UF IFAS
UNIVERSITY of FLORIDA

AGRICULTURE AND
NATURAL RESOURCE
ECONOMICS PROGRAM

Citrus Growers' Perceptions of Best Management Practices Costs and Benefits

Tara Wade, PhD
Moonwon Soh, Student
Southwest FL Research and Education Center
Immokalee, FL

Citrus Grower Seminar
March 23, 2021
Immokalee, FL

Introduction

- Agriculture plays an important role in sustaining and improving Florida's natural resources

- We can increase this role by:
  1. Measuring the economic value of the services growers provide
  2. Implementing policies that reward agricultural stewardship

We can achieve this by examining factors that affect how growers make decisions to use conservation practices.

Economist's Role:

- Economists help manage scarce resources
- Economists ask questions about factors affecting choices:
  - Too expensive?
  - A need for more education?
  - Too time consuming?
  - Lack of interest?
  - Other factors…

Introduction

Agricultural best management practices (BMPs) are essential to mitigating agriculture's effects on the environment

Practices must be economically feasible if growers are going to adopt

Public benefits

- Sustained or improved water quality
- Sustained or increased water quantity
- Reduced soil erosion
- Improved air quality

Potential private benefits

- Improved crop yield
- Improved soil health
- Reduced input costs (e.g., fuel, labor, and fertilizer)

Knowledge Gaps in Best Management Practices (BMPs) Implementation

Growers provide a public service by absorbing the cost of implementing BMPs

- ***Information Gaps*:**
  - What are the full suite of costs and benefits?
  - Do benefits from BMPs outweigh the costs?
  - How do BMPs affect producers' bottom line?
  - Does the public benefit outweigh the grower benefit?
  - Do cost-share programs provide enough incentives to increase BMP use?
  - How do we communicate the financial benefits of BMP use to growers?
  - Who should be paying for BMP implementation?

More information is needed so we can have a meaningful conversation about who should be paying for BMP adoption and how to improve program design.

Florida Best Management Practices Adoption & Cost Survey

Primary Goal:

To better understand the burden placed on growers

We conduct a statewide grower survey to:

- **Identify which commodity groups are adopting certain BMPs**
- **Understand some of the challenges to adoption**
- **Obtain growers' perspectives on the additional cost of adoption**
- **Obtain growers' perspectives on the effect on yield**

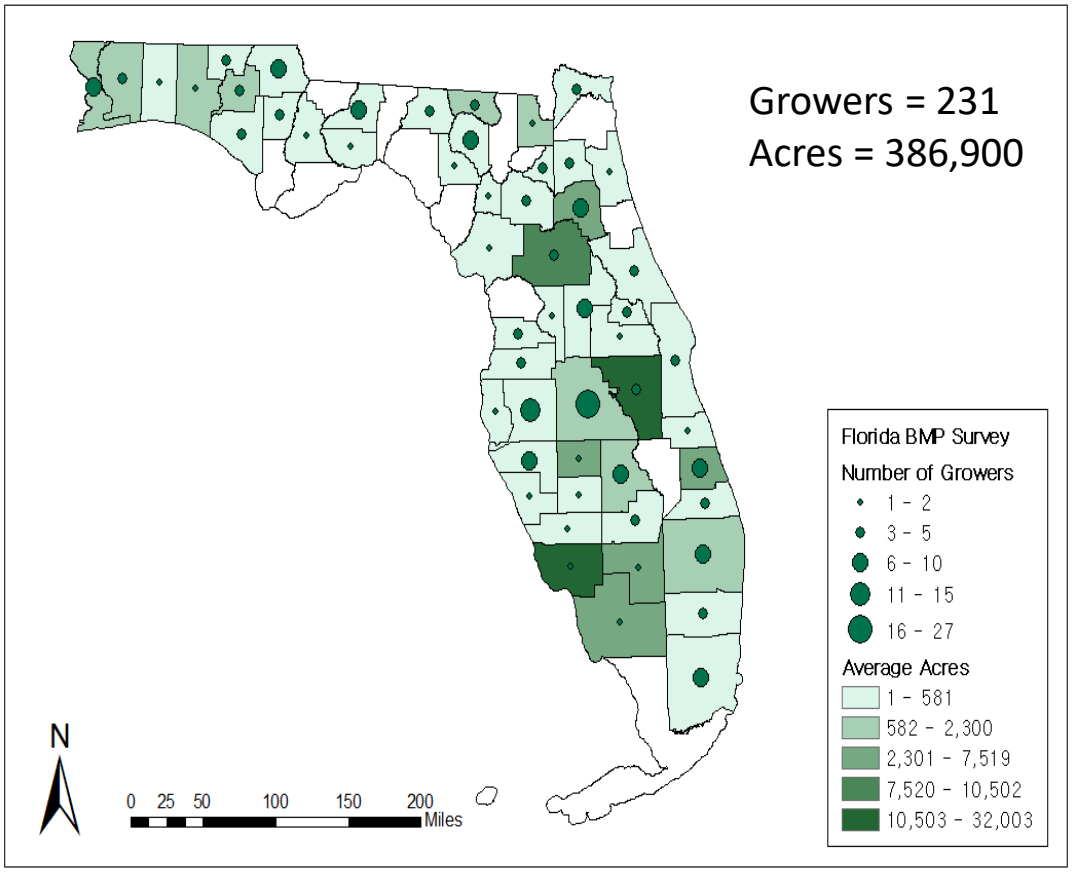
These are the first steps to capture the cost of BMP adoption and document the services you provide

