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# ASSESSING THE EDUCATIONAL NEEDS OF NEW AND BEGINNING URBAN FARMERS IN NEW ORLEANS, LOUISIANA

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### ABSTRACT

Targeted needs assessments are critical tools for extension educators in addressing the educational needs of clientele. Grow Louisiana, funded through the USDA Beginning Farmer and Rancher Development Program, offers educational and hands-on training to new and beginning farmers. The program, a partnership between cooperative extension and nonprofit agencies in southeast Louisiana, held its inaugural year in New Orleans, LA. A pre- and post-needs assessment was conducted to gauge participants' skills development and understanding of business planning and sustainable horticulture production. The pre-post assessment documented increased knowledge and skills development in key programmatic areas and led to a revised curriculum to better meet participant needs and a strategic program review.

### INTRODUCTION

Needs assessments are important tools available to extension educators that assist in identifying program needs and focusing resources in a way that allows them to serve their clientele efficiently and effectively. Needs assessments can be used in design, development, and delivery of programs (Seevers et al., 2007) and in program evaluation. Needs assessments gather information to assist professionals in making data-driven and responsive recommendations about how to solve problems (Rossett, 1995), or in the case of this study, how to better tailor a farmer training curriculum to meet the needs of a diverse participant group.

In late 2018, the Louisiana State University Agricultural Center (hereafter LSU AgCenter) was awarded a U.S. Department of Agriculture National Institute of Food and Agriculture (NIFA) grant (Award # 2018-70017-28597) to develop an educational program which focused on whole-farm planning, business skills development, and sustainable horticulture production for new and beginning farmers in the southeast region of Louisiana. New and beginning farmers are defined as individuals with no prior farming experience up to those with less than 10 years prior farming experience. The program brought together expertise from LSU AgCenter faculty and extension educators, non-profit organizations focused on food system development, and experienced farmers to provide a strategic mixed method approach to farmer training. The Grow Louisiana Beginning Farmer Training Program (Grow Louisiana) is the first cooperative extension-based program of its kind conducted by the LSU AgCenter in the southeast region of the state, focusing on the New Orleans, Lafayette, and Baton Rouge metropolitan areas.

The inaugural program year was 2019 and it was administered in New Orleans, LA beginning in January. New Orleans was selected as a host site for the inaugural year based on the emerging local food system interest in the area, the number of interested new and beginning farmers, existing urban farming activities, and synergies with local organizations focused on food system development. Orleans Parish (county), which encompasses the city of New Orleans, has 39 farms located on 529 acres, with the average farm size of 14 acres (USDA Census of Agriculture, 2017). A majority (75%) of the operations have less than 10 acres and another 15% between 10 and 50 acres. Major commodities, in terms of production acreage, include various high-value horticultural products such as vegetables, fruits, floriculture, and cut flowers/ greens making up for about 93% of the sales value. In terms of producer demographics, in Orleans Parish, approximately 60% of the producers are female, predominately white (54%) with a high percentage of new and beginning farmers (47%).

New and beginning farmer programs have been established at several land-grant universities, including Cornell University, Pennsylvania State University, University of Maryland, and Colorado State University. Programmatic activities have recognized the need for a holistic approach to tackle the needs of new and beginning farmers. Grow Louisiana is adding to the programmatic efforts at the state level to support new and beginning farmers with an emphasis on horticulture production, urban farming, and sustainable practices. Urban agriculture and its benefits have been the focus of several studies in sustainable food systems (Ackerman et al., 2014), urban communities (Hagey et al., 2012; Santo et al., 2016), food access (Kato, 2013), and food security (Siegner et al., 2018), among others. New Orleans provided the perfect opportunity for such a program in Louisiana. The New Orleans metropolitan area has a vibrant local food scene with a long-established nonprofit organization managing multiple weekly farmers markets, strong demand from restaurants and other direct marketing outlets for local food, a food policy council, as well as nonprofit organizations dedicated to training hobby gardeners and small to medium-scale market gardeners. However, there was a need to develop a more cohesive and comprehensive new and beginning farmer training program that is supported by science-based research and extension expertise.

