facilities at school, food preparation skills of cafeteria employees, cost of local foods, access to processing facilities, available supply of local products, food quality and food safety oversight, and delivery (Bellows et al., 2003).

Barriers are also evident for farmers in the participation of farm-to-school programs. Farmer constraints include limitations in production, processing, storage and transportation (Dillon, 2007). Small-scale farmers often cannot produce all the fresh produce needed by public schools. In addition, schools are increasingly relying on pre-processed and pre-packaged foods. Due to lack of access to processing facilities, farmers find it difficult to process and package their products in ways that schools can utilize them. Lastly, farmers often do not have the storage or the transportation abilities to either cool produce or deliver it to the schools. A New Jersey farm-to-school assessment found supply, seasonality and distribution to be the greatest challenges facing both schools and farmers (Harmon, 2004).

To understand the challenges for the implementation of a farm-to-school program, several agencies and organizations have conducted community food assessments (Burlington Food
Community food assessments examine community food issues and assets in order to facilitate change actions such as policy advocacy and program development (Pothukuchi, et, al., 2002; Cook, Morgan, Radenovic & Renzi, 2007; Cohen, 2002). Conducting a community food assessment for a farm-to-school initiative involves understanding the current policies and procedures that schools are constrained by as well as the storage, processing, and cooking ability of schools, and the current distribution systems utilized by schools and those available to them for use (Harmon, 2004). It is critical to understand these logistical components in order to implement a viable program whereby farmers sell directly to schools, money stays in the local economy, and students increase their intake of fresh fruits and vegetables.

While farm-to-school programs may include products other than fresh fruits and vegetables, the majority of farm-to-school programs reviewed tended to concentrate only on the incorporation of fresh fruits and vegetables into school meals (Dillon, 2007; Harmon, 2004; Bellows et, al., 2003; Izumi et, al., 2006; Burlington Food Council, 2004). Fresh fruit and vegetable purchasing is also subjected to fewer restrictions and requires less processing than other farm products such as meat and dairy products. For this research, I will examine farm-to-school programs in the context of schools purchasing fresh fruits and vegetables from local farmers.
METHODOLOGY

This thesis is conducted using public sociology research methods. Public sociology involves taking sociology beyond the boundaries of the university to promote dialogue about issues that affect the fate of society (Burawoy 2004). Public Sociology often employs collaborative research that is different from academic models in that it emphasizes the importance of tapping knowledge from both academia and the community (Nyden, Figert, Shibley & Burrows, 1997). Through collaborative research, the community often plays a role in defining the research agenda. The study design for this MA research thesis has been adapted from Randy Stoecker’s project-based research model presented in his book Research Methods for Community Change (2005). Stoecker’s project-based research is a form of participatory research that aims to “create some real difference in real people’s lives, and the research exists in the service of that effort” (Stoecker, 2005:8). Through this model, farm-to-school, one project of the Southeastern NC Food System Council is examined to determine the project needs and potential solutions to meet these needs. This project is just one project of the Southeastern NC Food System Council that examines institutional buying. The research for this project will contribute to a larger community food assessment project of the SENCFS Council that examines agricultural production, organic farming, farmers’ markets as well as institutional buying.

The researcher obtained Institutional Review Board certification to conduct the research, and the research was approved by the Institutional Review Board at the University of North Carolina Wilmington on January 14, 2009.

Participatory Project-Based Research Model

In his introduction to project-based research, Stoecker (2005) notes that the purpose of this research is to make the voices, needs and concerns of community members or organizations
known so that the project can meet those needs. He goes on to say that the research does not inform the project, but rather is a result of the project. In project-based research, it is important that the community or organization is involved in the development of the research question or questions, the research methods, the process for data collection and data analysis, and what will be done with the results. When doing project-based research, Stoecker (2005) adds that the timeline is often short, the research question is often limited to something that is easily countable, and the presentation of the results often occurs in less formal brochure or policy-brief format.

Conducting research that will further the goals and needs of a community or organization involves designing research methods for maximum impact (Stoecker, 2005). One way to do this is to focus not only on collecting information, but to employ strategies that will link community members and organizations together. While many proponents of participatory research suggest involving community members as much as possible, there are many barriers to involving communities in the data collection process. Limited time of community members, short timelines for research, and the need for community members to undergo training in order to conduct research all inhibit the ability for community members to take part in the data collection process. For this particular project, SENCFS Council members were not utilized to collect data due to the aforementioned reasons.

Stoecker (2005) mentions the importance of building participatory relationships with the community or organization that the research is benefiting. The research for this thesis was conducted in conjunction with and on the behalf of the SENCFS Council. It was enabled through the relationship created between the researcher and the organization. The researcher was the Coordinator of the SENCFS Council and has an established relationship with the Council
through this position. The researcher was able to identify the goals of the organization and the goals for the research through this relationship with the Council as well as by serving on the assessment committee of the Council, which identified areas to be examined as part of the community food assessment of the SENCFS Council.

The project-based research cycle model for social change projects includes four identifiable stages through which research is conducted (Stoecker, 2005). These stages include diagnosis, prescription, implementation and evaluation. “They begin with an attempt to diagnose a condition. Based on that diagnosis, the change agents choose a treatment or prescription. The treatment is implemented, and its impact is evaluated. Depending on the impacts, a new round of diagnosis, prescription, implementation and evaluation may be required” (Stocker, 2005:66).

There are numerous contexts in which this research model may be applied. Utilizing this project-based research cycle model can help communities identify issues or needs, learn about best practices to meet these issues or needs, understand the resources available to implement strategies to address these issues or needs, and whether it is possible to address these issues or needs.

The research for this thesis utilized the first two stages of this model: diagnosis and prescription. Stoecker (2005) suggests that when planning the research process, the first step is to identify where in the project cycle the group or organization is to see what kinds of research will be most beneficial. The SENCFS Council had identified the farm-to-school project as part of a larger program to create a community food system. However, the farm-to-school project had yet to be planned because there remained a need to identify those needs and issues of local school systems to be met through a farm-to-school project. For this project, the stage of the project-based research model to begin with was diagnosis. Part of the needs and issues of the
organization had been identified as part of the diagnosis. The need to develop an institutional buying relationship with school systems by working with Child Nutrition Directors had been pre-established by the SENCFS Council. However, those needs of the school systems to be addressed in order for them to participate in a farm-to-school program had yet to be identified. These needs were ascertained through this research. In addition to diagnosis, the prescription stage was also addressed through this research. Other farm-to-school programs were examined to identify best-practices that would suggest solutions to be implemented to meet the needs of the project.

**Diagnosis**

The diagnosis stage identifies a change opportunity (Stoecker, 2005). This stage involves defining not only the problem, but who is involved in defining the problem, who is involved in implementing change, who is to benefit, who is not to benefit and who may support and oppose the change. It is also the stage where community willingness to change is examined. The most common methodological approaches used in diagnosis are needs assessments and asset mapping. A needs assessment is used to determine the gap between the current situation and what the community or organization would like for the situation to be. Asset mapping determines what the talents or opportunities are in a community and how these can be developed.

This research conducts a needs assessment for the diagnosis stage. The needs assessment is conducted as part of a community food assessment, identifying those needs that must be met in order to implement a farm-to-school program. According to Stoecker (2005), there are two ways in which a needs assessment can be conducted, either through an extensive approach where a large number of cases are used to understand a population or through an intensive approach where only a few cases are examined in order to understand cause and effect. This research takes
and intensive approach in that only a few cases were studied in depth; however, they were utilized to determine the characteristics of a school nutrition programs rather than seeking to identify a cause and effect.

The sampling method employed was criterion sampling where a purposeful sample of three out of the seven school systems residing in the region covered by the SENCFS Council were examined to determine what their needs are in order to participate in a farm to school program. These three school systems reside in the eastern part of the region. Only these selected school systems were examined for this research because of proximity to the researcher. In addition, they are all located in the more urban counties. The other four school systems, located in the western counties of the region covered by the SENCFS Council, are largely rural with greater agricultural production than the eastern counties. These four school systems were examined by another research team that worked in conjunction with the researcher on this project. At the end of these research projects, results will be combined to gain a greater understanding of the needs of all the school systems in the SENCFS Council’s region.

The methodology utilized to determine the needs was informed by previous literature on farm-to-school programs. Because a community food system must respond to the specific needs of the community, those needs of other communities established through food assessments could only be suggested as applicable in Southeastern NC. Therefore, an assessment of the child nutrition program, food purchasing program and food preparation and distribution program needed to be assessed to determine those needs that would need to be met in order to implement a farm-to-school program. The information for determining these needs was gathered from the Child Nutrition Directors who oversee the Child Nutrition Program in each school system and are directly responsible for purchasing.
Semi-structured interview scripts (see appendix a) were developed by the researcher to guide the inquiry into determining what issues and needs would need to be met in order for local food to be purchased from each school system and served in the school lunches. These interview scripts consisted of open-ended questions with a logical progression from availability and promotion of fresh fruits and vegetables, to the challenges and needs of participating in a local food purchasing program. They allowed for elaborated discussion of issues critical to school food purchasing that may have been overlooked or not considered by the researcher.

Contact by telephone was made to all of the interview candidates where an explanation of the research was given and a request for an interview was solicited. The Child Nutrition Director contacts were identified through online websites for their school systems. Face-to-face interviews were scheduled and conducted by the researcher with the Child Nutrition Directors of the three school systems. For each interview, the researcher traveled to the office of the Child Nutrition Director. The researcher systematically asked all of the questions on the interview script allowing for elaboration and discussion of other issues and needs. The interviews were tape-recorded and the researcher took additional notes throughout the interview.

The interviews were transcribed by the researcher within a week of being conducted. Some participatory project-based research has involved the validation of interview transcriptions (Stoecker, 2005). In the interest of time, these were not conducted in this research. However, the transcripts were reviewed three times to ensure accurate transcription and validity of information. Ethical considerations were made for these interviewees. Because some interviewees expressed personal views and provided personal information, all names have been omitted. The data was analyzed to determine the recurring issues and needs identified by the
Child Nutrition Directors in order to create a criterion of needs to be met with the implementation of a farm-to-school program.

