

# MEMORANDUM

Agenda Item No. 8(L)(2)

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**TO:** Honorable Chairman Jose "Pepe" Diaz  
and Members, Board of County Commissioners

**DATE:** May 3, 2022

**FROM:** Geri Bonzon-Keenan  
County Attorney

**SUBJECT:** Resolution approving, pursuant to section 2-9 and 2-10 of the County Code, an Interlocal Agreement between Miami-Dade County and the University of Florida Board of Trustees on behalf of its Institute of Food and Agricultural Sciences, Food and Resource Economics Department, Tropical Research and Education Center, and Southwest Florida Research and Education Center for Miami-Dade County to provide \$448,651.00 to support completion of an Agricultural Lands Study; authorizing County Mayor to execute same and to exercise any and all provisions conferred therein

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The accompanying resolution was prepared by the Regulatory and Economic Resources Department and placed on the agenda at the request of Prime Sponsor Commissioner Rebeca Sosa.



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Geri Bonzon-Keenan  
County Attorney

GBK/jp

# Memorandum



**Date:** May 3, 2022

**To:** Honorable Chairman Jose “Pepe” Diaz  
and Members, Board of County Commissioners

**From:** Daniella Levine Cava  
Mayor *Daniella Levine Cava*

**Subject:** Resolution authorizing execution of an Interlocal Agreement between Miami-Dade County and UF-IFAS for completion of an Agricultural Lands Study

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## **Recommendation**

It is recommended that the Board of County Commissioners (Board) approve the proposed Resolution authorizing execution of an Interlocal Agreement between Miami-Dade County and the University of Florida on behalf of its Institute of Food and Agricultural Sciences (UF-IFAS), Food and Resource Economics Department, Tropical Research and Education Center, and Southwest Florida Research and Education Center in order for the County to provide \$448,651.00 in funding to the University of Florida for completion of a study assessing the economic trends related to agriculture in Miami-Dade County and determining the amount of land necessary to maintain an economically viable agricultural industry.

## **Scope**

The County’s major agricultural areas are located in South Miami-Dade County, primarily within Commission Districts 8 and 9. However, the County is second in the state in terms of market value of agricultural products sold at \$837,734,000.00, making it an issue of countywide importance.

## **Delegation of Authority**

The proposed Resolution authorizes the County Mayor or the County Mayor’s designee to execute the Interlocal Agreement on behalf of Miami-Dade County and to exercise any and all provisions contained therein.

## **Fiscal Impact/Funding Source**

The proposed Interlocal Agreement has a scope valued at \$448,651.00 that will be paid to the University of Florida for completion of the study. The study will be funded from the Department of Regulatory and Economic Resources operating budget.

## **Track Record/Monitor**

The Assistant Director, Jerry Bell of the Planning Division, within the Department of Regulatory and Economic Resources, will monitor the Interlocal Agreement.

## **Background**

On June 15, 2021, the Board directed the administration to prepare the necessary legislation to effectuate an update of a 2002 study that assessed agricultural land needs in Miami-Dade

County, as recommended in the final Urban Expansion Area Report, dated May 7, 2021, prepared by the Department of Regulatory and Economic Resources (“Department”). In response to the directive, the Department coordinated with the University of Florida - Institute of Food and Agricultural Sciences (UF-IFAS), the institution that completed a portion of the 2002 study. This coordination resulted in submittal of a proposal by the UF-IFAS for completion of the study.

In 2002, UF-IFAS completed a study titled “Miami-Dade County Agricultural Land Retention Study” in partial fulfillment of Florida Department of Agricultural and Consumer Services (FDACS) Contract No. 5218. The main purpose of the study was to analyze data concerning the long-term economic outlook of the agricultural industry and the development of recommendations to enhance the industry’s economic well-being. The report provided an overview of agriculture in Miami-Dade County, analysis of economic trends for major agricultural commodities, major issues affecting profitability and sustainability of Miami-Dade agriculture. Utilizing the data and analysis from the UF-IFAS study, the Miami-Dade County department responsible for land use planning completed a study in 2002 titled “Urban and Agricultural Land Use Trends and Projections.” The study provided projections for agricultural land requirements based on commodity trends and the potential loss of agricultural land over time due to urbanization.

The policies of the County’s Comprehensive Development Master Plan (CDMP) have long supported agriculture as a viable economic use of suitable lands (CDMP, Page I-70). Specifically, CDMP Policy LU-1R states, in part, that Miami-Dade County shall take steps to reserve the amount of land necessary to maintain an economically viable agricultural industry. A major goal of the study is to ascertain recommendations related to the minimum acreage of agricultural land necessary to maintain a viable industry. The Board also urged that the study address agricultural innovations that may affect land needs and include recommendations on how to support the agricultural industry in a meaningful way. These issues are incorporated into the Scope of Work authorized through the proposed Interlocal Agreement as summarized below:


- 1) Provide an overview of agriculture in Miami-Dade County including the characteristics of the area and general description of the agricultural practices associated with each major crop or commodity group.
- 2) Document the importance of agriculture to Miami-Dade County and beyond, specifically including the local economic impact.
- 3) Document economic trends associated with major agricultural crops grown in Miami-Dade County specifically including trends in acreage. Trends in revenues, and profitability are to be examined whenever possible.
- 4) Identify major factors affecting the profitability and sustainability of Miami-Dade County agriculture such as trade policy, climate change, support systems, and land use conflicts.
- 5) Identify and evaluate emerging technological changes that could help or harm Miami-Dade County’s competitive situation and change agricultural land needs.
- 6) Provide recommendations to improve the economic sustainability of agriculture in Miami- Dade County.