This study focuses on changes in knowledge, experience, adoption of best practices, and skill level of new and beginning farmers as a result of participation in Grow Louisiana. These changes were assessed as a part of a pre- and post- needs assessment of program participants. Knowledge, experience, and adoption change were measured in business and production areas, including farm planning, business planning, risk management, and sustainability in production and farm management. Moreover, participant skill level change was assessed in a variety of learning topics, including business management, vegetable production, fruit production, and soil management. The outcomes were useful in the evaluation of the program's curriculum, which was used in a strategic review of the program and planning for subsequent trainings. The information can also be useful for the development of similar programs within and outside of Louisiana.

## PROGRAM DESCRIPTION & NEW ORLEANS COHORT

Grow Louisiana trains new and beginning farmers with less than ten years of experience on small to mid-size farms in Louisiana. With a focus on sustainable horticultural production, Grow Louisiana offers a year-long educational curriculum providing technical, business, and hands-on training as well as information exchange, mentoring, and networking. Educational sessions are offered in two parts, from January through March and then from September through November. Farm visits in the summer also complement the two-part curriculum. In addition to the needs assessment, an evaluation of the program is conducted at the program midpoint and upon program conclusion, providing an additional opportunity to assess the program's curriculum. The program was developed to tackle the educational and developmental needs of urban horticulture producers at the state-level and its programmatic efforts reached the southeastern region of the state.

The program emphasizes sustainable horticultural practices. Participants receive training in whole-farm planning based on the following principles: 1) sustainable agriculture and business practices, 2) resource optimization, 3) objective decision making, and 4) efficient work practices. The goal of the program is to increase participant knowledge through education and experience to support better decision-making, and the development of sustainable whole farm plans, and the development of skills and strategies to effectively manage risk.

Eighteen participants were admitted in the inaugural training cohort out of 49 applicants. The participants were primarily from Orleans Parish. Participants were selected via a competitive review process that gauged farming experience, access to farmable land, interest in sustainable horticultural practices, and potential for growth as a farmer. Participants included 12 women and six men. The average age of the group was 43, and it was comprised of eight individuals that identified as Black/African American, eight that identified as White/Caucasian, one identifying as Latino/Hispanic American, and one identifying as mixed race. Participants varied in terms of farming experience and access to land. Four participants indicated that they had established farms and five other participants indicated that they had access to farmable land but were not currently farming. Other participants were seeking land to start their farm businesses.

Program activities started in January 2019 with participants attending the annual Southern Sustainable Agriculture Working Group (SSAWG) Conference, where they participated in a pre-conference 1.5-day organic vegetable training course, a sustainable farm field trip, and regular conference sessions. The educational curriculum consisted of seven classroom-based sessions between January and March, three field days during the summer months, and eight classroom-based sessions between September and November. The initial spring session was a program orientation that took place prior to participant attending the SSAWG Conference. During the orientation, participants were introduced to the program curriculum and learning areas. A key element of the remaining spring sessions was to engage participants in discussions around the realities of farming, the business planning process, and farm risk identification. These initial classroom-based sessions included Soil Management 101, Vegetable Production 101, Fruit Production 101, Record Keeping 101, Business Planning and Marketing 101, and Food Safety 101. Farm visits during the summer allowed participants to interact with potential mentor farmers as well as provided hands-on opportunities for participants to learn specific production techniques. The fall sessions provided more technical information, addressed participant needs based on the pre-needs assessment, and the development of a farm business plan. These sessions included Business Planning 201, Financial Management 201, Farm Marketing 201, Soil Management 201, Vegetable Production 201, Fruit Production 201, and concluded with a session on Farm Resources. The last program session was an interactive session where each participant presented their farm business plan in the form of a business pitch.

Program emphasis was placed on effective communication and content delivery. The educational sessions were typically co-taught by an extension educator and an experienced farmer. Each meeting lasted on average three hours, and a single topic was covered in each session. In the first portion of each session, extension educators provided the background and groundwork for the topic and in the second portion farmers spoke from their own practical experience. The summer field days reinforced this work as participants visited established farms to further learn about on-farm experiences.

## METHODS

The project administrators, with the assistance of an independent evaluator, developed a pre-post training needs assessment instrument following resources made available by several non-profit organizations that focused on new and beginning farmer development. Additionally, Pritchard and Polishuk (2018) was used as a guide to ensure important topics were covered. Topics addressed by the assessment were selected to complement the program's educational curriculum. Participants rated their knowledge, skill, or experience related to several topics including, farm planning, business planning, as well as a variety of sustainable horticulture practices. Participants were also asked to rate their skill level for various learning objectives, including business management, vegetable and fruit production, and soil management.