Florida Best Management Practices Adoption & Cost Survey

- Core BMPs examined:
  - Controlled release fertilizer
  - Cover crops
  - Calibrate fertilizer equipment
  - Irrigation scheduling tools
- Core BMP questions:
  - Crop acres
  - Additional cost
  - Years used
  - Affect on yield
- Other BMPs: soil tests, IFAS recommended fertilizer rates, apply fertilizer at root zone, conservation tillage, conservation buffers, do not irrigate beyond field water holding capacity

Survey Methods and Data Description

Grower Distribution for All Crops

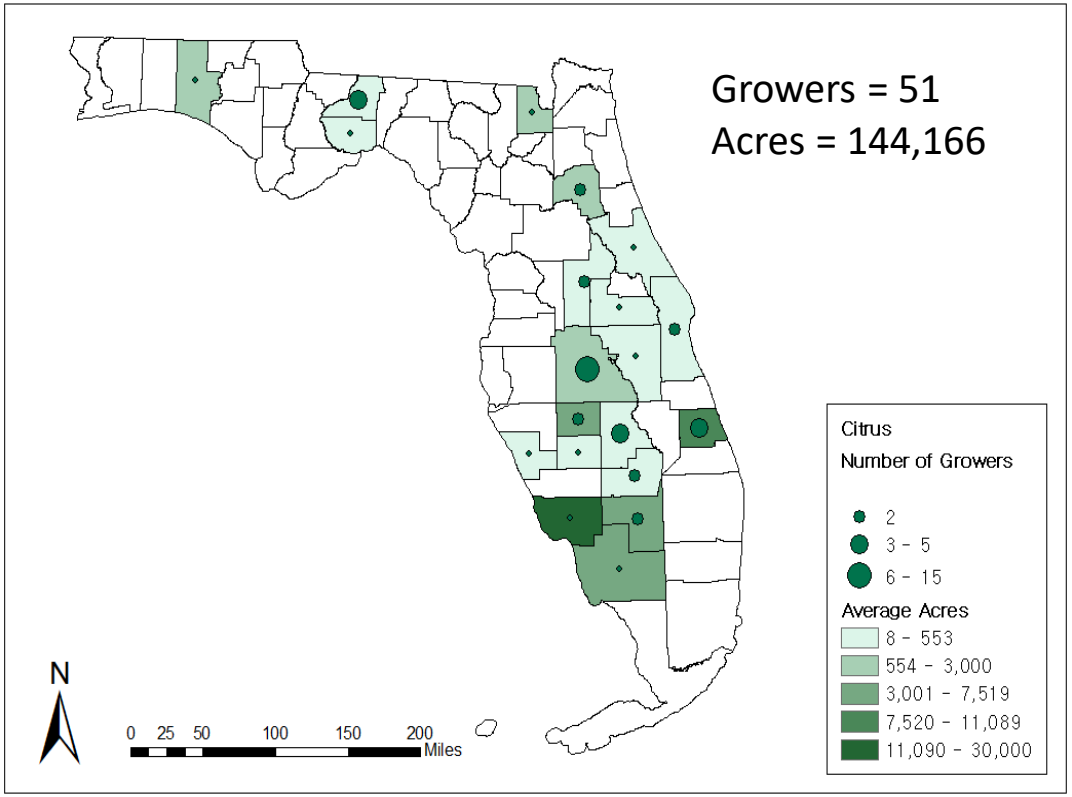


Notes

- Usable Surveys: 160
- *Second crop data are treated as separate responses*
  - Growers with secondary crop: 80
- Livestock or unreliable: 9
- **Total usable: 231**
  - ❖ Total Acres: 386,900
  - ❖ Mean Acres: 1,675
  - ❖ Median Acres: about 200
  - ❖ Crops: Citrus, Agronomic Crops, Vegetables, Forage, Other crops

