

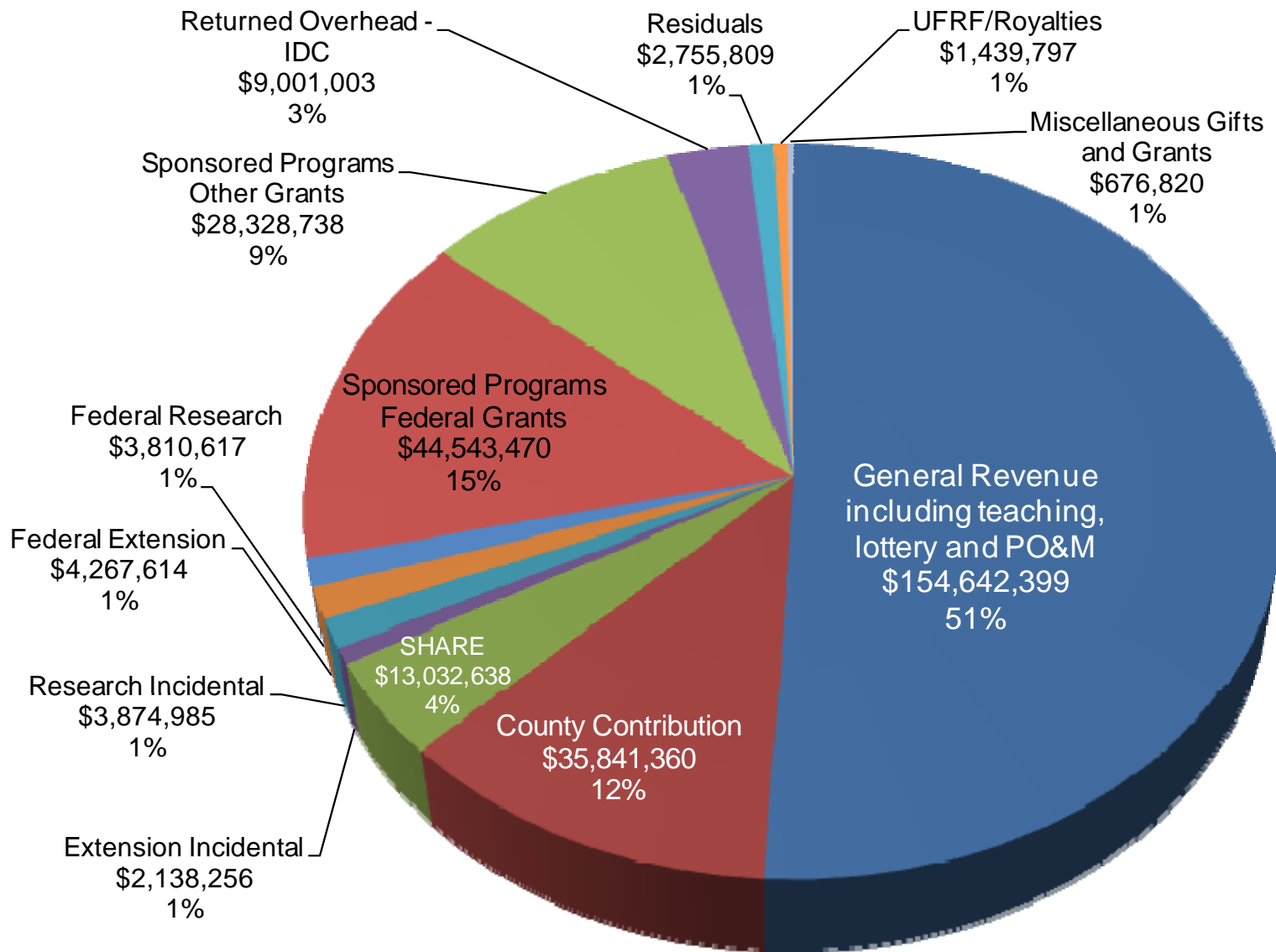
IFAS Research Efforts and Agricultural Sustainability