Participants completed a paper version of the assessment in-person prior to the beginning of the program and upon completion. The data was collected and assessed by the project evaluator, who served as an unbiased third-party. The needs assessment allowed the evaluation of the topic areas included in the program's curriculum and identification of future training areas. To analyze the statistical difference between the pre- and post- needs assessments, a paired t-test was used.

## RESULTS

Results were analyzed by educational area focus. For each area of the instrument, a short definition was provided and subtopics by area were introduced.

### ***Farm and Business Planning***

Participants were asked to indicate whether they had a 'Farm Plan', which was defined as a roadmap to start-up, profitability, and growth of a farm business. The pre-assessment was completed by 18 participants and the post-assessment by 16 participants. Out of the 18 participants, only three had a business plan

(16%) prior to participating in the program. By completion of the program, 12 out of 16 participants had a farm plan (75%). The results presented in Table 1 are based on the 15 participants that completed both the pre- and post-assessments. There was a significant change in perceptions regarding the participants' knowledge on making a farm plan, as measured on a three-point Likert scale of low (1), medium (2), and high (3). Additionally, there was a significant change in perceptions regarding the importance of completing a farm plan, as measured on a three-point Likert scale of not important (1), somewhat important (2), and very important (3). While not significant, responses also gave a better understanding of participants' ability to make a farm plan. Perceptions on the importance of having a farm plan related to the successful operation of a farm business were slightly lower, however, not statistically significant.

**Table 1.** Participant response pre- and post-program for farm planning needs.

Farm Planning Statements	Mean Pre-	Mean Post-	Paired t-test p-value
How would you rate your knowledge about making a Farm Plan? <sup>a</sup>	1.467	2.33	0.004***
How would you rate your ability to make decisions about making a Farm Plan? <sup>a</sup>	2.067	2.333	0.301
How important do you think completing a Farm Plan is? <sup>b</sup>	3.000	2.467	0.006 ***
How important do you think a Farm Plan is to the success of your business? <sup>b</sup>	3.000	2.867	0.164
Notes: Statements vary by knowledge, ability, and importance. Scales for each statement are reported below.			
a. Scale used: 1-low, 2-medium, 3-very high			
b. Scale used: 1-not important, 2-somewhat important, 3-very important.			
Significant at the 1% (***), 5% (**), and 10% (*) level, respectively			

Next, participants were asked to indicate whether they had a 'Business Plan', which was defined as a formal written document containing farm business goals, the methods on how these goals can be attained, and the time frame within which these goals need to be achieved. Out of the 18 participants, only two had a business plan (11%) prior to participating in the program. By completion of the program, 12 out of 16 participants had a business plan (75%). Table 2 presents information on business planning skills and tools for the 15 participants that completed both the pre- and post-assessments. Participants responded to a three-point Likert scale of no experience (1), some experience (2), and very experienced (3). There was a significant change in writing and updating a business plan, which was a program deliverable. There were also significant changes reported related to usage of both Quickbooks and Veggie Compass software, both of which provide electronic financial and farm management capabilities.

**Table 2.** Business planning needs as perceived by participants pre- and post-program.

Business Planning Statements	Mean Pre-	Mean Post-	Paired t-test p-value
Writing/updating a business plan.	1.533	2.867	0.000***
Record keeping skills	2.333	2.133	0.189
Financial management knowledge to prepare and support your farm plan	1.733	2.333	0.003***
Using Microsoft Excel (or similar program) to manage farm information	1.933	2.133	0.334
Using Quickbooks (or a similar program) to manage your finances	1.466	2.143	0.002***
Using a crop diversification software program such as Veggie Compass	1.000	1.929	0.002***
Using Veggie Compass to understand overhead, depreciation and marketing.	1.000	1.214	0.082*
Notes: Scale used: 1-no experience, 2-some experience, 3-very experienced.			
Significant at the 1% (***), 5% (**), and 10% (*) level, respectively			

### **Risk Management**

Participants were assessed on their level of comfort managing several areas of farm risk, including production, finances, marketing, institutions, and human. While the subject of risk management was not directly covered as a part of the program's curriculum, these five areas of farm risk were indirectly woven into

related training topics. To assess comfort managing risk, a Likert scale of no experience (1), some experience (2), and very experienced (3) was used. In all categories, there was a significant positive change after completion of the program with marketing being the risk category having the highest numerical mean difference (0.87\*\*\*). Participants also reported having either no to some experience in human risk related to managing health and well-being of staff members and labor supply on the farm.

