

FLORIDA EXTENSION INITIATIVE 1:

INCREASING THE SUSTAINABILITY, PROFITABILITY, AND COMPETITIVENESS OF AGRICULTURAL AND HORTICULTURAL ENTERPRISES

STATEWIDE EDUCATIONAL PROGRAMS IN SUSTAINABILITY OF PRODUCTION SYSTEMS AND ALTERNATIVES*Group 2: Food Systems | Small Farms and Alternative Enterprises | Food Safety***SITUATION**

Priority Working Group (PWG) 1.1.2 has three signature programs: *Food Systems, Small Farms and Alternative Enterprises, and Food Safety*. This PWG is referred to as “Food Systems” for short. The definition of the term food system varies with the mission and goals of the educational institution, community organization, or governmental agency that uses the term. While the University of Florida has not recognized an official definition of the term, a definition was proposed by faculty from Initiatives 1 and 5 that was adapted from the University of California – Davis (2017) as follows: *a sustainable food system is an interdependent network of food production, processing, distribution, marketing, consumption and waste management in order to enhance the environmental, economic and social health of an area*. Food systems can be local, national, or global. The target clientele include farmers, ranchers, processors, aggregators, distributors, technical service providers, county- and state-level decision makers, and allied agency and industry representatives. This PWG will work closely with food systems-oriented PWGs in other Extension Initiatives, as well as an integrated team of researchers and educators from Florida and beyond.

Florida’s Food Systems: Overall, Florida’s 47,600 farms encompassed 9.5 million acres of land and generated 8.45 billion dollars in cash receipts in 2014 (USDA NASS, 2014). Florida’s net farm income in 2015 was just over \$3 billion dollars (USDA ERS, 2015a). Florida is first in the nation in production value of oranges, fresh market tomatoes, watermelons, grapefruit, snap beans, cucumbers, and squash. Florida is 12th in the nation in beef cows; in fact animal and animal-products account for 5 million acres of land and water and approximately half of the state’s agricultural cash receipts (FDACS, 2015).

Within the state of Florida, food systems exist at four scales: community, intrastate, interstate, and international. At each scale there are production inputs; production of specialty crops, row crops, livestock, and seafood commodities; post-harvest handling; value-added processing; and distribution of commodities to wholesale, retail, and food service markets. End users include consumers (such as those who consume fresh market oranges or and orange juice) or other industry segments (such as processors who produce orange juice concentrate). All agricultural operations in Florida are subject to a variety of local, state and federal regulations that may include occupational licenses, pesticide applicators licenses, liability insurance, production and processing food safety certifications, and commodity-specific market orders. Thus, our clientele look for leadership among IFAS Extension faculty for training on best management practices to meet the regulation requirements.

Historically, the state’s food systems were designed to support the national and international scales by leveraging Florida’s seasonal advantage in the fresh produce market. Florida’s commerce and distribution infrastructure is well-established for specialty crops, seafood, and livestock products that are exported nationally and internationally for sale or additional processing. However, recent consumer demands for locally-sourced and branded products have drawn attention to the need for value-added processing, aggregation, and distribution infrastructure for smaller-scale operations and short-chain farm to table networks within the state. The infrastructure effectively supports the state’s *large farms* (those having \$1M

or more in annual sales as defined by the USDA) that are responsible for the bulk of agricultural production in Florida and typically export commodities out of state. Large farms account for a mere 3% of the total number of farms in the state, but comprise greater than 85% of total farm revenue. Small farms, in contrast, comprise greater than 95% of Florida's farms, although not all of those farms contribute substantially to food economies. In Florida, the definition of a farm varies from county to county, although generally speaking, any operation reporting \$1,000 in annual gross sales or greater is considered a farm.

Florida's farmers are diverse culturally, and many of our states' farmers are new to farming. In 2014, Miami-Dade County had more Hispanic farmers than any other county in the country (USDA NASS 2017). Nationally and in Florida, all categories of minority-operated farms increased from 2007 to 2012. However, minority-operated farms have less farm income. In 2014, 2,696 Florida farmers (~18% of all FL farms) reported they were American Indian, Asian, Black or African American or more than one race. Nationally, female farmers make up 14% of principal operators while in Florida, 36% of principal operators are women. Despite a national decline in the number of new farm starts, Florida is 5th in the nation in the percent of principle operators who are beginning farmers (5 years or less as principle operators); 31% of farmers in FL are in this category and are from a diversity of farms (USDA NASS, 2017). Beginning farmers and ranchers are a large clientele group with diverse educational needs that must be met to ensure industry stability.

