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Evaluation of Louisiana Farm to School Programming: Harvest of the Month and Local Food Procurement

Arin M. Shaffer

Louisiana State University and Agricultural and Mechanical College

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EVALUTION OF LOUISIANA FARM TO SCHOOL PROGRAMMING: HARVEST OF THE MONTH AND LOCAL FOOD PROCUREMENT

A Thesis

Submitted to the Graduate Faculty of the Louisiana State
University
Agricultural and Mechanical College in partial fulfillment
of the requirements for the degree of Master of Science

in

The School of Plant, Environmental, and Soil Sciences

by Arin Shaffer
B.S., Southern Arkansas University, 2012 December 2020

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ABSTRACT

Farm to school is a growing movement that is beginning to draw serious interest in different parts of the United States due to its ability to connect communities with their local producers while providing many benefits. Farm to school entails three main components: school gardening, education and curriculum, and local food procurement. The farm to school movement is relatively new to the state of Louisiana and very little research has been conducted to evaluate the impact of the farm to school programs on local food procurement and the effect on school food environments. Case studies of three Louisiana parish school districts that incorporate local agricultural products into their school food service programs were conducted to understand the specifics on how and why these child nutrition directors chose to procure local foods for their students. The child nutrition directors reported that, in general, local products were of a higher quality and provided great nutritional and educational benefits for their students. The main challenges with acquiring local products related to reliable supply and delivery and an inability to find and communicate with local farmers. The Louisiana Harvest of the Month program was initiated in August 2018 for the fall semester and an evaluation of the program was conducted for the 2018-2019 school year. The Harvest of the Month program provided materials and support to all the schools that enrolled. The evaluation involved a pre- and post-survey that yielded inconclusive results due to limited participation in the post-survey. The presence of cafeteria or school food service leadership on Harvest of the Month teams could lead to better results in future research along with different research methods such as focus groups instead of surveys.

CHAPTER 1. INTRODUCTION

The implementation of farm to school programming has increased in the United States in recent years due to the perceived benefits of reducing plate waste and improving student participation in school meal programs. In addition, farm to school is viewed as a key tool to reduce the epidemic of childhood obesity in order to reduce the prevalence of medical issues related to obesity later as adults. Farm to school programs also serve to provide students with educational opportunities regarding agriculture and understanding where food comes from. Farm to school programs have fostered the formation of other nutrition education programs such as Harvest of the Month programs.

Harvest of the Month (HOM) is a program that promotes farm to school by encouraging schools to source locally grown foods, such as fresh fruits and vegetables, once a month either as an entrée in the cafeteria, or a taste test or snack. The HOM item is introduced in conjunction with newsletters, educational lessons, recipes, and materials focused on that particular product along with stickers indicating the student “tried it.” Harvest of the Month provides incentives for schools to include local food offerings on a limited basis with the goal of schools sourcing more of their fresh fruits and vegetables from local growers when in season consistently.

Previous research has reported that farm to school programs offer many benefits and challenges to both the students and the schools. Further research, however, is needed to quantify and elucidate these benefits and challenges. Many of these studies have been conducted in the last twenty years on farm to school, however, there has been a lack of research studies focused on the Harvest of the Month programs.

This thesis consists of two studies. First, a multiple case study on local procurement for three parishes with a goal to understand the procurement process and to share the benefits and

challenges that schools might expect when sourcing local products. The goal of the second study was to evaluate the overall impact of the Louisiana Harvest of the Month (LAHOM) program on participating schools and their farm to school activities, and procurement of local produce. In addition, to provide an assessment of the LAHOM program by the participating schools in order to enhance farm to school programming in Louisiana.

CHAPTER 2. LITERATURE REVIEW

2.1. Introduction

Farm to school (FTS) is a movement that focuses on “enriching the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools and early care and education sites” (National Farm to School Network, 2016, pg. 1). The movement has expanded in the last two decades with the number of farm to school programs increasing from less than 10 in 1998 to more than 42,000 in 2015 (USDA-FNS, 2015). Farm to school programming has been used to promote a few different, but related purposes or themes. The farm to school movement has been framed as a tool that can redress poor food environments, improve nutrition behaviors and student health and well-being, and revitalize rural communities through the support of local agriculture (Bagdonis et al., 2009). It is important to keep all of these different goals in mind as farm to school programs are implemented so that one goal is not neglected for the other, which could possibly hurt the farm to school program or movement as a whole. For example, if “student health becomes the dominant framing in farm to school, program commitment to the hard work of finding, supporting and sourcing food from local and regional farmers may wane” (Bagdonis, Hinrichs, 2009, pg. 117). This would not necessarily cripple the farm to school movement, but it would neglect one of the three main components of farm to school, which is procurement and sourcing locally and in season. Farm to school can be comprised of a multitude of activities, programs, and policies that are unique to each location. Farm to school is generally characterized as being made up of the following three signature components: procurement of local and regional food products, gardening, on site at schools of varying types, and education, health, food and agriculture related (Joshi et al., 2014). Farm to school programs are more often found in urban

compared to rural schools as noted by the following quote: “As schools become more rural, they are less likely to participate in farm to school activities” or have farm to school programs. Urban schools and areas are more likely to have policies in place that promote FTS activities than rural areas. For example, it has been reported that rural locations have a negative relationship with taste tests and serving local foods, while urban locations have a higher correlation with school gardens, promotion and media coverage, and integration of farm to school into curriculum (Botkins and Roe, 2018, pg. 131).

Farm to school programs can provide benefits to different groups such as students, farmers, and local communities. Students acquire access to “nutritious, high-quality, local food so they are ready to learn and grow”, and farm to school improves education through experiential means that promote food, health, agriculture, and nutrition (National Farm to School Network, 2016, pg. 1). Farmers can open up new markets and sources of income by participating in farm to school and this can strengthen the local community by keeping the money in the region to promote economic growth and job creation. The benefits provided also affect different sectors by promoting public health, education, economic development, and community engagement. Some public health benefits include improvement of student health behaviors, an increase in fruit and vegetable (FV) consumption in students with low FV consumption, consumption of more FV when schools have school gardens or serve local food, and improved attitudes and willingness to try new and healthier foods. Farm to school promotes economic development by creating and maintaining jobs in the community and increasing student meal participation. Farm to school also positively impacts education outcomes by increasing food/agriculture literacy, enhancing overall academic achievement, and encouraging students to be involved in their communities. The environment benefits from reduced food waste and the implementation of sustainable

practices. Lastly, the community is engaged which results in an increase in awareness and support, interest in local food systems, and more opportunities to promote equality in the food system (National Farm to School Network, 2016).

Some common examples of farm to school activities that schools employ include; serving local products as snacks or in the cafeteria at schools, holding taste tests, planting a school garden, serving food from a school garden, taking field trips to farms, farmers visits to schools, the use of promotion and media coverage for local food systems, and integration of farm to school into school curriculum (Botkins and Roe, 2018). Schools differ in their level of farm to school implementation due in part to their local situation, the desired outcomes for their farm to school programs, and certain variables that control how much schools can implement farm to school. These variables include: funding, supply of local produce from local farmers, number of local farmers, knowledge of local procurement practices, school size, and location (Botkins and Roe, 2018). It is thought that with technical support, perseverance, continued support from internal and external champions, and future legislation, schools will be able to overcome these barriers to farm to school implementation (Bagdonis et al., 2009).

2.2. Education

Education is one of the core principles of farm to school along with procurement and school gardens (National Farm to School Network, 2016). One of the main goals of farm to school is to teach students about where their food comes from by giving students the opportunity to learn about agriculture and participate in food related activities that enhance their education. Farm to school has been reported to have a wide variety of positive impacts when it comes to engaging students in the classroom and improving academic achievement. Farm to school achieves these positive impacts through a multitude of methods that include “hands-on, place

based and project-based methods” (Joshi et al., 2014, pg. 60). Farm to school plays a key role by being part of a comprehensive education program that promotes student well-being as a whole, and knowledge, as well as physical and mental health.

Involving the students in the learning process through experience-based activities or inquiry-based learning can promote learning (knowledge) and student engagement (Djonko-Moore et al., 2017; Skelton et al., 2012). This can be achieved in farm to school programs with school gardens, which can give young children opportunities to acquire first-hand experience about how food is grown. Teachers can also use the gardens and integrate them into the curriculum to teach inquiry-based learning in science classes to promote critical thinking. Additionally, experience and activity-based curriculum have been shown to be more effective than traditional teaching methods (lecturing from a textbook) in certain instances (Bredderman, 1982). Dudley's review and meta-analysis of experiential learning strategies revealed that their greatest effects were shown to be associated with “reduced food consumption or energy intake; increased FV consumption or preference; and increased nutritional knowledge outcomes” (Dudley et al., 2015, pg. 1). These strategies can be a versatile tool to promote outcomes related to fighting obesity and providing nutrition education.

2.3. Food Literacy

The number of the U.S population directly involved in agriculture has been declining for a hundred years (Dimitri et al., 2005). Farming has become less common as evidenced by the 2012 U.S. Census and the 2012 Census of Agriculture. In 2012, only 3.2 million people out of a total population of 312.8 million farmed which is just a little over one percent (USDA-NASS, 2014). As the agriculture industry has focused on the economies of scale due to mass production, monocultures, and mechanization, the American people have experienced a disconnect with

agriculture and their food systems. As fewer people are directly involved in farming, there is less understanding about the process of growing food and how it can affect our environment. This has resulted in a decline in food literacy, which can be defined as “the ability to make decisions to support the achievement of personal health and a sustainable food system considering environmental, social, economic, cultural, and political components” (Cullen et al., 2015, pg. 143). Food literacy can be further separated into the following components: planning and managing, selecting, preparing, and eating food (Vidgen and Gallegos, 2014).

Truman’s review of food literacy mentions that most of the studies regarding food literacy are focused on knowledge related outcomes, not health outcomes which has left a sizable gap in the literature. A majority of the studies (39%) are focused on adults and work to identify “facilitators and barriers to the adoption of food literacy ideas (31%) or contributing to the understanding of the components of food literacy (15%)” (Truman et al., 2017). Most of these studies occurred outside of the United States (89%) which shows the need for research on food literacy in America. It is important to understand and improve food literacy because if society has insufficient food literacy, there will be negative consequences for consumers which directly result in poor attitudes and decision making skills related to food because of a lack of information (Palumbo et al., 2017). It is apparent that the creation of new programs, intervention strategies, and tools are needed to help improve food literacy.

Farm to school works to improve food literacy by improving knowledge about food and how it is actually grown and where it comes from. The main tools that are used to enhance food literacy in the student populations are school gardens, procurement of local produce (sometimes in conjunction with nutrition education programs like the “Gimme 5” program or the California Harvest of the month program), and nutrition education curriculum through programs like the

Supplemental Nutrition Assistance Program (SNAP-Ed), the Expanded Food Nutrition Education Program (EFNEP), or the California Harvest of the Month Program.

School gardens enhance food literacy by increasing student knowledge of the food growing process from cultivation to the consumption of food as well as seasonality. Exposure to nutrition education lessons combined with school gardens increase nutrition knowledge scores after the intervention (Morris and Zindenberg-Cherr, 2002). A recent review of school garden literature reported that 75% of the quantitative studies on school gardens positively impacted student academic achievement and behavior (Blair, 2009). In addition, teacher surveys showed that school gardens were primarily used for their positive effects on academic achievement, primarily in the science sector. School gardens can be used to improve attitudes toward fruits and vegetables (FV) (Lineberger and Zajicek, 2000), which can be helpful when promoting them when conducting nutrition education programs. Improving attitudes towards fruits and vegetables is important for farm to school programs. When students have better attitudes towards FV they will have better educational outcomes because it is something they are interested in learning about. Learning will become more productive if the children care more about what they are studying and are active participants in the education process. Procurement of local produce and repeated exposures to new fruits and vegetables through taste tests and menu items in the cafeteria can help improve food literacy by changing their preferences. Children are more likely to learn about a subject if they are interested in the topic. One way to increase their interest in a subject is to repeatedly expose them to it; this is also called the mere-exposure effect or familiarity principle. Preference will grow for things as they become more familiar to the person. Children often have a neophobia when it comes to food and repeated exposure to new foods is a useful tool to break through the unfamiliarity (Birch, 1987). SNAP-Ed and EFNEP are

government programs that use evidence-based nutrition lessons to improve food literacy in program participants. They help the people who need it most, the low-income families and target both youth and adult populations by giving them knowledge and positively influencing their nutrition and physical activity related behaviors.

2.4. Health Literacy

Health and food literacy are closely related which can make the terms confusing at times. However, there is a difference, health literacy can be defined as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (Parker and Ratzan, 2010, pg. 23). Knowledge related to selecting, preparing, and eating healthy, nutritious food is important to living a long and healthy life. Having some degree of food literacy is important to have good health literacy. It appears that health literacy has declined in the American population in recent years as the obesity rate has climbed dramatically in both adult and youth populations. In 2015-16, the obesity rate in adults was 39.8% and 20% in school age children and young people (6 to 19 years of age). The percentage of children and young people plagued by obesity has tripled since 1970; this trend cannot be allowed to continue (Ogden et al., 2014). Not only is obesity and obesity-related conditions such as heart disease, stroke, type 2 diabetes, and certain cancers (Jensen et al., 2013) responsible for some of the leading causes of preventable deaths in the United states, they are also responsible for huge medical expenditures borne by the American people and society. In 2008, obesity cost the United States an estimated \$147 billion (Finkelstein et al., 2009). Farm to school programs can be an important intervention to use against obesity by promoting health literacy and food literacy in young children.

Farm to school programs have in part increased in popularity due to the interest from the public health sector. Farm to school programs are a way to install “innovative childhood obesity programs” to prevent obesity in future generations of American youth (Joshi et al., 2014, pg. 35). Farm to school activities increase the availability of healthier foods to school children and their families through local procurement practices. As mentioned before, nutrition is an important part of maintaining a healthy lifestyle and when it is paired with physical activity, they can prevent some of the chronic diseases that are related to obesity such as heart disease and type 2 diabetes (Jensen et al., 2013). Farm to school can serve as an important bridge between public health agencies and other organizations like schools and the agriculture industry.

Health literacy outcomes are; child participation in school meals, child knowledge and awareness about healthy eating, willingness to try new and healthier foods, students’ consumption of less unhealthy foods, and students participating in physical activity in gardens (Joshi et al., 2014). School meal participation has been shown to increase because of farm to school programs (Joshi et al., 2008). Additionally, child knowledge and awareness about healthy eating also increased because of farm to school program implementation (Bontrager-Yoder et al., 2014; Joshi et al., 2008; Smith et al., 2015). Joshi reported that students are more likely to try new foods after the intervention, or in other words, have acquired new preferences for fruits and vegetables, which is supported by other studies that use farm to school related activities (LaChausse, 2017; Voorhees et al., 2011). Student consumption of less unhealthy food has been shown to be a common outcome of farm to school programs (Joshi et al., 2008) and increased consumption of healthier foods has shown to be possible in other studies as well (Smith et al., 2015; Slusser et al., 2007). Finally, physical activity has increased as a result of farm to school

programming via school gardens and other strategies (Rees-Puncia et al., 2017; Phelps et al., 2010).