Participants also ranked sources of risk on their farm, in the areas of production, marketing, financial, institutional, and human from high (1) to low (5) in terms of level of risk. Figure 1 presents information on the top risk areas from the pre- and post-assessments. It was noted that participants who ranked human risk as highest priority in the pre-assessment continued to rank it highest in the post-assessment. Figure 2 presents changes in comfort managing risk based on average scores. Production risk was ranked as the highest priority in both the pre- and post-assessments, followed by human risk. Marketing and financial risk were ranked third and fourth in the pre-assessment, respectively, and these rankings were reversed in the post-assessment. Institutional risk was ranked last for both the pre- and post-assessments. There were no statistical differences in the overall risk ranking.

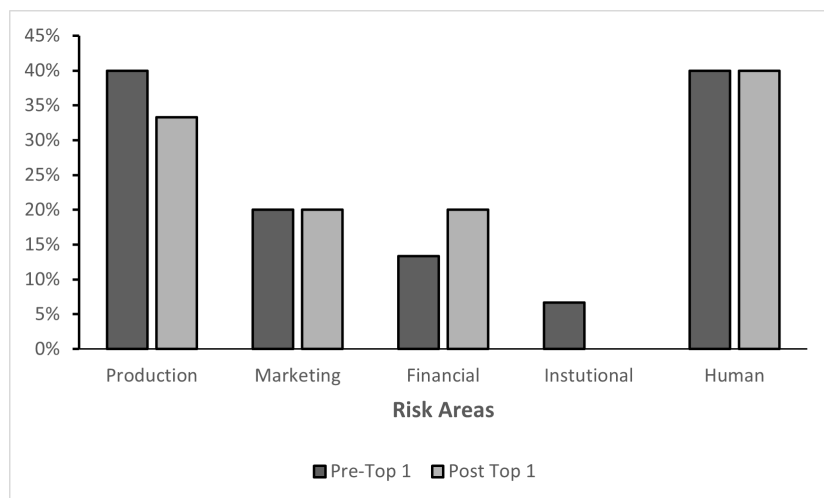


Figure 1. Participant response (percent) in pre- and post-assessment indicating their top risk area (n=15).

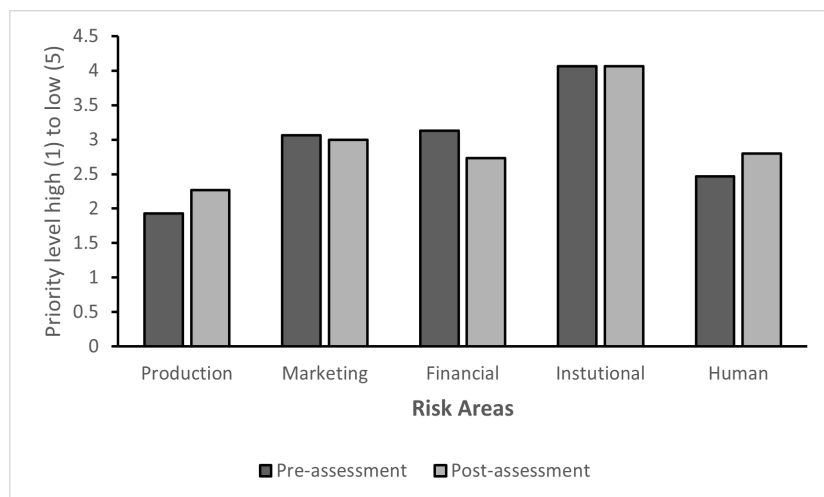


Figure 2. Participant response in pre- and post-assessment indicating changes in comfort managing risk (n=15).

**Sustainability**

The assessment also gauged the experience of participants related to a variety of sustainability topics. These topics included production, marketing, and business management, given the vast nature of sustainability related to farm business and production practices. Participants were provided a general overview of sustainable horticulture at the start of the program with the goal of participants understanding these practices as a means to provide farm profitability, promote environmental stewardship, and enhance quality of life for farm families and communities. Individual topics were presented that related directly to sustainable horticulture and individual farm practices and operations. Participants rated their experience using a three-point Likert scale of no experience (1), some experience (2), and very experienced (3). Table 3 presents results related to sustainability topics for the 15 participants that completed both the pre- and post- assessments. In most cases, there was a significant positive increase in experience related to sustainability topics. Participants had a higher appreciation for most of the sustainability topics at the end of the program with the exception of natural resources, quality of farm products, personnel, waste management, and product or business diversification.