Indian River County Forum on Agricultural Sustainability

November 20, 2009

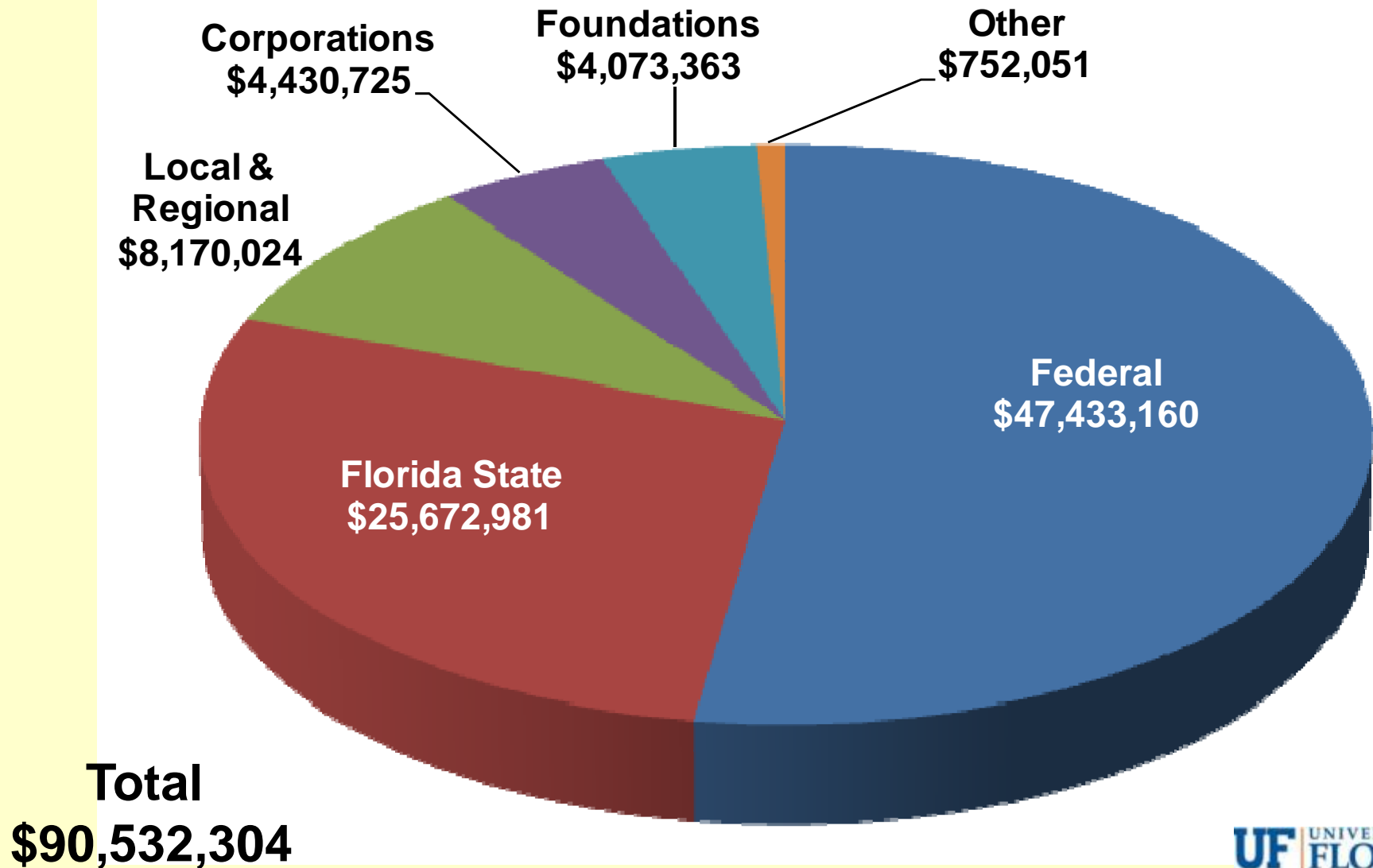
Joseph (Joe) C. Joyce

Associate Vice President for Agriculture and Natural Resources
Institute of Food and Agricultural Resources
University of Florida