2.5. Harvest of the Month Program

Harvest of the Month (HOM) is a nutrition education program that was originally created by some local school districts in California as a way to provide nutrition education targeting low-income students. In 2005, the California Department of Public Health adopted Harvest of the Month and launched the program in a statewide effort to provide “standardized, cost-effective, replicable, and readily available” materials for nutrition education. The Harvest of the Month Program’s goals include: increasing access to fruits and vegetables for students and other members of the community, increasing consumers’ preference for fruits and vegetables, increasing consumption of local produce, increasing participation in daily physical activity, and to familiarize the state’s local produce and agriculture (California Department of Public Health, 2014).

The Harvest of the Month Program resources are based on the United States Department of Agriculture and Department of Health Human Services 2010 *Dietary Guidelines for Americans*. These guidelines are supported by research that shows eating fruits and vegetables along with a minimum of 60 minutes of physical activity every day can help children maintain a healthy weight and lower their risk for serious health problems. The California Harvest of the Month consists of several monthly elements that include: educator, family, and community newsletters, menu slicks, press release templates, posters, fact sheets, and links to state standards. It is a goal to emulate the California Harvest of the Month and implement it in the entire state of Louisiana as a part of the Louisiana Farm to School program. Louisiana Harvest of the Month is a component of the Louisiana Farm to School program and is a central program to give students

access to local, healthy food, provide schools with an easy entry into farm to school practices, while simultaneously giving local farmers a new market to expand into and sell to. It is also possible that schools could grow their own gardens and provide produce for the program, while providing the students hands-on experience with the growing and harvesting process. Hands-on experience/activities have been shown to have positive impacts on student outcomes and could possibly increase fruit and/or vegetable consumption (DeCosta et al., 2017). The Louisiana Harvest of the Month program showcases Louisiana grown foods in schools, institutions, and communities. Each month, schools focus on promoting one locally grown item by serving it in at least one meal, taste test, or snack, displaying Louisiana Harvest of the Month materials and doing educational lessons and activities.

There has been a significant amount of research in the area of nutrition education and how to use it to positively affect eating behaviors and to reduce negative dietary and sedentary related behaviors that are associated with childhood and adult obesity. However, very little research has been done specifically on Harvest of the Month programs and how it can positively affect children's eating behaviors. It has been hypothesized that increasing fruit and vegetable intake for children can help reduce childhood obesity and the associated long-term negative effects that come with a life of obesity such as cancer and heart disease. This has never been proven, but nonetheless measures must be taken to stem the obesity tide. Obesity is extremely difficult to treat and preventing excess weight gain is the key to preventing obesity per the literature and expert committees (Newby, 2009). Showing children how to eat healthy at an early age should help lower child obesity rates and prevent obesity later in life.

To date, there have been only 11 studies that have focused on Harvest of the Month as the primary intervention tool for positively affecting eating behavior in low-income children. Nine

of the studies focused on student outcomes while the other two studies focused on teacher outcomes. The Harvest of the Month studies measured or surveyed 16 different outcomes with the most common variables measured being; fruit and vegetable consumption (64%), attitudes and beliefs toward fruits and vegetables (45%), fruit and vegetable preferences (36%), knowledge regarding fruits and vegetables (27%), self-efficacy to ask for, eat, and/or prepare fruit and vegetables (27%), availability at home (18%), and how certain demographics influence fruit and vegetable related behaviors (parents, teachers, peers) (18%). The most common components of the Harvest of the Month interventions include: taste tests, Harvest of the Month posters, various types of newsletters (educator, parent/family, farmer of the month), student workbooks, cooking demonstrations, “I Tried It” stickers, and a nutrition education curriculum.

The studies on the impacts of the Harvest of the Month interventions have produced mixed results. The Harvest of the Month program has produced the most significant results on the outcomes of increasing student knowledge regarding fruits and vegetables (67%), changing attitudes and beliefs toward fruits and vegetables (60%), and changing preferences for fruits and vegetables (50%). Harvest of the Month has not significantly impacted fruit and vegetable consumption (14-28%) or self-efficacy (33%). This is probably because the interventions did not last long enough to change behaviors as most of the studies only lasted one year. Research shows that it takes long periods of time to change complex behaviors like eating an unhealthy diet (Corepal et al., 2018; Kavanagh et al., 2011). Additionally, the intent behind the behavior could have been changed because of the intervention, but the behaviors did not change with intention. The subjects may not have had the time, ability, or skill to meet the outcome for consuming fruit and vegetables. Perhaps, intent to perform a behavior is a good variable to measure in future Harvest of the Month intervention studies. It may take longer for children to ascertain the self-

efficacy needed to impact their fruit and vegetable consumption. Therefore, longer follow-ups are needed to ascertain if the fruit and vegetable consumption increases after the intervention when they have had the time to gain the ability or skills needed to increase their fruit and vegetable consumption. Subsequently, self-efficacy is possibly the first (intermediate) step to increasing FV consumption (McCarthy et al., 2012). The researchers stated that students may demonstrate a significant increase in fruit and vegetable consumption with multiple program exposures, but that this hypothesis still needs to be tested. Research suggests that implementation levels are linked to teachers' perceptions of the students' eating behaviors. As a result of the interventions, teachers' perceptions of improvements in their students' behaviors was positively associated with the level of encouragement they reportedly gave to their students to consume fruits and vegetables (Evans et al., 2012b). Levels of Harvest of the Month program implementation and encouragement were linked to positive eating outcomes in the students. Teacher trainings are needed to support and to raise the levels of nutrition education and encouragement for students to make "healthier food choices." Additionally, the literature also corroborates that teachers who are higher implementers of HOM are significantly more likely to "strongly agree that their students were more receptive to eating fruits and vegetables" (Wood et al., 2011, pg.146). Program longevity also increased mean scores for surveys in successive years which suggests that the longer the program lasts, the greater the program's impact will be.

Many of the Harvest of the Month studies lack methodological rigor because of the following reasons: "lack of a comparison group, relied on subjective measures, and didn't measure actual FV consumption" (LaChausse, 2017, pg. 376). Additionally, only four of the studies were theory-based using Social Cognitive Theory and/or the Theory of Planned Behavior (Dave et al., 2015; Prelip et al., 2011; Prelip et al., 2012; Medina et al., 2017). The lack of

positive results could be related to the fact that most of the Harvest of the Month studies did not use an “underlying theory of behavioral change” (LaChausse, 2017, pg. 382). Five out of the eleven studies did not use a random control group and most of them did not conduct any process evaluation as a part of the study. Three of the studies focused on students without employing random control groups, but one of the studies used focus groups so it wasn’t necessary to have a control group (Margolin et al., 2017). Neither of the two teacher studies used a control or random design. Four of the studies did not measure FV consumption, the most important variable. Future studies should have more rigorous testing of the Harvest of the Month Program and its elements in order to determine and understand the effectiveness of HOM, while keeping respondent and data collector burden at a minimum (LaChausse, 2017; Smith et al., 2015).

There are a number of other future directions that should be investigated in order to further our understanding of how to make the Harvest of the Month program more effective. The use of process evaluation is a crucial step that has been missing from most Harvest of the Month studies. Only three studies (Dave et al., 2015; Evans et al., 2012b; Wood et al., 2011) have used a process evaluation as part of their interventions. Future studies on Harvest of the Month should include a process evaluation to help stakeholders see how a program outcome or impact was achieved and to see how the program can be more impactful. Additionally, future studies could identify barriers to implementation of a multicomponent nutrition education program (Evans et al., 2012b). Future research could the adoption of new intervention strategies that could positively impact children’s FV consumption (Prelip et al., 2011; Prelip et al., 2012). Longer follow-up surveys are needed to see if the intervention has lasting effects on children’s eating behaviors and attitudes toward FV (LaChausse, 2017). The differences between the home and school environments regarding food availability and choices could be investigated (Margolin

et al., 2017). Future research could also include the use of educational materials at home, along with assessing psychosocial factors among caregivers of different ethnic backgrounds (McCarthy et al., 2012). Strategies to engage teachers who are overwhelmed with curriculum (Prelip et al., 2011) and to increase parental involvement are needed to increase the effectiveness of the program (Prelip et al., 2012). Future research could “work toward determining the best methods for soliciting caregiver input about the program” (Smith et al., 2015, pg. 320). Wood suggests that research could examine the effects of teachers’ multi-year participation in Harvest of the Month on students and classroom practices (Wood et al., 2011).

Nutrition education is a broad field that has had a wide variety of studies completed previously. Review of the nutrition education literature may suggest strategies or tools that could prove useful in making the Louisiana Harvest of the Month program more effective. DeCosta’s (2017) review concludes that trying to “force” children’s fruit and vegetable intake to increase is counterproductive in the long run. Social facilitation (i.e. positive role models) however, appears to be an effective strategy to promoting fruit and vegetable intake in children. In addition, programs that promote active participation such as gardening and cooking programs may encourage greater vegetable consumption and providing children with free, easily accessible produce has also been shown to have positive effects on future eating behavior. Their recommendation for future research is to examine how taste and palatability can affect children’s attitudes and eating behaviors (DeCosta et al., 2017). A review of the effectiveness of school-based obesity intervention programs concluded that these programs can improve dietary and physical activity behavior (Verstraeten et al., 2012). However, there is a dire need for interventions to have a process evaluation to reach their maximum potential. Another review of school-based interventions reported that the programs can moderately improve fruit intake in

children, but they only minimally impact vegetable intake (Evans et al., 2012a). This is similar with results from the Harvest of the Month literature review. A review of interventions that seek to increase fruit and vegetable intake in children reported that 67% of the studies had a significantly positive effect (Knai et al., 2006). The review highlights certain components that were found to be particularly effective such as: intervention duration of at least 12 months, increased access to FV among the entirety of the school, teacher training and integration within the curriculum, and the inclusion of school leadership and parents in the program. There is a need for more in-depth research, longer follow-up periods, and evaluation of program effectiveness. Multi-component interventions are supported by the most evidence to positively impact fruit and vegetable intake in small children in a school setting. Rigorous evaluation protocols are needed to evaluate future programs and should be considered essential components of future interventions (Kropski et al., 2008). Common problems with the literature that have delegitimized the fidelity of the intervention programs have included methodological rigor, program design, and implementation. Program design and implementation could be standardized in order to avoid these problems and set a benchmark for further studies on Harvest of the Month and for use by other researchers.

2.6. Local Procurement

Procurement is the final pillar of farm to school program implementation and is the step by which fresh, local food is brought into schools for student consumption. Schools and farmers are required by the National School Lunch Program (NSLP) to meet certain safety and nutrition guidelines and requirements in order to do business. The NSLP and the school food services can be a large market for local farmers to tap into, with 30 million school lunches served daily in the USA in 2017 and 4.9 billion annually (School Nutrition Association, 2018). Procurement of local

foods by schools is being promoted by the United States Department of Agriculture Food and Nutrition Services. They are also offering resources and technical assistance to help schools and farmers learn how to expedite the local procurement process (USDA-FNS, 2018). Farm to school as an alternative agrifood movement has to work together with the “longstanding national school meals public entitlement program” in order to survive and thrive, whereas community supported agriculture and farmers’ markets are private business ventures (Allen and Guthman, 2006). The farm to school movement is based on the idea that local farmers can benefit from the NLSP by selling directly to schools (Izumi et al., 2010).

The procurement portion of farm to school not only benefits the students; it also benefits the farmers by giving them another market that they can possibly sell product to. By procuring food from local and regional areas the money will stay in the region and promote economic stability and growth in the region. “Each dollar invested in farm to school stimulates an additional \$0.60-\$2.16 of local economic activity, in one case resulting in \$1.4 million overall contribution to the state” of Oregon (National Farm to School Network, 2014, pg. 2) Another benefit is the creation of jobs in the region and in the state; “for every job created by school districts purchasing food local foods, additional economic activity creates another 1.67 jobs”(National Farm to School Network, 2014, pg. 4). Other additional economic benefits include: an increase in economic activity in the region and the state, an increase in student participation in school meal programs, a decline in school meal program costs, an increase in farmer income due to farm to school sales, and the addition of new long-term markets with school districts (National Farm to School Network, 2014). As the farm to school movement was popularized, school meals were used to promote the development of more “localized agricultural systems” (Botkins and Roe, 2018, pg. 126). It is important that this component of farm to school

not be forgotten in favor of educating students or implementing gardens. It is important to not let one component of farm to school become more dominant than the other lest support for one or both other components should wane (Bagdonis et al., 2009). Future studies should continue to account for the procurement component of farm to school when designing their interventions. Vogt and Kaiser's (2007) review states that "schools in particular, can benefit greatly" from institutional marketing of regionally grown food to combat childhood obesity. Accounts from farmer cooperatives and networks reveal that schools are often the least dealt with in terms of institutional customers. Restaurants, universities, and food retailers are more likely to have dealings and relationships with local farmers rather than public or private school systems. The review goes on to state that the main benefits offered by regional food procurement are financial support for the local community and economy and increased access to healthy, fresh, and nutritious food. Barriers that farmers and school food services are routinely combating include the lack of regional food infrastructure and low financial support for processing and central distribution facilities. These barriers vary by school, school system, region, and state. There is a need for more support for regional food systems as illustrated by the review in order for farmers to be able to network with local and regional schools. In order to advance regional procurement and thus the growth of regional economies, it is important to understand why farmers would want to participate in farm to school programs or sell to schools at all. Farmers participate in farm to school programs for two underlying reasons: "to diversify their marketing strategies and to contribute to social benefits through direct action" (Izumi et al., 2010, pg. 374). Direct farm to school or school food service sales often make up a very small percentage of their total income and it is only in certain cases where farmers can sell and make significant financial gains from farm to school due to logistical issues. Despite the low sales numbers, farmers showed no

interest in terminating their contracts or relationships with schools and they cited social responsibility and the long-term economic benefits as reasons why to continue the relationship. The starting income from new business relationships with schools can be insignificant at first, but over time the farmers will be able to tap into the full market potential of school food service when trust is built and both parties have a better understanding of their needs and the logistics involved in direct food sales. Farmers also view it to give back to their community and to help students learn about agriculture. Furthermore, farmers realized that their product could play an important role in changing or enhancing the children's dietary habits. The farmers felt that “by introducing children to a wider range of fruits and vegetables, they could help cultivate children’s taste for nutritious foods and play an important role in promoting lifelong healthy eating habits” (Izumi et al., 2010, pg. 379). Conner’s study on Vermont farmers’ motivations and distribution practices give further insight into the reasons they directly sell to school food services via a two-step cluster analysis that “characterizes farmers’ motivations along a continuum between market-based and socially embedded values” (Conner et al., 2012, pg. 321). They reported that farmers who are closer to the market-based values on the continuum are significantly associated with distribution practices that promote participation in farm to school programs and sales to school food services operations. Farmers that are motivated by social reasons were somewhat less willing to adopt the practices needed to do business with school food services. Understanding farmer motivations is important for the allocation of technical assistance resources and the results of the study reveal that farmers with motivations that are market-based are the easiest to enlist in farm to school programs while farmers who are motivated by social responsibility would benefit from technical assistance. The school side of procurement also deals with its fair share of barriers and some of these will be shared with the

farming side of procurement, for example the lack of regional infrastructure and regional/central processing distribution facilities. Furthermore, schools face other barriers to the procurement of local food and farm to school program implementation that include: price of local product, safety issues, uncertainty of best practices for local procurement, difficulty of finding product year round due to seasonality, the lack of processed/pre-cut products, problems with food quality, lack of reliable delivery, inability to get information on products, inability to find new suppliers, lack of adequate cooking and storage facilities, and, vendors not offering local products or a wide variety of local products (Botkins and Roe, 2018). School food service staff identified additional barriers to the procurement of local produce such as shelf life, lack of staff knowledge and training, and service to students (Stokes and Arendt, 2017). Several federal and state regulations were identified regarding local procurement of foods as another obstacle to overcome (Colasanti et al., 2012). There is a need for farmers and school professionals to receive technical assistance and trainings to make procurement easy for both parties.