Table 3. Participant pre- and post-program assessment of sustainability topics.

Sustainability Statements	Mean Pre-	Mean Post-	Paired t-test p-value

Crop diversity	1.533	2.400	0.000***
Organization of farm space	1.667	2.400	0.001***
Agricultural practices (fertilizers, pesticides, management of livestock)	1.667	2.267	0.003***
Natural resources (soil, water and organic matter management)	1.733	2.000	0.164
Renewable energy sources	1.667	2.133	0.004***
Quality of farm products	1.533	1.800	0.262
Supply chain activities	1.333	2.200	0.001***
Personnel (sustainability of personnel)	1.600	1.733	0.433
Waste management	1.733	1.867	0.610
(Market) value of your products	1.400	2.200	0.003***
Farm's ability to generate income	1.400	2.400	0.000***
Farm's ability to sustain independence	1.400	2.067	0.003***
Diversification of your products and business	1.533	1.933	0.082*
Notes: Scale used: 1-no experience, 2-some experience, 3-very experienced.			
Significant at the 1% (***) , 5% (**), and 10% (*) level, respectively			

### Learning Areas

In the final part of the assessment, participants were asked to assess their skill level related to four areas of farm management: business management, vegetable production, fruit production, and soil management. Self-assessments were completed using a scale of high skill (1) to low skill (5). A decrease in numeric value implies a positive change in skill level. The results indicate that all the business management learning objectives, except for direct marketing, farmers markets, restaurants/small grocery, and farm stand/store sales, significantly improved (Table 4). These results show that basic business management knowledge, with the exception of the general area of marketing, improved as a result of the program. For the vegetable production and soil management learning areas, all of the subtopics for these learning areas significantly improved. For the fruit production learning area, most of the subtopics significantly improved except for planting and pruning. Based on the results, participants indicated that their knowledge of vegetable production and soil management had significantly increased, which in addition to the program's curriculum could be partly attributed to the 1.5-day organic vegetable training course that participants attended at the SSAWG Conference. During this course, production practices and soil management were stressed. Participant's response to most of the business management learning objectives indicated that the program provided useful information on the majority of business management practices, however, those practices related to direct marketing were not adequately addressed for the perceived needs of the participants.

**Table 4.** Participant farm management skill assessment

Skill Learning Areas	Mean Pre-	Mean Post-	Paired t-test p-value
<b>Business</b>			
Direct Marketing: Branding, Customer Service, and Outreach	2.667	2.600	0.869
Assessment of the Market	3.467	2.733	0.028**
Farmers' Markets	3.067	2.533	0.120
Restaurants and Small Grocery	3.467	3.000	0.220
Community Supported Agriculture (CSA)	3.467	2.733	0.077*
Agri-Tourism	4.200	3.133	0.010***
Farm Stand and Farm Store Sales	3.867	3.467	0.373
Cost of Production Calculations	3.933	3.000	0.021**
Developing Price Points	4.000	2.933	0.017**
Yearly Budgeting and Cost Projections	3.933	2.800	0.002***
Risk Management: Insurance, Disaster Planning, and Contracts	3.933	3.200	0.077*
Certifications and Regulations	4.200	3.000	0.003***