Honorable Chairman Jose "Pepe" Diaz  
and Members, Board of County Commissioners

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- 7) Offer recommendations related to the minimum acreage of agricultural land necessary to maintain a viable industry in Miami-Dade County. Such recommendations shall, at a minimum, assess projected land needs in years 2030, 2040 and 2050.

The proposed resolution authorizes expenditure of \$448,651.00 for completion of the study. The UF-IFAS proposal provides for submittal of the final report approximately 14 months from the date of commencement.



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Jimmy Morales  
Chief Operations Officer



**MEMORANDUM**  
(Revised)

**TO:** Honorable Chairman Jose "Pepe" Diaz  
and Members, Board of County Commissioners

**DATE:** May 3, 2022

**FROM:**   
Gen Bonzon-Keenan  
County Attorney

**SUBJECT:** Agenda Item No. 8(L)(2)

Please note any items checked.

- "3-Day Rule" for committees applicable if raised
- 6 weeks required between first reading and public hearing
- 4 weeks notification to municipal officials required prior to public hearing
- Decreases revenues or increases expenditures without balancing budget
- Budget required
- Statement of fiscal impact required
- Statement of social equity required
- Ordinance creating a new board requires detailed County Mayor's report for public hearing
- No committee review
- Applicable legislation requires more than a majority vote (i.e., 2/3's present \_\_\_\_, 2/3 membership \_\_\_\_, 3/5's \_\_\_\_, unanimous \_\_\_\_, CDMP 7 vote requirement per 2-116.1(3)(h) or (4)(c) \_\_\_\_, CDMP 2/3 vote requirement per 2-116.1(3)(h) or (4)(c) \_\_\_\_, or CDMP 9 vote requirement per 2-116.1(4)(c)(2) \_\_\_\_ ) to approve
- Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required

Approved \_\_\_\_\_ Mayor  
Veto \_\_\_\_\_  
Override \_\_\_\_\_

Agenda Item No. 8(L)(2)  
5-3-22

RESOLUTION NO. \_\_\_\_\_

RESOLUTION APPROVING, PURSUANT TO SECTION 2-9 AND 2-10 OF THE COUNTY CODE, AN INTERLOCAL AGREEMENT BETWEEN MIAMI-DADE COUNTY AND THE UNIVERSITY OF FLORIDA BOARD OF TRUSTEES ON BEHALF OF ITS INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, FOOD AND RESOURCE ECONOMICS DEPARTMENT, TROPICAL RESEARCH AND EDUCATION CENTER, AND SOUTHWEST FLORIDA RESEARCH AND EDUCATION CENTER FOR MIAMI-DADE COUNTY TO PROVIDE \$448,651.00 TO SUPPORT COMPLETION OF AN AGRICULTURAL LANDS STUDY; AUTHORIZING THE COUNTY MAYOR OR COUNTY MAYOR'S DESIGNEE TO EXECUTE SAME AND TO EXERCISE ANY AND ALL PROVISIONS CONFERRED THEREIN

**WHEREAS**, the Board wishes to accomplish the purposes set forth in the accompanying memorandum, which is incorporated herein by reference; and

**WHEREAS**, the County, through Board of County Commissioners Resolution No. R-69-07, expressed a desire to enter into interlocal agreements with local universities for the provision of services needed by the County; and

**WHEREAS**, the University of Florida-Institute of Food and Agricultural Sciences (UF-IFAS), Food and Resource Economics Department, Tropical Research and Education Center is located in Miami-Dade County and is recognized locally, nationally, and internationally as a leading research and education institution for tropical and subtropical horticulture and natural resources; and

**WHEREAS**, the UF-IFAS Southwest Florida Research and Education Center (SWFREC) is located in Collier County and its stated mission is to supply decision-makers with specific knowledge to sustain and enhance agricultural, human, and natural resources through nationally and internationally recognized research, extension, and teaching programs; and

**WHEREAS**, Under Article IX, Section 7(a) of the Florida Constitution, the University of Florida's purpose is to achieve excellence through: 1) teaching students, 2) advancing research, and 3) providing public service for the benefit of the state's citizens; and

**WHEREAS**, the County recognizes that the University of Florida is fully qualified to render the services described in this Agreement,

**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA**, that this Board approves the Interlocal Agreement between Miami-Dade County and the University of Florida on behalf of its Institute of Food and Agricultural Sciences, Food and Resource Economics Department, Tropical Research and Education Center, and Southwest Florida Research and Education Center, in substantially the form attached hereto and incorporated herein by reference, for the County to provide \$448,651.00 in funding to the University of Florida for the completion of a study assessing the economic trends related to agriculture in Miami-Dade County and determining the amount of land necessary to maintain an economically viable agricultural industry; and authorizes the County Mayor or County Mayor's designee to execute the same for and on behalf of Miami-Dade County and to exercise any and all provisions contained therein.