Research alone will not be able to change our food system, but it will be the first step. Domestic and farm policies will have to change along with, the concentration of power that is currently with multinational companies, large growers and processors. Inequalities in access will also have to be addressed in order to make sure the people who most need healthy, nutritious food can fulfill their needs. Changing local procurement practices and breaking down the barriers to local procurement that currently in the food system will take time and “considerable investment in local food economies, food security solutions, and sustainable business models” (Zajfen, 2008).

2.7. Farm to School and Gardening

Gardening, based at school sites, is one of the three key components of farm to school programs. School gardens can be made in different ways such as box beds (made of plastic or wood), in flat beds, or in raised beds. School gardens can also use other horticultural tools and strategies such as potted plants, composting areas, and habitat gardens for beneficial insects like butterflies. School gardens are used to give students access and opportunities to experience a “living laboratory for student experimentation and observation” (Smith, 2003, pg. 1).

Experiential education is becoming a larger part of school curriculum because of the need for hands-on activities to engage students in the learning process. Administrators and educators are starting to use school gardens as a way to implement experiential education into their school curriculum. Like farm to school, school gardening has also become a national movement and it is not a coincidence. School gardening has become a focal point for many organizations and programs like state departments of education and university extension programs. School gardens and gardening curriculum usually target elementary schools and students with a variety of purposes and outcomes in mind. School gardens have been used to boost academic performance in children, promote recreational physical activity, improve student behaviors, and build social capital in the children in the form of self-esteem, sense of belonging, and compassion (Blair, 2009). As the school garden movement has grown, school gardens have come to be recognized as an important element of school nutrition services school health programs because they can provide nutrition education via experiential education. School policies that promote healthy eating have been linked to increased fruit and vegetable intake at schools (Nanney et al., 2014). In addition, the National School Lunch Program promotes the use of school garden produce in school cafeterias to improve access to fresh, healthy, local foods. Support is in place for schools

to use school gardens as a teaching tool and as a way to bring fresh produce to the students at the same time, all that is left is for the schools to begin the implementation process.

2.8. Gardening as Experiential Education

School gardens provide an approach to learning that is inquiry-based, place-based, and experiential in nature. Place-based learning opportunities that are common occurrences in school gardens has shown to be effective in improving test scores for fourth graders in a poor, rural, area in Louisiana (Emekauwa and Williams, 2004). Fewer students were scoring unsatisfactory on the Louisiana Educational Assessment Program for the 21st Century test (LEAP 21) as a result of the three-year place-based intervention. Gardening studies that examine the effects of experiential teaching methods reveal that critical thinking is encouraged by gardening programs (Waliczek et al., 2003). Mabie and Baker in 1996 conducted two different experiential education intervention programs: a school garden project and three in-class seed starting projects. The study's results show that student participation in agriculture related activities also positively impacted critical thinking skills (1996). Another study involved the use of a nutrition education and gardening group, nutrition education group, and control groups (Morgan et al., 2010). The nutrition education and gardening group had a significant difference for fruit and vegetable knowledge when compared to the control groups, but only when comparing the students with the lowest scores for fruit and vegetable knowledge (Morgan et al., 2010). In another study science achievement scores for the experimental group that received hands-on gardening curriculum were statistically different between pre- and posttest scores, while the control group's scores were found to have no significance between tests (Smith and Motsenbocker, 2005). Blair's (2009, pg. 16) review of garden literature including only 12 quantitative studies looked to ascertain if school gardens could provide adequate experiential education to cause measurable

and observable changes in student academic achievement and behavior.” The review reports that the gardening programs increased the science scores in all of the evaluated studies and 75% of the studies reported positive differences in test measures between the experiment and control groups. However, these studies are commonly lacking methodological rigor which affects the validity of the results. The studies were plagued by problems that include “short-term, quasi-experimental design, using instruments without proven validity, and lack of rigorous sampling procedures and random assignments of control and experimental groups” (Blair, 2009, pg. 34). Blair’s review of gardening literature reported a positive effect on education, but another meta-analysis review of gardening interventions suggested that the studies had no effect on nutrition knowledge (Langellotto and Gupta, 2012). Langellotto and Gupta’s review also indicates that there is a need for more rigorous studies on gardening and children to truly determine its impacts. For more thorough and rigorous future meta-analysis reviews of garden impacts it is recommended that researchers record, and report means, sample sizes and measures of variance. Research on the effects of school gardens on children is still limited and requires more research of higher quality and rigor as the two previous reviews of garden literature suggest.

2.9 Health Benefits

School gardens can be used to provide healthy food for children and increase fruit and vegetable consumption, aside from the knowledge gain in students. School gardens can also be used to change children’s preferences for fruit and vegetables and to encourage healthier eating habits. They can also be used to provide opportunities for children to be physically active which is a key contributor for a healthy lifestyle. Providing children access to fruits and vegetables through a school garden increases the probability that they develop preferences for them. Repeated exposures to fruits and vegetables (i.e. more access and availability via a school

garden) have been proven to get children to accept new food into their diets (Birch, 1987). This can take anywhere from 10 to 15 exposures including at least one type of tasting event.

Langellotto and Gupta's review of school garden literature states two non-mutually exclusive hypotheses, one: school gardens provide children greater access to vegetables which could lead to increased levels of vegetable consumption and two: gardening decreases children's neophobia to trying new foods by exposing them to more vegetables (2012). Growing food in the garden can be an influential experience for children that can lead them to trying new foods if they had not previously experienced those vegetables beforehand, which could lead to increased consumption of those vegetables (Langellotto and Gupta 2012). School gardens can be a great way to incorporate physical activity into a school routine, especially since most young children are not achieving the recommended levels of physical activity. Studies focusing on physical activity and school gardens are not abundant in the literature. A study focusing on school gardens and physical activity looked to examine was one of the first randomized controlled trials and to their knowledge was the first such study. The results of the study were promising and showed that school gardens can play a key role in promoting healthy lifestyles by increasing physical activity. "Over the course of two years children at the garden intervention schools reported a greater reduction in their usual daily sedentary activity" (Wells et al., 2014, pg.31). Additionally, the study was rigorous in its testing procedures and can provide a baseline for future studies regarding young school-age children's physical activity and participation in school gardens.

2.10. Farm to School Case Studies

Case studies are commonly used for research purposes in the social sciences (i.e. psychology and anthropology) and professional fields such as evaluation of research questions such as: "who", "what", "where", "how many", "how much", "how" and "why". Additionally,

the ability to control behavioral events and whether the research focuses on contemporary events dictates if the case study is the appropriate research tool. Case studies are the preferred method when the “how” and “why” questions are the research questions posed and there is a lack of behavioral control of events and a focus on contemporary events (Yin, 2009). Conducting case studies usually involves “direct observation of the events being studied, and interviews of the persons involved in the events” (Yin, 2009, pg. 11). Additionally, case studies have a unique strength to consider due to their ability to deal with a variety of evidence: “documents, artifacts, interviews, and observations” (Yin, 2009, pg. 11). It is important to employ great care and rigor when conducting case studies to ensure the data is not skewed, biased, or erroneous, especially when conducting interviews, the central component of the case study. Measures should be taken to mitigate, if not eliminate, any potential interviewer bias as well because interviewer bias can skew the data toward the attitudes and the ideas of the interviewer by using closed-ended response questions or choices through oversight or omission (Krueger, 2015). Stuart A. Rice first mentioned this potential for interviewer bias in 1931 when he wrote: “a defect of the interview for the purposes of fact-finding in scientific research then, is that the questioner takes the lead” (Rice, 1931, pg. 561). The author goes on to mention that when the interviewer is in charge this causes the interviewee to take on a passive role which might not allow the interviewee to discuss or highlight the topics, or concerns that are most important. This lack of disclosure or discussion can lead to interviewer bias which can harm the value of the data received from the interview. Non-directive interviewing uses open-ended questions and allows respondents to disclose information without being restrained by narrow choice options or leading the interviewee to respond in a certain way. A non-directive form of

interview also allows the respondents to discuss the topic, express their feelings and concerns, and share their experiences and beliefs.

Case studies have been a commonly used method of research, but their use in studying farm to school phenomena has been limited to this point. Based on our knowledge of the farm to school case studies that have been previously conducted, only two of them have been published in academic journals (Christensen et al., 2017; Hartline et al., 2017). In general, most case studies are not published as peer-reviewed journals but as articles by organizations or agencies such as the National Farm to School Network, Colorado Farm to School, Vermont Farm to School Network, Georgia Organics and Ecotrust to promote or advocate for farm to school. There is a need for further case studies conducted by universities to understand how and why farm to school works in order to better promote and facilitate its development. So far, the case studies on farm to school have focused on different areas which have served to expand the literature. First, a group of researchers at the University of Nebraska-Lincoln focused on the attitudes of foodservice managers and the beliefs of food-service staff and educators prior to starting farm to school programs (Hartline et al., 2017). A mixed-methods case study using interviews and surveys was implemented in 4 rural schools in Nebraska to determine how farm to school was perceived in schools before being implemented. The results of this study reported qualitative and quantitative data that illustrated attitudes towards farm to school implementation. Qualitative themes derived from the study included: more work for me, uncertainties, healthy changes and choices, food safety concerns, opportunity, and the complications involved with the local procurement process. The attitude surveys used a 5-point Likert scale: Strongly Agree = 5, Agree = 4, Neutral =3, Disagree= 2, Strongly Disagree =1 to determine the attitude scores for specific responses in the survey. Overall, farm to school implementation received positive scores

with the mean attitude score for foodservice staff resulted in 68% and 79% for educators. Their research concluded that while there were positive attitudes towards farm to school among school staff, barriers remained that needed to be addressed in order for successful farm to school program adoption to occur.

Next, the National Farm to School Network in partnership with Colorado State University developed case studies on the economic impacts of farm to school (Christensen et al., 2017). Two case studies were conducted in public schools in Minneapolis and the state of Georgia. The objectives of the study were to “provide descriptive data about the types of farms selling to schools (including the level of producer satisfaction with those transactions), understand if/how farmers changed their operations based upon the availability of school markets, and come up with an average farm expenditure profile that could be increased by the total number of farms in the study area selling to schools to create a new farm to school industry sector in IMPLAN”. The study reported that farmers began to sell to schools for four reasons: schools provided a market, as an opportunity to educate youth, they were approached by the school, and they already sold to an intermediary that was selling to a school. Farmers were most satisfied with the following aspects of selling produce to schools: delivery requirements, prices, reliable payments, delivery logistics, time commitment, and ease of communication. The farmers’ biggest challenge and greatest dissatisfaction was the volume they were able to sell to schools. The IMPLAN economic assessment concluded that the “multiplier impacts for the farm to school sector are larger than the more traditional fruit and vegetable farm sectors, indicating that farm to school farms purchase more inputs from the local economy per unit of output, which results in positive local economic impacts” (Christensen et al., 2017). The Minneapolis public schools case study and the Georgia case study had multiplier impacts of 1.45 and 1.48,

respectively. The reported impacts are similar to other farm to school economic assessments. The main challenge associated with these case studies was the implementation of the survey protocol due to the time and effort needed for the volunteers to collect primary data. It was suggested that financial compensation should be provided for volunteers to facilitate data collection or surveys should be conducted in areas that have strong ties to the research team in order to elicit prompt and complete responses.

Ecotrust conducted a case study to ascertain the effects of a small increase to school funding (an additional \$.07 per meal) and whether there would be significant economic benefits to the state of Oregon (Sobell et al., 2011). This subsidy was chosen as the reimbursement rate of study for several reasons: it represented the cost of half of a fruit or vegetable serving and was within the range of allocations that other states contributed towards local procurement. It was also viewed as a substantial amount that could engage producers to sell to schools despite complex purchasing requirements and was significant enough to justify the additional paperwork needed for tracking and reimbursement of increased local purchases. The study was conducted in two Oregon school districts in order to incorporate more locally grown products into the cafeteria. One of the primary objectives of the study also included testing and refining protocols for how schools could use and track a subsidy to streamline future implementation. The other objective was to evaluate the effects of the meal subsidy and the effects of school and community efforts on school lunch participation rates, children's produce consumption, and the local economy. Two school districts were chosen for the case study: Portland Public Schools (PPS) (a large urban school district), and Gervais School District (a small rural school district). Information was collected from these school districts concerning the types, amounts, and the prices of local products, and student participation in the National School Lunch program.

Surveys and focus groups were utilized with the students at PPS in order to measure student knowledge, attitudes, and behaviors towards fruits and vegetables served as part of their Harvest of the Month program. Food service directors from both school districts were interviewed to understand and learn about their experiences with the program. An input-output analysis was conducted to determine the effects of the subsidy on local procurement and the results of this basic analysis indicated that the schools increased the amount and the types of local product procured, but the two school districts implemented the program in different ways. The initial investment of money into the two school districts for local procurement resulted in an economic multiplier effect of 1.86, which suggests that every dollar spent on school food promotes an additional \$ 0.86 of spending amongst households and suppliers. The surveys of school food service providers elucidated how they would spend extra funds for local food. The survey results indicated that they would spend the extra money on purchasing more fresh fruits, fresh vegetables, fluid milk/butter, bread and bakery products, and poultry/eggs. Analysis of six different economic scenarios revealed that the state would expect immediate positive economic benefits across multiple sectors due to the increased amount of local procurement. Student participation data in PPS's lunch program revealed mixed results as total participation rate for all schools on days Harvest of the Month (HOM) days or totally locally sourced days (LL) was higher than all other days in September, December, and January and lower on HOM or LL days than other days in October, November, and February to May. This is likely due to the complexities involved with introducing new foods to students. The results for the survey regarding student consumption of fruit and vegetables were not significant and the study had issues due to non-random sampling and a small sample size. More research and resources are needed to study the phenomena associated with local produce consumption in students.

There are a variety of other farm to school case studies published by other farm to school programs that cover numerous topics. None of these case studies are published in academic journals and they mostly serve as examples for farmers and educators to learn about how farm to school is implemented. They are explanatory in nature and contain no research or analysis and they usually focus on the school's point of view in relation to how and why they are conducting farm to school. These farm to school case studies come from many different areas focusing on the following: integrating farm to school curriculum, engaging the community in wellness, joining sustainability and farm to school goals, the cafeteria unifying the whole community, and investing in your school's meal program. The Colorado Farm to School Program also has a wide variety of case studies that cover different topics such as ensuring food safety of local foods in schools, establishing salad bars, starting a school garden, and establishing relationships with local producers. These case studies did not necessarily use specific interview protocols or guidelines because they were not designed to be part of a multiple-case study. In the case of the Vermont Farm to School Network they created a long list of items that they wanted to learn about, and the interviewers spoke with a range of people affiliated with each school to learn about what they had to share about these topics. Their case studies are explanatory and focus on "how" and "why" research questions in order to serve as examples and inspiration for others in the community who are interested in participating in farm to school. These case studies serve more as a "how-to" for farmers and educators to learn about how farm to school is implemented. While the Colorado Farm to School Program and the Vermont Farm to School Network are the two largest sources of farm to school case studies, there are other singular case studies based on individual farm to school programs in other states like Georgia, Florida and Wisconsin. More case studies with methodological rigor are needed to understand how and why farm to school

works for these programs in order to foster the continued growth of the farm to school movement.