Survey Methods and Data Description

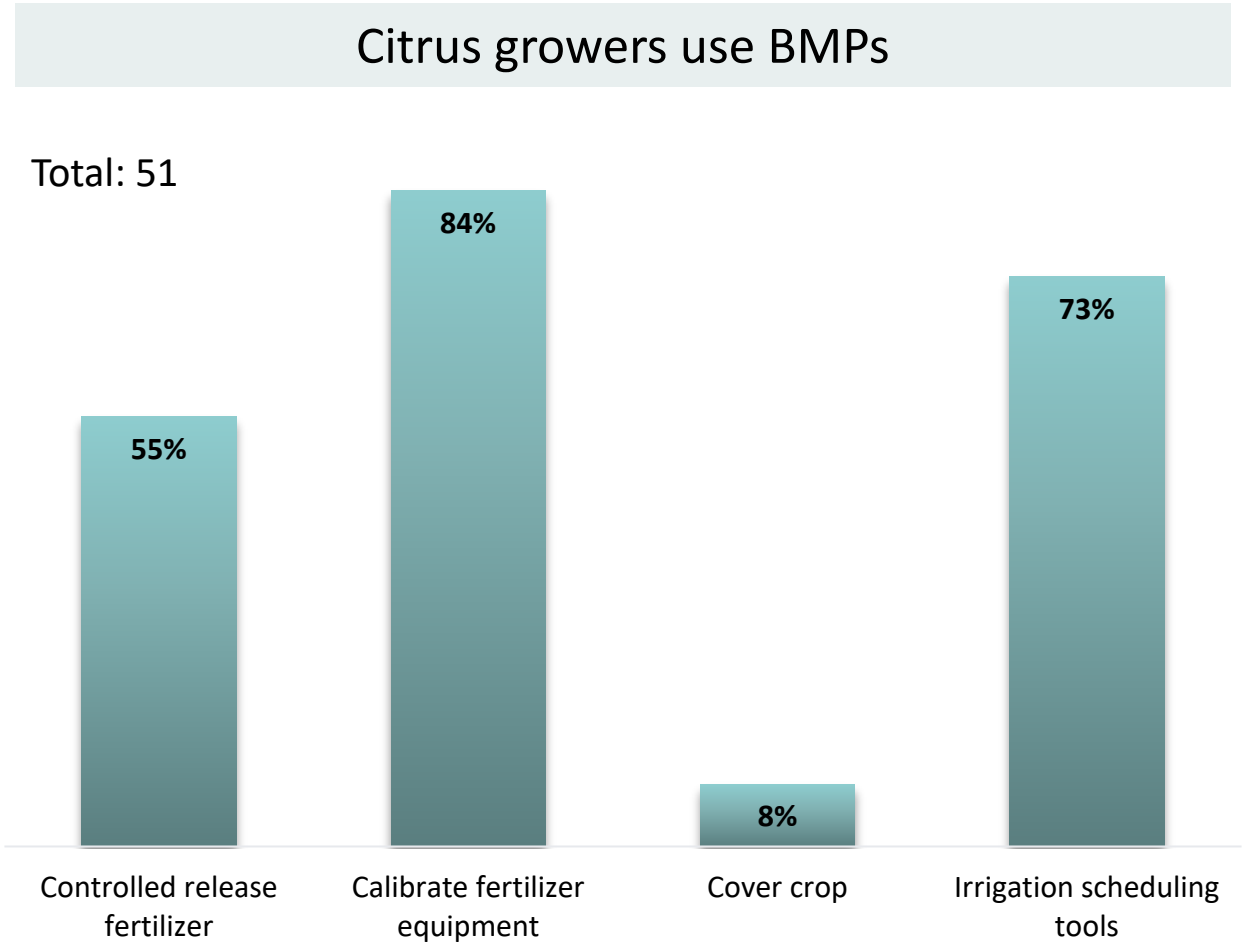
Grower Distribution for Citrus Crops



Notes

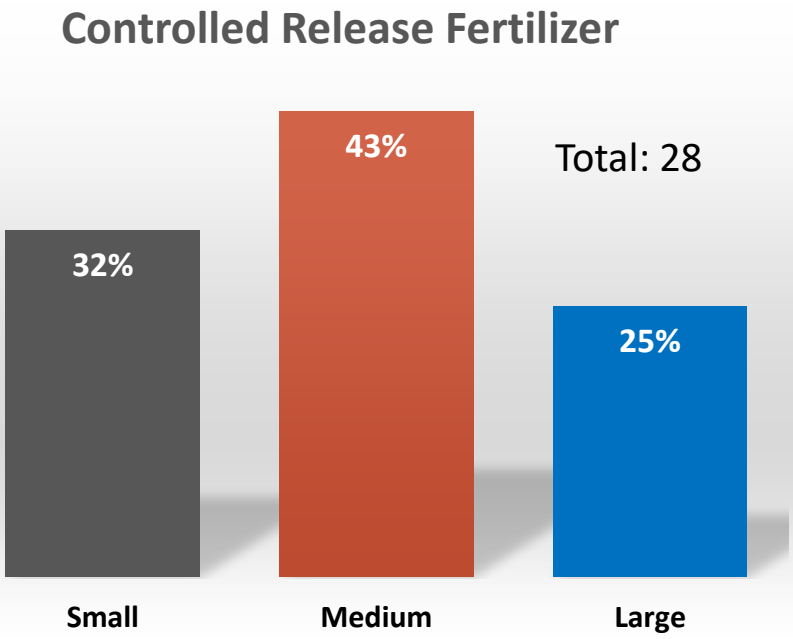
- Usable surveys: 51
  - Total Acres: 144,166
  - Mean: 2,827
  - Median: about 300
- Farm size categories:
  - Small: 17
  - Medium: 15
  - Large: 19
- Counties: 20