The foregoing resolution was offered by Commissioner \_\_\_\_\_, who moved its adoption. The motion was seconded by Commissioner \_\_\_\_\_ and upon being put to a vote, the vote was as follows:

Jose "Pepe" Diaz, Chairman

Oliver G. Gilbert, III, Vice-Chairman

Sen. René García

Sally A. Heyman

Eileen Higgins

Kionne L. McGhee

Raquel A. Regalado

Sen. Javier D. Souto

Keon Hardemon

Danielle Cohen Higgins

Joe A. Martinez

Jean Monestime

Rebeca Sosa

The Chairperson thereupon declared this resolution duly passed and adopted this 3<sup>rd</sup> day of May, 2022. This resolution shall become effective upon the earlier of (1) 10 days after the date of its adoption unless vetoed by the County Mayor, and if vetoed, shall become effective only upon an override by this Board, or (2) approval by the County Mayor of this resolution and the filing of this approval with the Clerk of the Board.

MIAMI-DADE COUNTY, FLORIDA  
BY ITS BOARD OF  
COUNTY COMMISSIONERS

HARVEY RUVIN, CLERK

By: \_\_\_\_\_  
Deputy Clerk

Approved by County Attorney as  
to form and legal sufficiency.



Dennis A. Kerbel



**INTERLOCAL AGREEMENT  
BETWEEN MIAMI-DADE COUNTY AND  
UNIVERSITY OF FLORIDA**

THIS AGREEMENT, made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ 2021 (“Effective Date”), by and between MIAMI-DADE COUNTY, FLORIDA, a political subdivision of the State of Florida (hereinafter referred to as the “COUNTY”), and the UNIVERSITY OF FLORIDA BOARD OF TRUSTEES on behalf of its Institute of Food and Agricultural Sciences, Food and Resource Economics Department, Tropical Research and Education Center, and Southwest Florida Research and Education Center, its successors or assigns, a public body corporate of the State of Florida, (hereinafter referred to as the “UNIVERSITY”, and collectively with the COUNTY, the “Parties”).

For and in consideration of the mutual agreements hereinafter contained, the COUNTY hereby retains the UNIVERSITY to, and the UNIVERSITY hereby covenants to, provide the services described herein to effectuate completion of a study assessing the economic trends related to agriculture in Miami-Dade County and determining the amount of land necessary to maintain an economically viable agricultural industry (hereinafter referred to as the “Project”).

**WITNESSETH:**

WHEREAS, the policies of the County’s Comprehensive Development Master Plan (CDMP) have long supported agriculture as a viable economic use of suitable lands (CDMP, Page I-70) and CDMP Policy LU-1R states, in part, that Miami-Dade County shall take steps to reserve the amount of land necessary to maintain an economically viable agricultural industry; and

WHEREAS, in 2002, the UNIVERSITY through its Institute of Food and Agricultural Sciences (UF-IFAS) completed a study titled “Miami-Dade County Agricultural Land Retention Study” in partial fulfillment of Florida Department of Agricultural and Consumer Services (FDACS) Contract No. 5218, the main purpose of which was to analyze data concerning the long-term economic outlook of the agricultural industry and the development of recommendations to enhance the industry’s economic well-being; and

WHEREAS, the COUNTY through its Department of Regulatory and Economic Resources desires to complete a study, building upon analysis completed by UF-IFAS in the 2002 study, that assesses economic trends related to agriculture in Miami-Dade County and determines the amount of land necessary to maintain an economically viable agricultural industry to inform implementation of the aforementioned CDMP policies; and

WHEREAS, the COUNTY, through Board of County Commissioners Resolution No. R-69-07, expressed a desire to enter into interlocal agreements with local universities for the provision of services needed by the County; and

WHEREAS, the University of Florida-Institute of Food and Agricultural Sciences (UF-IFAS), Food and Resource Economics Department, Tropical Research and Education Center is located in Miami-Dade County and is recognized locally, nationally, and internationally as a leading research and education institution for tropical and subtropical horticulture and natural resources; and

WHEREAS, the UF-IFAS Southwest Florida Research and Education Center (SWFREC) is located in Collier County and its stated mission is to supply decision-makers with specific knowledge to sustain and enhance agricultural, human, and natural resources through nationally and internationally recognized research, extension, and teaching programs; and

WHEREAS, Under Article IX, Section 7(a) of the Florida Constitution, UNIVERSITY's purpose is to achieve excellence through: 1) teaching students, 2) advancing research, and 3) providing public service for the benefit of the state's citizens, the provision of UNIVERSITY's services within the scope of this agreement further these important goals; and

WHEREAS, the COUNTY recognizes that the UNIVERSITY is fully qualified to render the services described in this Agreement.