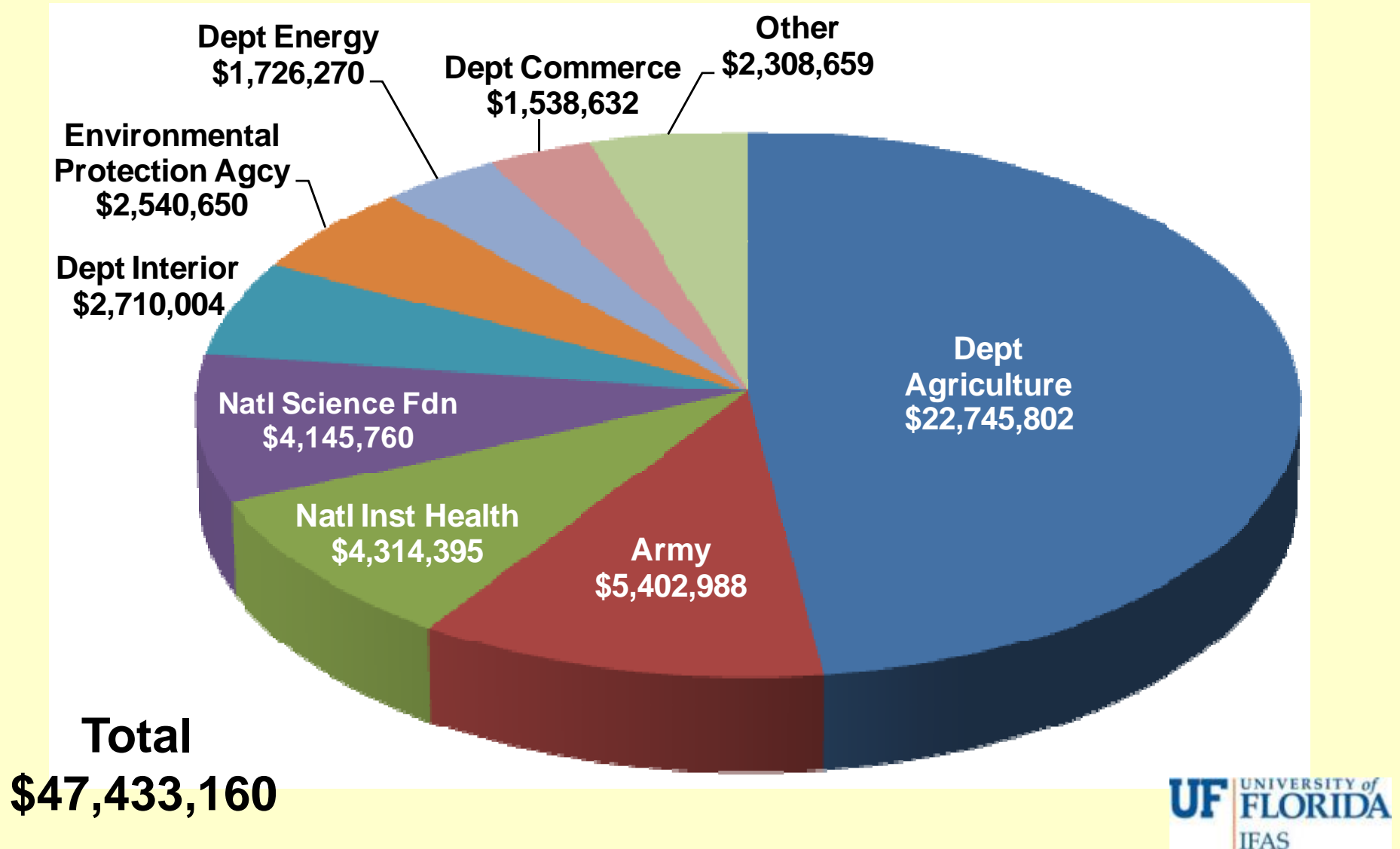


Total \$304,353,506

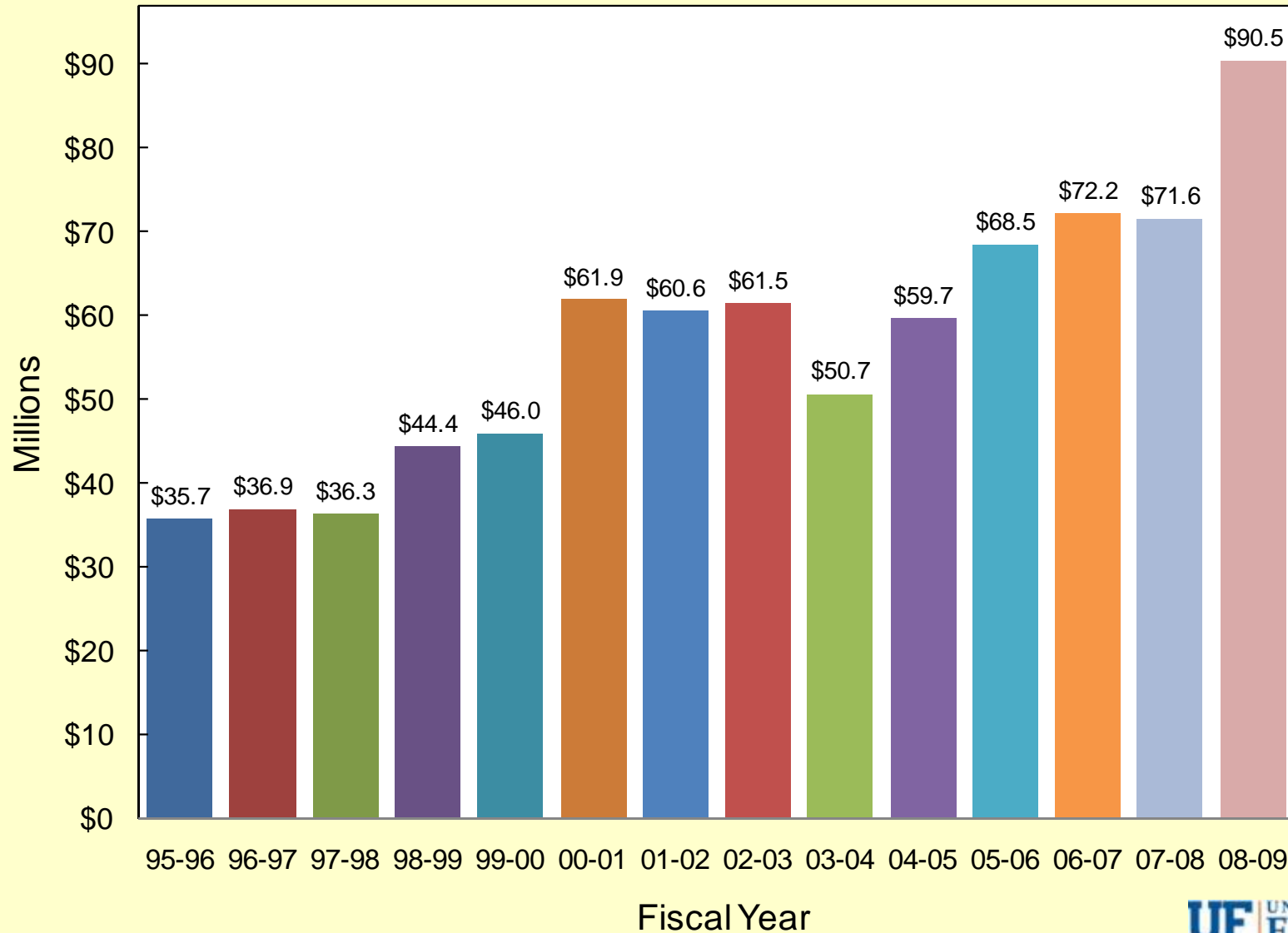
IFAS Sponsored Programs All Sources



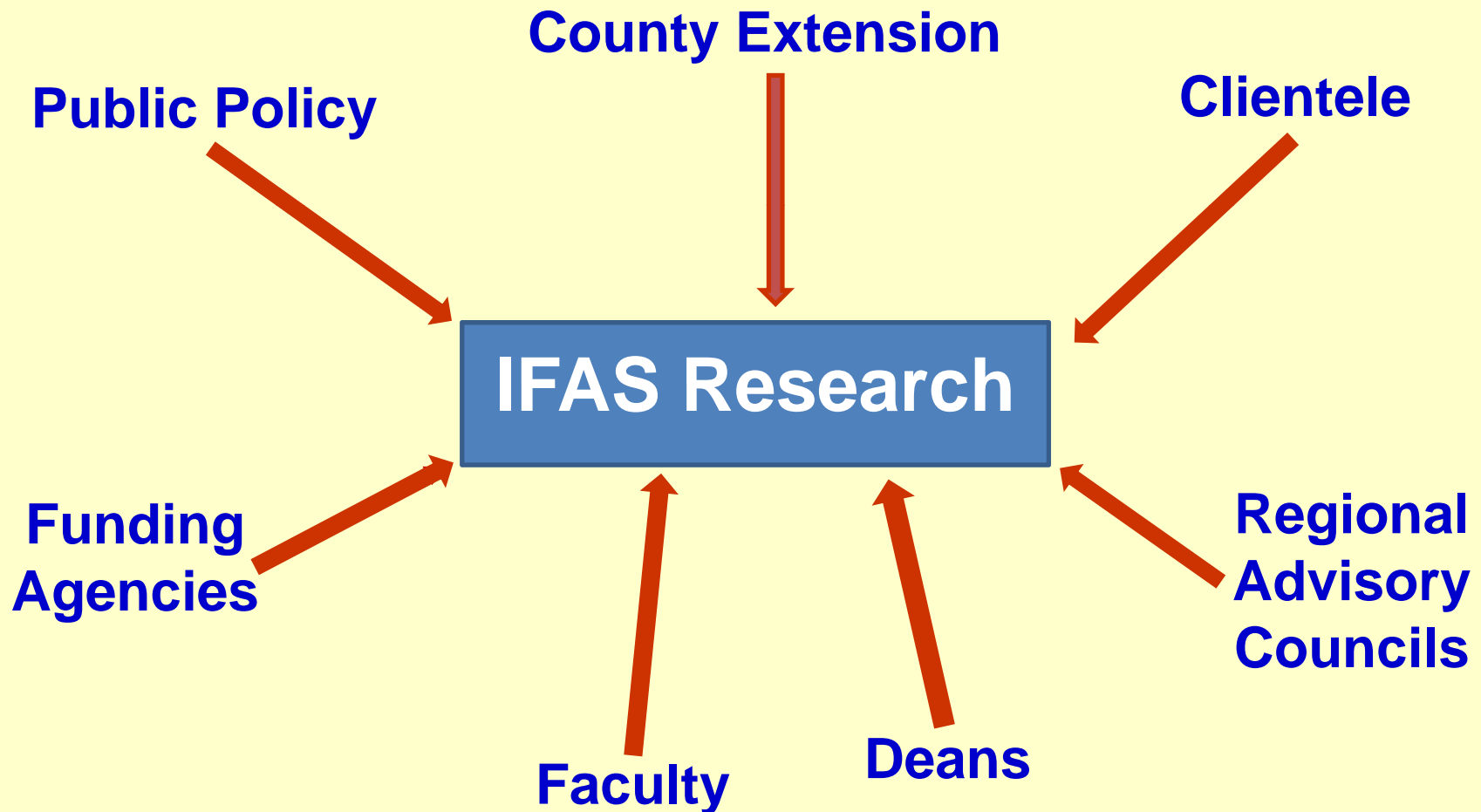
IFAS Sponsored Programs Federal Funding



IFAS Sponsored Research Awards



Sources of Input to IFAS Research Prioritization Process





UF/IFAS RESEARCH ROADMAP

Executive Summary

A FACULTY-DRIVEN PLAN

UF UNIVERSITY of
FLORIDA

**“A plan to build
science capacity
in order to meet
the real world
challenges facing...**

**Agriculture,
Natural Resources
and
Life Sciences”**

Mark R. McLellan
Dean for Research

UF UNIVERSITY of
FLORIDA
IFAS



Steps in the Research Roadmap Process

Each department and Research and Education Center developed and shared their unique roadmap – massive effort by your faculty.