**Prescription**

Once a situation has been diagnosed, the prescription stage examines ways to impact it (Stoecker, 2005). Simultaneously, as the information was being gathered to determine the needs of the school systems for the implementation of a local food purchasing program, farm-to-school programs within the State of NC were being examined to determine best practices in order to guide solution recommendations for the SENCFS Council. This process was part of the prescription stage of the project-based research cycle. Because part of the diagnosis stage was completed at the start of the research project, research for the prescription stage was able to take place as further research for the diagnosis stage was also taking place. Thus, the researcher, along with the SENCFS Council, was able to look for programs that have addressed school system needs in their implementation of farm-to-school programs in order to explore project solutions to the diagnosed problem. This is called best practice analysis (Stoecker, 2005).

Best practice analysis involves researching alternative solutions and developing comparative research standards in order to make an effective prescription, or suggestion for a solution (Stoecker, 2005). Researching alternative solutions involves gathering all of the information about ways that others have addressed the problems or issues. Developing criteria upon which those alternatives can be compared involves creating standards upon which those alternatives are compared to determine the “best practice,” which can be used to guide the community or organization toward a plausible solution.

The alternative solutions that were explored as part of the prescription stage included programs that enabled public schools in NC to purchase fresh fruits and vegetables from farmers.
These alternatives were chosen because they were implemented in NC and therefore subjected to the same rules and regulations of those school systems in Southeastern, NC. It would be easier to adapt suggestions for solutions from these programs.

The programs examined were farm-to-school programs in that they delivered only local agricultural products to school systems. Snowball sampling was utilized to identify alternative programs to examine. The programs included Madison Farms, a local distribution center in Western NC that sells aggregated small farmer products to the county school system. The contact information for Madison Farms was obtained through personal connections of a SENCFS Council member with the cooperative extension office involved with Madison Farms. This contact led the researcher to the Co-founder of the operation as well as the manager of Madison Farms. Another program examined was the Camp Lejeune Dependent School System, whose farm-to-school program is operated by the Child Nutrition Director. The contact information for the Camp Lejeune Dependent Schools Child Nutrition Director was obtained by one of the Child Nutrition Directors interviewed as part of the research in diagnosis stage. The third farm-to-school program examined was the North Carolina Department of Agriculture & Consumer Services (NCDA & CS) Farm-to-School program. Contact information for this program was garnered from the NCDA & CS website. The Director of the Food Distribution Division of the NCDA was interviewed. The Director suggested talking to one of the employees of the Farm-to-School program who was instrumental in the development of the program. This employee of the NCDA & CS working with their Farm-to-School program was also interviewed.

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3 In each of these programs, the term local is used differently and is defined by the entity operating the program as local. Local for the NCDA & CS program is defined as within the state of NC; local for Madison farms as defined as grown within Madison County or adjacent counties; and local for Camp Lejeune Dependent Schools is defined as grown within a 20 mile radius of the Camp Lejeune Military Base.
Similar to the diagnosis research, interview scripts were developed by the researcher to address the logistical process of farm-to-school implementation through these programs. Individual interview scripts (see appendix b, c, d) were created based upon the type of entity or organization administering the program. The interview scripts contained open-ended questions that allowed for elaboration and discussion of issues that may have been overlooked or not considered by the researcher. The interview scripts consisted of logistical issues that were critical to the success of the programs and inquired about personnel involved, facilities available, transportation utilized, communication with farmers and schools, payments, as well as challenges that arose in the implementation of the program.

Data was collected through telephone interviews with the farm-to-school programs. Telephone rather than face-to-face interviews were conducted because of the lengthy travel distance required for face-to-face interviews. Interviews conducted with NCDA & CS personnel were conducted immediately upon calling their program. Those interviews that were conducted with Madison Farms and the Child Nutrition Director for Camp Lejeune Dependent Schools were conducted after an initial call explaining the purpose of the research and establishing a telephone interview time and date. Notes were taken during the telephone calls and typed up. Follow-up calls and emails were sent to clarify information that was recorded and to inquire about information that was not collected during the telephone interview. Follow-up calls and emails insured the validity of the information collected.

Once alternatives are identified and explored, they must be evaluated in order to choose the alternative that will inform the best solution to be implemented (Stoecker, 2005). Developing the

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4 The NCDA & CS Farm-to-School program is located in Raleigh, NC 130 miles from UNC Wilmington; Madison Farms is located in Madison County NC 380 miles from UNC Wilmington; and Camp Lejeune Dependent Schools is located in Jacksonville, NC 60 miles from UNC Wilmington.
criteria can be done by applying best-practices standards, through the derivation of existing research, from theory, with the inclusion of unique community characteristics, from project goals, and through the engagement of stakeholder groups. The criteria for evaluating the alternatives examined through this research were derived from previous research conducted as part of the diagnosis stage with Child Nutrition Directors in Southeastern NC. The criteria for evaluation were based on how the farm-to-school programs addressed those needs identified by the Child Nutrition Directors. Data from the farm-to-school program interviews were analyzed and evaluated according to how they addressed those needs and the resources they utilized in addressing those needs.

In choosing an alternative to suggest a solution, Stoecker (2005) suggests ranking criteria, calculating benefits and calculating costs as ways in which alternatives can be evaluated. The data analysis for the prescription was employed through comparing each alternative’s approach to addressing the needs identified by the Child Nutrition Directors in Southeastern NC. The criteria were not ranked, nor were the costs or benefits calculated. Rather, the manner in which each program addressed the needs with consideration of the resources available for implementation was utilized to offer suggestions for solutions. Three solutions were developed that utilized the processes for farm-to-school development gathered through interviews with farm-to-school programs. In addition, policy recommendations were formed from the research to support the implementation of a farm-to-school program in Southeastern NC. The last part of the prescription stage, choosing a solution, has yet to be applied through this research. This research will inform the SENCFS Council of the possible solutions based on the aforementioned criteria with the corresponding required resources. With this information, the SENCFS Council will be able to decide upon a solution to implement.
The research for the prescription stage should be carefully integrated with a planning process, with information gained from the research used to inform the planning process and the planning process informing what research is needed (Stoecker, 2005). This process took place through open dialog at SENCFS Council and committee meetings that discussed institutional buying processes. The Council was interested in learning how distribution and storage methods of institutional buying programs operated, which informed the research and information gathered. In addition, the research informed the Council on what logistical steps to consider for implementing an institutional buying program as they move forward.

Utilizing the participatory project-based research model allowed the researcher to assist the SENCFS Council in their goal of implementing a community food system in Southeastern NC. While there remains some debate concerning the objectivity of community based collaborative research and its ability to produce accurate knowledge (Nyden et al., 1997), this research method enabled the researcher to work with and within the community, utilizing local knowledge to make a contribution to social change. Another method might not have produced the same conclusions that are critical to the advancement of the SENCFS Council’s goals.
RESULTS

The school systems examined for this research are located in Southeastern NC and will be referred to as the Southern, Central and Northern school systems. Each school system has a Child Nutrition Program administered by a Child Nutrition Director that is accountable to the State and Federal government. Child Nutrition Directors have to follow the strictest nutrition guidelines whether they are mandated at the State or Federal level and are accompanied with or without funding. All purchasing, ordering, menu-planning and oversight of the National School Lunch Program are conducted by the Child Nutrition Director. Some schools also have breakfast and after school snack programs that are also part of the Child Nutrition Program. Child Nutrition Programs are self-supporting, meaning they are not funded through the school system in which they are operating. Funding for the Child Nutrition Program comes from 1) federal reimbursements for free ($2.57), reduced ($2.17) and full priced ($0.24) meals; 2) entitlement dollars to purchase USDA commodities based on participation in the school lunch program; and 3) profits made through a la carte items and full priced meals. See table below for the school system budgets (See table 1).
<table>
<thead>
<tr>
<th>School System</th>
<th>Student Population</th>
<th>Annual Food Budget</th>
<th>Fruit and Vegetable Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern School System</td>
<td>11,847</td>
<td>$2,250,000</td>
<td>$500,000</td>
</tr>
<tr>
<td>Central School System</td>
<td>24,961</td>
<td>$4,700,000</td>
<td>$387,225</td>
</tr>
<tr>
<td>Northern School System</td>
<td>8,160</td>
<td>$1,300,000</td>
<td>$250,000</td>
</tr>
</tbody>
</table>
The Southern school system serves 11,847 students in 19 schools; 6,870 students (55%) qualify for free and reduced lunch. Those students qualifying for free or reduced lunch are living at or below the poverty line. The Southern school system is in a large rural county located on the southeastern most coast of North Carolina, encompassing 850 square miles. It is the second largest landmass county in the State, and the largest towns in this school system are situated on the coast. The Child Nutrition Program in this school system is independently operated, meaning that there is not an outside food management company that operates the program. The Child Nutrition Director has the discretion to choose the food vendors as well as set her or his own contract and bid regulations. Self operating Child Nutrition Programs have multiple vendors, each supplying different products.

The Central school system is in the smallest and most urban county of the three. It serves 24,961 students in 37 schools, with 9,832 students (39%) qualifying for free and reduced lunch. The Central school system is a densely populated coastal county covering only 200 square miles. It is the second smallest county in the State but has the 12th largest school system in the State. The largest city in the three counties with a population of 100,000 is located in this County. Similar to the Southern school system, the Central school system’s Child Nutrition Program is also independently operated.

The Northern school system is also located in a coastal County. It is a large county covering 870 square miles. It serves 8,160 students in 16 schools, with 4,243 students (52%) qualifying for free and reduced lunch. Unlike the Southern and Central school systems, the Northern school system’s Child Nutrition Program is operated by the food management company Aramark. The Child Nutrition Director and all of the cafeteria and food service staff are employees of Aramark. The Northern school system is required to purchase all of their products through Aramark.
approved vendors and contracts. Sysco, a food product distribution company for restaurants and institutions, is the contracted vendor through Aramark that supplies the Northern school system with all of its produce.

**Fresh Fruit and Vegetable Purchasing**

There are a variety of ways that the Southern, Central and Northern school system purchase fresh fruits and vegetables. The most common way is through a vendor who has a pre-established contract through a formal bidding system. Because all of the school systems have vendors, they purchase fresh fruits and vegetables similarly. Prices for available fruits and vegetables are released weekly, and the Child Nutrition Director chooses what to order. For the Southern and Central school systems, which are self-operating, vendor contracts are sometimes established on a yearly basis; however, it is more advantageous for them to renew contracts every six months due to fluctuations in food prices. In both the Southern and Central school systems, US Foodservice won the produce bid for the 2008-2009 school year. The Northern school system only purchases fruits and vegetables through Sysco. Deliveries of fruits and vegetables made through the vendors in all of the school systems are delivered directly to individual schools within the school system. They receive deliveries on a daily to weekly basis.