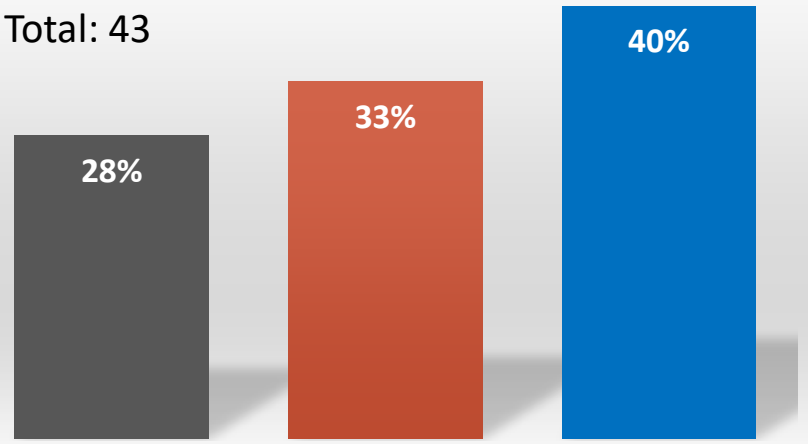
Citrus Growers' Adoption Rates of Four Core Best Management Practices

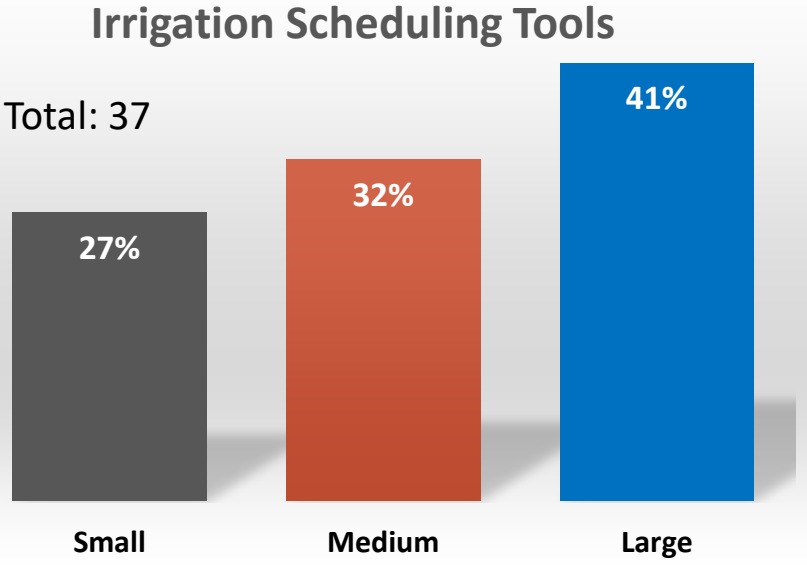


Citrus Growers' BMP Adoption Rates by Farm Size

Larger farms are more likely to use irrigation tools, but less likely to use control release fertilizer