- Science of the future
- Essential Core Programs
- Critical Hires that will shape our future science

Pillars of IFAS

- Agricultural & Biological Engineering
- Agricultural Education & Communication
- Agronomy
- Animal Sciences
- Entomology & Nematology
- Environmental Horticulture
- Family, Youth & Community Science
- Food & Resource Economics
- Food Science & Human Nutrition
- School of Forest Resources & Conservation
- Horticultural Sciences
- Microbiology & Cell Science
- Plant Pathology
- Soil & Water Science
- Statistics
- Wildlife Ecology & Conservation
- Citrus Research & Education Center (REC)
- Everglades REC
- Florida Medical Entomology Lab
- Ft. Lauderdale REC
- Gulf Coast REC
- Indian River REC
- Mid-Florida REC
- North Florida REC
- Range Cattle REC
- Southwest Florida REC
- Tropical REC
- West Florida REC

...Envisioning a future of interdisciplinary sciences

Faculty from each unit met together to identify multi-disciplinary, cross-cutting programs in 3 “IFAS Worlds”

- Production Agriculture
- Natural Resources
- Human Dimensions



The Common Threads

- Sustainability
- Energy
- Climate Change
- Water
- Food Systems and Food Safety
- Ecosystem Health and Services
- Resource Production

Indian River REC – Ft. Pierce

Core Programs of the Future:

- Citrus canker and greening – genetics and grove architecture
- Biological control of invasive plants and insects
- Specialty crops and high value-added production horticultural products
- Farm-to-fork production systems for alternative crops
- Environmental quality and restoration of wetlands and estuaries
- Biofuel feedstocks
- Alternative agricultural systems (aquaculture, energy crops)
- Interaction of sustainable agriculture and environmental quality

UF/IFAS - Addressing CITRUS GREENING in Florida
Florida Agricultural Experiment Station
Florida Cooperative Extension Service

Longer-Term Research

Short-Term Research

Immediate Action Response

ADDRESSABLE ISSUES TODAY

- [1] **Detection & Removal of Infected Trees**
 - Improved Scouting
 - New Diagnostics
 - spread dynamic
- [2] **Citrus Psyllid Suppression**
 - Chemical Suppression
 - Material
 - Application
 - Timing
 - Increased IPM
 - improved chemical use
 - Psyllid Population & dynamics
 - Improved bio-controls
- [3] **Nursery Targeted Opportunities**
 - Protected/contained nursery models
 - Improved diagnosis & protection of budwood