Florida has an estimated 20.6 million permanent residents (U.S. Census, 2017) and had an estimated 106.6 million visitors in 2015 (Visit Florida, 2017). Some of Florida's residents are among the nation's wealthiest; while other residents are in poverty (Coleman-Jensen et al., 2016; Sommeiller and Price, 2015; USDA ERS, 2017). Nationally, families and individuals spend 9.7% of their disposable personal income on food (USDA ERS, 2016a); this percentage is greater for low-income consumers. Among farmers and ranchers, income is also variable. While the majority of farmers we work with are not classified as living in poverty, some are. In the period from 2010-2014, six Florida counties with the greatest percentage of their workforce employed in the category "agriculture or other resource-based industry" included: Lafayette (13.2%), Okeechobee (13.6%), Glades (17.6%), Hendry (24.5%), DeSoto (26.2%), and Hardy (31.9%) (USDA ERS, 2015a). Among these six counties, poverty rates ranged from 22.1% (Glades) to 30.5% (DeSoto) (USDA ERS, 2015b). Developing a sustainable food system in Florida will require that educators pay close attention to farmer as well as community priorities, and deliver relevant educational programs with appropriate collaborators.

Small Farms and Alternative Enterprises: More than 90% of Florida's 48,000 farms are *small farms*, farms reporting gross annual sales of \$250,000 or less according to the Florida Agricultural Statistics Service (2013). Nationally, farms with annual sales less than \$10,000 account for 48% of all farms in the U.S., but only one percent of production (USDA ERS, 2016b). In Florida, approximately 55% of farms (25,860) report the market value of products sold was less than \$10,000 in 2012 (USDA NASS, 2012). These small farms include a significant percentage of urban farms and USDA certified organic farms that generate most of their revenue by direct to consumer sales.

Throughout the value chain, profit margins are limited, and three-quarters of small-farmers have such low profit margins that they are considered at risk by the USDA Economic Research Service (Hoppe, 2015). The majority of Florida farmers implement various strategies to reduce financial risk. These strategies include: utilizing innovative economic models such as Community Supported Agriculture (CSA), utilizing more than one market outlet such as farm stands, restaurants, and farmers markets; producing a variety of commodities and value-added products allowed by Florida's Cottage Food law; adding agritourism or other value-added services; participating in farm to school networks; hosting community fundraisers; and offering courses and internships. Consumer demand for freshness, nutrition, locally-sourced products, and product

diversity (unique cultivars, value-based labeling, and value-added products) requires ongoing innovation and diversification of products and processes within the food system (Wilkins et al., 2015; USDA NASS, 2016).

Successful small farm operators diversify into new processes, products, and/or practices, as market opportunities allow, but many small farm operators fail because they are not prepared for the realities of managing the multiple barriers to farming including following a business plan, obtaining credit, complying with regulations, diversifying risk, or marketing to an appropriate customer base (Low et al., 2015; Martinez, 2016). There is a shared concern throughout the U.S. and beyond that the lack of infrastructure including value-added processing, cold storage, and packing and distribution facilities will limit the long-term economic sustainability of small farms unless there is a systematic change to address the economic opportunities for short-chain food systems (Armendáriz et al., 2016; Berti and Mulligan, 2016; Low et al., 2015). In Florida, local food systems consist of a number of direct-to-consumer channels including farmers' markets, roadside stands, U-pick operations, and CSA agreements (Hodges et al., 2014) as well as indirect market channels. While the definition of "local" remains variable, UF/IFAS and many organizations throughout the state have accepted a definition of local as meaning produced in the state of Florida. Nationally, more than 167,000 U.S. farms locally produced and sold food through direct marketing practices, resulting in \$8.7 billion in revenue in 2015 (USDA NASS, 2016). Support is needed to help clientele develop new (or innovative) and diversified food enterprises, alternative supply chains and new markets that meet existing and emerging consumer demands and that are consistent with IFAS' commitment to resource conservation.