CHAPTER 3.

A Qualitative Study of Three School Districts Sourcing Local for Farm to School in Louisiana

3.1. Introduction

Farm to school for the purposes of this research is operationally defined as a group of activities that school districts can conduct to educate their schools about agriculture. This often is accomplished by connecting with local agricultural producers through the procurement of local products such as meat, fresh fruits and vegetables, or brown rice. In addition, educational activities such as gardening and in-class education through agricultural based lessons or out-of-class education through farm and farmers' market visits are also common farm to school practices that strengthen the ties between schools and local agriculture. According to the 2015 USDA Farm to School census, the state of Louisiana was one of twenty-six states to have 25-49% of their school districts involved in farm to school with 33% (31 school districts) of Louisiana school districts involved in farm to school. This amounted to 530 schools and 288,083 students that at some level participated in farm to school activities via local procurement, gardening, or education (USDA-FNS, 2015). The interest in the farm to school movement has grown in recent years, which has led to a rise in the number of farm to school programs across the country (Joshi et al., 2008). Farm to school programming has increased for multiple reasons, principally due to the efforts to mitigate the childhood obesity epidemic by improving the health and nutrition of students and the public's increasing skepticism of the global and industrial food system (Bagdonis et al., 2009). Case studies were conducted in order to elucidate the perspectives and experiences of child nutrition directors and associated staff in three Louisiana school districts that procured local products for their school food service programs. This research

is vital in order to understand their motivations and the procurement process for acquiring local foods. Farm to school implementation and local procurement processes are different for individual school systems due to a variety of factors that include geographic location, availability of local farmers and produce, price considerations, delivery and food safety certification requirements, and local policy differences (requirements). These case studies reveal how and why these counties (known as parishes) in Louisiana were able to navigate the local procurement process which will provide a guide for others to use as they decide how and if they could procure local products for their schools.

Childhood obesity is an epidemic worldwide and particularly in the United States. The proportion of school-age children that are overweight or obese has increased over the past few decades in the United States (Lytle, 2012). The detrimental effects of obesity on human health and the requisite costs to the country have been well documented. The National School Lunch Program is able to reach millions of students, with nearly 30 million school lunches served daily in 2018 and 4.9 billion annually (School Nutrition Association, 2018). This program could be used to change the perceptions of the students and to help prevent childhood obesity and adult obesity later in life. It has been hypothesized that increasing fruit and vegetable intake for children can reduce childhood obesity and the associated long-term negative effects that come with a life of obesity such as cancer, heart disease, and Type 2 diabetes. Obesity is extremely difficult to treat and the key is to prevent excess weight gain in order to combat obesity (Newby, 2009). Procurement of local produce and repeated exposures to new fruits and vegetables through taste tests and menu items in the cafeteria can help improve students' diets by changing their preferences. One of the barriers to local procurement is product waste by children who are unfamiliar with the taste, texture, preparation, or appearance of particular items. Preference will grow for foods as they become more familiar to the person. Children often have a neophobia

when it comes to food and repeated exposure (anywhere from 10 to 15 exposures) to new foods is a useful tool to break through the stigma (Birch, 1987).

There is very little research reported in the literature on how school food authorities have navigated the local procurement process and what factored into their decision-making for acquiring local products. Due to the lack of information on local food procurement, these case studies of three Louisiana school districts were conducted to provide information about the details, benefits, and challenges of procuring local products for schools. The objective of this multiple case study was to acquire details about the entire local procurement process and the motivations of school food authorities for acquiring local products, and to provide other school food authorities examples of how they could possibly procure local products for their own schools.

3.2. Materials and Methods

3.2.1. Instrument. A pre-interview survey was sent to the interviewees in advance to assist them in preparing for the interview and to adjust the questions as needed for their specific situations. No data was analyzed from the pre-interview survey since its purpose was purely to modify the interview scripts for each school district. An interview script (Appendix A) containing twenty-five questions in total. The questions can be categorized into the following topic: inquiring about their local procurement process (10 questions), their experiences with farm to school (6 questions), how they accommodated local food into their schools (6 questions), what specific vendor considerations that are important to the school districts (1 question), and questions regarding how they wrote specifications for local products (2 questions). The local procurement process can be operationally defined as the rules that schools must follow in order to procure local foods, which requires more knowledge and time than their regular procurement

process with larger distributors. Examples of questions regarding the local procurement process include: “How do you define “local” and how did you establish this definition?”, “Can you walk me through the process from start to finish of deciding you wanted to purchase local to the endpoint of the local food ending up in your school?”, and “Having gone through the process of procuring local food, what would you have done differently during the procurement process (if anything)?”. It is important to understand how they navigated the local procurement process so that other school districts can look at how it was done and choose what methods will work best for their own needs and capabilities.

Experiences with farm to school can be operationally defined as how well they thought the local procurement process was going and any positive or negative reactions that they may have had to it. Examples of these questions include: “Think back to when you/your school first became involved in local procurement from local producers. What were your first impressions when you/your school began purchasing local food?” Was it how you expected it to be?”, “What have been your experiences working with local farmers?”, and “What were your motivations (goals) for buying local products for your schools?”.

Accommodating local food into the schools can be operationally defined as how schools are using these products in their school menus either as entrées and/or sides and how frequently they are apart of school menus. Examples of questions that were asked regarding this include: “How do you accommodate local product in your school menus?”, “How do you adjust your school budget for purchasing local food? Does it cost more or less?”, and “What changes if any, have you had to make in order to bring in local product for your schools in terms of processing, marketing, or distributing the food to schools?”.

Vendor considerations can be operationally defined as the traits and capabilities of local farmers to be able to reliably work with school districts in order to supply them with local products. An example question is “What are your vendor qualifications?” These qualifications can include the vendor’s price, ability to supply and deliver products, and if they have certain safety certifications such as Good Agricultural Practices (GAP) or whether or not they have organic certification for their products.

Specifications for local products can be operationally defined as the terms with which schools wrote their solicitations and bids in order to procure local produce via the rules of the local procurement process. These specifications help to communicate to the producer what exactly the school wants in regard to identifying possible sources of local products, declaring expectations for product type, and setting requirements on local producers for product quality, supply and delivery.

3.2.2. Population and Sample. Interviews were conducted in person at the offices of the three participating school food authorities that had previously procured local products of some type. School food authorities were contacted to ascertain their willingness to be included in the case study and then provided informed consent forms prior to their participation. One of the limitations of this study is that the three school districts who were invited to participate (via email) were known to be involved in farm to school and local procurement. This could potentially invite some positive bias towards farm to school and local procurement since they have some experience in these areas.

Table 3.1. Description of school districts participating in farm to school case studies. Table 3.1 This table seeks to show a brief description of the school districts to show how they are setup and how they procured different local products.

School Districts	Type of District	Number of Schools	School Population	Local Produce Procured
School District 1	Rural	12 schools	2760 PreK-12 students	Grew their own hydroponic lettuce, tomatoes, cucumbers, peppers. Previously procured local watermelons
School District 2	Urban	42 schools	25,500 PreK-12 students	Procured local strawberries
School District 3	Urban	40 schools	31,000 PreK-12 students	Procured local rice and assorted meat entrees

3.2.3 Qualitative Data Collection and Analysis. The child nutrition directors were interviewed following an interview protocol with the interviews’ audio recorded. Forms of informed consent were signed by all participating school food authorities which allowed their audio to be recorded for transcription. The form of qualitative research methodology used for this study was narrative due to the fact that experiences of the child nutrition directors with farm to school were studied (Creswell, 2006) Also, due to time constraints this informal information gathering allowed us to quickly gather information for the qualitative study without the rigid process. All interviews were truth transcribed via the replay of the audio file and going along with the transcription and transcribed in intelligent verbatim via the Temi iPhone application. Afterwards quotes from the text were pooled together for themes and they were later categorized into broader topics. The interviews on average took about an hour to complete and were

conducted on August 21st, August 23rd, and September 3rd, 2019. In vivo codes were used to define the topics and themes from the data. The procurement process from the three parishes was discussed in the interviews which focused on how they defined local, how they found local product, how that product was transported into their schools, and the use of the product. Additionally, specific themes were categorized into two broader topics: benefits and issues/problems. The benefits topic was segregated into the following themes: higher quality of local product, improving student participation in the school food service program, better pricing, farm to school as a marketing tool, and the ease of the local procurement process. The issues topic was segregated into the following themes: inexperience with farm to school/local procurement, reliable supply and delivery of local products, and the inability to locate and communicate with local farmers in order to purchase local products.

3.3. Findings and Discussion

3.3.1 The Local Procurement Process

3.3.1.1. Defining Local. Understanding the school districts' definition of local is an important first step for school food service authorities to determine what is considered local foods so that the district will know what products are available to them in their defined region. A definition of local should be determined in order to identify what "foods are grown, harvested, raised, caught and processed in their chosen region and when those foods are available to them" (USDA-FNS, 2019, pg. 9). The three parishes defined what they considered local foods with all three parishes defining locally quite differently. This is to be expected as this definition is based upon what foods are available to them in their parish or region, the goals of the district, and their understanding of how they can use the definition of local in the solicitation process. The definition of local is an important tool to use in the solicitation process, but there was some confusion on how the term could be properly used. One of the school food service authorities did

not have any definition for local because of the lack of clarity on how this term could be used in their bidding process. Due to USDA rules and regulations the term local cannot be explicitly used during the writing of specifications, but local can be used in other ways to show the desire of the district to acquire local products. A school district's request for local products can be mentioned in the introduction to the solicitation. Two of the three schools did not say that they preferred local in their solicitations' introduction because they were unsure about how they could use the word local in their solicitation process. The districts that had definitions for local and local products were: within the parish and within the confines of the state or a 100-mile radius that may include parts of other states. It would be beneficial for school food authorities to better develop an understanding of how to use the term local in their food guidelines and specifications in order to improve their ability to solicit local products.

3.3.1.2. Finding Local Produce. The three school food service authorities used all avenues available to them in order to source local products. A variety of avenues were used to source local products and they included: Louisiana MarketMaker, various social media platforms (i.e. Facebook), reaching out to local farmers' markets, contact with their normal distributor (i.e. Robertson's Produce and Capital City Produce), personal encounters with local farmers, and the use of strictly modifying their product specifications for particular kinds of local products. It was reported that there were difficulties in locating farmers from whom to buy produce. It was even more difficult to find farmers that would be willing to sell to the school systems; this was a common theme throughout the interview process. None of the school food authorities used a request for information (RFI) to solicit information regarding available produce in the area. It is generally used to cast a broad net to acquire information from possible vendors and could be a

useful tool, but the school food authorities mentioned that farmers do not usually sign up as vendors so this information would not be seen by the farmers.

3.3.1.3. Type of Procurement Process. The two types of procurement methods that are used by schools are formal and informal procurement methods. Formal procurement methods require public advertising and include sealed bids (IFBs) and competitive proposals (RFPs). Informal procurement methods include small-purchase, a purchasing method that is more regulated and requires price quotes from at least 3 bidders, and micro-purchase, a noncompetitive purchasing method where the value of the purchase may not exceed \$3,000. All three of the school food authorities used the micro-purchase method for the procurement of local products. The value of the local product fell under the local small-purchase threshold which allows them to use this method to purchase local products (Conell et. al, 2018).

3.3.1.4. Accommodating Local Food Into Menus. The school districts' farm to school programs were different from each other in several instances, chiefly in the size of the school districts, the kinds of products procured, and the ways in which those products were procured or in one case grown (Table 3.1.). Two of the school districts (School District 2 and School District 1) that acquired local products incorporated local food into the school menus by bringing in either strawberries or melons into the school as a pilot program. School District 1 opted to grow their own produce via renovated greenhouses and they now produce approximately ninety percent of their own salad greens, peppers, tomatoes, and cucumbers. The other parish (School District 3) procured local products that easily fit into their menu already such as brown rice, sausage, beef roast, and meatballs. Procuring these grain and meat products were relatively easy as they were able to secure and acquire these items locally. There was no difficulty in accommodating local food into the menu or for any of the school districts.

3.3.1.5. Adjusting Budget to Accommodate Local Foods. For the school districts: fresh produce and rice funding normally comes from Department of Defense funds (DOD) or USDA Foods: Planned Assistance Level dollars (PAL) funds, respectively. The districts could not use these funds since they weren't procuring products from those programs because the products were acquired from local farming businesses instead. Since the districts were acquiring local products they adjusted their DOD allotment or used their PAL funds to procure other products in order to spend all of the funds given to them by government programs. In the case of School District 1 that had previously had a produce pilot program with watermelons, the district renovated greenhouses and owned the produce that was grown onsite. The budget was therefore designed to absorb the costs of the production in the greenhouses.

3.3.1.6. Writing Specifications for Local Product. Understanding how to write specifications for local products is a key part of the solicitation process. Using the term local when writing the specifications for solicitation is not allowed because its usage in this manner is viewed as limiting competition for vendors and products per USDA regulations. There are ways to specify for local without using the word local specifically in the solicitation process. Examples are to specify the size of the farm, how the produce is harvested, and how many days it takes for transportation to school sites to occur. These are all viable ways to specify local products without explicitly using the word local. Two of the three school districts used similar methods to specify that the district has a desire for local products (Conell et. al, 2018).

3.3.1.7. Vendor Evaluation Qualifications. School food services require certain qualifications be met by potential vendors such as: a food safety certificate, a reasonable price, quality product and packaging, delivery to individual schools, and being reliable and responsible to the bidding and procurement process. Food safety was one of the foremost concerns for the

three school districts. Consequently, the three school districts deemed that a food safety certification such as Good Agricultural Practices (GAP) certification or Produce Safety Alliance Training (PSA) is essential for them to consider procuring from local producers. In addition to this, the districts required that the local vendor had up to one million dollars in liability insurance. Price, of course, is important to consider since schools are on a limited budget. In all cases, however, it was stated that the districts were willing to pay a fair market price or above it to procure what they considered to be a premium, high-quality local product.

The parishes were incapable of transporting the local product themselves as they did not have adequate central warehouses or the capacity or manpower to deliver from the central warehouses to the schools. This places the burden of getting the product to the schools solely on the local farmers which can be a substantial barrier. In each case, the local farmers were able to transport the local product to each individual school in the parish. It is imperative that the local farmers be responsible and responsive during the bidding process since schools are on a schedule and need to ensure that they have products coming into their schools in a timely manner. If local farmers or vendors fail to respond to the bid or fail to fill it out inaccurately it could cost them the bid when the school is trying to acquire local products. Earlier studies have reported that local farmers have been frustrated due to a lack of knowledge of the standard process a school must use to purchase local foods (Vogt and Kaiser, 2007). Farmers need to be able to quickly and correctly respond to the bid and be responsible for their part of the contract, failure to complete the terms of the bid could ensure that the local vendor might lose their partnership with the school food service. School systems are on a tight schedule and cannot afford to miss weekly nutrition goals because a local farmer's inability to follow through with their side of the contract. One of the parishes attempted to hold a meet the buyer event to initiate contact with local

farmers and to educate them on the procurement policies that schools must use. The only farmer that participated, however, was the one farmer from whom they had already purchased local products. Communicating with farmers was one of the central problem themes from the interview process and it appears to be a major obstacle to the local procurement process.