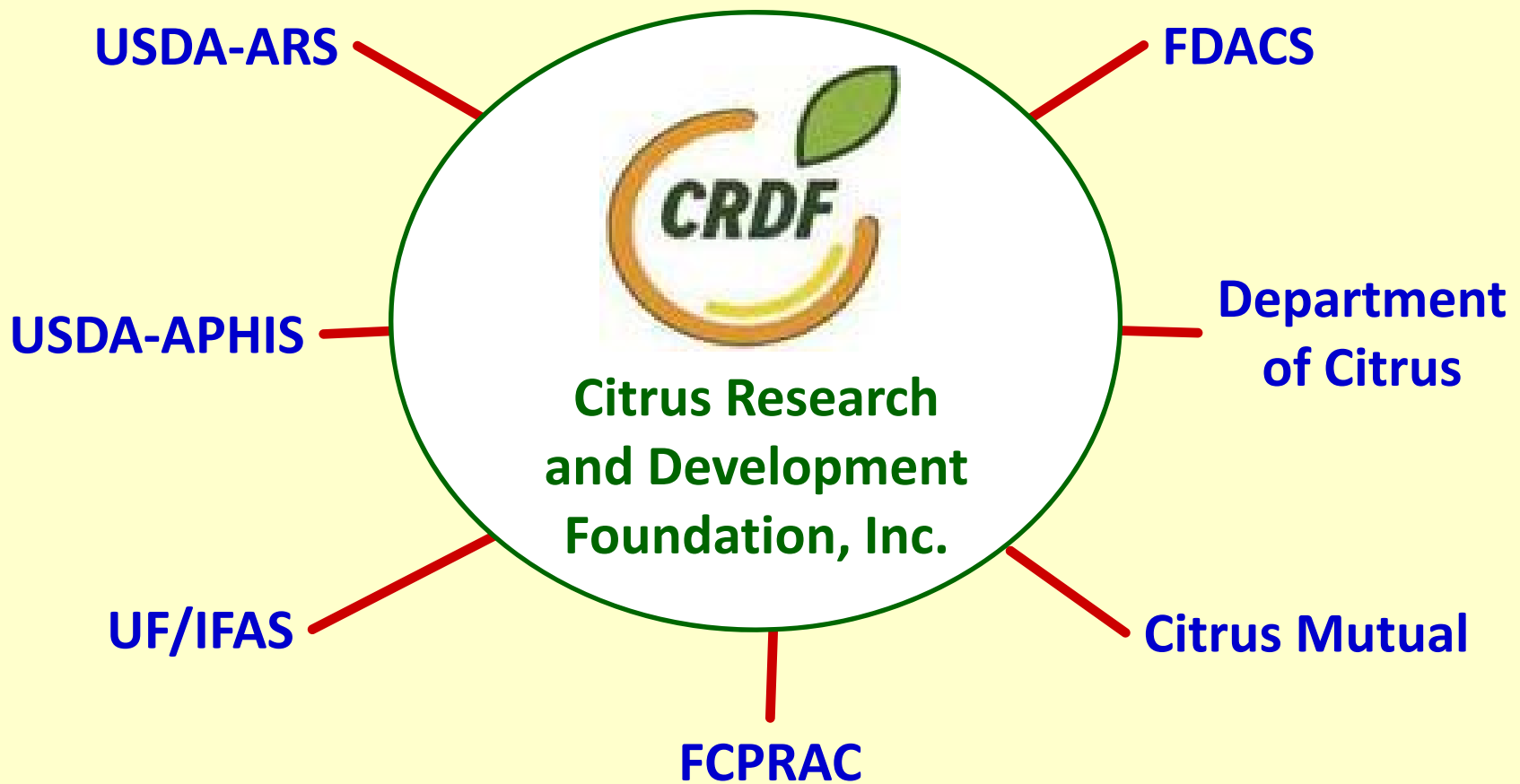
PRIMARY RESEARCH TODAY

- [1] **Genetics & Culturing**
 - Genetic sequencing- greening bacterium
 - study plant infection
 - disease development
 - fundamental bacterial biology
 - Learning to culture the bacterium
 - [2] **Diagnostics Improvement**
 - Use of genetics sequence to
 - Produce new primers
 - More sensitive diagnostics
 - [3] **Understanding Movement of bacteria**
 - Onset of infection
 - Development of symptoms
 - [4] **Strategies of Replanting lost citrus**
 - within blocks
 - whole blocks
 - [5] **Pathogen/psyllid interactions (Transmission Characteristics)**
 - Efficiencies
 - Timetables
 - Life stages
- [3] Improved Citrus Production Systems

LONGER TERM RESEARCH GOAL: SUSTAINABLE CITRUS PRODUCTION

- [1] plant-based tolerance or resistance
- [2] **Use of citrus relatives** (ie. Orange Jasmine)
 - trapping and suppression
 - psyllid populations - slowing greening infection
- [3] **Incorporating antibacterial genes**
- [4] **Manipulation of plant, insect or pathogen genetics**
 - interfere with the host/pathogen
 - interfere with or vector/pathogen

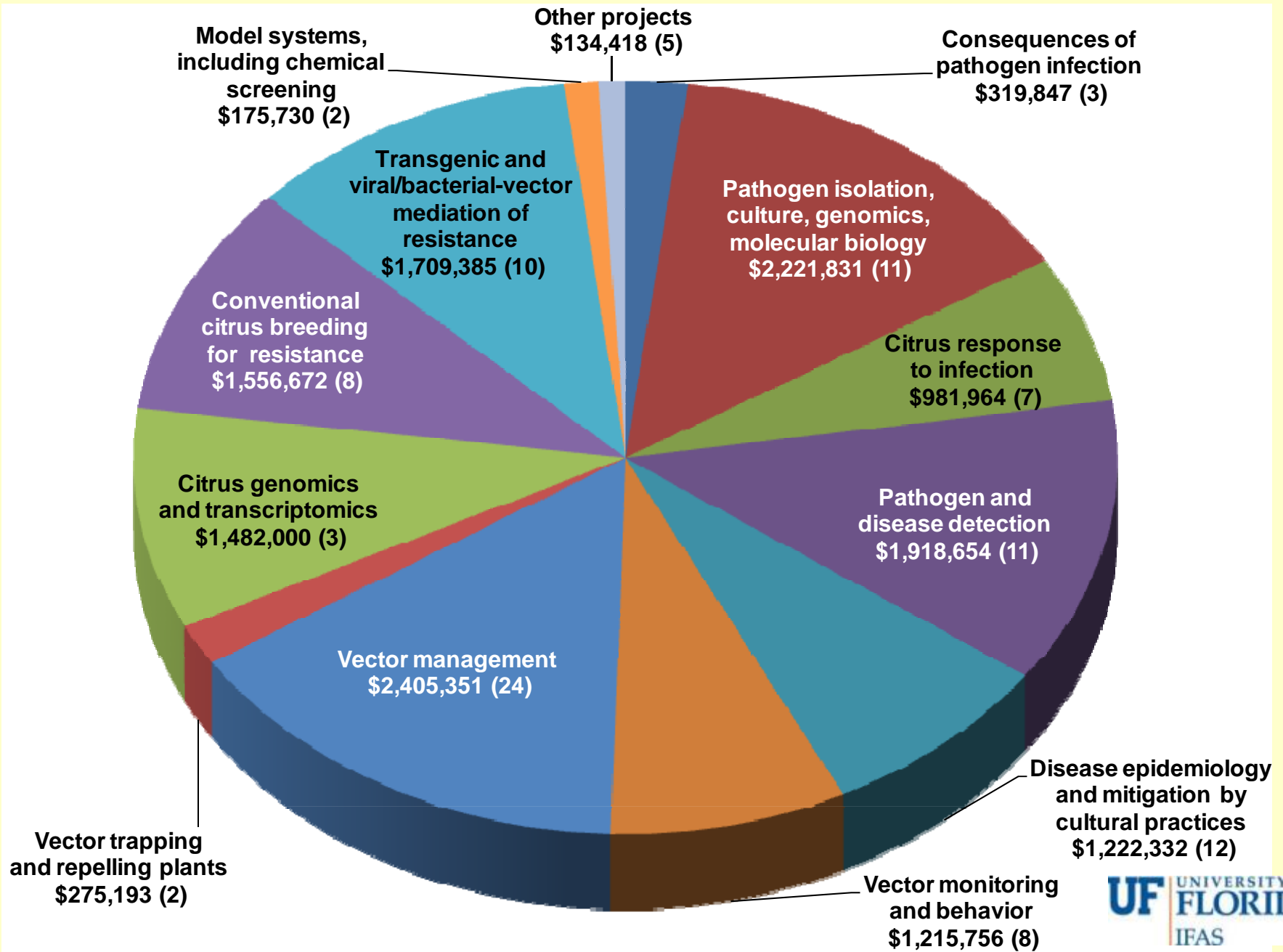
Florida Citrus Research and Development Coordination