Food Safety: Food system participants from producers to processors are obligated to use practices that reduce the risk of food-borne illness and increase the likelihood of a safer food supply. The Centers for Disease Control and Prevention (CDC) estimates 48 million cases of foodborne illness, 128,000 hospitalizations, and 3,000 deaths occur each year from foodborne microorganisms (<http://www.cdc.gov/foodsafety/cdc-and-food-safety.html>). The commodities that have led to the most outbreak-related illnesses were fruits and nuts (24%), vine and leafy vegetables (23%) and beef (13%). In response to these and other food safety risks, the federal government has enacted the 2011 Food Safety Modernization Act (FSMA), the most sweeping change in food legislation since the 1936 Food, Drug, and Cosmetic Act. Beyond mere regulatory compliance, there is an expectation of food safety throughout the food system to significantly exceed standards defined by FSMA. An estimated 4,000 operations in Florida will have to comply fully with the relevant FSMA rules within two to four years (depending on sales). Although many small farm operations are anticipated to be exempt from FDA inspections as may be required by FSMA, buyer-driven food safety demands are increasing pressure on all farmers to have food safety plans that exceed regulatory requirements. At all points in the Florida food system, support is needed to help clientele develop a strong food safety culture and an understanding of the new regulatory framework and overall market demands that relate to their products.

How the Food Systems PWG Will Help: Most importantly, IFAS can support farmers and the state's food systems by providing training and support for innovation and diversification of safe, nutritious and affordable products and processes. To enhance Florida's food system, leadership from the UF-IFAS Food Systems PWG is needed to support food system participants holistically by facilitating networking among partners; providing research-based recommendations to improve efficiency, quality and sustainability of system processes and products; increasing knowledge and awareness of food system activities among urban and environmental interests; guiding new food system business initiatives; and training new leaders to foster innovation from the private sector. Potential growth sectors within the state include commerce networks of farm/processor to institution (farm to school, farm to hospital) and restaurant/tourism venues, value-added processing of agricultural commodities, and expanding export markets. The demographic and economic description of Florida's residents influence the demand-driven aspects of our industry and Florida's agricultural industry operators' and allied stakeholders' responses to the diversity of consumer needs will ensure their relevance in the marketplace.

This Priority Work Group's overall goals are to:

- *Cultivate a robust and resilient Florida food system by strengthening food and value added industries,*
- *Support the development of a small farm industry that offers a diversity of commodities and utilizes innovative production and processing technologies,*
- *Ensure an abundant, sustainable, nutritious, safe, and affordable food supply for all,*
- *Assure consumer confidence in the quality, value, and consistency of Florida agricultural products, and to*
- *Facilitate a broader understanding, mutual respect and collaboration of urban, agricultural, and environmental interests.*

PROGRAM OBJECTIVES

Signature Program: Food Systems

- **Objective 1.** At least 60% of program participants will accurately describe the main commodities, capital and programmatic infrastructure, county, state and/or federal farm and food-related policies, and the roles and responsibilities of key organizations of Florida's food system.
- **Objective 2.** At least 5 agricultural businesses with contributions other than food production participating in our programs will adopt new tools, technologies, equipment, or business models to increase operational efficiency and effectiveness as a result of Extension programming.

Signature Program: Small Farms and Alternative Enterprises

- **Objective 3.** At least 65% of farmer and rancher participants will report increased knowledge of strategies and technologies intended to increase yield, reduce inputs, increase efficiency, increase economic return, and/or conservation of resources.
- **Objective 4.** At least 45% of farmer and rancher participants will report adoption of recommended practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.

Signature Program: Food Safety

Internal Participants:

- **Objective 5.** 100% of IFAS Extension's faculty with formal program responsibilities for plant or animal systems will identify the primary food safety regulations relevant to their typical client's production system.
- **Objective 6.** 100% of IFAS Extension's faculty with formal program responsibilities for plant or animal systems will apply their food safety knowledge by recommending at least 3 evidenced-based strategies to mitigate biological risks typical of the systems they work with the most.

External Participants:

- **Objective 7.** At least 80% of the program participants will report an increase in knowledge of federal (Food Safety Modernization Act) and/or state (Florida Department of Agriculture and Consumer Services) regulations.
- **Objective 8.** At least 80% of program participants will learn how to develop farm food safety plans, including those who are exempt from the Food Safety Modernization Act (FSMA) such as small farm/ranch operators and community and school gardens leaders.
- **Objective 9.** At least 80% of program participants will implement practices required by FSMA and/or FDACS.