**NCDA & CS Farm-to-School**

Another way in which fresh fruits and vegetables are purchased is through the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) Farm-to-School program. This program enables farmers to sell directly to schools through a NC farm-to-school cooperative that is operated by the NCDA & CS. Only NC grown fruits and vegetables are sold through this program. In order to participate in this program, Child Nutrition Directors must sign up with the NCDA & CS as well as be able to receive the order for their entire school system at a
central warehouse. Once the order is received, the Child Nutrition Director is responsible for delivering the produce to individual schools within their school system. Child Nutrition Directors receive notice electronically when items are available, along with the quantity and price of the items. If interested, the Child Nutrition Directors order these items, and they are then delivered the following week on NCDA trucks. The Southern and Central Child Nutrition Directors say that they participate in the NCDA & CS Farm-to-School program as often as possible, as long as the prices are comparable to prices offered through their vendors. The Northern Child Nutrition Director is able to participate in the NCDA & CS Farm-to-School program, but has only done so once, with apples.

Department of Defense

In the late 1990’s, the United States Department of Agriculture (USDA) Agriculture Marketing Services (AMS), USDA Food and Nutrition Services (FNS), and the Department of Defense (DoD) came together to initiate a pilot farm-to-school program in eight states (United States Department of Agriculture Food and Nutrition Service, 2000). During this time, there was a push to increase the amount of fresh fruits and vegetables served to students through the National School Lunch Program. The DoD already had a system in place across the US delivering fruits and vegetables to military bases, VA hospitals, and prisons that could be utilized to serve schools. Laws were re-written so that fruits and vegetables could be purchased and delivered to schools using entitlement dollars. This program has since evolved into the DoD Fresh Fruit and Vegetable Program. Child Nutrition Directors can purchase fresh fruits and vegetables for their school systems utilizing entitlement dollars. The program is operated through the DoD, which has long term contractors who purchase and distribute fresh fruits and vegetables to pre-determined regions throughout the US. These contractors supply school
systems with fresh fruits and vegetables purchased through the DoD. Child Nutrition Directors submit their order to the DoD, who sends it to their regional contractor to deliver. The DoD contractor for North Carolina is Foster-Caviness Foodservice. The DoD encourages its suppliers to buy locally and says that Foster-Caviness Foodservice does receive some of its products from local growers (within North Carolina). Similar to the NCDA & CS Farm-to-School program, fresh fruits and vegetables purchased through the DoD using entitlement dollars are delivered to a central warehouse within the school system on NCDA trucks. Prices for fresh fruits and vegetables are based on USDA market prices and reviewed on a weekly basis.

**Fresh Fruit and Vegetable Program Grant**

Lastly, the Fresh Fruit and Vegetable Program (FFVP) Grant allows school systems to purchase additional fresh fruits and vegetables for schools receiving this grant. Through this program, selected schools are reimbursed for the cost of making fresh fruits and vegetables available to students throughout the school day in addition to those served at breakfast, lunch and after school (United States Department of Agriculture Food and Nutrition Service, 2008). Only elementary schools that operate a National School Lunch Program and have over 50% of students eligible for free and reduced lunch can be selected for the FFVP Grant. States select schools that have submitted an application for the grant based on the above criteria. Receiving this grant results in an extra $50-$75 per-student per year for fresh fruits and vegetables. Tips for purchasing fresh fruits and vegetables with funds from the FFVP Grant include ordering through the DoD fresh fruit and vegetable program, buying from local grocers as well as buying from local farmers and farmers’ markets. The Southern school system has one school that currently receives the FFVP Grant. The Child Nutrition Director commented that “the applications have just gone out again for next year, so I don’t know if we’ll have a school that gets awarded that
program or not. We always hope for it. It’s a wonderful grant.” The Central school system also has a school that is currently receiving the FFVP Grant, which gives them an extra $200-$300 dollars each month to spend on fresh fruits and vegetables. There are no schools in the Northern school system that currently receive the FFVP Grant.

Barriers and Challenges

Cost

Despite the variety of ways that schools are able to purchase fresh fruits and vegetables, there are numerous barriers and challenges that they face in sourcing them locally. In this case, locally refers to the six-county region covered by the Southeastern NC Food System (SENCFS) Council. The greatest challenge to all school systems is cost. Of the 115 school systems in North Carolina, 94 are operating in a deficit, and 30 began the school year with less than 0.25 months operating balance (Hoggard, 2008). The average operating balance for school systems is 1.36 months. All school systems have to follow unfunded mandated nutrition standards, which are not always easy to pay for. One Child Nutrition Director comments, “the more nutritious the food is, the more expensive it is and the cost of it is. So, there are times that you feel conflicted between purchasing certain things because of the fact that you have to make money to cover the program and the standards can be so restrictive sometimes that you’re not- there’s no way, and you have to find other ways to make money, and you have to be creative; it’s not easy.” The Child Nutrition Director goes on to comment that “you have to make the money to keep your program alive, but you can’t do this and you can’t do that and you can’t do the other, and if you’re doing that, then we’ll take your money away from you- so it’s a tight rope to walk as a Child Nutrition Director.” For the Southern school system, cost is one of their biggest obstacles. Federal reimbursements cover only 57% of the budget. Next year, they will go to pre-cooked meats that
only require pre-heating. One of the reasons mentioned was cost. For the Central school system, they see cost as their number one priority. They are moving toward pre-cooked meals as well, mostly due to cost restrictions. The Northern school system does not list cost as a main issue or priority; however, the Child Nutrition Director states that they will not buy fruits or vegetables that are above $0.22 per portion. So, in order for them to purchase locally, it must be cost-effective.

*Regulations*

Another challenge to the purchasing of local fresh fruits and vegetables is regulation restrictions. All school cafeterias must follow Hazard Analysis and Critical Control Points (HACCP) standards. They are inspected and receive a health score just like any restaurant. The Southern school system Child Nutrition Director listed produce vendors having a HACCP program in place as a priority in her ability to buy locally. In addition to HACCP, the Child Nutrition Director listed Good Agricultural Practices (GAP) Certification as another criterion for local producers to possess in order for her to buy from them. The Child Nutrition Director mentioned that she is not worried about food safety issues with locally grown products, as this is something she worries about more with the mega farms. However, she did have a negative experience with a small producer who sold her rotten products without proper handling. In order to prevent future situations similar to that one, the Southern Child Nutrition Director wrote HACCP compliance and GAP certification into her bid regulations for produce vendors. Regulations necessary to purchase local products identified by the Central school system include having proper insurance and HACCP compliance. These regulations are also necessities for the Northern school system Child Nutrition Director who specified produce vendors must have a $1 million insurance policy. While he said that Aramark is in favor of sourcing fresh produce
locally, he also cautions, “one of the things that Aramark wants to stay away from is some really small guy who’s selling out of the back of his truck that has no HACCP policies in place and things like that.” Food safety is a major issue and concern for Child Nutrition Directors. Thus, small vendors who sell products off their trucks are seen as potentially hazardous and providing inferior products. If these vendors have a set of standards or regulations that they abide by, then they are looked upon more favorably by Child Nutrition Directors.

According to federal regulations, under a provision for the Food, Conservation and Energy Act of 2008, school systems are allowed to apply geographic preference to their purchasing of fresh fruits and vegetables (United States Department of Agriculture Food and Nutrition Service, 2008). This enables school systems to purchase unprocessed locally grown or locally raised agricultural products. Unprocessed items include those that require minimal handling and preparation by the producer, such as washing vegetables, bagging greens, butchering livestock and poultry as well as pasteurizing milk, and eggs. Items that are chopped or sliced can be purchased at the discretion of the Child Nutrition Director. This bill makes no mention of certifications or standards that local growers must have in order to sell to school systems. Other than handling and storage, there are no strict standards that school systems must adhere to when purchasing fresh fruits and vegetables (United States Department of Agriculture Food and Nutrition Service, 2005). The stipulations regarding sourcing fresh fruits and vegetables include purchasing from a known source and receiving products at the appropriate temperature (41° for refrigerated items; 45° for milk and eggs). Standards set for the regulation of fresh fruit and vegetable vendors are determined individually by the Child Nutrition Director of each school system and written into the produce bid. Setting up a local purchasing program with school
systems in Southeastern NC must meet the individual standards of each school system that have been written into their produce bids.

Packaging

Packaging is another challenge that exists for Child Nutrition Directors trying to buy directly from farmers. Child Nutrition Directors prefer to receive shipments packaged in a certain way whether it is by the size of boxes and bags or the way the products are placed within them. In addition, Child Nutrition Directors prefer items that are individually packaged. For example, the Southern school system Child Nutrition Director uses some minimally processed pre-packaged grapes and apple slices that are easy for her to distribute. She also uses pre-chopped lettuce for salads. She mentions that these conveniences are “wonderful, but again making sure that they are safe- that’s probably one of the biggest things.” The Child Nutrition Director goes on to say that taking a package with pre-sliced apples and serving it is easier than washing the apples and putting them in bags because “the health department says you can’t have a big bowl of apples [for kids to] reach in, as they are touching other apples.”

The Central school system Child Nutrition Director requires that farmers package the products in a way that she can use them, how exactly was not specified. The Northern school system gets about half of his produce pre-processed and packaged. The main challenge for the Northern school system Child Nutrition Director was his ability to receive shipments that are packaged to each school’s quantity needs. Labor was not mentioned as a critical issue for any of the school systems. The Southern school system Child Nutrition Director commented, “Labor is determined by meals per labor hour; if you have the labor there, you need to utilize the labor that is there.” All of the school systems receive some produce that requires washing and processing (slicing, chopping, mixing, and cooking).
Knowledge of Local Sources

Knowing where and how to source fresh fruits and vegetables is another challenge for Child Nutrition Directors to participate in local food purchasing. The Southern school system Child Nutrition Director mentioned that she would like to incorporate some local food products into her Child Nutrition Program this spring. While she had some ideas about where to find local products, she was not entirely sure. The Central school system commented that she would love to incorporate local fruits and vegetables into her Child Nutrition Program but did not know how to contact farmers for various products. Finding local sources for products also increases the workload of Child Nutrition Directors. This is something that they will have to do in addition to their other duties, thus a major challenge to instituting a farm-to-school program.