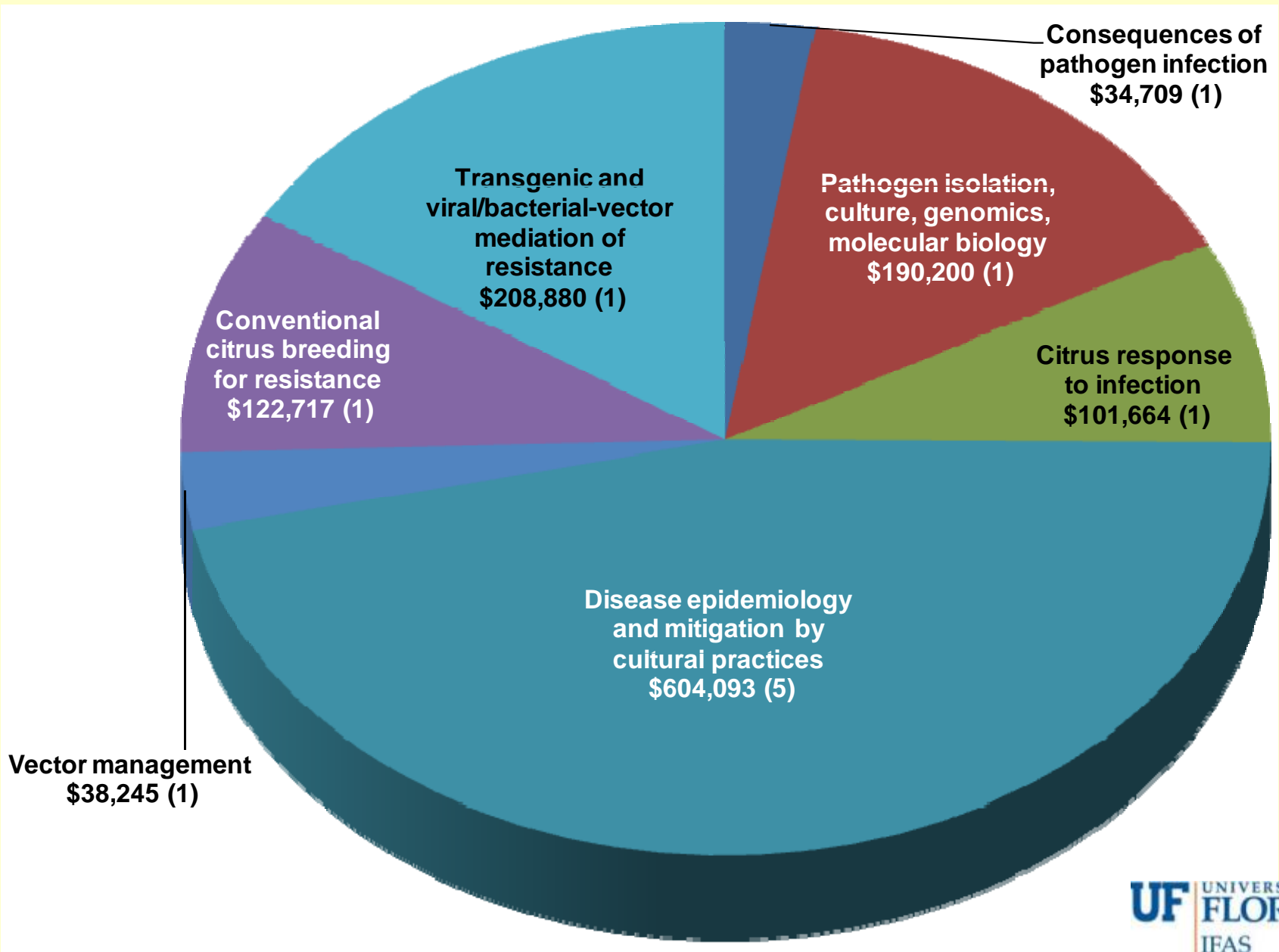
2008-09 FDOC- and FDACS-funded Projects

- Consequences of pathogen infection
- Pathogen isolation, culture, genomics, molecular biology
- Citrus response to infection
- Pathogen and disease detection
- Disease epidemiology and mitigation by cultural practices
- Vector monitoring and behavior
- Vector management
- Vector trapping and repelling plants
- Citrus genomics and transcriptomics
- Conventional citrus breeding for resistance
- Transgenic and viral/bacterial-vector mediation of resistance
- Model systems, including chemical screening
- Other projects