3.3.1.8. Geographic Preference and Other Policies. Geographic preference is a new provision that was added in the 2008 Farm Bill to promote the procurement of local products by school food service authorities. This provision enables a school district to give products a “defined advantage” if the product meets their definition of local (Conell et. al, 2018, pg. 64). Coincidentally, none of the school districts used this provision since it is a part of the formal, competitive solicitation process instead of the informal, micro-purchase that all three of the districts used to procure local products. The geographic preference provision would be more useful if the parishes were able to obtain higher volumes of local product, which would cause districts to go through the formal procurement process. From a school system perspective it is ideal if they are able to purchase from a single source that can provide the necessary volume. There were no policies of any kind that inhibited the local procurement process for any of the school districts.

3.3.2. Farm to School Benefits Identified by School Food Authorities

Improving the school food service program is obviously the number one priority of the child nutrition directors. It was perceived by all of the child nutrition directors that participating in farm to school and the procurement of local produce would improve their program incrementally. Perceived improvements to the school food service program by participating in local procurement and farm to school included: acquisition of high quality products, improving student participation in the school food program, less expensive products via direct sourcing, the

value of using farm to school as a marketing tool, and the unexpected ease of the local procurement process (Table 3.2.).

3.3.2.1. Higher Quality Products. Local, farm-fresh products were perceived to be of a superior quality to the other kinds of produce that were received from various sources. Additionally, the incorporation of local products into school menus was thought to be a major benefit for school nutrition programs (Colasanti et al., 2012; Gregoire and Strohbeh, 2002; Izumi et al., 2006). Acquiring superior products can be important due to a variety of factors such as increasing participation in the school food service programs and reducing food waste, marketing, and providing healthier and more nutritious options for students. When new products are procured and introduced to the students it is important that the quality is as high as possible in order for students to try the product and find it palatable and overcome food neophobia. It can take anywhere from ten to fifteen exposures for students to accept new foods into their diets so it is important that when they appraise the product, it is of the highest quality possible quality (Birch, 1987).

Table 3.2. Themes described as benefits from child nutrition directors after experiencing the local procurement process. This table shows samples of quotes that were tagged to the themes derived from the interview process and in vivo coding. These are the main benefits that they experienced during the local procurement process experienced by the school food authorities that participated in the qualitative study

Theme	Quotes
Higher Quality Products	<p>“Well, I like local products. I mean, to me they're fresher and like I said, the watermelon's that are usually grown around here are a lot sweeter than what you get in from someone else somewhere else. It's kind of iffy on that. So it was quality of the product, if you will. Yeah, because yeah, to me, local products are usually a better quality.”</p> <p>“It really exceeded my expectations as far as the product”</p> <p>“it was such a great experience and the product was wonderful.”</p>
Improving Student Participation	<p>“I would say that probably 90 to 95% of the students picked that item up (strawberries), which is incredibly high from another day where you have out, you know, maybe an apple or you know, pineapples or something like that.”</p> <p>“I think that's things that help to build your program, um, and to grow, grow your participation.”</p>
Price	<p>“...we have capabilities to receive products direct, which also allows us to get a better price.”</p> <p>“And that price actually came in cheaper than what our monthly produced bid does.”</p> <p>“Plus it's cheaper. Literally, I mean seeds and what little that we have into it. That's it. Really, we figure a head of lettuce costs about 12 cents.”</p> <p>“Um, you know, for any purchase. Yes (I would) be willing to pay a little bit more for local product if's still within budget.”</p>
Marketing	<p>“We wanted that marketing partnership...so that we can use that educational piece for our community.”</p> <p>“And so I do think that those type of buzz words help from a marketing standpoint, um, for especially parents who may be, um, bag-lunchers or, who don't eat in the cafeteria...”</p> <p>“Well, again, I think it's about, um, I think it's about connecting that education piece to our students. You know, we have a, we have a, an opportunity with what we're serving every day to our students to really help them to understand where their food comes from.”</p>
Unexpected Ease of the Process	<p>“I like it better than working with the distributor actually.”</p> <p>“Uh, they've, they've been really easy to work with honestly, so we haven't had any, any issues with, yeah,”</p> <p>“I was a little, um, surprised at how, how easy it was to obtain. Um, all of the product from one farmer.”</p>

3.3.2.2. Improving Student Participation. The child nutrition directors mentioned that the school nutrition programs must compete for student participation in the meal programs.

Some students tend to bring homemade lunches or simply don't eat the reimbursable meals that the school nutrition program provides. This lack of participation obviously can have an adverse effect on the program and it is believed that acquiring local products that are of a higher quality will elevate their student participation and the program. Improving cafeteria menus by integrating better products was a method that they experimented with and reported as a success. Participation in the school food service programs was perceived to have increased or was deemed satisfactory whenever local product was procured for the students as a pilot or as part of their normal cafeteria routines (i.e. boxed salads). Specifically, after the local produce was introduced into the salads there was a marked increase in the volume of salads that students consumed, which coincides with less waste. The health and well-being of the students is at the forefront of the school food service programs' goals and providing healthy, tasty options that can reduce "calorie counts" is a method that reaches all these goals and more.

3.3.2.3. Price. The participants were interested in acquiring any local products if the price was competitive and the quality was comparable to their regular products. It was stated several times that the child nutrition directors were willing to pay what was considered to be "fair market value" for local products. In addition to the local product having a superior quality, local products in these cases were said to be less expensive to procure due to the fact that they were purchased directly from the source. All three of the school districts mentioned this in regards to the different types of products that they were acquiring or growing. Removing the intermediaries such as the distributors and the extra costs associated with them such as handling and transportation enabled the districts to get a better price on the local products than their normally acquired items. These "shortened supply chains" and their advantages could enable districts with budgetary constraints to still be able to purchase local products as desired and

needed (Izumi et al., 2010, pg. 88). Furthermore, all of the districts stated that they would pay a premium or a little more over market value to buy what was determined to be high quality local products and this has been reported from other studies as well (Hardesty, 2008; Izumi et al., 2006;). Even though the price differential may be a small, either a little more or less expensive, the perceived benefit of procuring high-quality local products from local businesses was stated to be worth the investment in order to improve the child nutrition program. Procuring better products at a lower price is a way to improve the school food service program keeping in the important factors of nutrition and cost.

3.3.2.4. Marketing. Farm to school was viewed as a marketing tool that could be used to build student participation numbers and improve school food service programs. As mentioned earlier, farm to school is believed to be a powerful marketing tool by bringing in local products to support local agriculture businesses. It is also viewed as an important addition to the educational component of the cafeteria that can be forgotten in light of other program objectives such as meeting nutrition requirements. Affording students the opportunity to be exposed to different kinds of local products can allow a movement towards “creating a healthier generation through education” and greater food literacy.

3.3.2.5. Unexpected Ease of the Process. Previous studies have reported that farm to school is deemed to be more work for foodservice managers, but that they were willing to go through the extra work for the students (Hartline et al., 2017; Izumi et al., 2010). The school districts revealed that this was partially true, that there was more work involved to find and locate potential vendors who would be able to meet the quantity of product needed and have the capacity to deliver the product to the individual schools. Additionally, it was perceived to be more difficult to find local products during the school year when there is so much work to be

done and that it was easier to begin sourcing and testing products in the summer. However, the local procurement process itself was viewed to be easier than they anticipated prior to purchasing local products and that in some cases it was easier and a “better” process to deal with than their normal vendors or procurement process.

3.3.3. Farm to School Challenges Identified by School Food Authorities

The three foodservice managers articulated that there were a number of “complications” that limited their ability to procure local produce for their school food service programs. These included: lack of experience with local procurement and an absence of formal guidelines for the local procurement process, securing reliable food quantities and delivery of the products to individual schools, and the inability to locate and communicate with local farmers of which there is a limited number (Table 3.3.).

3.3.3.1. *Inexperience and Lack of Guidance for Local Procurement.* In all cases there was limited experience with local procurement due to the recent formation of their farm to school programs and interest in sourcing locally. Inexperience with local procurement practices coupled with a lack of training in this area and an absence of a formal handbook to help guide them through the process; especially in regard to conducting site visits to farms in order to ensure the safety of the food were seen as obstacles. School food service managers would like to see a concrete set of best practices for farm to school, to assure them they are following procedure in a way that is optimal and safe for everyone involved. Even though there is “a lot of gray” in farm to school, it was mentioned that school food service has “a lot of black and white rules” that define what practices they can undertake. The school food service directors mentioned that they would like a similar set of guidelines to help them with farm to school, particularly in regard to food safety. Training and guidelines (such as with Produce Safety Alliance), that help school food service managers identify potential safety

hazards when conducting site visits before the procurement of local products would help to dispel some of the reservations that school food service managers might have about the whole process.

Table 3.3. Themes described as challenges from child nutrition directors after experiencing the local procurement process. This table shows samples of quotes that were tagged to the themes derived from the interview process and in vivo coding. These are the main challenges to the local procurement process as experienced by the school food authorities that participated in the qualitative study.

<p>Inexperience and Lack of Guidance</p>	<p>“Well, that's something interesting because we're, I'm still learning the rules on what is, uh, what we are allowed to say. Like, okay, well can we say local, we still aren't clear on what we can and can't do.”</p> <p>“I definitely don't think I have the whole process. You know, um, school food service has a lot of black and white rules. And I think that's why farm to school is very scary is because there's a lot of gray.”</p> <p>“So if somebody wanted to give me a handbook to follow, you know, I would take that any day of the week.”</p> <p>“Well that's good. Look, just gave me a little book, you know. For school food service I mean there's literally like a rule for everything. Like how they can come in the line, how they have to sit in the cafeteria, make sure we can't segregate. Farm to school. It's like an open book. Like, just whatever you want to do.”</p>
<p>Lack of Reliable Supply and Delivery</p>	<p>“So it's very time sensitive and the, and just the sheer volume to get them.”</p> <p>“And, uh, we, we would love to purchase more local. Um, and I think several, you know, many other school districts have the same issues that we have where we have such a large volume.”</p> <p>“Um, and you know, we're spread out. So I was concerned about being able to receive all of our deliveries on time.”</p> <p>“...I was a little concerned about how do we break up the deliveries, how are, you know, to make sure that everybody got it on the correct day or the same day.”</p>
<p>Connecting and Communicating</p>	<p>“So at some point it's still a matter of being able to reach farmers, um, and get them to respond and provide the information that we need so we can even see like who's available and what's available.”</p> <p>“So I do think that some of it is going to require some work on the farmer's end to be able to be receptive to, um, the concept as well.”</p> <p>“Um, no, we definitely had, we had some issues with getting, getting, uh, getting response.”</p>

3.3.3.2. Lack of Reliable Supply and Delivery. The ability of local farmers to supply and transport the volume of product needed to feed entire school districts consistently is a substantial

obstacle for local procurement (Gregoire and Strohbehn, 2002; Hardesty, 2008; Izumi et al., 2006). Feeding a minimum of 2750 students (approximately 15,000 servings of a product per week), the lowest total enrollment of the three districts that participated, dictates that farms of a certain size and capacity are better suited for long-term, regularly occurring transactions for the school district and the farmer. Smaller sized farms, that don't meet the needed capacity to sell and transport the necessary quantities of product to schools reliably, are still valuable farm to school allies. Two of the three districts partnered with small-scale farms (less than fifty acres) in order to provide their students with local, farm-fresh product that they could source. All of the school districts wanted as much local product as possible to try and improve their school food service programs and were willing to work with the local farmers that were available and responsive, even if that farmer did not have the capacity to become a regular vendor. The school food managers are interested in procuring local products because they believe that it is a better product and will seek to improve their school food service program however they can. These school districts were unable to facilitate the transportation or long-term storage of product which places the burden on the farmers to deliver.

3.3.2.4. *Connecting and Communicating.* The inability of the school districts to acquire sufficient volumes for regular purchases is closely related to the difficulties that transpired when the school districts attempted to identify and connect with local farmers. All of the school districts were frustrated with their ability to find and communicate with local farmers in their parish about procuring products from them of any scale. This lack of knowledge and connections with local farmers obviously hampers the ability of the districts to procure local products and might stem from a few possible factors (Gregoire and Strohbehn, 2002). The factors that possibly contribute to this could include: the farmers in these areas may not be interested in participating in farm to school and simply don't wish to develop schools as a market, a lack of understanding

of the districts' local procurement process, the districts use of ineffective communication channels, and the fear that the farmers may not be able to get an adequate price for their products. (Hartline et al., 2017).

It is reported that the most frequently reported obstacle to procurement was the “infrastructure needed to locate and coordinate the communication, planning, processing, tracking, and distribution of farm produce to institutions” (Vogt and Kaiser, 2006, pg. 248). One of the parishes held a farmer meet and greet event at their main office in order to explain how their local procurement process worked and to touch base with the local farming community. Additionally, the meeting was designed to help the farmers understand their responsibilities as a local vendor and to help the district see what products and quantities were available in their area. However, the sole participating farmer had already supplied the district with product for its recent pilot program, so no new connections were made, despite the best efforts of the school to advertise the meeting.

3.4. Limitations of Study

The limitations of this study include a positive bias towards farm to school and local procurement due to the fact that in order to examine how schools were conducting this process they most likely had to have some positive experiences and success in order to do so. This is not a representative sample of schools conducting or attempting to conduct farm to school programs in Louisiana due to the fact schools that had relatively moderate or little success with local procurement were unable to be located and added to this study due to time constraints. Additionally, only conducting these qualitative studies with three school districts is a small sample size compared to the total number of seventy school districts in the state.

3.5. Conclusion

This research using a multiple-case study shows how three parishes in Louisiana conducted farm to school along with the benefits and challenges that materialized during the local procurement process. The farm to school movement is steadily growing and it appears that the demand for local products is increasing in Louisiana. Foremost, the problems that have emerged appear to lie with the supply of local products; it is hard to initiate farm to school programs and procure local products without local farmers. Given that there is currently an increased interest in farm to school across the country and in Louisiana, further research is needed to examine and discern how to overcome the obstacles and to highlight the benefits of farm to school. In addition, other points of view need to be considered, such as conducting case studies or focus groups with school districts who haven't initiated farm to school programs, food processors and distributors, and farmers to find out what other obstacles are faced and to identify opportunities to benefit all parties involved in the farm to school movement. Needs assessments could be conducted with these groups to better understand what is required in order to move the farm to school movement forward.

Chapter 4.