EDUCATIONAL METHODS

The dynamic nature of the Florida food industry and diversity of its stakeholders require many different educational methods to reach all clientele effectively. The activities of this program are a coordinated effort by multi-disciplinary state and county faculty. Information, messages, and metrics are developed at a state level and distributed to counties. Because this is a new PWG, professional development among our own faculty is a primary goal. In addition to traditional clientele, training will also be targeted at the new generation of food system producers, processors, researchers, educators, and regulators, and is intended to integrate with current CALS curriculum. We aim to integrate extension programming with student teaching and mentoring, as well as new community leader mentorship.

Traditional extension education approaches will be used: curriculum development, EDIS/white paper publication, traditional and online educational presentations, group teaching, website and social media development, application development, webinars, hands-on training, certification programs, demonstration sites/hubs at county offices, farms, and other sites, information “kits” at all county offices, traditional and non-traditional workshops, field days, conferences and meetings, video conferencing, online training, and establishment of testing centers for certificate programs at county offices (similar to Sylvan learning centers). To ensure effective education of traditionally underserved clientele, the Food Systems PWG will also use innovative education approaches that do not require access to internet or transportation, such as informational text messaging campaigns.

Other activities include:

- Face-to-face workshops and presentations at community organizations with traditionally underserved clientele.
- Implement a training program for Extension and food systems professionals that will strengthen the skills necessary to foster food systems collaboration, innovation, and impact.
- Conduct feasibility studies, enterprise/business plans and case studies of successful/profitable local food distribution chains, and create decision tools for farmers/ranchers to expand into new markets.
- Develop new programs on alternative enterprises and systems, including Urban Farm Academy.
- Partner with campus university initiatives that focus on farm and food systems to develop new models of scholarly education that integrate teaching and extension and provide new opportunities for research and development of new products and processes.
- Facilitate establishment of new farms in urban areas that cater to the needs of local buyers.
- Share models of innovative farmers and ranchers with others.
- Advance our understanding of innovations in agriculture, and learn new and effective approaches of Extension education and evaluation.
- Offer face to face in-depth training and web-based updates on food safety.
- Host an electronic hub for all internal and public food safety information that aggregates consumer food safety information (Solutions for Your Life website), small farm food safety information (Small Farms and Alternative Enterprises website) and farm/processor food safety information (Food Science and Human Nutrition/UF-IFAS Food Safety Extension’s website).
- Conduct relevant evaluation strategies to ensure internal efficiencies and to ensure that agricultural enterprises and consumers are increasing their knowledge and are adopting improved behaviors.

RESULTS

Signature Program: Food Systems

- Objective 1. At least 60% of program participants will accurately describe one or more of the following: the primary food commodities and agri-business services; capital and programmatic infrastructure; county, state and/or federal farm and food-related policies; and the roles and responsibilities of key organizations of Florida’s food system.
 - Outcome: Program participants use and apply their knowledge to strengthen Florida’s food system.
 - Indicators:

- Quantitative increases in knowledge gained in program evaluations, including online educational presentations and webinars.
 - Participant success stories about accessing UF/IFAS food systems resources to support their business or programmatic food systems objectives.
- **Objective 2.** At least 5 agricultural businesses with contributions other than food production participating in our programs will adopt new tools, technologies, equipment, or business models to increase operational efficiency and effectiveness as a result of Extension programming.
 - **Outcome:** Operations increase efficiency and effectiveness.
 - **Indicators:**
 - Quantitative measure of purchases of new materials, tools, and/or equipment.
 - Quantitative decrease in inputs, fuel, energy, water, labor or other costs following adoption.
 - Quantitative increase in the number of value-added products for inter and intrastate trade.
 - Quantitative increase in the number/capacity of processors dedicated to alternative crops or new food/beverage products.
 - Quantitative increase in the number of farming operations selling direct to consumer.
 - Quantitative increase in the number of consumers reached in direct-to-consumer markets.
 - Participant success stories of market penetration of FL foods.
 - Quantitative cost savings to consumers who buy Florida commodities.
 - Participant success stories of entrepreneurship and innovation following demonstrations, workshops, and field days.
 - Positive press reports highlighting collaboration and outcomes.