Storage and Delivery

Storage and delivery capabilities of school systems present challenges for schools to buy directly from farmers. Most of the fresh fruits and vegetables grown in Southeastern NC are harvested during the summer months when schools are not in session. This requires that these products be frozen if schools would like to use them throughout the school year. However, there are limited facilities to store these products. The Southern and Central school systems have more adequate storage capacity. However, the Southern school system Child Nutrition Director commented that storage fees are expensive. The Northern school system found storage to be a major issue. “We can only use so much product at any given time; if we had to take more quantity than we could use up, that would make it difficult.” He goes on to say, “I’d love to have [local] blueberries throughout the year, but we don’t have enough freezer space to be able to do that right now.”
The Northern school system also had more concerns with delivery than the Southern and Central school systems. In order for the Northern school system Child Nutrition Director to purchase produce from local farmers, he says, “it would need to be delivered [to individual schools], rather than dropped off where we would have to take people in a van to pick it up [from the central warehouse] and drop it off, that makes it difficult.” Both the Southern and Central school systems receive shipments of USDA commodity products and NCDA & CS Farm-to-School products to their central warehouses and deliver them to individual schools. Thus, they gave no indication that sourcing locally using the same system would pose an inconvenience to them. However, the Central school system Child Nutrition Director did mention the importance of deliveries from suppliers being dependable, meaning they must come on a specified date at a specified time.

**Dependability and Quality**

A common challenge to all the school systems was dependability and quality. Due to a prior situation of purchasing locally, the Southern school system Child Nutrition Director has put regulations in place that would guarantee both dependability and quality. This was due to one supplier she described as unscrupulous, as “he would do things like bring a case of tomatoes and put the good ones on top and the rotten ones on the bottom.” For the Central Child Nutrition Director, both dependable supply and dependability of the supplier as well as quality of product are listed as her top priorities. The Northern school system Child Nutrition Director was also weary of the quality of locally grown products. He mentioned his hesitation with dependability of local suppliers as he states, “you don’t want to jump into something that is going to be a complete failure and it’s going to cost you $200,000.” Entering into contracts with local suppliers means that Child Nutrition Directors have to engage in relationships with companies
that they have no prior experience with, and who may not have a reputation- good or bad. For this reason, the Child Nutrition Directors are not sure if local farmers will be both dependable and provide a dependable product. Child Nutrition Directors have experience working with large food vendors such as US Foodservice and Sysco and understand and know how to navigate these systems to find a supplier that meets their needs; however, working with farmers as vendors is unfamiliar territory that warrants trepidation concerning dependability and quality of product.

**Farm-to-School Programs in NC**

There are some programs that have been established that attempt to address the challenges of providing local produce to NC school systems. These programs consist of NCDA & CS Farm-to-School program previously mentioned, Madison Farms farm-to-school program and Camp Lejeune Dependent Schools farm-to-school program. They are all operated by unique agencies and attempt to address different barriers that arise through the purchasing of local food from local growers.

*NCDA & CS Farm-to-School*

The NCDA & CS Farm-to-School program was put into place in August 2008. In order to participate in the program, farmers must join the NC Farm-to-School Cooperative, have $2 million liability insurance, be GAP certified and enroll in Goodness Grows in NC, the NCDA & CS agricultural marketing program. Because of these stipulations, it is often difficult and expensive for small and medium sized farms to participate. For the NCDA & CS Farm-to-School program, Child Nutrition Directors in all school systems across the State are canvassed about what local products they would be interested in purchasing the following school year. These recommendations are given to regional marketing personnel that work with farmers to supply the products. The growers, as part of the NC Farm-to-School Cooperative, meet through a
conference call according to product, select a price and go through a bidding process at the state level. If they submit the lowest bid, their products are accepted. Farmers who sell their products through the NCDA & CS Farm-to-School program are not guaranteed that their products will be accepted in the bid, nor that schools will participate. However, the Farm-to-School products have continued to win the produce bid.

As products become available, an electronic announcement with products and prices is sent to all Child Nutrition Directors. Those Child Nutrition Directors that would like to participate in the NCDA & CS Farm-to-School program place orders with the NCDA & CS. Items are then collected by NCDA trucks from the farms and delivered to the requesting schools. Products come from all over the state of NC and are delivered to school systems anywhere within the State. When trucks deliver the products, they are delivered to a central warehouse within the school system, and it is the school system’s responsibility to deliver the products to their individual schools.

The NCDA & CS Farm-to-School program addresses many challenges identified by Child Nutrition Directors to participate in farm to school programs. The NCDA & CS Farm-to-School program offers the lowest cost item, ensures that all farmers follow growing and food safety regulations, provides a system for ordering that is simple and easy for Child Nutrition Directors, and since the program is administered by the NCDA & CS, it guarantees quality and dependability through the NCDA & CS. The only challenge that the NCDA & CS Farm-to-School program does not address is delivery. While the items are delivered to a central warehouse in the school system, it is the school system’s responsibility to deliver the items to their individual schools. Some school systems in NC do not have a central warehouse for storage, nor the capability to deliver products to individual schools within their school system.
This is the case with the Northern school system in this study. It has limited ability for storage and delivery of NCDA & CS Farm-to-School products and thus does not utilize it as much as other school systems that have greater capacity for storage and delivery, like the Southern and Central school systems.

*Madison Farms*

Madison Farms is another program that allows farmers to sell directly to schools. Madison Farms is a network of growers who cooperate in projected production during crop season and sell their products under the Madison Farms label. The first direct purchasing relationship set up through Madison Farms was with a Child Nutrition Director in Madison County, NC. The Child Nutrition Director was interested in purchasing local products, but did not have the capability of purchasing from multiple farmers; rather, she wanted to purchase from one source. Madison Farms allowed her this ability. The Madison Farms facility consists of a warehouse that has freezer and refrigeration storage, a value-added kitchen facility for cleaning and packaging, and a loading dock with a pallet jack. The facility has a $1 million liability insurance policy that covers its farmers and is in the process of getting GAP certified; however, products were not GAP certified when it first began selling to Madison County Schools.

The operations at Madison Farms consist of constant communication between Madison Farms and their buyers. On a weekly basis, the Madison Farms account manager calls their farmers, asks what they have available and when it will be ready; they will subsequently send this information to the buyer, who will fax in their order. The Madison County school system sends a truck to Madison Farms every Monday to pick up their order. The co-founder of Madison Farms states that the key factors to establishing their successful farm-to-school program were “a persistent farmer, a high quality product, and an interested Child Nutrition Director.”
Madison Farms is adamant about not selling anything that is not of the best quality, which is important to maintaining business relationships.

The Madison Farms farm-to-school program addresses many of the challenges schools have in buying from local farmers. There is only one supplier to work with, though the products come from many farmers; Madison Farms provides an adequate storage facility; regulations are being followed and are handled at the facility (GAP Certification, liability insurance, quality control); they are able to provide a good quality product; and they are dependable. In addition, the school system is willing to pick-up and deliver the products to their schools. Many of these challenges were addressed through the personal relationship that was established between the Child Nutrition Director and Madison Farms’ farmers because of the Child Nutrition Director’s personal interest and initiative. This allowed for a transparent relationship. One challenge left unaddressed is the disconnect between peak growing season and the school year. Because of this, Madison Farms says it is moving beyond farm-to-school engagements and concentrating on expanding other markets.

Camp Lejeune Dependent Schools

The last farm-to-school program examined was Camp Lejeune Dependent Schools, a Department of Defense Education Authority, located in Jacksonville, NC on the Camp Lejeune Military Base. This school system’s Child Nutrition Program operates similarly to public schools; however, it is only accountable to federal regulations and guidelines. The Camp Lejeune Dependent Schools serve 3,200 students in seven schools and 1,000 students in the Summer Lunch Program. The Child Nutrition Director for this school system has been purchasing produce directly from farmers for 20 years. She says, “People used to shake their heads at me, but I always thought it was the right thing to do.” The Camp Lejeune Dependent Schools Child Nutrition Director
Nutrition Director began the program after thinking about “how junky and awful” the produce was that she was buying while driving down the road seeing lush, green fields. She thought to herself, “Why am I buying that produce if this farm with all this produce is right here?” Right then, she stopped and talked to the grower. It started with strawberries.

Now, the Camp Lejeune Dependent Schools Child Nutrition Director buys a variety of local produce throughout the entire year; this is the first year she has bought local produce for 12 consecutive months, utilizing winter crops available like collards and sweet potatoes. The Child Nutrition Director only works with farms that are within 20 miles of the schools; right now she is working with 3 farms that are about 50 acres each, but will have to add one more. The produce is picked up either by herself on her way to work or by the school system truck when it is a large order. All products are received as harvested and only washed. There are twice as many health inspectors in the Camp Lejeune Dependent Schools cafeterias than in NC school system cafeterias; these inspectors come unannounced on a weekly basis, and she says food safety has never been an issue. Concerning regulations, she looks for her local suppliers to be a part of Goodness Grows, inspects for general cleanliness, quality of product (most important), limited spraying (only in dire situations) and their ability to provide the quantity she needs.

Concerning quality, the Camp Lejeune Dependent Schools Child Nutrition Director says there is no comparison between what vendors and local farmers sell. “Local products are always better quality.” Farmers that she works with are willing to package the products the way that she prefers and even grow varieties that she requests. When buying products, she makes sure that they are in the same price range as produce sold in other school markets (DoD Fresh Fruit and Vegetable Program, NCDA & CS Farm to School). Most of the time she says it comes out
cheaper; however, this does not take into consideration the cost of having to provide transportation.

Formal contracts are not arranged between the farmers and the Camp Lejeune Dependent Schools; however, the Child Nutrition Director is in constant contact with the farmers and has developed close, personal relationships with them. She says that Camp Lejeune Dependent Schools are not the priority market for the farmers she buys from, because she cannot buy products at the prices other direct markets can provide. Elementary students in the Camp Lejeune Dependent Schools are taken on field trips to farms using FFVP Grant monies and have learned about the variety of local produce they eat. When asked if she has seen nutritional benefits from buying local produce, the Child Nutrition Director comments, “It would be unusual for a student not to have a fruit or vegetable on their plate when going through the line.” She mentions that there are many obstacles when buying from local farms, that if people do not want to do it, they will not do it. However, when asked why she buys from local farms she lists, “it’s the best quality of product, it’s the best thing for the students, money is going back into the local community, I can advertise local products, and parents love that their students are eating locally.”