Louisiana Harvest of the Month Impacts and Lessons Learned

4.1. Introduction

Nutrition education programs and interventions have been introduced into schools in order to increase knowledge and to promote good eating habits. Nutrition education research is common, but the Harvest of the Month (HOM) program is not a widely studied nutrition education intervention program. The purpose of HOM is to introduce and expose students to fruits and vegetables and improve their eating habits at an early age to promote a healthy lifestyle and prevent obesity later in life. Less than 15 studies have been conducted to study the effects of Harvest of the Month intervention programs. These studies focused on quantifying the impact of the program on student-centered objectives such as improving the knowledge, preferences, and attitudes of students towards fruits and vegetables. In 2005, the California Department of Public Health adopted Harvest of the Month and launched the program in a statewide effort to provide “standardized, cost-effective, replicable, and readily available” materials for nutrition education. The Harvest of the Month Program’s goals include: increasing access to fruits and vegetables for students and other members of the community, increasing consumers’ preference for fruits and vegetables, increasing consumption of local produce, increasing participation in daily physical activity, and to familiarize the state’s local produce and agriculture (California Department of Public Health, 2014). Nutrition education research is a broad field, but the Harvest of the Month program and its impacts have not been extensively studied with only 11 studies using the HOM program as its main intervention. Previous HOM research objectives included 16 objectives with the most shared ones being: fruit and vegetable consumption (64%) (Dave et al., 2015; LaChausse, 2017, McCarthy et al., 2012; Prelip et al., 2011; Prelip et al., 2012; Smith et al., 2015; Voorhees et al., 2011), attitudes and beliefs toward

fruits and vegetables (45%) (Evans et al., 2012b; McCarthy et al., 2012; Prelip et al., 2011; Prelip et al., 2012; Voorhees et al., 2011), fruit and vegetable preferences (36%) (LaChausse, 2017; McCarthy et al., 2012; Medina et al., 2017; Voorhees et al., 2011), knowledge regarding fruits and vegetables (27%) (LaChausse, 2017; Prelip et al., 2012; Smith et al., 2015), and self-efficacy to ask for, eat, and/or prepare fruit and vegetables (27%) (LaChausse, 2017; McCarthy et al., 2012; Medina et al., 2017).

Schools who completed the survey received Louisiana Harvest of the Month materials consisting of the thirteen Louisiana Harvest of the Month posters. These posters included the following fruits and vegetables: broccoli, cabbage, citrus, cucumber, eggplant, mushrooms, peppers, strawberry, summer squash, sweet potato, tomato, watermelon, and winter squash. Additionally, schools received stickers that promoted local food with captions like “I Tried It!”, “I Tried Local”, and “Official Taste Tester”. These stickers were used to incentivize and promote students trying new and local foods. Lastly, the schools received access to a cloud storage device account with resources and materials to support schools and the LAHOM program. The following resources and materials were provided: the LAHOM School Year Calendar, the LAHOM Participation Letter, a LAHOM Taste Test Guide, the LAHOM Toolbox, LAHOM Tracking Sheets, a Louisiana Produce Seasonality Chart, the LAHOM Toolkit, the LAHOM Lesson Compendium, a digital template of the stickers, newsletter content, monthly menu templates, serving line sign templates, social media images, coloring pages, LAHOM logos, and HOM 101 guides for Getting Started, Food Service, Educators, and Producers.

The current research objectives differ from previous Harvest of the Month research objectives and the original goals with which the HOM program was created. None of student-centered research objectives were included in this study. Instead this study’s objectives were 1) to ascertain how schools were sourcing and marketing their fresh fruits and vegetables to their

student populations; 2) to conduct an evaluation of the LAHOM program; and, 3) to determine if participation in the LAHOM program increased schools' farm to school activity. To our knowledge, no studies have been conducted to determine the program's impact on fostering farm to school activities in schools. This research study seeks to conduct an impact evaluation of the Harvest of the Month program.

Keywords

Farm to school, Impact Evaluation, Local Food Systems

4.2. Materials and Methods

4.2.1. Subjects Data Collection and Analysis. Qualtrics Survey Software was used to administer and collect data from the surveys to research how schools procured their food, and if they were sourcing local foods and participating in farm to school activities (i.e. gardening and nutrition education). The survey analysis was limited due to the low response rate for the post-survey (n = 5) and the small sample size (n = 20). The main analytical tool that could be used given the limitations of small sample size and poor response rate was a two-proportion z-test. The pre- and post-survey questions were segregated into questions that were in the pre-survey only, in both the pre- and post- surveys, and in the post-survey only. The alpha level for this study is set to .001 due the number of two proportion z-tests (39).

4.2.1. Population and Sample. An email list of public and private K-12 schools was obtained from the Louisiana Department of Education. School administrators were contacted about participating in the LAHOM program and all email addresses were verified through calls and emails to assure that as many schools as possible had the opportunity to participate in the program. Schools that wished to participate were asked to sign up and form Harvest of the Month teams of three to four people in order to integrate the program into the schools. The

participants in the program were HOM schools with evaluations completed by individual team leaders. HOM team leaders were from diverse leadership roles within the schools. Public and private schools throughout the state were solicited to participate in the LAHOM program. Team leaders were either teachers (38%), principals or assistant principals (24%), child nutrition supervisor (19%), a health coach (5%), a director of curriculum and instruction (5%), or a director of operations (5%). Of the forty-five individual schools that signed up for the Harvest of the Month program (as seen in Figure 1), 20 schools participated in the pre-survey; which is a response rate of 46.67%. The response rate for the post-survey was 20% with five schools filling out both surveys. The average student enrollment for schools that completed the survey was 396 students with a range of 49 students to 1600 students. The majority of the schools that completed the survey question involving student participation in the program had robust student enrollment participation. Most schools (80.00%) who answered the question selected that they had high (76 - 100%) participation in the Free or Reduced Lunch program while the rest of the schools (20.00%) indicated that they had moderately high (51-75%) participation. The small sample size along with a low response rate of 25% for the post-survey limits the reliability of the survey results.

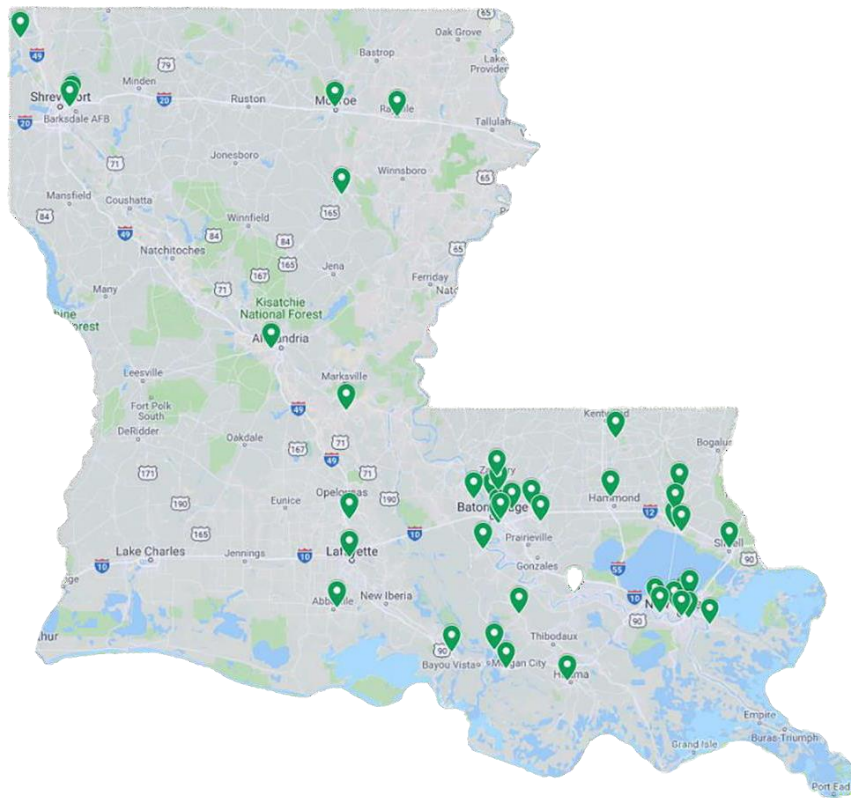


Figure 4.1. A map of schools participating in the Louisiana Harvest of the Month program. School location shown by the green indicator reveals that the program’s presence is mainly along the I-10 corridor. Program outreach could improve in the southwest, central, and northern parts of the state.

4.2.2. Instrument. The Louisiana Harvest of the Month research and impact evaluation involved the use of a pre-survey and post-survey (Appendix B). The pre-survey (containing 36 questions), the Louisiana Harvest of the Month Beginning of Year Survey, was administered in August 2018 at the beginning of the fall semester and the post-survey (containing 32 questions), the Louisiana Harvest of the Month End of Year Survey, was administered in April 2019 at the end of the spring semester. Additionally, these surveys were conducted to quantify and evaluate the effects of the LAHOM program on farm to school activities in schools across the state of

Louisiana. Lastly, the objective of the surveys was to determine how the program impacted farm to school activities, including whether they intend to continue with the Louisiana Harvest of the Month Program.

The first research objective, to ascertain how schools were sourcing and marketing their fresh fruits and vegetables to their student populations, can be operationally defined as the methods, sources, and local products that were procured by the schools before and during their first year of participation in the LAHOM. Examples of questions that work to this end include: “Does your school utilize salad bars?”, “Please indicate the number of farmers selling to your school via each avenue?”, “How is your food service operation managed?”, and “Which of these categories of food do you source locally?”.

The second research objective, the impact evaluation of the LAHOM program, is operationally defined as understanding the impacts of the program, how it was being used, and how to improve the program. Examples of questions that work towards this objective include: “Do you plan to continue with the Louisiana Harvest of the Month program? Why or why not?”, “What barriers have you experienced when beginning or participating in farm to school activities?”, and “How can we improve the Louisiana Harvest of the Month program to benefit you and your students more?”.

The third research objective, determining if participation in the LAHOM program increased schools’ farm to school activity (including local procurement), can be operationally defined as schools starting or expanding farm to school activities due to participation in the LAHOM program.(i.e. starting a school garden or expanding by including the current school garden into the school/class curriculum). One example of a question for this objective is “From the following list of activities, please indicate any farm to school activities that your schools

conduct and which year it began”. The options for this question include “yes”, “no”, “don’t know”, and “intend to start in the future”. Other questions include “Does your district, school or classroom have a garden?” and “If yes, is the garden used in as apart of any school curricula?”.

The surveys consist of original questions designed by the Louisiana Farm to School Team and questions adapted from the National Farm to School Web Survey (Joshi and Azuma, 2009) and the Survey of K-12 Food Service Providers in Michigan (Izumi et al., 2006)). Most of the questions required the participants to choose from qualitative closed-choice items such as yes/no and check all that apply. Other questions used an open-ended format to identify what the schools’ top fresh and prepared produce purchases were and to provide comments or feedback.

4.3. Results and Discussion

4.3.1. Pre-Survey Only Questions. Harvest of the Month program participants expressed a desire to participate in maintaining or using a school garden. Every participant responded “yes” to the question regarding their willingness to use or maintain a school garden if one were made available. This shows that these schools regarded school gardens as a viable avenue to start or expand their farm to school program. However, schools indicated that there were some issues with who would manage the garden. Two-thirds of (65%) of respondents said that they would be interested in having a staff member participate in a school garden training program, and the other portion (35%) answered the question with “maybe”. These results are consistent as school gardens require personnel, management, inputs, and time to maintain and some programs might not have the resources to create or sustain a school garden.

Schools were asked what agricultural and nutritional programs were at their individual schools as part of the survey. The schools responded: Head, Heart, Hands, and Health (4-H) program (70%), Future Farmers of America (FFA) program (10%), the Supplemental Nutrition

Educational Assistance Program (SNAP-Ed) (10%), Agriculture in the Classroom (AITC) (5%), and the Expanded Food and Nutrition Education (EFNEP) program (5%). The 4-H program could be a possible partner to work with the Louisiana Harvest of the Month program to promote a healthier lifestyle for children. Schools indicated that they had low levels of outside funding to support farm to school programs and initiatives. The majority of schools (80%) did not receive financial support from external sources, and they reported they did not hold any harvest, farm, or food system events to promote local agriculture or nutritional programs. It would be advantageous to the Louisiana Farm to School program to provide workshops to assist schools in the development of events to promote local food systems.

4.3.2. Pre-Survey and Post-Survey Questions. The alpha level for this study is set to .001 due the number of two proportion z-tests (39). There was no significant change in the use of salad bars (p-value of 1 is greater than alpha level of .001) , a la carte fruit and vegetable offerings (p-value of 1 is greater than alpha level of .001), or the use of vending machines with fruits and vegetables due to program intervention (p-value of .853 is greater than alpha level of .001)(Table 4.1). These three questions were tied to the first research objective regarding the LAHOM's effects on impacting local food procurement and how the food is marketed/utilized in schools. The results indicated as follows: 20% or more of schools in both of the surveys had salad bars as a part of their school food service programs (15% and 20% respectively, pre-post, respectively), sell fresh fruits and vegetables a la carte in their schools (10% and 20% pre-post, respectively), or sell fresh fruits and vegetables in vending machines at schools (5% and 20%, pre-post respectively). Salad bars have been used to promote student consumption of fruit and vegetables by providing students with a large variety of free-choice items. The case studies of school districts in Louisiana that procured local products mentioned that there were problems

with using salad bars due to the large amount of waste that can occur with free-choice salad bars.

The preferred method was to instead use boxed salads in order to give students the option to eat salads while cutting down on food waste (G. Hosea, personal communication).

Table 4.1. School food environment and access options for students from the Louisiana Harvest of the Month survey administered pre (fall 2018) and post (spring 2019). (using an alpha level of .001). Numbers in parentheses show the number answers given for each option divided by the total number of people who answered the survey question (percentages also reflect this). P-value must be less than alpha level of 0.001 to be significant

	Pre-Survey Yes	Pre-Survey No	Post-Survey Yes	Post-Survey No	P-value
Does your school utilize salad bars? (p-value = 1.0)	15% (3/20)	85% (17/20)	20% (1/5)	80% (4/5)	1.0
Do you sell fresh fruit and vegetables a la carte in your school? (p-value =1.0)	10% (2/20)	90% (18/20)	20% (1/5)	80% (4/5)	1.0
Do you sell fresh fruit and vegetables in vending machines in your school? (p-value =.853)	5% (1/20)	95% (19/20)	20% (1/5)	80% (4/5)	0.853

The survey results indicated that schools did not procure products from a large number of local suppliers (Table 4.2). In general, schools procure very little local products from any local suppliers (i.e. farmers, farmers’ markets, distributors/processors, grower cooperatives). A few schools sourced products from 1-5 farmers and none from 6 or more farmers. There was no significant change in the number of farmers or the use of each avenue due to participation in the LAHOM program. It was difficult to establish connections with local farmers and avenues in order to procure local products as shown in the LAHOM case studies. A local event was held by

a school district in order to network and make connections with local buyers, but only 1 grower and no new suppliers appeared at the event. An academic year is a short amount of time to make these connections and if the LAHOM team members at the school were not part of the school food service leadership this would make it inherently more difficult to establish business relationships with local farmers.

Table 4.2. The number of farms that LAHOM Schools sourced from. Results of the Louisiana Harvest of the Month survey administered pre (fall 2018) and post (spring 2019). Numbers in parentheses show the number answers given for each option divided by the total number of people who answered the survey question (percentages also reflect this). P-value must be less than alpha level of 0.001 to be significant.