NOW, THEREFORE, in consideration of the mutual terms, conditions, covenants and payments hereinafter set forth, the COUNTY and the UNIVERSITY agree as follows:

1. COUNTY'S OBLIGATIONS AND AUTHORIZATION TO PROCEED: The COUNTY agrees to support the Project in the manner detailed in Section 3 of Appendix A including performing long run economic analysis under the direction of the UNIVERSITY; assisting the UNIVERSITY with GIS mapping and recruitment of focus group participants; and furnishing to the UNIVERSITY available County economic and demographic data.
2. UNIVERSITY'S SERVICES: The UNIVERSITY shall perform research, analysis, and other services as detailed in Sections 1, 2 and 4 of Appendix A.
3. COMPENSATION: The COUNTY agrees to pay, and the UNIVERSITY agrees to accept, a lump sum fee of \$448,651 representing full compensation for the performance of the services specified herein. Compensation to the UNIVERSITY shall be in accordance with the following payment schedule: 50% of the total fee due at the beginning of the Project, 40% of the total fee upon completion and delivery of the Draft Report, and 10% of the total fee upon delivery of the Final Report. The UNIVERSITY shall submit invoices for all work in progress using a format and procedure provided by RER. Invoices shall be submitted within one hundred twenty (120) calendar days of the performance of the service being billed. The COUNTY shall not pay invoices that are not properly submitted within that period. Additionally, the COUNTY may withhold payment of any invoices from the UNIVERSITY if the COUNTY determines that the UNIVERSITY submitted and received payment of an inaccurate invoice, without limitation to any other legal or equitable remedies.
4. TERMS OF AGREEMENT: The term of this agreement is for two (2) years and shall commence upon issuance of the Notice to Proceed from the Department of Regulatory and Economic Resources.
5. AMENDMENTS: This Agreement contains the entire Agreement of the parties and there are no conditions or limitations to this undertaking except those stated herein. After the execution hereof, no alterations, change, or modification hereof shall be binding or effective unless executed in writing and signed by all parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective and duly authorized officers.

By: \_\_\_\_\_  
Lourdes Gomez, AICP, Director  
Department of Regulatory and Economic Resources

Date: \_\_\_\_\_

By: \_\_\_\_\_  
University of Florida

Date: \_\_\_\_\_

# Evaluation of Agricultural Land Use Trends and Outlook in Miami-Dade County, Florida

Proposal Submitted by the University of Florida-Institute of Food and Agricultural Sciences, Food and Resource Economics Department, Tropical Research and Education Center, and Southwest Florida Research and Education Center (“the Consultant”)

In Response to Request for Proposals by the Miami-Dade County Department of Regulatory and Economic Resources (“the County”)

October 14, 2021

## Introduction

Miami-Dade County, Florida is among the leading producers of agricultural specialty crops in the United States. According to the USDA Census of Agriculture, in 2017 the County had 2,752 farm operations, \$838 million in sales and around 50,000 acres under production, including both open fields and greenhouse-shadehouse protected growing areas (USDA-NASS). Sales for major crop groups included \$698 million for nursery, greenhouse, floriculture and sod, \$87 million for vegetables, \$44 million for fruits, nuts and berries, and \$10 million for miscellaneous livestock and aquaculture products. The County is the number one producer of floriculture and nursery crops in the U.S., and second in Florida in overall crop value. Since 2002, total production acreage increased by 5% and total sales increased 44% in nominal dollar terms (Table 1). Total agricultural land in the County, including idle or non-production areas, declined from 83,332 acres in 2002 to 68,046 acres in 2017, representing a decrease of 18 percent. In 2019, crop, livestock, forestry and fisheries production in the County supported 9,444 direct jobs and \$1.032 billion in output (sales revenues), with total economic contributions resulting from multiplier effects in other sectors of 12,249 jobs, \$1.554 billion output, and \$844 million in value added or Gross Domestic Product (UF-IFAS). In addition, numerous allied sectors for food and ag product processing and distribution account for significant economic activity in the County. The South Miami-Dade area has become a draw for agritourism showcasing its unique agricultural system. Agricultural lands provide important environmental services for green space, groundwater recharge, and pollution abatement.

Table 1. Trends in agricultural crop operations, sales and production area in Miami-Dade County, 2002-17

Statistic / Crop Group	2002	2007	2012	2017	% change 2002-2017
Number crop farm operations with sales	<u>1,846</u>	<u>2,136</u>	<u>2,574</u>	<u>2,266</u>	<u>23%</u>
<b>Sales (Dollars)</b>					
Floriculture	NA	\$286,097,476	\$245,294,066	\$452,851,564	
Nursery	NA	194,627,381	130,322,081	239,505,520	
Fruits, under protection	\$35,826,000		73,687,000	43,573,000	22%
Vegetables, incl seeds & transplants, in the open	102,592,000	127,774,000	136,676,000	86,834,000	-15%
Vegetables, incl fresh cut herbs, under protection		329,600	NA	1,771,206	
Crop totals	<u>\$573,350,000</u>	NA	<u>\$592,266,000</u>	<u>\$827,873,000</u>	<u>44%</u>
<b>Production Area or Total Agricultural Land Area</b>					
Floriculture, in the open – acres	1,793	1,967	2,185	1,702	-5%
Nursery, in the open – acres	6,064	10,279	12,584	13,415	121%
Vegetables, in the open – acres	24,712	21,810	20,632	18,997	-23%
Floriculture, under protection - sq ft	76,463,370	64,527,816	61,984,245	80,598,446	5%
Nursery, under protection - sq ft	10,861,006	43,182,682	NA	22,208,839	104%
Fruit, bearing and nonbearing groves – acres	12,862	11,365	21,977	13,343	4%
Vegetables, incl fresh cut herbs (excl tomatoes), under protection - sq ft	NA	41,200	NA	270,062	
Total area in production – acres	<u>47,436</u>	<u>47,895</u>	<u>58,801</u>	<u>49,824</u>	<u>5%</u>
Total agricultural land – acres	83,332	64,636	77,055	68,046	-18.3%

Source: USDA, Census of Agriculture.