<b>Vegetables</b>			
Seed Variety and Selection	3.200	2.133	0.006***
Crop Rotation	3.400	1.933	0.000***
Soil Tilth, Tests, and Fertility	3.533	2.200	0.000***
Field Preparation for Planting	3.667	2.267	0.000***
Seeding Rates and Calibration	3.867	2.600	0.000***
Planting Dates and Dates to Harvest	3.667	2.267	0.000***
Weed Control	3.400	2.400	0.010***
Pest and Disease Strategy	3.867	2.533	0.001***
Planning for Harvest (Drying and Storage)	3.533	2.667	0.043**
Custom Equipment vs Investment in your Own Equipment	3.857	2.571	0.003***
Owning Equipment for Tillage, Planting, and Harvest	3.714	2.643	0.008***
<b>Fruits</b>			
Planting	2.929	2.571	0.239
Pruning	3.143	2.857	0.365
Tillage	3.929	2.857	0.026**
Spraying and Spray Safety	3.857	3.071	0.015**
Irrigation	3.643	2.500	0.003***
Cultivation and Weed Management	3.786	2.286	0.001***
Harvest	3.429	2.714	0.035**
Pack Shed	4.357	2.643	0.003***
Food Safety	3.286	2.286	0.038**
Soil Health and Fertility Management	3.643	2.143	0.000***
Plant Health	3.429	2.500	0.009***
Equipment Operation and Safety	4.143	2.929	0.015**
<b>Soil</b>			
Soil Composition: What is the soil actually made of?	3.154	2.231	0.027**
Organic vs Non-Organic Soil	2.786	1.857	0.042**
Soil's pH	2.857	1.643	0.000***
Soil's correction	3.500	2.000	0.001***
Soil nutrients and their functions	3.143	2.214	0.013**
Advantages and disadvantages of fertilizer	3.286	2.143	0.004***
Soil's ability to: Drain well and hold onto water	2.929	1.857	0.004***
Soil's ability to: Hold nutrients	3.143	2.000	0.002***
Soil's ability to: Hold air for plants and microbes to breathe	3.286	2.000	0.002***
Soil's ability to: Aggregate nicely, creating aggregate tilth	3.500	2.143	0.003***
Soil's ability to: Remain in place (not erode)	3.500	2.143	0.005***
Notes: Scale used: 1(highest) – 5(lowest)			
Significant at the 1% (***), 5% (**), and 10% (*) level, respectively			

## DISCUSSION

The pre-post- needs assessment of Grow Louisiana's inaugural participants verified the need for a whole farm planning and sustainable horticultural production educational program. Interest in urban farming and increasing numbers of small and mid-sized farms in the area, as well as synergies between farmers and local organizations to promote local food production provided an opportunity for extension educators to play a role in training new and beginning farmers in the southeast region of Louisiana. Additionally, an increase in interest and use of sustainable growing practices was observed. Grow Louisiana allowed participants to receive training on important farm and business planning and sustainable horticulture production (fruit, vegetable, soil science) topics which was complemented by field visits and discussions with experienced farmers as well as networking with potential mentor farmers.

Results indicated significant, positive changes in skill and knowledge for many of the farm management topics covered in the program. Pre- and post-assessments of learning skills on all topic areas showed that participants benefited from program participation. Related to curriculum topics, particularly for farm planning and business planning, core changes in participant skill levels were observed, as considerable emphasis was placed on these areas in promoting farm strategic planning. Practical experience indicates that these are two key areas for the development of successful farm businesses. The results also indicate that the program did not effectively meet the expectations of participants in the general topic area of marketing and that modifying the program for future trainings was warranted.

The program was designed to dedicate approximately half of the educational content to business planning and half to sustainable horticulture production. It was anticipated, due to the stated interests of participants, that the program would result in an increase in skill level related to horticulture production and soil management. The results for fruit and vegetable production and soil management skills learning areas indicate that the sessions targeting these topics indeed were highly effective. The participants skill related to learning areas in vegetable production and soil management, both with 11 subtopics, improved. Additionally, most of the fruit production topics, also improved significantly. These results indicate that related to the topics of sustainable horticulture production and soil management, the program was highly effective.

The needs assessment was also beneficial to project administrators in evaluating the program's curriculum to better serve participants. For example, based on the results of the pre-assessment, project administrators were able to adjust the program's curriculum based on the needs of participants. The full results of both the pre- and post-needs assessments allowed project administrators to make necessary curriculum adjustments for future participants.

## CONCLUSIONS

Participant goals, educational needs, experiences, and scale of production were important in the development of educational topics that met the needs of a diverse group of new and beginning farmers. For Grow Louisiana, conducting a pre-post needs assessment allowed project administrators to strategically develop a plan that provided for whole-farm development, inclusive of business planning and management practices, sustainable horticultural production strategies, and soil management practices. To the extent possible, this plan tried to meet the individual expectations of each participant. The utilization of a pre-post assessment coupled with knowledge from existing programs, understanding the needs of local producers, and synergies in the local community related to farming and the food system added to the success of Grow Louisiana in its inaugural year.

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