The Camp Lejeune Dependent Schools farm-to-school program addresses many of the challenges in local purchasing programs. Costs of local products are kept within the market prices of other vendors and are usually cheaper. The Child Nutrition Director inspects the farms personally to evaluate the farming practices taking place (washing, spraying, etc.). The farms are able to package the products in a way that is beneficial to the Child Nutrition Director and there is no need for prior processing. In order for her to meet regulations, the products cannot be pre-processed as this ensures less opportunity for food contamination and thus, greater food safety.
The Camp Lejeune Dependent Schools handles delivery and storage, as the produce is picked up shortly after harvest. Additionally, the quality, quantity and dependability are ensured by the personal relationship between the Child Nutrition Director and the farmers. Through this farm-to-school program, Camp Lejeune Dependent Schools incurs much of the responsibilities in approaching the challenges most school systems face in participating in farm-to-school. However, because of the personal initiative and passion to make this system work, the Child Nutrition Director has been willing to go to great lengths to ensure that the program continues.

The NCDA & CS Farm-to-School program, Madison Farms and Camp Lejeune Dependent Schools all provide examples for how public K-12 schools can incorporate local produce into their school meals. These farm-to-school programs uniquely address challenges and barriers that school systems encounter with instituting a farm-to-school program (See Table 2). Examination of these programs provides models that Southeastern NC school systems can utilize to implement a farm to school program.
Table 2. Barriers Addressed by Farm-to-School Programs in NC

<table>
<thead>
<tr>
<th></th>
<th>NCDA &amp; CS Farm-to-School</th>
<th>Madison Farms</th>
<th>Camp Lejeune Dependent Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>Must win lowest bid</td>
<td>Determined through relationship between Madison Farms and the Child Nutrition Director</td>
<td>Must meet school system’s market prices</td>
</tr>
<tr>
<td><strong>Quality Control</strong></td>
<td>Provided through GAP Certification, Liability Insurance and farm inspection by NCDA &amp; CS</td>
<td>Provided through GAP Certification, Liability Insurance and farm inspection by Madison Farms</td>
<td>Requires Child Nutrition Director to personally inspect farms</td>
</tr>
<tr>
<td><strong>Processing and Packaging</strong></td>
<td>Provided</td>
<td>Provided through Madison Farms</td>
<td>Farmer in compliance with the individual wishes of the Child Nutrition Director</td>
</tr>
<tr>
<td><strong>Know-How and Time</strong></td>
<td>Little requirements of Child Nutrition Director</td>
<td>Easy ordering form, requires constant communication about available supply</td>
<td>Requires extensive effort on the part of the Child Nutrition Director</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>School system stores products once delivered</td>
<td>Items stored at facility; schools pick up needed supply</td>
<td>Schools store needed supply</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td>Items delivered to central warehouse; school system delivers to individual schools</td>
<td>Items picked-up from facility and delivered to individual schools by the school system</td>
<td>Items picked-up from farms and delivered to individual schools by the school system</td>
</tr>
<tr>
<td><strong>Dependability</strong></td>
<td>Guaranteed by NCDA &amp; CS</td>
<td>Developed through personal relationship with Madison Farms and Child Nutrition Director</td>
<td>Developed through personal relationship with farms and Child Nutrition Director</td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>Guaranteed by NCDA &amp; CS</td>
<td>Consistent communication needed between Madison Farms and the Child Nutrition Director</td>
<td>Requires Child Nutrition Director to inspect farm ability</td>
</tr>
</tbody>
</table>
RECOMMENDATIONS

As with all community food systems, farm-to-school programs must be established to address the challenges and meet the needs of the community in which they are located. The research with three school systems in Southeastern NC reveals that not all the Child Nutrition Directors in each school system have the same concerns and priorities for buying local produce (See Table 3). In some school systems, only addressing a few of these barriers and challenges is satisfactory for purchasing from local farmers. In the Southern school system, the Child Nutrition Directors has stated that she would like to purchase from local growers, especially those within her County. The concerns most critical to her are cost and regulations. However, while she has regulations of HACCP compliance and GAP certification written into her bid for produce, she concedes to possibly by-passing these in order to purchase local products. The Child Nutrition Director is also more familiar with the growers in the County and is more likely to have access to reliable information on the dependability and quality of product that they sell. For the Central school system, cost, dependable supply, dependable product and packing are most important. The Central school system Child Nutrition Director understands that locally grown produce provides the freshest product and is interested in incorporating these products into her menu. However, she is not familiar with growers and would need them to provide her with a product she can count at an affordable price.
<table>
<thead>
<tr>
<th>Region</th>
<th>Cost</th>
<th>Regulations</th>
<th>Processing/ Packaging</th>
<th>Know-how/ Time</th>
<th>Storage and Delivery</th>
<th>Dependability and Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>$0.10-0.22 per portion</td>
<td>HACCP Policy and $1 Million Liability Insurance</td>
<td>Process half of their fresh fruits and vegetables</td>
<td>Does not have the know-how or time</td>
<td>Has little storage and delivery capacity</td>
<td>Has little concern</td>
</tr>
<tr>
<td>Central</td>
<td>Largest concern</td>
<td>HACCP Policy and Liability Insurance</td>
<td>Going to pre-processed foods</td>
<td>Does not have the know-how or time</td>
<td>Has central storage and currently delivering from central storage to individual schools</td>
<td>Has large concern</td>
</tr>
<tr>
<td>Southern</td>
<td>Largest concern</td>
<td>HACCP Policy and GAP Certified</td>
<td>Have the capabilities, but prefer pre-processed and packaged</td>
<td>Interested in buying locally willing to make the time and effort to find growers and their products</td>
<td>Has central storage and currently delivering from central storage to individual schools</td>
<td>As long as regulations are followed, has little concern</td>
</tr>
</tbody>
</table>
The Northern school system has different concerns than both the Southern and Central school systems. The Child Nutrition Director in the Northern school system would require a vendor that has met the regulations stipulated (HACCP compliance and $1 million liability insurance) and that can deliver to all of the schools in the Northern school system. He divulges that produce is the only product that Aramark makes vendor exceptions for, meaning he is able to source produce locally and would definitely entertain this idea. Addressing the individual concerns of the school systems enables individual farmers to enter into local purchasing engagements with the Child Nutrition Directors more easily. By doing this, individual farmers are able to obtain a greater profit, from the direct purchasing relationship established.

There are a variety of ways to address the challenges and barriers that Southeastern NC school systems face regarding the institution of a farm-to-school program. The Southeastern NC Food System (SENCFS) Council is committed to promoting the purchasing of local foods in Southeastern NC by increasing available markets to small and limited resource farmers. This organization would be instrumental in implementing strategies to facilitate farm-to-school programs in Southeastern NC school systems. The most feasible ways for the SENCFS Council to create a farm-to-school program are to 1) encourage direct buying relationships between Child Nutrition Directors and local farmers; 2) establish a local food distribution facility that would sell local products to schools; or 3) encourage food vendors that serve the school systems to buy locally grown products either through a local distribution center or through direct purchases from farmers.

Direct Purchasing

Encouraging direct buying relationships between Child Nutrition Directors and local farmers is one way for the SENCFS Council to implement a farm-to-school program. This type of farm-
to-school program would be similar to that of the Camp Lejeune Dependent Schools farm-to-school program. It would require that Child Nutrition Directors establish relationships with local farmers. Since only one Child Nutrition Director in Southeastern NC is currently considering buying directly from local farmers, a campaign to educate both the Child Nutrition Director and their constituents (students, teachers, administration and staff) about the benefits of buying locally would be necessary.

Directly purchasing from local farmers requires considerable effort by the Child Nutrition Director; therefore, it would need to be something that both they and their constituents are interested in pursuing. Once the Child Nutrition Director is actively considering buying directly from farmers, the SENCFS Council can facilitate connecting them with local growers. This can be done by providing a list of growers and their contact information to the Child Nutrition Directors. After establishing this connection, it would be up to the Child Nutrition Directors to create their own purchasing system with the local grower.

In order to help facilitate this process, the SENCFS Council could also provide a storage facility for products harvested during the summer, when schools are not in session. This would increase the ability for Child Nutrition Directors to purchase from local farmers as there is a limited supply of fresh produce during the school year. A flash freeze unit would enable this process, which would need to be garnered through grant funds to the SENCFS Council. A flash freeze unit allows produce to be quickly frozen and its freshness preserved. Responding to the idea of having a flash freeze unit to preserve local produce harvested during the summer for the school year, the Northern school system Child Nutrition Director says, “if you can go that way and do a local, frozen products, I think we can spread it out throughout the year and use more product than we can when products are available fresh.” While this system enables and
encourages a farm-to-school program, it necessitates added work on the part of the Child
Nutrition Director. They are responsible for finding local sources, conducting product inspection
for quality assurance and coordinating ordering and delivery of the products. These duties exceed
those that are typical of a Child Nutrition Director. Thus, the success of a farm-to-school
program through direct buying relationships between Child Nutrition Directors and local farmers
would be contingent upon getting the Child Nutrition Director interested in buying local products
and their willingness to make the effort to do so.

Local Food Distribution Center

Another way to implement a farm-to-school program is to create a system similar to Madison
Farms farm-to-school program. This would require the establishment of a local food distribution
center where farmers could collectively sell their products to school systems. This distribution
center would enable farmers to wash, process, package and store their products. Such a
distribution center would also need the capability of communicating with farmers and Child
Nutrition Directors about product availability and purchasing as well as the capacity to deliver
products to individual schools. The success of a local food distribution center would also be
reliant upon the promotion of local foods within the community to parents, teachers,
administrators, Child Nutrition Directors, and staff. Such a system could comply with the
regulations set in produce bids, provide the storage and delivery for the amount of food schools
purchase, and establish a purchasing system that is easy for Child Nutrition Directors order from.
Establishing a system to meet the needs of Child Nutrition Directors would also directly address
issues of dependability, quality and quantity of products. Another way in which the distribution
center could function is in that of a vendor, where they submit a bid to be the produce provider
for the school system.
Like the direct purchasing farm-to-school program, setting up a local food distribution system would necessitate the active participation of Child Nutrition Directors in Southeastern NC. The SENCFS Council would be the ideal organization to establish such a facility that would optimally allow the purchasing of local foods by school systems in Southeastern NC. In order to implement a local food distribution system, numerous steps need to be taken: 1) educating and organizing Child Nutrition Directors to buy from the facility; 2) organizing farmers to sell to and grow for the facility; 3) developing a business plan for the facility; 4) garnering funding for a facility and needed equipment; 5) establishing standards for farmers and products to meet the regulations of schools; 6) providing training and assistance to farmers in order to meet those regulations; 7) understanding what products schools would buy and their processing/packaging needs; 8) establishing pricing criteria; 9) development of purchasing and delivery system; and 10) hiring staff to operate the facility. Simultaneously, a campaign to garner support for the facility in the local community including parents, teachers, school administration, and school staff would need to take place as well as a campaign to urge policy makers to develop policy conducive and supportive to providing funding that is supportive of local food purchasing.