Note that information was not available in some years due to data quality or nondisclosure issues and there are concerns regarding 2012 area in production and total agricultural land data.

While agriculture remains an important industry in Miami-Dade County, there are numerous challenges to its continued vitality: development pressures and high land prices, international trade competition, government regulations such as phytosanitary and worker protection standards, exotic pests (plants, animals, insects and diseases), hurricanes, climate change, sea level rise, seawater intrusion, stormwater flooding and restricted potable groundwater availability due to withdrawals. Moreover, the social and agricultural system diversity in the County makes it difficult to find political consensus on strategic land use planning. For example, there have been recent controversies around expansion of the Urban Development Boundary to convert agricultural land to commercial or industrial use (Miami Herald).

The Miami-Dade County Comprehensive Development Master Plan (CDMP) supports agriculture as a viable economic use of suitable lands. CDMP Policy LU-1R states the County shall take steps to reserve the amount of land necessary to maintain an economically viable agricultural industry. In 2002, the University of Florida (UF-IFAS) completed the “Miami-Dade County Agricultural Land Retention Study” (Degner et al.) evaluating the long-term economic outlook of the agricultural industry and providing recommendations to enhance the industry’s economic well-being. The report provided an overview of agriculture in Miami-Dade County, economic trends for major agricultural commodities, and issues affecting profitability and sustainability. Based on these findings, County land use planners completed a companion report in 2002 that provided projections for agricultural land requirements and the potential loss of agricultural land over time due to urbanization. The County currently has reserved 52,000 acres for agricultural use. The report, however, posed the question of whether sufficient land will remain by the year 2050 to sustain a viable agricultural presence in the County. Under CDMP Policy LU-1R, therefore, further study is now deemed necessary to determine the amount of land necessary to maintain an economically viable agricultural industry to 2050, as authorized by Board Resolution R-69-07.

This proposed study will build upon the previous 2002 study by a group of economists, engineers and scientists at the University of Florida-IFAS, by assessing economic trends and conditions related to agriculture in the County and providing guidance on policies to achieve planned goals.

### **Section 1: Scope of Work**

Based on the Scope of Work provided by the County, UF-IFAS will provide a report to the County that addresses the following tasks (as specified by the County):

- 1) Provide an overview of agriculture in Miami-Dade County including the characteristics of the area and general description of the agricultural practices associated with each major crop or commodity group.
- 2) Document the importance of agriculture to Miami-Dade County and beyond, specifically including the local economic impact.
- 3) Document economic trends associated with major agricultural crops grown in Miami-Dade County specifically including trends in acreage. Trends in revenues, and profitability are to be examined whenever possible.
- 4) Identify major factors affecting the profitability and sustainability of Miami-Dade County agriculture such as trade policy, climate change, support systems, and land use conflicts.
- 5) Identify and evaluate emerging technological changes that could help or harm Miami- Dade County’s competitive situation and change agricultural land needs.
- 6) Provide recommendations to improve the economic sustainability of agriculture in Miami- Dade County.
- 7) Offer recommendations related to the minimum acreage of agricultural land necessary to maintain a viable industry in Miami-Dade County. Such recommendations shall, at a minimum, assess projected land needs in years 2030, 2040 and 2050.

## Section 2: Technical Sources and Methods

An overview of agriculture in Miami-Dade County will be developed using data from the U.S. Department of Agriculture-National Agricultural Statistics Service (USDA-NASS) annual surveys, the Census of Agriculture (last conducted for 2017), and data requests to Florida Department of Agriculture. Best Management Practices (BMP) for major commodities published by Florida Department of Agriculture and Consumer Services (FDACS) and a review of literature will be used to describe production practices. In addition, information from the USDA CropScape cropland data layer mapping system, the FDACS *AFSIRS* irrigation database will be used to check and validate specific crop acreages. Production costs and returns for specific crops will be assessed using enterprise budgets for major crops produced in the County, along with simulation of profitability using *Simetar* software (Richardson and Schumann), as well as information from the Agricultural Resource Management Survey (USDA-ERS), and local industry data from the *BizMiner* database.

Detailed profiles will be developed for the largest individual crops having significant production area or sales of at least five million dollars within each of the four major commodity groups: floriculture (tropical foliage, flowering plants), nursery (landscape trees, shrubs, groundcovers), fruits (avocado, mango, carambola), and vegetables (snap bean, tomato, squash, sweet corn). In addition, aquaculture as a developing industry in the County will be profiled.

Published secondary data on commodity production area, volume, sales and profitability will be complemented and verified with information from focus groups and interviews with industry experts, association leaders, Extension agents, and selected leading firm owners or managers. Bilingual focus group sessions with 7 to 10 participants will be organized for each commodity group with a mix of industry stakeholders recruited to provide diverse perspectives on the industry. The sessions will be conducted at Tropical Research and Education Center in Homestead, with facilitation by an experienced market research professional and audio recorded and transcribed to document all comments made. Questions for discussion in focus groups will be submitted for approval by the University of Florida Institutional Review Board (UF-IRB) for compliance with best practices and ethical standards for research.

Assessment of trends in agricultural commodity production will rely on many of the same primary and secondary sources as indicated above. Specifically, changes in production area, volume and sales will be examined for the period since 2002, when the previous Agricultural Lands Retention Study was completed, up to present, with the most recent information available for 2019-20.