Please indicate the number of farmers selling to your school via each avenue	Pre- Survey Yes (1-5 farmers)	Pre-Survey No (0 farmers)	Post-Survey Yes (1-5 farmers)	Post-Survey No (0 farmers)
Purchase directly from farmers	11.00% (2/18)	89.0% (16/18)	0.00% (0/3)	100.00% (3/3)
Purchase directly from farmers' market	5.26% (1/19)	94.74% (18/19)	0.00% (0/3)	100.00% (3/3)
Purchase through distributors/processors who buy from local farmers	18.75% (3/16)	81.25% (13/16)	33.33% (1/3)	66.67% (2/3)
Other	7.70% (1/13)	92.30% (12/13)	0.00% (0/3)	100.00% (3/3)

In general, the schools' procurement of different categories of local products was relatively low (Table 4.3). Local products acquired by schools were fresh produce (35% and 40% pre-post, respectively, p-value = 1.0), dairy and eggs (15% and 60%, pre-post, respectively, p-value = 0.128), bakery items (5% and 60%, pre-post, respectively, p-value = 0.020), meats and entrees (5% and 20%, pre-post, respectively, p-value = 0.853), canned items (0% and 20%, pre-

post, respectively, p-value = 0.444), and beverages and water (0% and 0%, pre-post, respectively, p-value = N/A due to no one procuring local beverages and water locally). This data set is related to the first research objective of ascertaining how and what local foods schools are procuring locally. All of these p-values were greater than the alpha level of 0.001 so they aren't significant. The sample size of 20 possible surveys for the pre-survey and the small sample size of five for the post-survey limited the survey analysis. There were no statistically significant changes in the acquisition of locally sourced items. This is once again to the small sample size and low response rate for the post-survey would suggest that these changes may not be reliable.

Table 4.3. Categories of local food products and how much they were procured pre- and post-survey by LAHOM participant schools from the Louisiana Harvest of the Month survey administered pre (fall 2018) and post (spring 2019). Numbers in parentheses show the number answers given for each option divided by the total number of people who answered the survey question (percentages also reflect this). P-value must be less than alpha level of 0.001 to be significant.

	Pre-Survey Yes	Pre-Survey No	Post-Survey Yes	Post-Survey No	P-value
Fresh produce	35.0% (7/20)	65.0% (13/20)	40.00% (2/5)	60.0% (3/5)	1.0
Dairy and eggs	15.0% (3/20)	85.0% (17/20)	60.00% (3/5)	40.0% (2/5)	0.128
Bakery items	5.0% (1/20)	95.0% (19/20)	60.00% (3/5)	40.0% (2/5)	0.020
Meats and entrees	5.0% (1/20)	95.0% (19/20)	20% (1/5)	80.0% (4/5)	0.853
Canned items	0.0% (0/20)	100.0% (20/20)	20% (1/5)	80.0% (4/5)	.444
Beverages and water	0.0% (0/20)	100.0% (20/20)	0.0% (0/5)	100.0% (5/5)	N/A

There was no significant change (p-value =1, which is greater than alpha level of .001) in the manner of management the schools used to manage their food service operations or the

purchasing the majority of their produce from a primary vendor (data not shown, related to research objective 1). There was likely no need to change the management of the cafeteria in order to accommodate the procurement of local foods. Additionally, the majority of schools (70% pre-survey and 80% post-survey) had a primary vendor from whom they purchased most of their produce. Most of the schools' pre-survey (over 80%) did not procure fresh produce from sources such as cooperatives/food hubs (p-value = 1, which is greater than alpha level of .001), farmers (p-value = 1, which is greater than alpha level of .001), school gardens (p-value = 0.878, which is greater than alpha level of .001), or the Department of Defense Fresh program (p-value = 0.682, which is greater than alpha level of .001). There were no significant impacts of the LAHOM in regard to research objective 1 for these questions. Most of the schools (85%) procured fresh produce from their primary vendor (p-value = .035, which is greater than alpha level of 0.01). This suggests that it is easier for school food service programs to procure all of their fresh produce from one source instead of managing multiple accounts in order to acquire local products. In addition, eighty-five percent and eighty percent of the schools had all of their meal preparation on site pre- and post-survey, respectively (p-value = 1, which is greater than alpha level of 0.001). The LAHOM program had no impact on changing these methods of how schools managed and procured their local foods (research objective 1).

Participation in the Louisiana Harvest of the Month program didn't significantly impact the types of restrictions that schools had in their wellness policies (i.e. restrictions on what kinds of foods are allowed at schools or foods that can be brought to the school by the students)(data not shown, research objective 1). Team participation in the Louisiana Harvest of the Month program did not significantly impact the involvement of team members in other committees related to wellness, nutrition, or other food service issues.

The Louisiana Harvest of the Month program didn't significantly affect the schools' participation, introduction, or expansion of other farm school activities (research objective 3) such as purchasing food from local producers (p-value = .205, which is greater than alpha level of 0.001), having a school garden (p-value = 0.480, which is greater than alpha level of 0.001), incorporating school garden produce into cafeterias (p-value = 0.724), which is greater than alpha level of 0.001), composting (p-value = 1, which is greater than alpha level of 0.001), conducting in-class nutrition education (p-value = 1, which is greater than alpha level of 0.001), offering out of classroom learning opportunities (p-value = 0.884, which is greater than alpha level of 0.01), Harvest of the Month program participation (p-value = 0.05, which is greater than alpha level of 0.001), and other nonspecific farm to school activities (data not shown). These activities are related to research objective 3 and didn't significantly impact farm to school activities by participating in the LAHOM program.

Participant schools ranked their top five fresh and processed produce in both the pre- and post-survey. Each product was scored on a sliding scale with the number one product receiving five points and the fifth most popular product scoring one point. The top five fresh produce products in the pre-survey (with composite numbers shown) were apples (49), oranges (37), bananas (29), tomatoes (18), and lettuce (15). The top five fresh produce products in the post-survey were strawberries (11), apples (10), cucumbers (5), lettuce (4), and bananas (3). Oranges, tomatoes, cucumbers, and strawberries were part of the LAHOM poster set and calendar at the time these schools participated in the surveys. The top five processed products in the pre-survey were shredded lettuce (43), baby carrots (33), salad mix (17), chopped spinach (14), and an onion-pepper blend. The top five processed products in the post-survey were chopped carrots (5),

green beans (4), shredded lettuce (4), and a fruit cocktail (3). There were no significant differences in the results (research objective 1).

Schools were asked if they had school wellness committees in order to ascertain how much the team members at participant schools knew about their schools (research objective 1). All schools are mandated by law to have a wellness committee yet twenty percent of schools in the pre-survey and sixty percent of schools in the post-survey indicated they did not have a wellness committee. This is likely due to incorrect information gathering on team members' part or maybe due to the makeup of the team members and leaders' and the absence of school cafeteria leadership serving on LAHOM teams. This could also explain the lapses in data that were common throughout the survey results. LAHOM team members possibly did not have the time to gather some of the information needed for the survey or did not have access to the necessary information. Future surveys on the LAHOM could require that a member school cafeteria leadership be a team member or the leader in order to facilitate information gathering and garner the necessary support to complete the surveys fully.

There were no significant changes in LAHOM participant schools' wellness policies (research objective 2) for restriction on food and/or beverages in vending machines (p-value = 0.465, which is greater than alpha level of 0.001), soda bans on campus (p-value = 0.412, which is greater than alpha level of 0.001), specifics on allowable competitive foods (p-value = 0.368, which is greater than alpha level of 0.001), specifics on foods allowed in fund-raisers or class parties (p-value = 0.271, which is greater than alpha level of 0.001), specifics on foods children can bring to school (p-value = 1, which is greater than alpha level of 0.001), and an emphasis on locally grown food (p-value = 0.878, which is greater than alpha level of 0.001) (Table 4.4). In addition, most (85%) schools had no other committees that addressed these areas. Furthermore,

only forty-five percent of pre-survey participants and none of the post-survey participants were included on any of these committees. If the team members are not in leadership roles in the cafeteria it is unlikely to lead to changes in these areas. Moreover, the timeframe of a year is a short amount of time to change school policy when the groundwork for the program is being laid.

Table 4.4. Changes in types of restrictions in schools’ wellness policies in LAHOM participant schools from the Louisiana Harvest of the Month survey administered pre (fall 2018) and post (spring 2019). Numbers in parentheses show the number answers given for each option divided by the total number of people who answered the survey question (percentages also reflect this).P-value must be less than alpha level of 0.001 to be significant.

	Pre- Survey Yes	Pre-Survey No	Post-Survey Yes	Post-Survey No	P-value
Restriction on food and/or beverages	70.0% (14/20)	30.0% (6/20)	40.0% (2/5)	60.0% (3/5)	0.465
A soda ban on campus	30.0% (6/20)	70.0% (14/20)	0.0% (0/5)	100.0% (5/5)	0.412
Specifics on allowable competitive foods	55.0% (11/20)	45.0% (9/20)	20.0% (1/5)	40.0% (2/5)	0.367
Specifics on foods allowed for fund-raisers or class parties	60.0% (12/20)	40.0% (8/20)	20.0% (1/5)	80.0% (4/5)	0.271
Specifics on foods children can bring to school	50.0% (10/20)	50.0% (10/20)	60.0% (3/5)	80.0% (4/5)	1.0
An emphasis on locally produce/grown food	15.0% (3/20)	85.0% (17/20)	0.0% (0/5)	100.0% (5/5)	0.820

The farm to school activities that the surveys focused on included procurement of food from local farmers, incorporating school garden produce into the menu, composting programs, in-class nutrition education, offering in-class snacks using local products, offering out-of-classroom learning opportunities such as tours of farms and farmers' markets, conducting Harvest of the Month programs, and other farm to school related activities. There was no significant effect on any of the LAHOM schools conducting farm to school activities outside of using the Harvest of the Month program (data not shown). This can be attributed to the lack of promotion of the other activities by the LAHOM program and the short time span of a year to implement and conduct multiple farm to school activities. For example, future efforts could include expanding the LAHOM program into helping participant schools start and maintain school gardens to facilitate the incorporation of fresh produce into the classroom and cafeteria.

As mentioned previously, it may be beneficial for school gardens to be an integral component of the LAHOM programming. Pre-survey results indicated that half of the participant schools had school gardens while post-survey results indicated that eighty percent of participant schools had school gardens. These results are not significant and cannot be considered indicative of an increase in school gardens due to the low participation in the post-survey. Seventy percent of the school gardens in the pre-survey were used as part of any school curricula with seventy-five percent of schools in the post-survey also using their school gardens in their curricula.

4.3.3. Post-Survey The post-survey, with additional questions, sought to evaluate the impact of the Louisiana Harvest of the Month program. These questions are all related to research objective 2 (trying to determine the impacts of the Louisiana Harvest of the Month program). Such questions were only on the post-survey after the schools had participated in the program over the 2018-2019 academic school year. All five of the post-survey respondents

indicated that they planned to continue using the Louisiana Harvest of the Month program. Their comments as to why they felt this way included “students loved it”, “the HOM calendar will guide the recipes I present to students and good resources”, and “ability to incorporate into health lessons”.

The Louisiana Harvest of the Month program materials that were used by program participants were the Louisiana Harvest of the Month posters (80%), the Louisiana Seasonality Chart (60%), the LAHOM coloring pages (40%), the recipes for cafeteria and home use (40%), and the Louisiana Harvest of the Month Toolkit (20%). None of the participants used the LAHOM Lesson Compendium. It appears that the program participants sought to use and promote the program (along with healthy foods and healthy eating) without integrating the lessons in their classroom. Program participants were then asked about their intention to incorporate these program materials into their LAHOM program in their future. The results indicated that each school intended to incorporate all of the LAHOM program materials that they had not previously used in their program.

All of the post-survey participants (5) indicated that they would recommend the LAHOM program to other schools. Participants were then asked to describe the perceived benefits of participating in the LAHOM program. Their comments included, “it gave students new knowledge regarding LA produce and gave students a preview of things they would grow in the school garden”, “students were able to try different crops that they might not have at home”, “it is a great way to expose kids to different types of food and gives them a choice in what they want to eat”, and “students were able to be exposed to new foods and learn about Louisiana produce.” Their comments reveal that the program is viewed as a tool to promote awareness of local fruits and vegetables.

Program participants did not express negative opinions when asked about what improvements could be made to the program. They were interested in having training to help improve their use of the program and its materials via professional development sessions. The perceived barriers to farm to school activities noted by program participant included time constraints (60%), funding (40%), rules and regulations (20%), lack of knowledge or expertise (20%), cafeteria support (20%), and “lack of a dedicated agricultural teacher” (20%). These issues could be addressed in conjunction with professional development sessions.

4.4. Conclusions and Future Research Considerations

The findings and lessons from these surveys can help direct the course of future research for the Louisiana Harvest of the Month program. The Louisiana Harvest of the Month program appeared to be a successful introduction for schools to familiarize themselves with farm to school and local procurement practices. The survey results were limited and inconclusive due to the limited participation in the post-survey as well as the low number participating initially. It would have been advantageous if more schools could have also completed the pre-survey and provided a larger pool to sequester data from. Previous researchers’ surveys included incentives to increase participation; this was not provided with our study. The low participation or absence of cafeteria leadership on LAHOM teams probably affected survey results and having incentives for their participation to be on LAHOM teams in order to complete the survey should be beneficial for future research. The use of focus groups or individual interviews with schools using the LAHOM program could be advantageous in order to be effective in evaluating the program due to the immediacy of the information gathering.

**APPENDIX A.
CHILD NUTRITION DIRECTOR INTEVIEW
QUESTIONNAIRE**

Appendix A. Child Nutrition Director Interview Questionnaire
1. Think back to when you/your school first became involved in local procurement from local producers. What were your first impressions when you/your school first began purchasing local food? Was it how you expected it to be?
2. How do you define “local” and how did you establish this definition?
3. What is your method of finding sources of local food? Searching online, using state resources (such as Louisiana MarketMaker), producer associations, USDA resources, talking to community members, using social media, etc?
4. Do you ever use a request for information (RFI) and if so, what for?
5. How do you accommodate local product into your school menus?
6. How do you adjust your school food budget for purchasing local food? Does it cost more or less?
7. Can you walk me through the process from start to finish of deciding you wanted to purchase local to the local food ending up in your school? a. Walk me through how you used the bidding process?
8. How do you write specifications to identify the local products you want?
9. How do you communicate your intentions to purchase local in your solicitation process?
10. Do you use an invitation for bid (IFB) or a request for proposal (RFP) in your formal procurement process? If so, what is your evaluation criteria for RFP?

Table cont'd

Appendix A. Child Nutrition Director Interview Questionnaire

11. Suppose that I was a producer that approached you about selling your school(s) local product.
- What are your vendor qualifications?
 - How important is your consideration of price?
 - How important is your consideration of the quantity that you could or would deliver?
 - How important is your consideration of their certifications such as organic certification, GAP certification, etc.?
 - How did you work with the farmer to get the produce transported to your schools? By delivery truck? Did you pick it up?
 - How did you determine that the product was safe? How did you bring this concern up to the farmer?
 - Are there any other evaluation qualifications?
12. Have you ever used geographic preference to target local? If so, what was your experience?
- What is your evaluation criteria for geographic preference?
 - How did you determine much preference is given?
 - How will it be applied i.e. dollar value, percentage, point system, other.
13. What were your motivations (goals) for buying local product for your schools?
14. How has serving local food impacted meal participation in your school?
15. What changes, if any, have you had to make in order to bring in local product for your schools in terms of processing, marketing, or distributing the food to schools?
16. What have been your experiences working with local farmers?
- What were some of the benefits and challenges? Please describe in detail.
17. Are there policies at the school, district, local, state or federal level that affect procuring local products from farmers?
18. Do you use any programs or grants to support the purchase of local produce? For example, DoD Fresh or USDA Fresh Fruit and Vegetable Program.
19. How do you see local foods fitting into your school in the future?
- How often do you plan on procuring local food? Is there local product that you're not currently procuring that you would like to receive in the future?
 - If a grower can't produce a minimal amount of product for each of your schools in your district would you still procure from that source? Is there a minimal amount for 1 school or all schools that you would require?