Signature Program: Small Farms and Alternative Enterprises

- **Objective 3.** At least 65% of farmer and rancher participants will report increased knowledge of strategies and technologies intended to increase yield, reduce inputs, increase efficiency, increase economic return, and/or conservation of resources.
 - **Outcome:** Farmers and ranchers demonstrate increased knowledge and skill of subject matter.
 - **Indicators:**
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 - Farm operator success stories detailing how increased knowledge gained from hands-on training, workshops, field days, and conferences reduced mistakes.
 - Quantitative increase in participant reports of self-efficacy in science and technology.
 - Farmer success stories of increasing consumer confidence and trust.
 - Quantitative increase in the number of operations using enterprise budgets to set product prices.
 - Quantitative measure of number of successful loan applications reported to Extension faculty.
 - Farmer and rancher success stories of improved financial health.
- **Objective 4.** At least 45% of farmer and rancher participants will report adoption of recommended practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
 - **Outcome:** Farmers and ranchers operate efficient, profitable businesses that conserve resources.
 - **Indicators:**
 - Quantitative increase in the number of farmers and ranchers reporting adoption of recommended practices.
 - Quantitative increase in the Florida Department of Agriculture and Consumer Services *diversified agriculture BMP program* participants
 - Quantitative increase in number of profitable alternative crops or new value-added products.
 - Quantitative increase in small farm market share.
 - Quantitative increase in the percentage of farms engaged in entrepreneurial activities.
 - Quantitative increase in number of new or alternative crops and new value-added products.

- Quantitative increase in the number of value-added products for inter and intrastate trade.
- Participant success stories of new market opportunities as a result of new products/services.

Signature Program: Food Safety

Internal Participants:

- **Objective 5.** 100% of IFAS Extension’s faculty with formal program responsibilities for plant or animal systems will identify the primary food safety regulations relevant to their typical client’s production system.
 - **Outcome:** IFAS Extension faculty increase self-confidence on food safety topics
 - **Indicators:**
 - Quantitative increase in the number of stakeholders who refer to IFAS faculty for advice
- **Objective 6.** 100% of IFAS Extension’s faculty with formal program responsibilities for plant or animal systems will apply their food safety knowledge by recommending at least 3 evidenced-based strategies to mitigate biological risks typical of the systems they work with the most.
 - **Outcome:** IFAS Extension is trusted by food safety clientele
 - **Indicators:**
 - Participant success stories detailing the use of EDIS documents and programs in adopting practices that mitigate risk and support food safety compliance

External Participants:

- **Objective 7.** At least 80% of program participants will report an increase in knowledge of federal (Food Safety Modernization Act) and/or state (Florida Department of Agriculture and Consumer Services) regulations.
 - **Outcome:** Program participants recognize the regulations that apply to their operation
 - **Indicators:**
 - Participants report they know where to source regulatory information that applies to them
 - Participants report they have shared their knowledge with others
- **Objective 8.** At least 80% of program participants will learn how to develop farm food safety plans, including those who are exempt from FSMA, such as small farm/ranch operators and community and school gardens leaders.
 - **Outcome:** Farm and garden operations have adopted best practices to mitigate biological risk.
 - **Indicators:**
 - Quantitative increase in the number of participants with have learned how to develop a Farm Food Safety Manual.
 - Participant success stories of improved consumer confidence in Florida agricultural commodities- especially direct to consumer or products bearing “buy local” labels (i.e. Fresh from Florida)
- **Objective 9.** At least 80% of program participants will implement practices required by FSMA and/or FDACS.
 - **Outcome:** Producers, processors, packers and distributors are compliant with FSMA.
 - **Indicators:**
 - Quantitative increase in number of current certifications and compliant exempt operations
 - Quantitative increase in the number of participants having successful third party audits.
 - Success stories from participants of face-to-face trainings and web-based updates on food safety.
 - Quantitative decrease in cases of food borne illnesses, recalls of Florida products and the number of food related health risks related to Florida’s food system evidenced by CDC data

NEEDS

- Design and implement a statewide needs assessment to identify food system priority program needs
- Statewide evaluation plans for Food Systems, Small Farms and Alternative Enterprises, and Food Safety
- Comprehensive educational program for beginning farmers and ranchers
- Data on food systems infrastructure in Florida

- Food safety program supports, including demonstration areas at county offices
- Program support, program assistants
- Web-based program delivery support
- Extension specialist or add FTE in ABE in processing and packaging engineering
- State and county faculty with food systems programming in their POWs and ROAs
- Evaluation faculty FTE increase

SUPER ISSUES

This priority work group activity relates to “Awareness and appreciation of food systems and the environment”.