Assessment of economic contributions of the agricultural industry in the County will rely on the *IMPLAN* economic modeling software and local data for 2019-20. Economic contributions will be estimated for each major commodity group in terms of employment (fulltime and part-time jobs), output (sales revenues), value added (GDP), labor income (salaries, wage and benefits), property income, and taxes to local, state and federal governments. This task will be investigated by the UF-IFAS Economic Impact Analysis program personnel (see list of project investigators at end of proposal). Long run economic contributions of the agricultural sector through 2050 will be assessed with the Regional Economic Models Incorporated-Policy Insight (REMI-PI) software licensed by the County, with specification of inputs and interpretation of results by the project investigators.

New and emerging agricultural technologies that may impact production practices will be evaluated to assess their economic, environmental and social impacts of adoption. Future technologies that could transform agriculture to be more profitable and sustainable will be presented and discussed. Future technologies may include new developments and improvements in application of such concepts as precision agriculture, protected agriculture, artificial intelligence, Internet of Things, big data analytics, biosensors, nanotechnology, automation, robotics and advances in indoor recirculating aquaculture production systems. Some specific ag technologies applicable would include variable rate fertilizer applicators, GPS, data loggers, smart sprayers, autonomous ground and aerial vehicles, mechanical harvesters, etc. Protected agriculture systems (greenhouses, vertical farms, transplant houses) may have significant potential for increasing productivity and land use intensity for specialty crops. In addition, plant

breeding and genetic engineering technologies will be considered. The assessment will evaluate capital and operational costs, land and labor requirements for future technologies for their impacts on productivity, profitability, sustainability. The project team will interview industry stakeholders, equipment manufacturers and other technology vendors to evaluate future technology developments, their adoption potential and impacts. An agricultural engineering technology specialist will be a co-principal investigator on the project.

Long term sustainability of agriculture in the County will be evaluated through modeling of climate and groundwater systems by a modeling specialist together with economists. Specifically, the groundwater modeling will consider the latest global climate model projections for temperature, rainfall, and hydrologic extremes such as heavy precipitation and drought, and Everglades restoration. Predictions for sea level rise, consumptive groundwater withdrawals and land-use and climate changes will enable hydrologic projections for groundwater flooding (or root zone saturation) events and availability of potable irrigation water. Recommendations will be developed for mitigation of adverse consequences of these stressors.

The analysis of long term agricultural land needs to 2030, 2040 and 2050 will be structured around scenarios developed for economic variables and a range of economic forecasts (low, medium, high). Projections will consider linear and nonlinear statistical models of past trends, together with expert opinion and consensus forecasts on markets, profitability, technology, climate, water and other environmental or institutional constraints. To the extent possible, the modeling of scenarios will be consistent with other recent long range planning efforts such as the UF-TREC strategic plan and the 2020 Strategic Economic Development Plan for South Dade.

### **Section 3: County Support**

The County has pledged to support this project by providing available County economic and demographic data, recruiting participants for focus group sessions, assisting with GIS mapping, and performing long run economic analysis with the REMI economic modeling software under the direction of the Consultant. Project investigators will specify the inputs and outputs for the REMI model. It is anticipated that approximately 25 runs will be needed with the REMI model to cover changes in policy variables for agricultural sector sales, exports, imports, employment, productivity, production costs and compensation rates, and at least three scenarios for the general macroeconomic forecast (baseline, high growth, low growth), that are run jointly with the other policy variables. At a minimum, GIS maps and summary statistics will be required for current and projected future land use, agricultural activity by parcel, the Urban Development Boundary, population density, topography/elevation, public parks, and groundwater depth.

### **Section 4: Project Deliverables**

Meetings with County Staff. The Consultant will meet with County staff within fifteen days of issuance of the Notice to Proceed and quarterly during the course of the project to provide project updates. Meetings with County staff may occur virtually utilizing videoconferencing communication technology acceptable to the County. A Plan of Action will be presented at an initial meeting with County staff to confirm the timeline for project milestones, data needs, and proposed techniques for data collection.

Quarterly Reports. Four quarterly reports will be provided to the County during the course of the project. These reports will summarize all activities, accomplishments, and key findings during the period.

Final Report. A Draft Report meeting the requirements of the Scope outlined in this proposal will be provided to the County. The report will include executive summary, table of contents, with separate sections for introduction, methodology and results for each scope of work item, conclusions, information sources cited, tables and figures, and appendices of additional supporting information. The County will have an opportunity to review and comment on the Draft Report, then the investigators will respond to these comments, addressing each one and indicating the changes that were made or not made, and the reasons for the changes. The revised Final Report will be provided in digital form as a pdf document, and the County will print copies of the report for distribution to the Board of County Commissioners and elsewhere as appropriate. An oral presentation of the project findings will be made to the County upon

request. In addition, project findings will be presented to local stakeholders at a public meeting.

Board Attendance. The Consultant will attend and present at up to two meetings of the Agricultural Practices Advisory Board and two meetings of the Board of County Commissioners, if requested, for up to one hour. Such attendance is anticipated to be in-person unless an alternate arrangement is approved by the County. The Consultant will be available to discuss the project with individual County Commissioners via telephone or videoconference.

