

SESSION TWO: The Role of Automation in the Workforce

Round Table Meeting July 2025

Please remember to follow Chatham House Rule.



Moderator Jay Akridge

**Trustee Chair
Teaching and Learning Excellence
Purdue University**

SESSION TWO SPEAKERS



Wendy Powers
Dean
University of Maryland
College Park



Ben Palone
Sr. Director
Western Growers
Association



Rob Trice
Partner
The Mixing Bowl &
Better Food Ventures



Alex Russomagno
Sr. Manager
Strategic Engagement
AGCO Ventures

QUESTION AND ANSWER

Please submit your questions on the meeting app or use one of the microphones.



Jay Akridge
Purdue University



Wendy Powers
University of Maryland
College Park



Ben Palone
Western Growers
Association



Rob Trice
The Mixing Bowl &
Better Food Ventures



Alex Russomagno
AGCO Ventures

1) Go to App 2) Go to Your Agenda 3) Find the Session 4) Q&A Tab



CULTIVATOR LUNCH

Round Table Meeting July 2025



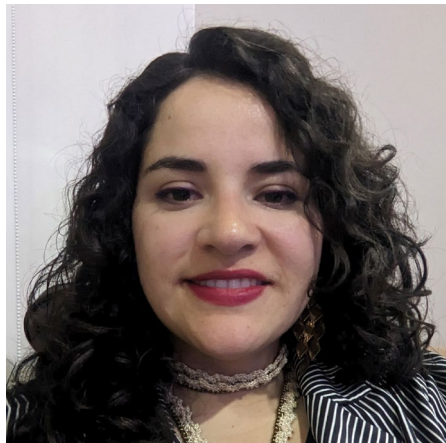


Morgan Craven

Director of Programs and Events
Farm Foundation



JULY 2025 CULTIVATORS



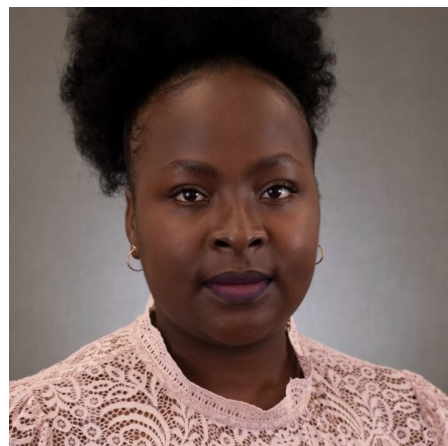
Natalia Espinoza
University of Georgia



Ike Inniss
**Southern University
and A&M College**



Jordan Knapp-Wilson
University of Georgia



Duplicate Sambani
University of Florida



Wendell Scales Jr.
University of Arkansas



Jared Trask
Purdue University



Yasin Yildirim
**North Dakota State
University**

**Thank you to BNSF and the
Round Table Fellows
for your support of the
Cultivators Program!**





Natalia Espinoza

University of Georgia



GEORGIA
Horticulture

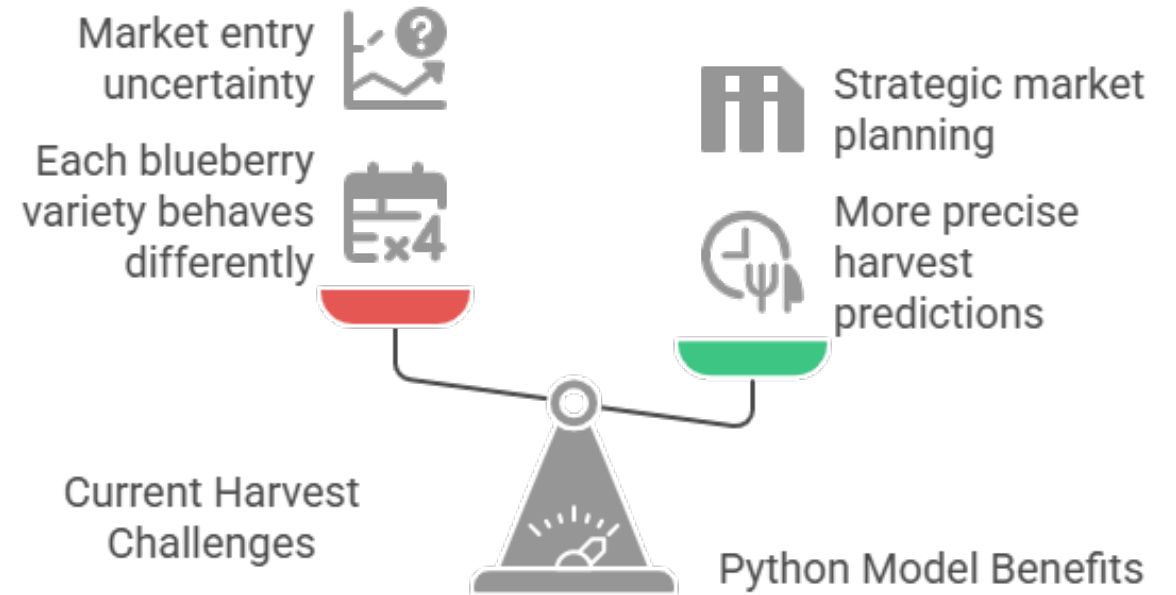
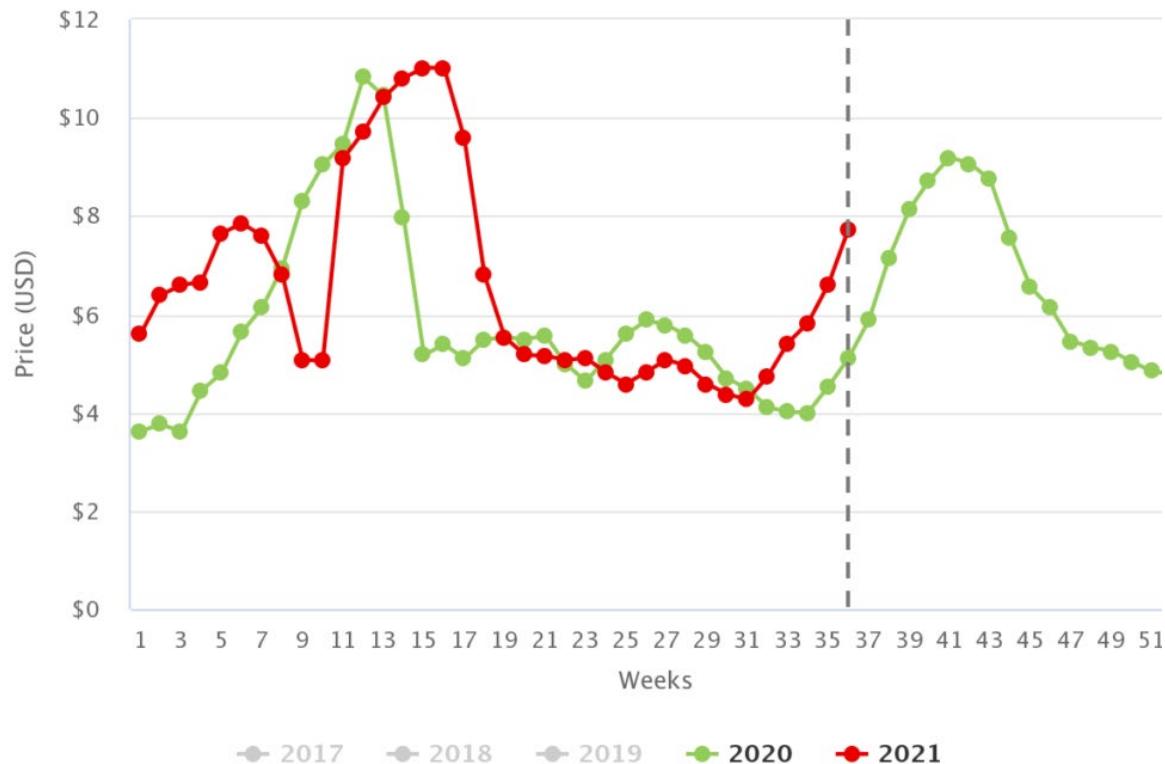