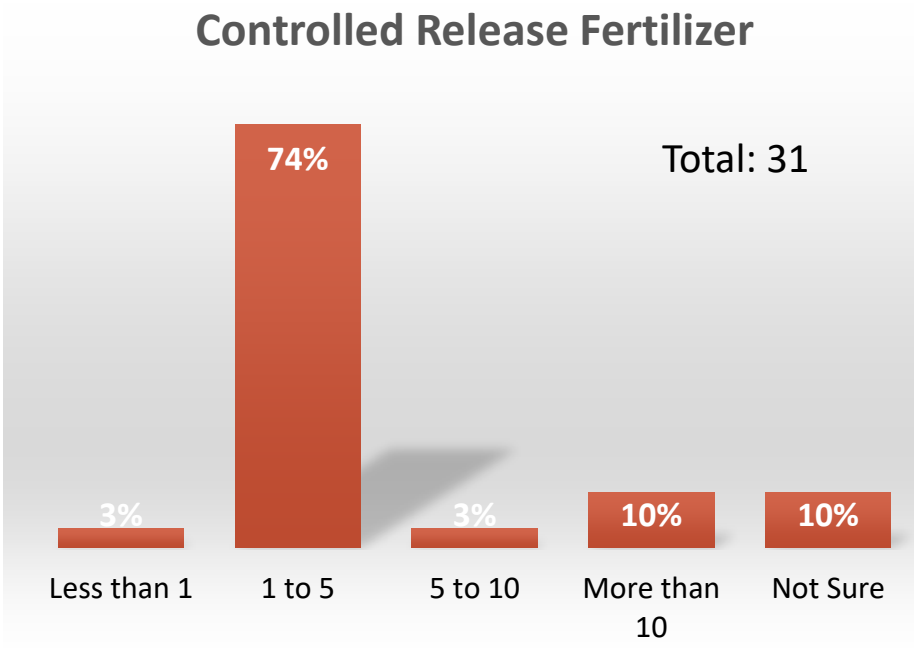


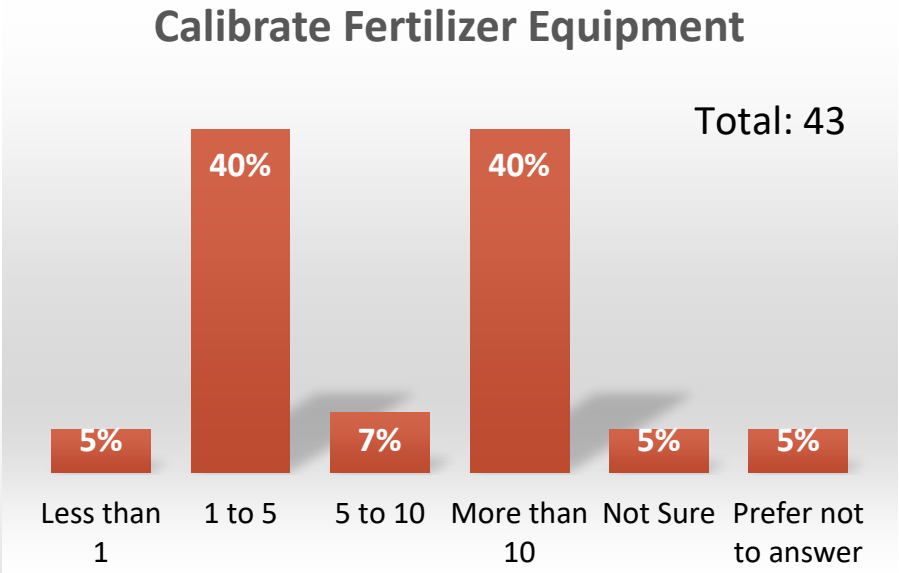


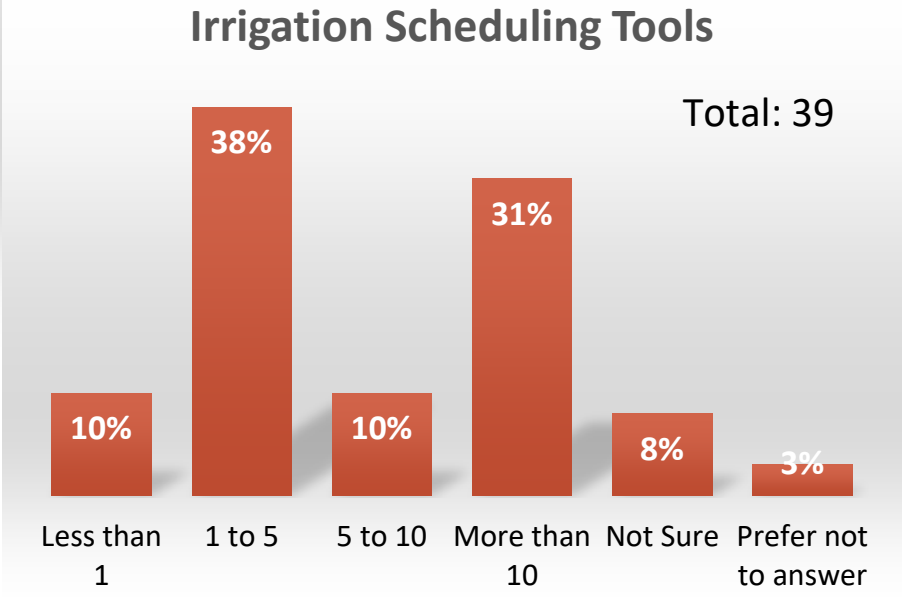


Adoption Timing for Core Best Management Practices

Most citrus growers use controlled release fertilizer for 5 years or less





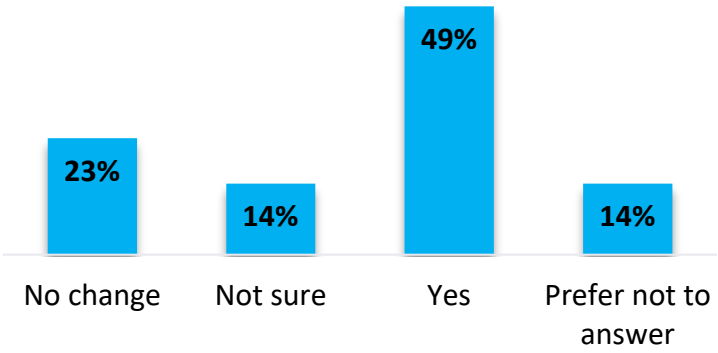