Efforts to organize Child Nutrition Director to buy from local farmers and farmers to sell to institutional buyers are underway by the SENCFS Council. Meeting to gather Child Nutrition Directors together to talk about local food purchasing are being planned by the SENCFS Council. In addition, small and limited resource farmers were contacted to participate in a survey to develop a list of what is being produced in Southeastern NC, as well as to identify those farmers that would be willing to participate in a local food purchasing system with institutions in the region.
In order for a local food distribution facility to be successful, it will have to have a business plan. The Madison Farms farm-to-school program provided an example for how such a facility could be operated. However, their facility is partly funded through Madison County and relies heavily on grant funds. Another option to model the facility after is Eastern Carolina Organics (ECO). ECO is an organic produce distribution facility that serves Central and Eastern NC. This facility began with grant funds and is currently operating as an LLC. Establishing a local distribution center would most likely require the acquisition of grant funding and/or loans. The facility would also require coolers, freezers, a value added kitchen for processing and packaging as well as trucks for transportation. Agricultural granting agencies like the US Department of Agriculture, Golden Leaf Foundation, Tobacco Trust Fund, and the Kellogg Foundation are all viable options to explore.

Once logistics for establishing a processing and distribution facility have been developed, the needs of the Child Nutrition Directors must be met by the farmers. The regulations and standards set by the Child Nutrition Directors must be identified and agreed upon. If this requires farmers to obtain certifications and/or training, such opportunities must be provided. Farmers surveyed by the SENCFS Council will be asked about any certifications that they have as well as certification and training needs. Cooperative Extension Agents and other farming agencies who participate in the SENCFS Council will be organized to provide needed trainings to farmers in Southeastern NC.

Matching demand for products would also have to be met with supply provided. School systems would have to be canvassed for what types of products they would utilize in their school meals throughout the year, so that farmers could plan and plant accordingly. The quantity demanded would also have to be matched with the amount of products that farmers are growing
as well as who is going to grow how much of what product. Pricing for products would have to be established; not only the prices that school systems will be charged for the products, but the profit that farmers will receive for the products they sell through the distribution center. This is an important logistical consideration in order to make sure that farmers are able to sell their products within the budget restrictions of the school systems. This is also important in guaranteeing that farmers are able to adequately profit from this system and that enough funds are generated to maintain the function of the facility.

The role of the facility will be to act as the broker for regional growers to sell to Southeastern NC school systems. In order to fulfill this role, a system for communication, purchasing and delivery will need to be established. Farmers will need to be contacted frequently to determine the availability of products, their products will have to be delivered to the facility, processed and packaged. Child Nutrition Directors will also have to be notified about product availability, place orders and receive deliveries. Thus, a system for communicating between both the farmer and Child Nutrition Director will have to be established as well as a process for receiving products from farmers and delivering them to school systems. Lastly, staff for this facility will have to be hired and trained to carry out these operations. Child Nutrition Directors should be participants in the decision making process for the development of a local distribution center. Both Eastern Carolina Organics and Madison Farms provide models of communicating between growers and buyers that can be utilized to develop a system for this facility.

Selling through Vendors

A third way to set up a farm-to-school program would be to sell locally grown products directly to vendors who are already selling products to school systems. Considering a farm-to-school program that would function in this capacity, the Northern Child Nutrition Director

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comments, “having the producers come through [our vendor] would absolutely be best; that would alleviate a lot of the problems.” This type of farm-to-school program could be established either through direct purchasing from local farmers or through a local distribution facility. Some vendors have already begun purchasing from farmers as it provides them with positive press about being social and environmental stewards. The vendors for the school systems (Sysco and US Foodservice) could purchase from the farmers or distribution center and then deliver the products to school systems without changing the food purchasing system of school systems.

Another vendor that could be involved in utilizing this system is Foster Caviness Foodservice. Foster Caviness Foodservice is the NC Vendor for the DoD fresh fruit and vegetable program. If a relationship was established that enabled Foster Caviness Foodservice to buy directly from farmers, then schools could purchase locally grown products using their commodity entitlement dollars.

Although setting up a local food purchasing program through vendors would require little if any change to Southeastern NC school systems, there are a numerous challenges that arise when working with corporations. All of the challenges previously discussed pertaining to costs, standards and regulations, packaging, dependability, quality and quantity must be addressed. Storage and delivery present fewer challenges as these companies often have regional storage centers and delivery infrastructure already in place. Selling to vendors also increases the chances that profits for farmers will decrease, especially if the farmer sells through a local distribution center to the vendor. Working within a corporate structure allows for some of the money spent on local products by Child Nutrition Directors through vendors to school leave the region. While it is ideal for schools to purchase local products through this system, other drawbacks arise through this system.
The three recommendations, direct marketing to schools, establishing a local food
distribution center and selling through vendors, all address unique barriers and challenges to
implementing farm-to-school programs in Southeastern NC (Table 4). They also require the
involvement of the SENCFS Council to facilitate a farm-to-school program. Of all the
recommendations, the most feasible to be implemented by the SENCFS Council is to connect
Child Nutrition Directors to local growers. The Council is actively working to establish a list of
local growers interested in selling to institutions. This type of farm-to-school program provides
for the greatest amount profit to be returned to the grower. It is also feasible for the SENCFS
Council to look to granting agencies for the purchase of a flash freeze unit to facilitate local
produce purchases. While this option is the most viable option for the SENCFS Council in their
current stage of operation, this is not the recommendation that is most likely to garner the
participation from Southeastern NC Child Nutrition Directors. In order to provide for optimal
participation from Child Nutrition Directors, while retaining the greatest amount of profit for the
farmer, a local food distribution center will need to be established.
### Table 4. Barriers addressed by Recommended Farm-to-School Programs

<table>
<thead>
<tr>
<th></th>
<th>Direct Marketing to Child Nutrition Directors</th>
<th>Establishing Local Food Distribution Center</th>
<th>Selling Through Vendors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>Agreement between Child Nutrition Director and Farmer</td>
<td>Set for both the Farmer and the Child Nutrition Director through bidding system</td>
<td>Farmer would meet prices established by the Vendor</td>
</tr>
<tr>
<td><strong>Quality Control</strong></td>
<td>Would be the responsibility of Child Nutrition Director</td>
<td>Standards of bid contract met through distribution facility</td>
<td>Standards of Vendor met by farmers</td>
</tr>
<tr>
<td><strong>Processing and Packaging</strong></td>
<td>Processed and Packaged at the farm to the standards of the Child Nutrition Director</td>
<td>Processed and Packaged at the facility to the standards established in formal bid</td>
<td>Vendor would process and package the products for delivery to the schools</td>
</tr>
<tr>
<td><strong>Know-How and Time</strong></td>
<td>Requires extensive knowledge of farms, farm products and Child Nutrition Director Time</td>
<td>Requires knowledge of the facility and possibly added time of Child Nutrition Director</td>
<td>Requires no knowledge of farmers or extended time for the Child Nutrition Director</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>Requires storage facilities for products when delivered</td>
<td>Provides storage for products/schools</td>
<td>Does not require storage of products</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td>Delivered by individual farmers, possible school system delivery required</td>
<td>Delivered by facility, possible school system delivery required</td>
<td>Delivered by Vendor to individual schools</td>
</tr>
<tr>
<td><strong>Dependability</strong></td>
<td>Varies, would need to be established through a business relationship with the farmer</td>
<td>Varies, would need to be established through a business relationship with the facility</td>
<td>Based upon prior experience with the vendor</td>
</tr>
<tr>
<td><strong>Quantity</strong></td>
<td>Varies with the season</td>
<td>Varies with the season and number of farmers involved</td>
<td>Quantity ensured</td>
</tr>
</tbody>
</table>
Developing a distribution center for locally grown products is one goal of the SENCFS Council; however, significant financial support is needed. This endeavor could take many years, while directly connecting Child Nutrition Directors to local producers could provide for immediate action of incorporating local produce into school meals. Due to the convenience for Child Nutrition Directors to participate in a farm-to-school program whereby local growers sell their products to vendors who have contracts with the schools, most Child Nutrition Directors would likely take part in this program. Although this may be the easiest option initially, it is the least favorable from the perspective of the SENCFS Council because less money is directed back to the local farmer.

Given its goals of increasing markets for local farmers and providing greater access to local products, the SENCFS Council should approach farm-to-school by first attempting to directly connect farmers with Child Nutrition Directors, then establishing a local distribution center, and lastly consulting with vendors to buy from local farmers. Implementing a farm-to-school program in Southeastern NC should also consist of educating and informing the community including Child Nutrition Directors, teachers, parents, school administration and school staff about the benefits of farm-to-school. Lobbying federal, state and local governments to institute geographic preference policies as well as to allocate funds for farm-to-school programs should also be an element of a farm-to-school program in Southeastern, NC.

**Education and Awareness**

Catalyzing stakeholders to urge their school system to participate in a farm-to-school program is another way to address challenges of farm-to-school programs. One way for school systems to participate in farm-to-school programs is to get school administrators, parents, teachers, nurses and Child Nutrition Directors interested in participating. The Northern Child
Nutrition Director commented that, “Down here [in North Carolina], there is almost no parent involvement. I very rarely get a phone call from a parent talking about nutrition.” In order to get these stakeholders interested and excited about farm-to-school programs, they need to be educated about the benefits of farm-to-school. If parents, teachers and nurses pushed for local foods in the schools, there would be more pressure on the Child Nutrition Director to find local sources. While this process would not facilitate addressing the logistical barriers of getting locally grown produce into schools, it would develop the initial impetus to investigate those issues.