Appendix A. Child Nutrition Director Interview Questionnaire

20. What new experiences did your staff have with the intake of local foods?

21. What new skills, if any, did your staff need in order to handle and cook local foods?

22. Having gone through the process of procuring local food, what would you have done differently during the procurement process (if anything)?

23. Have you done anything new in response to your prior experiences with local procurement?

24. Is there anything else that would be helpful for us to know about your experiences in working with local farmers?

25. Is there anything else that would be helpful for YOU to know about procuring local foods?

APPENDIX B.

LOUISIANA HARVEST OF THE MONTH SURVEYS: PRE AND POST

I. Louisiana Harvest of the Month Pre-Survey (Beginning of Year Survey – 2018-2019 Evaluation)

Instructions

Thank you for registering for the Louisiana Harvest of the Month (HOM) program! We appreciate your commitment to supporting healthy children and learning about Louisiana agriculture.

As the HOM Team Leader for your school or program, we need your help in completing this required survey. Please complete this Beginning of Year Survey at http://lsu.qualtrics.com/jfe/form/SV_0xgGiF2wBZmIvaJ.

Need Assistance? Crystal R. Besse

Louisiana Farm to School Director clrobertson@agcenter.lsu.edu

(225) 578-1037

www.lsuagcenter.com/louisianafarmentoschool

Before completing this survey, consult with your HOM team members (i.e. food service manager, administrator, educators) to obtain accurate answers to the questions. Teams can use this printable version to gather answers and the Team Leader/Contact should submit the survey online at http://lsu.qualtrics.com/jfe/form/SV_0xgGiF2wBZmIvaJ.

Please submit one survey per participating school or program site.

If you have any questions or need assistance completing this survey, please contact Crystal R. Besse at clrobertson@agcenter.lsu.edu or (225) 578-1037

Q1 Your information

Your Name _____

Your Title _____

Name of your school _____

Q2 Please indicate the student enrollment number for your school. If you are a teacher, please provide student enrollment for your classroom as well.

School _____

Classroom _____

Q3 Please indicate the percentage of student enrollment participation in the Free or Reduced Lunch Program (check one).

Q4 During the school year (August through May), approximately how many reimbursable meals are served each day?

Number of breakfasts served: _____

Number of lunches served: _____

Q5 How many snacks are served each day? _____

Q6 What is the price charged for a full-price lunch in your school?

Cost _____

Q7 Does your school utilize salad bars?

- Yes
- No

Q8 Please indicate the number of farmers selling to your school via each avenue

	Number of farmers			
	Check here if you use this avenue, but don't know the farmers of farmers involved	0 farmers	1-5 farmers	6+ farmers
Purchase directly from farmers	o	o	o	o
Purchase directly from farmers' market	o	o	o	o
Purchase through distributors/processors who buy from local farmers	o	o	o	o
Purchase from grower cooperatives	o	o	o	o
Other	o	o	o	o

Q9 How is your food service operation managed?

- Self-Managed
- Contract Managed
- Please provide the name of the management company if you have a contract _____

Q10 Which of these categories of food do you source locally? If you don't currently source food locally select N/A.

- Fresh produce (fruits and vegetables)
- Dairy products and eggs
- Bread; Bakery items; Grains
- Meats and entrée options
- Canned items
- Beverages and water
- N/A

Q11 For the food categories you checked as sourcing locally on the previous question, what is the Total Annual Budget (SY 2017-18) for these categories? ONLY PROVIDE THIS INFORMATION FOR THE CATEGORIES YOU CHECKED ON THE PREVIOUS QUESTION.

- Total Food
- Fresh produce (fruits and vegetables)
- Dairy products and eggs
- Bread, Bakery items, Grains
- Meats and entrée options
- Canned items
- Beverages and water
- N/A

Q12 As per SY 17-18 budget indicated in the previous question, please estimate amount spent on LOCAL product. Check N/A if you do not buy this product locally.

	1-10%	11-20%	21-30%	31-40%	More than 40%	N/A
Total Food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fresh produce (fruits and vegetables)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dairy products and eggs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bread, Bakery items, Grains	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meats and entrée options	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Canned items	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beverages and Water	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q13 Do you sell fresh fruit and vegetables a la carte in your school?

- Yes
- No

Q14 Do you sell fresh fruit and vegetables in vending machines in your school?

- Yes
- No

Q15 Do you have a primary vendor from whom you purchase a majority of your produce?
o Yes
o No

Q16 What is the name of your primary vendor? _____

Q17 From what other sources does your district or school purchase or receive fresh fruits and vegetables? (Please select all that apply.)

- Cooperatives or food hub
- Farmer/Producer
- School garden
- DoD Fresh Producer
- Other
- My school does not purchase fresh fruits and vegetables from any other sources besides my primary vendor

Q18 In your school, is all, part, or none of the meal preparation on site?

- All of the meal preparation on site
- Part of the meal preparation on site
- None of the meal preparation on site

Q19 What were the top 5 FRESH PRODUCE purchases you made in 2017-18? (i.e. whole potatoes, whole apples, fresh strawberries, etc.)

- o1. _____
- o2. _____
- o3. _____
- o4. _____
- o5. _____

Q20 What were the top 5 PREPARED PRODUCE purchases you made in 2017-18? (i.e. shredded lettuce, peeled carrots, etc)

- o1. _____
- o2. _____
- o3. _____
- o4. _____
- o5. _____

Q21 Does your school have a Wellness Committee?

- Yes
- No

Q22 Does your school's wellness or nutrition policy include... (please check all that apply)

- Restriction on food and or beverages in vending machines
- A soda ban on campus
- Specifics on allowable competitive foods
- Specifics on foods allowed in fund-raisers or class parties
- Specifics on foods children can bring to schools
- An emphasis on locally produced/grown foods

Q23 Are there other committees working on nutrition and food service issues? (e.g. parent association)

- Yes
- No

Q24 Are you included in any of these committees?

- Yes
- No

Q25 From the following list of activities, please indicate any farm to school activities that your school conducts and which year it began.

	Yes	No	Don't Know	In which year did the activity begin?
A. Purchasing food from local farmers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B. Incorporating school garden produce in cafeteria or for use in classroom taste tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
C. Composting/waste management programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
D. Conducting in-class nutrition education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
E. Offering in-class snacks using local products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
F. Offering out-of-classroom learning opportunities such as farm and farmers market visits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
G. Conducting Harvest of the Month Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
H. Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Q26 Does your school or classroom have a school garden?

- Yes
- No

Q27 Is the garden used in as a part of any school curricula?

- Yes
- No
- Not sure

Q28 Would you participate in maintaining or using a school garden as a learning tool if one were made available?

- Yes
- No

Q29 Would you be interested in having a staff member participate in a school garden training to learn more about creating and/or maintaining a school garden and ways to incorporate school gardening into the curriculum?

- Yes
- Maybe
- No

Q30 Are any of the following programs currently offered at your school?

- 4H
- FFA
- Ag in the Classroom
- EFNEP nutrition education
- Snap-Ed nutrition education
- No, none of these programs are offered at our schools
- Don't know/Not sure

Q31 To your knowledge, are any farm to school activities (i.e. school gardens, nutrition education, agricultural education, or sourcing local foods, etc.) supported by external funding sources? These may include grants, contracts, and other monies received either directly by the school or by program partners. Please check sources from the list below:

- Federal Funds
- State funds
- Local government
- Private foundation
- Individual donors
- Local universities/colleges
- No external support received
- Other _____

Q32 Does your school hold any harvest, farm, or food system events? If yes, what sorts of activities are involved?

Yes

No

Activities: _____

Q33 How would you describe administrative support for purchasing local

products? _____

Q34 How would you describe school board support for purchasing local

products? _____

Q35 How would you describe community support for purchasing local

products?

Q36 We would like to provide your contact information and program details on the Louisiana Farm to School Website. We would also like to add your name to our mailing list.

I do consent to my name, contact and program information being featured on the Louisiana Farm to School website at <http://www.lsuagcenter.com/LouisianaFarmtoSchool>.

I do wish to receive periodic updates from the Louisiana Farm to School Program. We anticipate sending you periodic updates on farm to school events, networking, and funding opportunities in your region.

II. Louisiana Harvest of the Month Post-Survey (End of Year Survey – 2018-2019 Evaluation)

Instructions

Thank you for registering for the Louisiana Harvest of the Month (HOM) program! We appreciate your commitment to supporting healthy children and learning about Louisiana agriculture.

As the HOM Team Leader for your school or program, we need your help in completing this required survey. Please complete this End of Year Survey at http://lsu.qualtrics.com/jfe/form/SV_ba4caKxverzhoO1.

Need Assistance? Crystal R. Besse
Louisiana Farm to School Director cbesse@agcenter.lsu.edu
(225) 578-1037

www.lsuagcenter.com/louisianafarmtoschool

Before completing this survey, consult with your HOM team members (i.e. food service manager, administrator, educators) to obtain accurate answers to the questions. Teams can use this printable version to gather answers and the Team Leader/ Contact should submit the survey online at http://lsu.qualtrics.com/jfe/form/SV_ba4caKxverzhoO1.

Please submit one survey per participating school or program site.

If you have any questions or need assistance completing this survey, please contact Crystal R. Besse at cbesse@agcenter.lsu.edu or (225) 578-1037.

Q1 Your information

- o Your Name _____
- o Your Title _____
- o Your school or district _____

Q2 Please answer questions according to who you are representing. If you represent a school, please answer for your school and/or classroom, depending on the reach of your program. If you represent a district or group of schools, please answer for the entire district.

What group do you represent?

- o District
- o School
- o Classroom

Q3 Please indicate the student enrollment number for your reach. For example, if you work on the district level, please provide district numbers, and if you are a teacher, please provide student enrollment for your school and classroom.

- o District _____
- o School _____
- o Classroom _____

Q4 Do you plan to continue with the Louisiana Harvest of the Month program? Why or why not?

- Yes
- No
- Comment _____

Q5 How are you using the Louisiana Harvest of the Month program in your school or district? Please be as descriptive as possible.

- Louisiana Harvest of the Month Lesson Compendium
- Coloring Pages
- Louisiana Harvest of the Month Toolkit
- Recipes for Cafeteria and Home
- Louisiana Seasonality Chart
- LA HOM Posters
- Other _____

Q6 What materials in the future do you plan to add to your HOM program?

- Louisiana Harvest of the Month Lesson Compendium
- Coloring Pages
- Louisiana Harvest of the Month Toolkit
- Recipes for Cafeteria and Home
- Louisiana Seasonality Chart
- LA HOM Posters
- Other _____

Q7 Would you recommend the LA HOM program to others?

- Yes
- No _____

Q8 Please tell us about the benefits you found in participating in the LA HOM program.

Q9 What barriers have you experienced when beginning or participating in farm to school activities? (i.e. local procurement, school gardens, etc.)

- Time intensive
- Funding
- Rules and Regulations
- Lack of knowledge or expertise
- School support
- Cafeteria support
- Administrative support
- Local support
- Other _____

Q10 How can we improve the Louisiana Harvest of the Month program to benefit you and your students more?

Q11 Please indicate the percentage of student enrollment participation in the Free or Reduced Lunch Program for your school or district (check one).

District	<input type="radio"/> 1-25%	<input type="radio"/> 26-50%	<input type="radio"/> 51-75%	<input type="radio"/> 76-100%	<input type="radio"/> Not Applicable
School	<input type="radio"/> 1-25%	<input type="radio"/> 26-50%	<input type="radio"/> 51-75%	<input type="radio"/> 76-100%	<input type="radio"/> Not Applicable

Q12 During the school year (August through May), approximately how many reimbursable meals are served each day?

Number of lunches served:

Number of breakfasts served:

Q13 How many snacks are served each day? _____

Q14 What is the price charged for a full-price lunch in your school or district?

Cost _____

Q15 In your school, is all, part, or none of the meal preparation on site?

- All of the meal preparation on site
- Part of the meal preparation on site
- None of the meal preparation on site

Q16 Do you have a primary vendor from whom you purchase a majority of your produce?

- Yes
- No

Q17 If yes, what is the name of your primary vendor _____

Q18 From what other sources does your district or school purchase or receive fresh fruits and vegetables? (Please select all that apply.)

- Cooperatives or food hub
- Farmer/Producer
- School garden
- DoD Fresh Program
- Other: _____
- My school does not purchase fresh fruits and vegetables from any other source besides my primary vendor

Q19 How is your food service operation managed?

- Self-Managed
- Contract Managed
- Please provide the name of the management company if you have a contract: _____

Q20 Does your school or district utilize salad bars?

- Yes
- No

Q21 Do you sell fresh fruit and vegetables a la carte in your school?

- Yes
- No

Q22 Do you sell fresh fruit and vegetables in vending machines in your school?

- Yes
- No

Q23 What were the top 5 FRESH PRODUCE purchases you made in 2018-19? (i.e. whole potatoes, whole apples, fresh strawberries, etc.)

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

Q24 What were the top 5 PREPARED PRODUCE purchases you made in 2018-19?(i.e. shredded lettuce, peeled carrots, etc)

- o 1. _____
- o 2. _____
- o 3. _____
- o 4. _____
- o 5. _____

Q25 Which of these categories of food do you source locally? If you don't currently source food locally select N/A.

- Fresh produce (fruits and vegetables)
- Dairy products and Eggs
- Bread, Bakery items, Grains
- Meats and entree options
- Canned items
- Beverages and water
- N/A

Q26 Please indicate the number of farmers selling to your school or district via each avenue.

	Number of farmers			
	Check here if you use this avenue, but don't know the farmers of farmers involved	0 farmers	1-5 farmers	6+ farmers
Purchase directly from farmers	o	o	o	o
Purchase directly from farmers' market	o	o	o	o
Purchase through distributors/processors who buy from local farmers	o	o	o	o
Purchase from grower cooperatives	o	o	o	o
Other	o	o	o	o

Q27 Does your school have a Wellness Committee?

- o Yes

- No

Q28 Does your school's wellness or nutrition policy include... (please check all that apply) Restriction on food and/or beverages in vending machines

- A soda ban on campus
- Specifics on allowable competitive foods
- Specifics on foods allowed in fund-raisers or class parties
- Specifics on foods children can bring to school
- An emphasis on locally produced/grown food

Q29 Are there other committees working on nutrition and food service issues? (e.g. parent association)

- Yes
- No

Q30 Are you included in any of these committees?

- Yes
- No

Q31 From the following list of activities, please indicate any farm to school activities that your school conducts and which year it began.

	Yes	No	Don't Know	Intend to start in the future
A. Purchasing food from local farmers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Incorporating school garden produce in cafeteria or for use in classroom taste tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Composting/waste management programs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Conducting in-class nutrition education	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Offering in-class snacks using local products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Offering out-of-classroom learning opportunities such as farm and farmers market visits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Conducting Harvest of the Month Program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q32 Does your district, school, or classroom have a garden?

- Yes
- No

If yes, Is the garden used in as a part of any school curricula?

- Yes
- No
- Not sure

This completes the survey. Thank you for your time and dedication!

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