Citrus Growers' Perceptions of Core BMPs' Profitability

Most citrus growers think BMPs are profitable

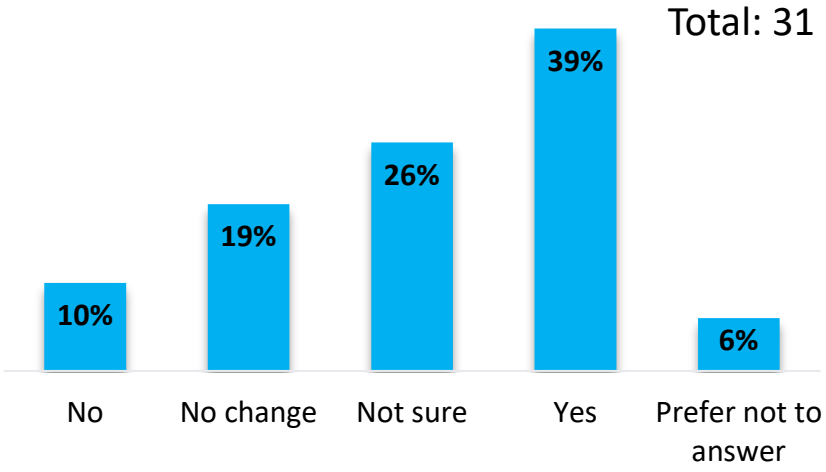
Calibrate Fertilizer Equipment

Total: 43



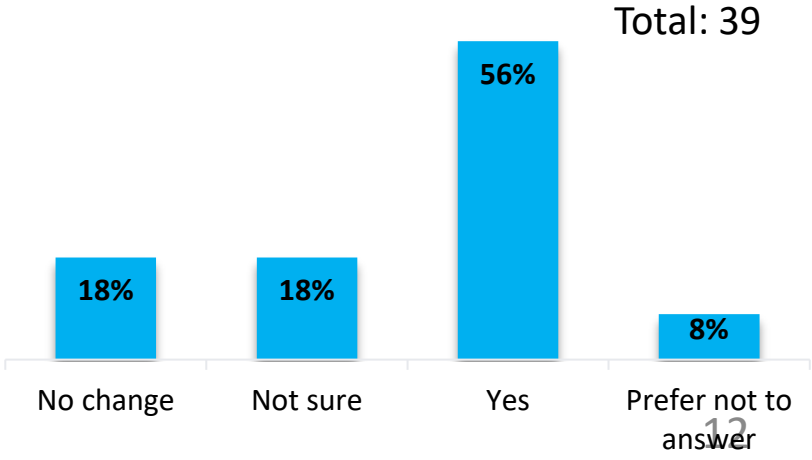
Controlled Release Fertilizer

Total: 31



Irrigation Scheduling Tools

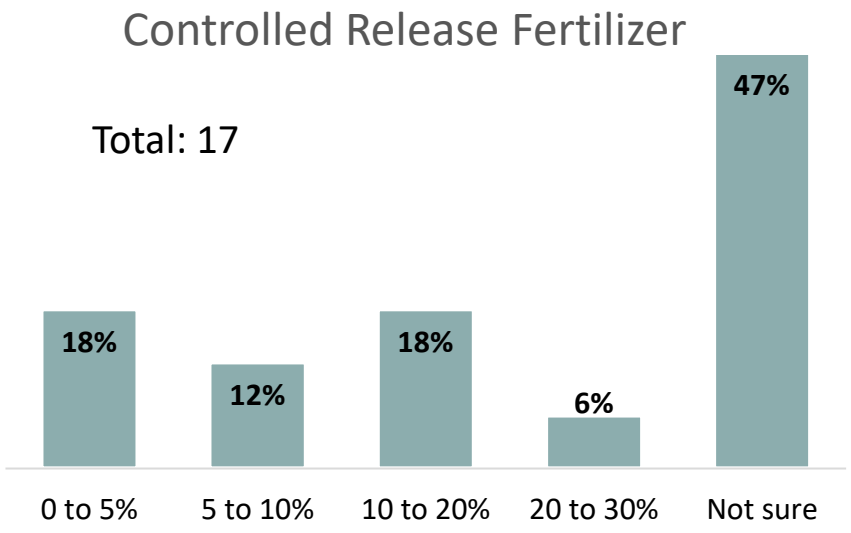
Total: 39