The SENCFS Council is currently establishing a “buy local campaign” to educate and make the public more aware of the reasons and benefits to buying locally. This campaign can be expanded upon to target stakeholders of farm-to-school programs. Providing promotion materials about buying locally to these stakeholders would engage them in a discussion about the benefits of buying locally. This would also generate consideration of utilizing school lunches to increase access to fresh fruits and vegetables from local sources.

As previously mentioned, efforts to educate and organize Child Nutrition Directors to purchase locally are currently underway by the SENCFS Council. Two of the three Child Nutrition Directors interviewed were familiar with the Camp Lejeune Dependent Schools Child Nutrition Director and her system for purchasing locally grown products. This pre-established relationship provides a basis on which to begin a discussion about the benefits of incorporating locally grown food into school meals as well as the how to engage in such a process. The SENCFS Council is organizing a meeting of Child Nutrition Directors in fifteen counties of Southeastern NC to begin this discussion on a broader scale. The interviews conducted for this research provided initial introduction to the SENCFS Council and its goals.
Policy

Farm-to-School programs in Southeastern NC could be strengthened with the implementation of policies supporting local food purchasing by Child Nutrition Directors. The Child Nutrition Program has both Federal and State mandates. Local Education Agencies, which are school systems regulated on the State level, must adhere to the strictest standards whether they appear at the State or Federal level. Through the implementation of policies on the national, state, and local levels, farm-to-school programs can be encouraged and facilitated. There are already some Federal and State policies that support and encourage farm-to-school programs, most of which have been passed in the last five years (Mass. Gen. Laws ch. 7, §23b, 2006; Mich. Comp. Laws ch. 388, §388.841-388.844, 2008; Community Food Security Coalition, National Farm to School Network, & School Food FOUCS, 2009).

There are policies that support and policies that inhibit local food purchasing. One policy passed at the national level to support local food purchasing is Section 19 of the Food, Conservation, and Energy Act of 2008, which allows Child Nutrition Programs to apply geographic preference for unprocessed, locally grown agricultural products (United States Department of Agriculture Food and Nutrition Service, 2008). This is important legislation in that it enables Child Nutrition Directors to purchase from local sources. The North Carolina Department of Agriculture and Consumer Services (NCDA & CS) Farm-to-School program has been developed based on this legislation and provides a process for the procurement of NC agricultural products by school systems. Local wellness policies also provide a supportive aspect for farm-to-school programs. Local wellness policies were mandated by the United States Department of Agriculture Food and Nutrition Service Department in 2006 to be implemented by each school system that participates in the National School Lunch Program to set goals for
nutrition education, physical activities in schools, school food provision and other school activities that promote student wellness (United States Department of Agriculture Food and Nutrition Service, n.d.). Through local wellness policies, stipulations for local food purchasing can be implemented.

While the Food, Conservation, and Energy Act of 2008 provides an arena for geographic preference purchasing, there are policies that inhibit the purchasing of local foods. First, mandates cannot be made for laws or policies whereby geographic preference is applied under the Food, Conservation and Energy Act of 2008 (United States Department of Agriculture Food and Nutrition Service, 2008a). Second, school systems must purchase through a competitive bidding system, where the lowest bid is to be accepted. Farmers have difficulty competing with the low bidding of vendors, thus unable to gain a contract that would allow the purchasing of local products by applying geographic preference (Community Food Security Coalition et, al., 2009). For the NCDA & CS Farm-to-School program to be successful, farmers have had to collectively bid low. Farmers taking part in the NCDA & CS Farm-to-School program are often larger farms that can afford lower bids. Conversely, farmers wishing to place bids to individual school systems, usually smaller farmers, are often unable to bid low enough to win these bids.

There is a need for further policy development to support the creation and implementation of farm-to-school programs in North Carolina. Policies needed include those that allow for preferential purchasing of local products over low bids, that provide infrastructure and technical and financial assistance for farm-to-school program development, and that encourage local agriculture purchasing to be incorporated into local wellness policies.

To address regulations that stipulate acceptance of the lowest bid, policies for preferential purchasing of local products within a percentage of the lowest bid can be developed. One
example of such a policy is the Massachusetts Preferential Purchasing Law of 2006. This law has allowed for the purchasing of Massachusetts grown products sold up to 10% higher than bids offering out-of-state products (Mass. Gen. Laws ch. 7, §23b, 2006). The state of North Carolina could establish such a law that would allow Child Nutrition Directors to purchase from local sources if they are within a given percentage of the lowest bid. Massachusetts passed their Preferential Purchasing Law of 2006 as a part of an economic stimulus bill (Mass. Gen. Laws ch. 7, §23b, 2006). Such a bill could be introduced with the same intent, to increase the State economy through the purchasing of local agricultural products. By allowing local sources to be purchased within a certain percentage of the lowest bid, farmers are better able to compete with vendors, and a greater amount of money is redirected into the local economy.

Another policy that would further enable the purchasing of local products is one that allows for a certain dollar amount of products to be purchased through the Child Nutrition Program without prior delegation to an agency through a competitive bidding process. Michigan lawmakers have allowed for single transactions costing less than $20,959 to take place without a formal, competitive bidding process (Mich. Comp. Laws ch. 388, §388.841-388.844, 2008). Such a law in North Carolina would more easily allow Child Nutrition Directors to purchase from local sources. While this would not provide for abundant sourcing of local products from one source, it would enable farmers to expand their markets marginally.

Another policy to support local food purchasing would be one that mandated the development of infrastructure and the facilitation of operations in local food purchasing (Community Food Security Coalition et, al., 2009). The state of North Carolina could implement such a policy to include the delegation of staff members to identify local food sources, create seasonal menus and promote healthy food choices among Child Nutrition Directors through the
use of local foods. The policy could also provide for the development of regional storage and processing facilities to enable both farmers, especially small and medium sized farmers, and Child Nutrition Directors to participate in the farm-to-school program. Implementing such a policy in the state of North Carolina would give Child Nutrition Directors encouragement and technical assistance to purchase from local sources. A Michigan policy has been enacted that encourages the coordination between the Michigan Department of Education and the Michigan Department of Agriculture to develop a program for farm-to-school procurement processes and procedures (Mich. Comp. Laws ch. 388, §388.841-388.844, 2008). Through a similar policy, the North Carolina Department of Agriculture, the North Carolina Department of Public Instruction, the North Carolina School Nutrition Association and Eat Smart Move More NC could be targeted as the agencies responsible for implementation of local purchasing policies supporting farm-to-school. This policy could be implemented to support and expand the current NCDA & CS Farm-to-School program.

Policies could also be implemented on the school system level to encourage local food purchasing. Many school districts across the nation have implemented school wellness policies that advocate for purchasing local fruits and vegetables (District Health Team, 2006; Franklin County School Board, 2008). Wellness policies are mandated for school districts that participate in the National School Lunch program (United States Department of Agriculture Food and Nutrition Service, n.d.). School wellness policies are developed by a committee of child nutrition personnel, school administration, teachers, nurses, parents and the PTA. School wellness policies in Southeastern NC school systems could be amended to include provisions for the procurement of local agricultural products. School wellness policies could also be adjusted to amend bid regulations so that small and medium sized farmers are able to meet them.
In addition to policies that encourage and enable the development of farm-to-school programs, policies that provide funds to school systems to purchase local food are also needed. The cost of locally grown products inhibits Child Nutrition Directors to purchase from local sources. With the majority of school systems in NC operating in deficits, cost must be considered. Through policies that provide additional funding to Child Nutrition Programs, local procurement could be enhanced. Greater funding would also enable Child Nutrition Directors to follow stricter standards as well as implement more nutrition education programs such as school gardens, cooking in schools, field trips to farms and bringing local chefs and farmers into the classroom. The Community Food Security Coalition proposes a $0.35 increase in Federal reimbursements for school meals (Community Food Security Coalition et al., 2009). Greater allocation of funds to provide for farm-to-school programming could have dramatic health benefits for school-aged children. If addressed as a health prevention strategy, Federal agencies may be willing to designate greater funds toward the procurement of local products.

Policies that address farm-to-school programs can be implemented in a variety of capacities at the national, state and local level. Federal policies have the ability to provide funding for the Child Nutrition Program, while State policies can provide preference for in-state products as well as assistance to Child Nutrition Directors in their attempts to procure locally grown products. Local level policies are also important, as they can further facilitate the logistical process of getting products from farmers into school cafeterias. Among effective policies that will allow Child Nutrition Directors to purchase locally grown products are those that mandate local preferential purchasing above the lowest bid and those that provide funding to Child Nutrition Directors to purchase locally grown products. Child Nutrition Directors need a greater amount of funds to purchase local products, and this will ultimately have a greater effect on the local
economy as farmers are better compensated for their products. With greater resources, Child Nutrition Directors can then purchase local products from farmers who are unable to compete with large vendors, selling their products at higher prices.

Along with health, environmental and economic development advocates, local food advocacy organizations like the Southeastern NC Food System Council are instrumental in creating and supporting policies for local food procurement by school systems. Policies can be developed and lobbied for by food advocacy organization and they can encourage the community at-large to support these policies. In addition to local efforts, State efforts through the North Carolina Department of Agriculture, NC education and child nutrition organizations, and sustainable agriculture agencies, such as the Center for Environmental Farming System and the Carolina Farm Stewardship Association, can develop and lobby for farm-to-school policies.

Currently there are two Bills submitted to the 2009 North Carolina General Assembly advocating for community food systems. One Bill is an Act from the NC Senate to establish a statewide goal that ten percent of the food products that are consumed in North Carolina be sustainably and locally produced in North Carolina by the year 2020 and to establish the North Carolina Sustainable Local Food Policy Council the address considerations regarding the development of a sustainable local food economy in North Carolina (North Carolina S. 1067, 2009). The other Bill is an Act from the House of Representatives that is only for the creation of the North Carolina Sustainable Local Food Policy Council that will address policy considerations regarding the development of a sustainable local food economy in North Carolina (North Carolina H.R. 1163, 2009). While these Bills do not address farm-to-school systems directly, they provide for the creation of local food policy councils to address local food purchasing within the State of NC, which would include farm-to-school programs.
At the national level, campaigns for farm-to-school include the Community Food Security Coalition, School Food FOCUS and the National Farm-to-School Network, which seek to inform the general public and introduce policies around farm-to-school. These agencies and organizations are important to developing and supporting legislation for farm-to-school as well as to educating and organizing the general public around farm-to-school issues that affect them and their communities. While policy making does not address logistical challenges of implementing a farm-to-school program, through policies, farm-to-school programs can be mandated, funded and provided legitimacy.
FURTHER RESEARCH NEEDED

While this research seeks to examine the challenges and opportunities of instituting a farm-to-school program in Southeastern NC, there still remains a need for further research. Further analysis of the costs and benefits of instituting a farm-to-school program is necessary. If 94 of the 115 school systems in NC are operating in a deficit, Child Nutrition Directors have major budget challenges to incorporating nutritious foods into school meals. Even if the Child Nutrition Directors are interested in buying from local farmers, they are restricted as to what price they are able to pay for these products.