### **Section 5: Project Timeline**

The project will be 19 months in duration, beginning November 5, 2021 and running through May 31, 2023, as indicated in the timeline/Gantt chart (Table 2). If the starting date of the project is delayed beyond November 5, all project dates will be adjusted by an equal amount.

The project work was organized around eight different activity groups that roughly correspond to tasks in the scope of work with durations and completion months as follows:

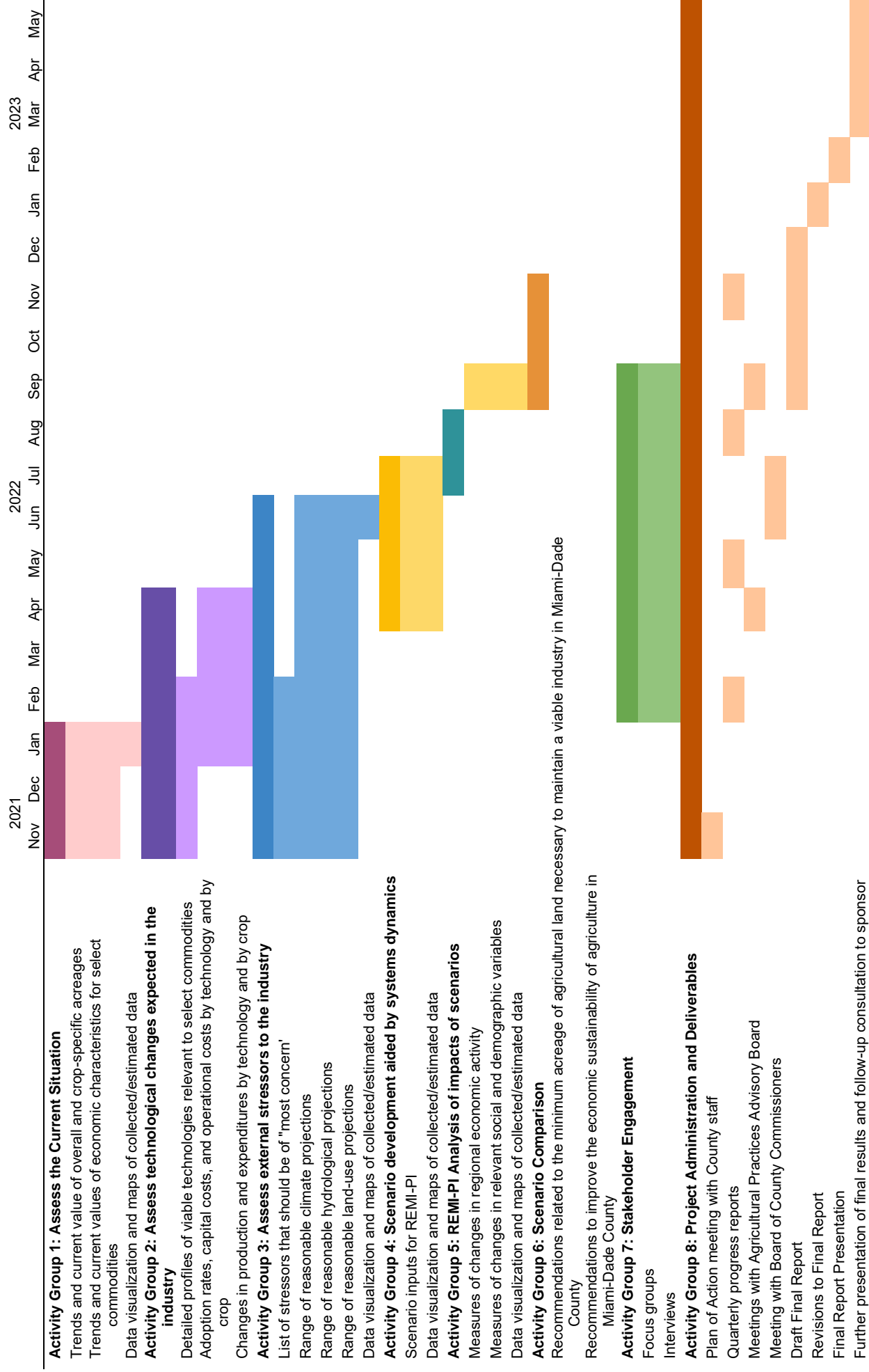
1. Assess the current situation, 3 months, Jan. 2022
2. Assess changes expected in the industry, 6 months, Apr. 2022
3. Assess external stressor to the industry, 8 months, Jun. 2022
4. Scenario development aided by systems dynamics, 4 months, Jul. 2022
5. REMI-PI analysis of impacts of scenarios, 4 weeks, Aug. 2022
6. Scenario comparison, 6 weeks, Nov. 2022
7. Stakeholder engagement, 8 months, Sep. 2022
8. Project administration, 17 months, May 2023

Note that inputs for some activities are dependent upon completion of other activities. For example, activities two and three four require information developed under activity one, activity four needs inputs from activities one, two and three, activity five depends upon activity four, and activity six depends upon activity five.