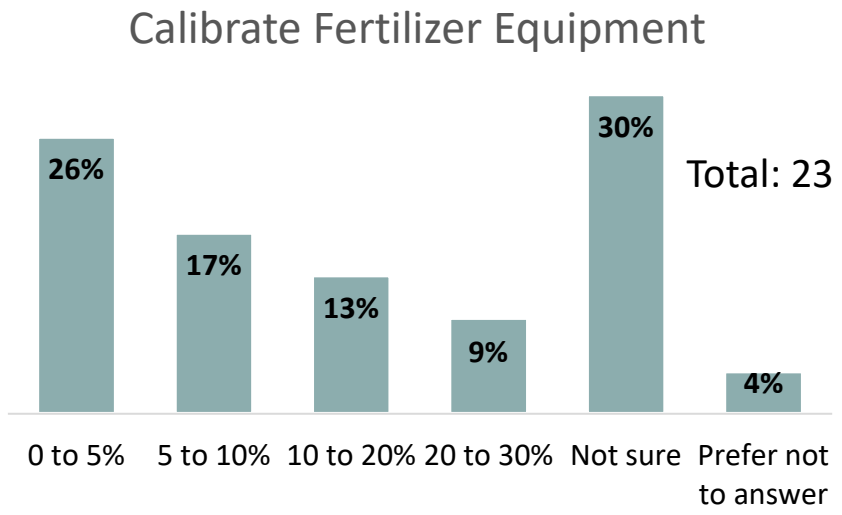


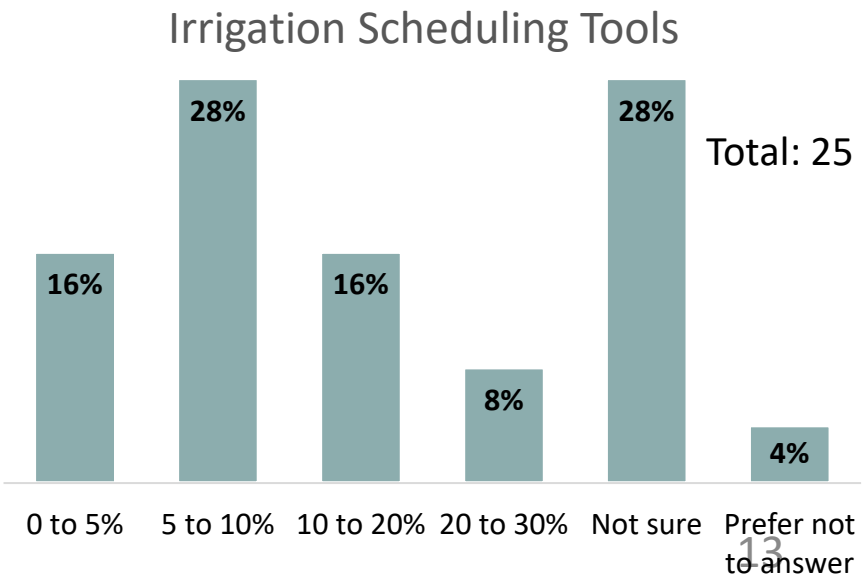
Citrus Growers' Perceptions of Yield Increases with Core BMP Use

Most citrus growers are not sure if BMPs help to increase yields

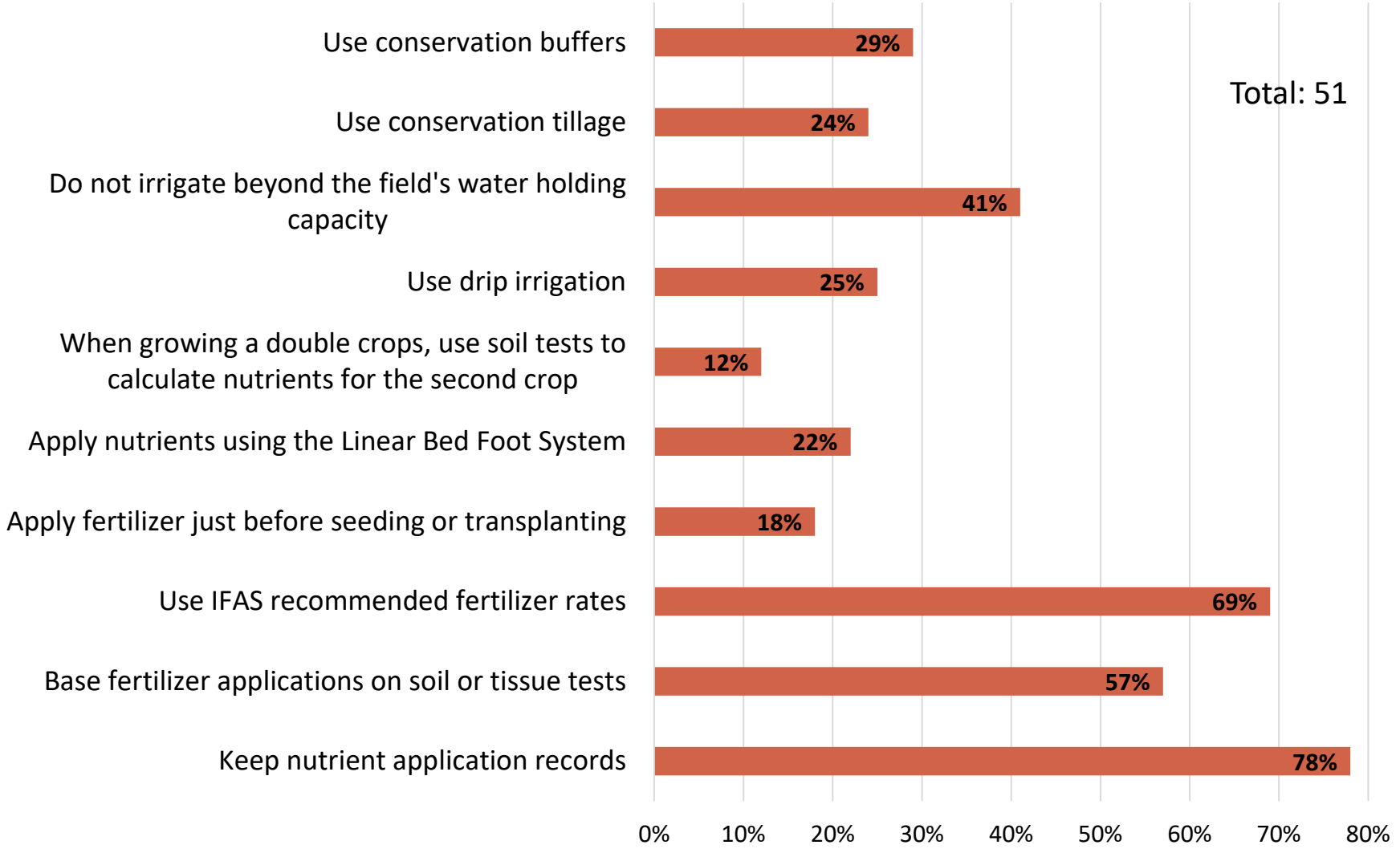
Perceptions of the extent of yield increases vary by practice