Research is needed to determine if selling to schools is economically beneficial to farmers and could sustain a local food distribution facility. Economic analysis of farm-to-school programs by the Farm-to-School Network measured the profit farmers have made (Joshi & Azuma, 2009). This analysis shows meager profits for farmers, most making less than $20,000 in profits through selling to school systems. One study with farmers in California revealed that farmers were generally dedicated to the idea of farm-to-school and were passionate about it; however, the profits and quantities generated by farm-to-school programs were too small to contribute to an overall profit margin.

In the same regard, the Camp Lejeune Dependent Schools Child Nutrition Director admitted that her school system was not the primary market for the farmers she buys from. This is because they make greater profits through their other markets (farmers’ markets and roadside stands). In addition, Madison Farms has been unable to create a self-sustaining program, despite markets with public schools, universities, hospitals and local grocery stores. It is important that a farm-to-school program be mutually beneficial to both farmers and school systems; thus, further investigation is needed to examine the costs and benefits of a farm-to-school program for both
farmers and school systems. Additional funding for a farm-to-school program is most likely needed to ensure adequate profits for farmers and affordable prices for schools.

Along with a cost-benefit analysis of the economic profits of a farm-to-school program, further research into effective strategies for educating Child Nutrition Directors about the benefits of sourcing produce locally to urge them to buy locally is needed. There are many reasons to buy locally and ways to relay these messages to communities including health and nutrition, obesity prevention, economic development and environmental sustainability. This research would help shape the educational messaging to Child Nutrition Directors and the community they serve about buying locally. There are benefits to buying locally as part of a community food system. In order to garner the support of Child Nutrition Directors and the population they serve, research concerning the most effective education strategies for Child Nutrition Directors about purchasing locally is needed.

Research is also needed to examine the effectiveness and efficiency of farm-to-school programs. The recommendations for farm-to-school programs include a spectrum of options ranging from changing the system for buying food products by developing direct buying relationships between Child Nutrition Directors and local farmers to presenting no change to the food purchasing program of school systems by selling to their vendors. There are benefits and challenges to each process that will be dependent upon the specific school system in which they are instituted. Further research must be conducted with farmers, school systems and vendors examining these benefits and challenges. This research will help shape the way in which a farm-to-school program is implemented. For this research, it is best to involve all of the stakeholders participating in the formation of a farm-to-school program. This will enable the development of a successful program. It also creates investment by the stakeholders; as they are involved in the
creation of the project, they can regard it as their own and therefore will be more likely to participate.

The ability of farmers in Southeastern NC to supply schools with the fresh fruits and vegetables they demand should also be examined. Engaging in a farm-to-school program as part of a community food system will increase markets for farmers. However, there is little knowledge on how many markets can be supplied by regional farmers. This research can be conducted as part of the examination of the effectiveness and efficiency of implementing farm-to-school programs where farmers are engaged as stakeholders for the implementation of a farm-to-school program. Currently, the SENCFS Council is conducting research with small and medium sized farmers to identify the limited resource farmers in the region, their capacity for growing and their need for expanded markets. These findings will inform farm-to-school implementation as to what quantities and varieties of products are available.
CONCLUSIONS

This research contributes to the development of a community food system. Community food systems present an alternative to the current agricultural production and consumption system where food is largely produced for export-driven economies. A community food system would provide for economic development, environmental protection and enhancement as well as increased social cohesion and nutritional health of the region. Relocalizing food production and consumption in Southeastern NC for sustainable local food production would be both innovative and lucrative.

Through this research, possibilities for school systems in Southeastern NC to purchase food from local farmers are examined. However, as the Child Nutrition Director from Camp Lejeune Dependent Schools commented, “There are many obstacles to buying from local farms; if people do not want to do it, they will not do it.” To engage Child Nutrition Directors in a local food purchasing system, they must be presented with a program that requires minimal exertion. Unless Child Nutrition Directors take the initiative or are urged to incorporate local foods into their schools’ meals, they will most likely continue with their current produce purchasing processes.

For those Child Nutrition Directors that would like to purchase locally, costs must be addressed. Child Nutrition Programs are facing major cost restrictions as they continue to meet strict nutritional standards. Not only do limited operating budgets negatively affect Child Nutrition Programs, they further limit the ability for school systems to participate in farm-to-school programs. It is not profitable for local farmers to sell to school systems that can only offer minimal prices for locally grown products.
The economic impacts of farm-to-school programs could be vast. In the three counties, $1,137,225 is spent for purchasing fresh fruits and vegetables. If only a percentage of this money was utilized to purchase local products, there would be a significant impact upon the local economy. Furthermore, the local economy would be enhanced through a multiplier effect of local food purchasing that would lead to job creation and industry development.

Program and policy developments to support farm-to-school initiatives are necessary to gain participation from Southeastern NC school systems. Instituting a farm-to-school program that addresses the specific barriers outlined by Child Nutrition Directors in Southeastern NC will have the most success and gain the greatest participation. At the same time, policy developments at the local, state and national level must be introduced and supported to facilitate the development of farm-to-school programs.

Farm-to-school is a growing issue across the US. With the obesity epidemic, child nutrition is becoming critical to the health of future generations. Farm-to-school programs can introduce a greater amount and variety of fruits and vegetables to school aged children, allowing them more opportunities to eat produce. In addition, farm-to-school programs are more enticing for school-aged children in that they are able to learn about where their food came from and how it was grown. Therefore, they are more likely to try fruits and vegetables. It is important that Child Nutrition Directors remain educated and aware about the benefits of farm-to-school programs and are urged to participate from parents, teachers, school administrators, and school staff.

This research provides many implications for the Southeastern NC Food System (SENCFS) Council. This regional Council is optimally positioned to encourage and facilitate the development of farm-to-school programs in Southeastern NC. Through the creation of programs, policy development and building awareness, the SENCFS Council and be an active force in
increasing local purchasing in Southeastern NC through farm-to-school programs. This requires fostering relationships with Child Nutrition Directors and garnering resources. As the sustainable food advocate of Southeastern NC, the SENCFS Council can be a catalyst to changing the way that Southeastern NC thinks about food, including the food served in school cafeterias.

In addition to farm-to-school programs, future implications of this research could be expanded to other institutional buying programs. Jails, prisons, hospitals, nursing homes, day cares, community colleges, universities and social service agencies all present opportunities to engage in institutional local food purchasing programs. Knowledge garnered from this research can be utilized to develop these types of institutional buying programs as well as farm-to-school.


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APPENDIX

Appendix a: Child Nutrition Director Semi-Structured Interview Questions

1. What nutrition programs to encourage the consumption of fresh fruits and vegetables are currently taking place in your school district?

2. What is your process for receiving deliveries, food storage and food distribution to the schools in your district?

3. What are your demands on quantity and quality of food products?

4. Who is/are your food vendors? Where does the food they deliver come from?

5. What is your food budget? (Fruit and Vegetable budget, Fruit and Vegetable budget as a % of total budget, # of free and reduced lunch students, $’s spent on school lunch per child)

6. To what extent do school cafeterias process and cook foods that are served for school lunches?

7. What equipment do school cafeterias currently use?

8. Do the schools in your district offer salad bars for students?

9. What is your role in deciding which foods to purchase? How are these decisions made?

10. To what extent are you currently involved in the North Carolina Farm to School program?

11. Are you aware of the benefits of participating in farm to school and/or purchasing local foods to incorporate into the school lunch program?

12. Would you be in support of legislation that encourages farm to school participation from public schools?

13. Are you aware school of any nutritionist buying products directly from farmers? Have you participated in such as program?

14. Would the schools in your district benefit from a flash freeze unit that could freeze and store local food products?

15. What are barriers you foresee in engaging in direct purchasing from local farmers? (staff, budget, food regulations, quantity etc.)
Appendix b: NCDA & CS Farm-to-School Program Semi-Structured Interview Questions

1. Who administers the North Carolina Farm to School Program?

2. What role does the Department of Defense Play in the NC Farm to School Program?

3. What is the fresh fruit and veggie program and how does it operate?

4. What is the process for schools to participate in the farm to school program?

5. How is produce transported and delivered in the farm to school program?

6. How can farmers be involved in the farm to school program?

7. What is the potential for small farmers to be involved in the farm to school program?

8. What is the reimbursement for farmers who participate in the farm to school program?
Appendix c: Madison Farms Semi-Structure Interview Questions

1. Could you describe your facilities?

2. How are your facilities managed?

3. What is the process for farmers to utilize your facilities?

4. What is the process for schools to utilize your facilities?

5. How are schools solicited to utilize your facility?

6. What is the payment process for schools and/or farmers?

7. How many schools and farmers are you currently working with?

8. How has your facility increased access to local foods in school meals?

9. What barriers are you currently facing?

10. What changes/improvements are you planning on making?
Appendix d: Camp Lejeune Dependent Schools Semi-Structured Interview Questions

1. What are the demographics of your school system?

2. How is your school system different from NC public K-12 school systems?

3. How did your farm-to-school program begin?

4. How do you order, purchase, deliver and distribute farm-to-school products? How often do you engage buying from local farmers?

5. How many farmers do you work with? How big are they and how do you identify them?

6. What are the stipulations farmers must adhere to in order for you to purchase from them?

7. Do you have contracts with farmers?

8. What are the health and/or nutritional benefits you have seen with your farm-to-school program?

9. Have you experienced any food safety problems from purchasing from local farmers?

10. Why do you do farm-to-school?

11. Are there any obstacles you have experienced with your farm-to-school program? How have you approached these obstacles?