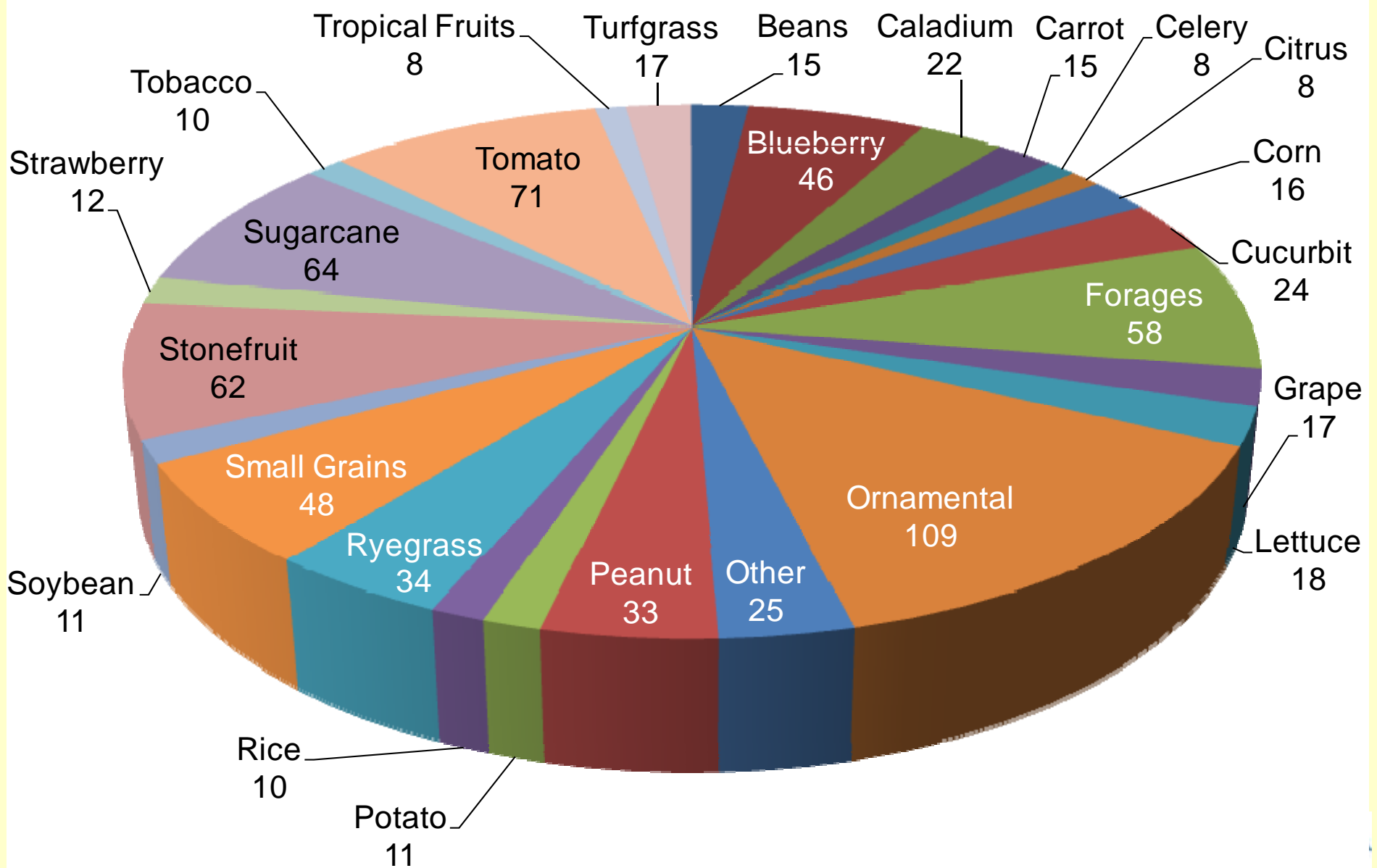
Greening Projects - \$15,619,133



Canker Projects - \$1,300,508



UF/IFAS Cultivar Releases Since 1892



Economic Impacts in Treasure Coast Counties by Agricultural, Natural Resource, and Food and Kindred Product Manufacturing, Distribution, and Service Industries in 2007

County	Direct Impact	Value Added	Total	Jobs
<i>(2007 U.S. million dollars)</i>				
Okeechobee	\$1,164.3	\$455.8	\$1,620.1	6,615
Indian River	\$2,267.0	\$1,287.1	\$3,554.1	18,340
St. Lucie	\$3,448.6	\$1,768.4	\$5,217.0	24,704
Martin	\$2,669.5	\$1,450.2	\$4,119.7	18,791
Brevard	\$4,266.7	\$2,214.3	\$6,481.0	32,747
Total	\$13,816.1	\$7,175.8	\$20,991.9	101,197

Benefits of Agriculture in the Landscape

- Open space
- Water storage
- Water recharge
- Wildlife habitat
- Invasive species management
- Eco-tourism
- Economic impact
- Low cost of services vs. inputs

QUESTIONS?

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