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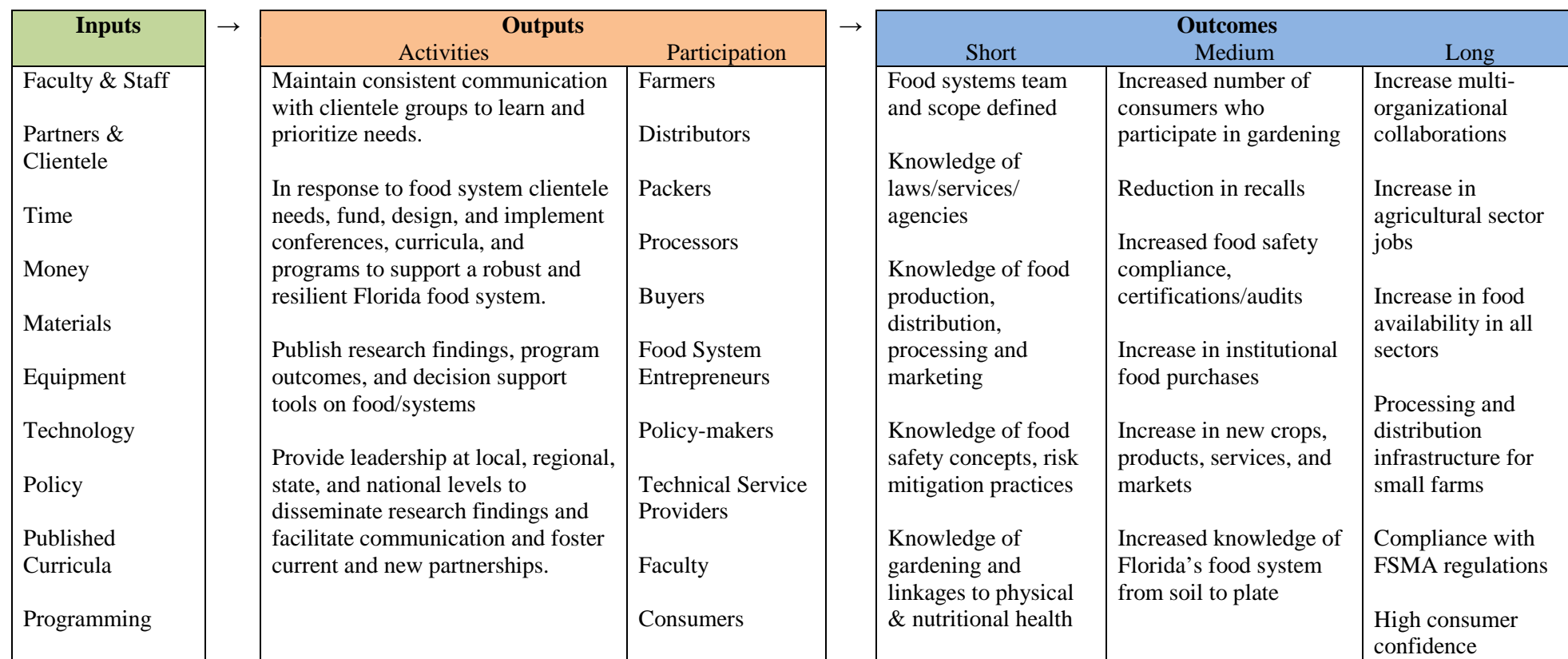
PWG 1.1.2: Food Systems | Small Farms and Alternative Enterprises | Food Safety

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***Team leaders**

Program: Group 1.2: *Food Systems / Alternative Enterprises and Systems / Food Safety*

Situation: Florida ranks first in the nation for a number of fruit and vegetable crops and ranks second in population. However, farmers worry about competition from foreign markets, extreme weather events, the cost of implementing regulations such as the Food Safety Modernization Act, and the high cost of inputs and labor. Meanwhile, income inequality among the state’s residents is significant, and approximately 16% of adults in the state qualify for federal food assistance. Florida’s agricultural industry infrastructure is designed primarily for export, and the demand for direct-to-consumer products outpaces supply. Extension leadership and programming is needed to ensure social, environmental and economic stability over the long term.



Assumptions

- Additional Extension faculty are trained in food systems
- Extension provides a leadership role at many food systems scales
- Stakeholders will be engaged with food systems programming

External Factors

- Climate and market conditions on production/distribution
- Continued and new support for programs is available
- Competing social and political influences on food systems