The Draft Report will be delivered by December 15, 2022. Comments from County staff on the draft report are to be provided within 20 days (by Jan. 5, 2023). The revised Final Report will be delivered by January 31, 2023. Quarterly written project updates will be provided to the County in February, May, August and November, 2022. An additional four months after delivery of the final report are allowed for follow-up and consultation with the County during February through May, 2023. Upon request, an oral presentation of findings may be made during this time. Meetings with the Agricultural Practices Advisory Board and the Board of County Commissioners will be scheduled at mutually convenient times to be determined.



Table 2. Project timeline and Gantt chart



## Section 6: Project Budget

The budget for the proposed project by UF-IFAS is detailed in the table below. Total personnel costs are \$399,115, including salary and fringe benefit expenses for separate teams conducting economic impact analysis, climate and hydrology assessment, technology assessment, local outreach, project administration and leadership. Other expenses include \$8,750 for local and overnight travel, giving total direct costs of \$407,865. In addition, a 10% indirect cost fee (\$40,786) is assessed for university administrative overhead costs, as per established guidelines for projects between state universities and local governments in Florida, bringing total project costs to \$448,651.

The County will be invoiced for payment according to the following schedule: 50% of total budget at the beginning of the project, 40% upon completion and delivery of the Draft Report, and the remaining 10% upon delivery of the Final Report. Note that this budget and payment schedule has been officially approved by UF-IFAS Division of Sponsored Programs, but there may be a budget amendment to cover travel costs for an additional meeting with the Board of County Commissioners and a public stakeholder presentation.

Table 3. Project budget

Item	Amount
<u>Personnel</u>	
Economic Impact Analysis Program team (Hodges, Court, Qiao, Ferreira, Ropicki)	\$133,550
Climate and hydrology team (Her, post-doc)	\$51,234
Technology team (Ampatzidis, post-doc)	\$53,274
TREC team (Blare, Ballen, Messina)	\$73,101
Administration (Clouser)	\$47,515
Other support, project communications (Evans, House)	\$40,441
Total personnel	<u>\$399,115</u>
<u>Other expenses</u>	
Travel-overnight and local	\$8,750
Total direct cost	<u>\$407,865</u>
Indirect cost (10% of total direct cost)	\$40,786
Total project cost	<u>\$448,651</u>

## Section 7: Project Investigators

The UF-IFAS project team includes eleven investigators from the Food and Resource Economics Department (Gainesville), the Tropical Research and Education Center (Homestead) and the Southwest Florida Research and Education Center (Immokalee), with affiliations and project roles for each investigator indicated in the table below.

Table 4. List of investigators and project roles

Name	University Affiliation	Project Role
Edward (“Gilly”) Evans	Professor and Center Director, UF/IFAS-Tropical Research and Education Center, Homestead	Project Director and Co-PI. Administration of Homestead and Immokalee faculty, meetings with County staff, commodity trade analysis; tasks 4, 6, 7; activity groups 2, 3, 4, 6, 7, 8
Lisa House	Professor and Chair, UF/IFAS-Food and Resource Economics, Gainesville	Co-PI. Administration of Gainesville faculty, market research; tasks 4 and 7; activity groups 4, 6, 8
Rodney Clouser	Professor Emeritus, UF/IFAS-Food and Resource Economics, Gainesville	Project coordinator, contact for county administrative staff, report editor, meeting convener; tasks 1,2, 3, 4, 5, 6, 7; activity groups 1, 2, 3, 4, 5, 6, 7, 8
Christa Court	Assistant Professor, UF/IFAS-Food and Resource Economics, Gainesville	Economic trend data and contribution analysis, sustainability assessment, liaison to county technical staff; tasks 1, 2, 3, 4; activity groups 1, 2, 4, 5, 6, 8
Andrew Ropicki	Assistant Professor, UF/IFAS-Food and Resource Economics, Gainesville	Economic trend data, aquaculture industry assessment; tasks 1, 3, 4; activity groups 1, 2, 8
Alan Hodges	Extension Scientist Emeritus, UF/IFAS-Food and Resource Economics, Gainesville	Economic trend data and contribution analysis, nursery and greenhouse industry assessment; tasks 1, 2, 3, 4, 5, 6, 7; activity groups 1, 2, 3, 4, 5, 6, 8
Trent Blare	Assistant Professor, UF/IFAS-Tropical Research and Education Center, Homestead	Industry-commodity assessment, local stakeholder interviews, meetings with county staff; tasks 1, 3, 4, 7; activity groups 1, 2, 6, 7, 8
Freddy Ballen	Research Associate, UF/IFAS-Tropical Research and Education Center, Homestead	Industry-commodity assessment, local stakeholder interviews; tasks 1, 3, 4, 7; activity groups 1, 2, 3, 6, 8
William Messina	Research Associate, UF/IFAS-Food and Resource Economics, Gainesville	Industry-commodity assessment, local stakeholder interviews and focus group sessions; tasks 4, 5, 6; activity groups, 2, 6, 7, 8
Ioannis (“Yiannis”) Ampatzidis	Associate Professor, Agricultural and Biological Engineering, UF/IFAS-Southwest Florida Research and Education Center, Immokalee	Agricultural technology assessment; task 5; activity groups 2, 4, 8
Young Gu Her	Assistant Professor, Agricultural and Biological Engineering, UF/IFAS-Tropical Research and Education Center,	Climate and hydrologic systems modeling, sustainability assessment; tasks 6, 7; activity groups 3, 4, 6, 8

Name	University Affiliation	Project Role
	Homestead	

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