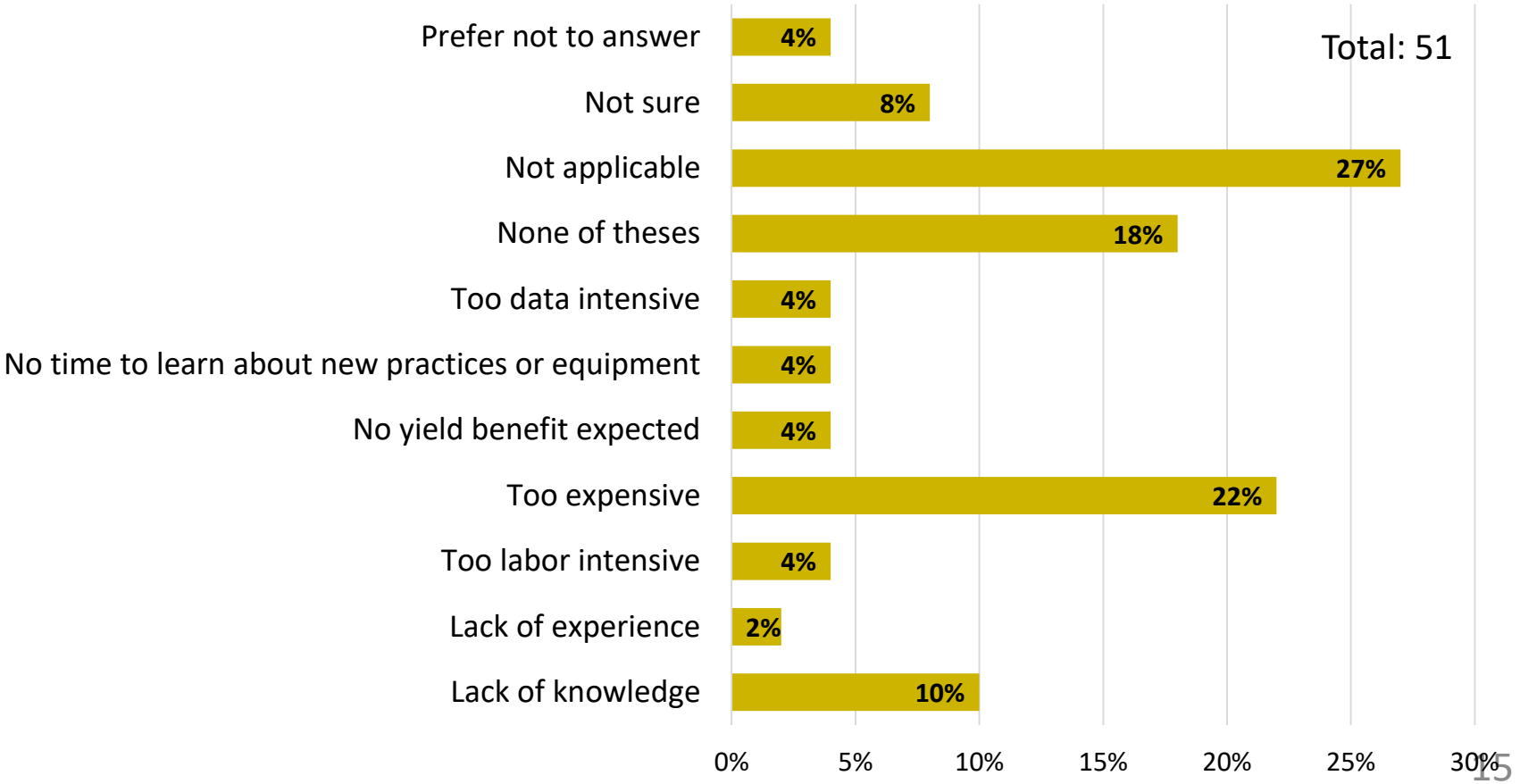


Citrus Grower's Adoption of Other BMPs



Citrus Growers' Reasons for Not Implementing BMPs

Over 20% of citrus growers indicate that BMPs are too expensive or not applicable to their groves



Summary

- BMPs can help to mitigate agricultures' effect on the environment
- Growers are adopting BMPs
- Several growers indicate that they are not sure if BMPs are profitable
- There is still a lot researchers do not know about how BMPs affect farm profitability
- Citrus growers' perceptions of BMPs' effects on yields vary by practice
- Grower's perceptions are our first step to understanding the suite of costs and benefits

Acknowledgements

Shelly Goodwin

Moon Soh

Acknowledgements: This work is partially funded by USDA-NIFA Multistate Hatch project W4133, “Costs and Benefits of Natural Resources on Public and Private Lands: Management, Economic Valuation, and Integrated Decision-Making”

Questions???

Tara Wade
(239) 658-3444
Tara.Wade@ufl.edu