Predicting Blueberry Harvesting Dates

Natalia Espinoza

nbe77578@uga.edu

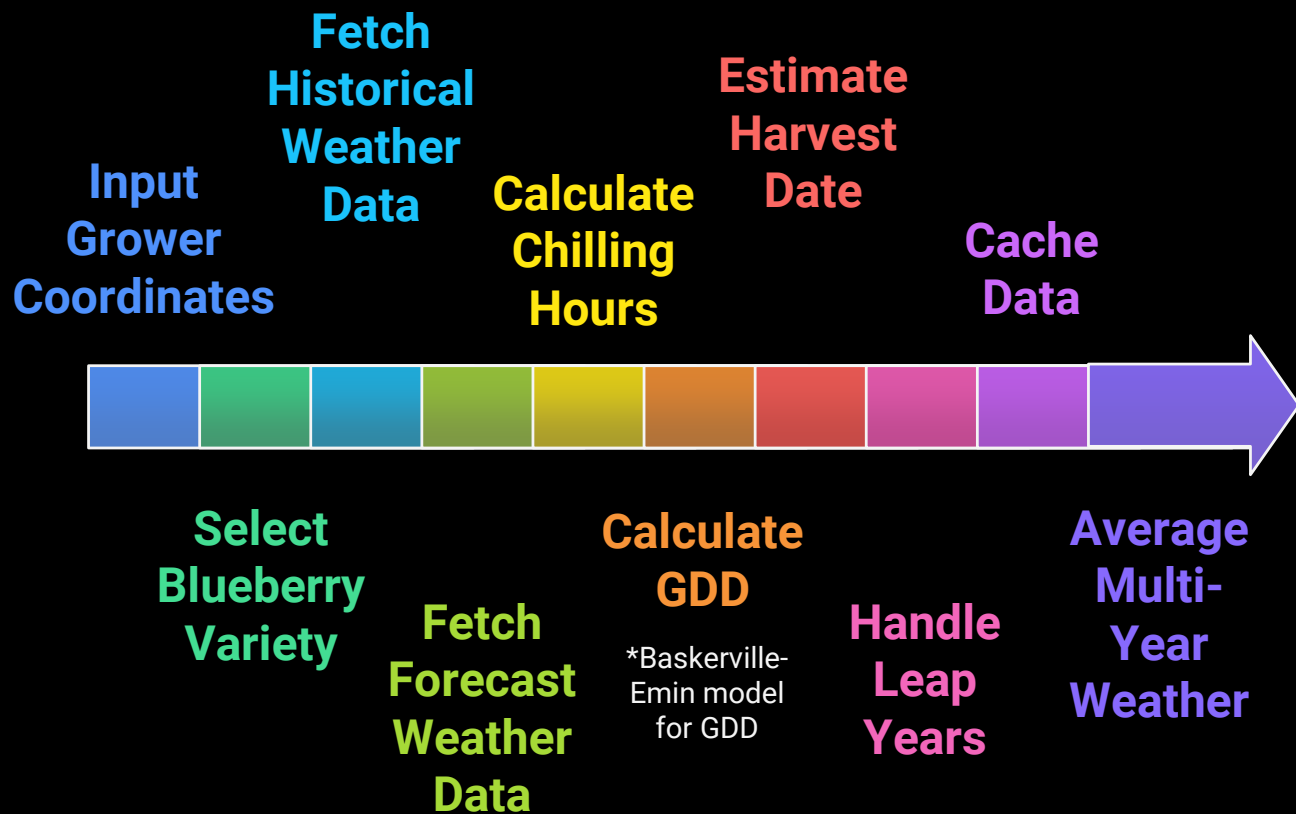
Why is it important to know when to harvest?



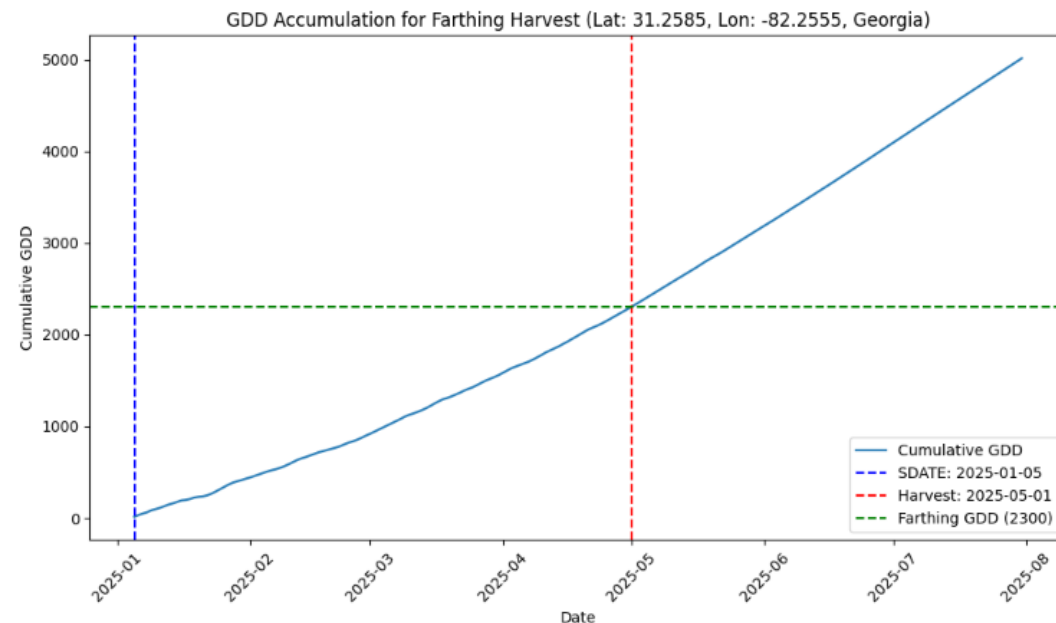
Balancing Harvest Challenges with Python Model Benefits

Source: USDA Market News via [Agronometrics](#)

Blueberry Harvest Date Prediction Process



Predicted Harvest Date: 2025-05-01

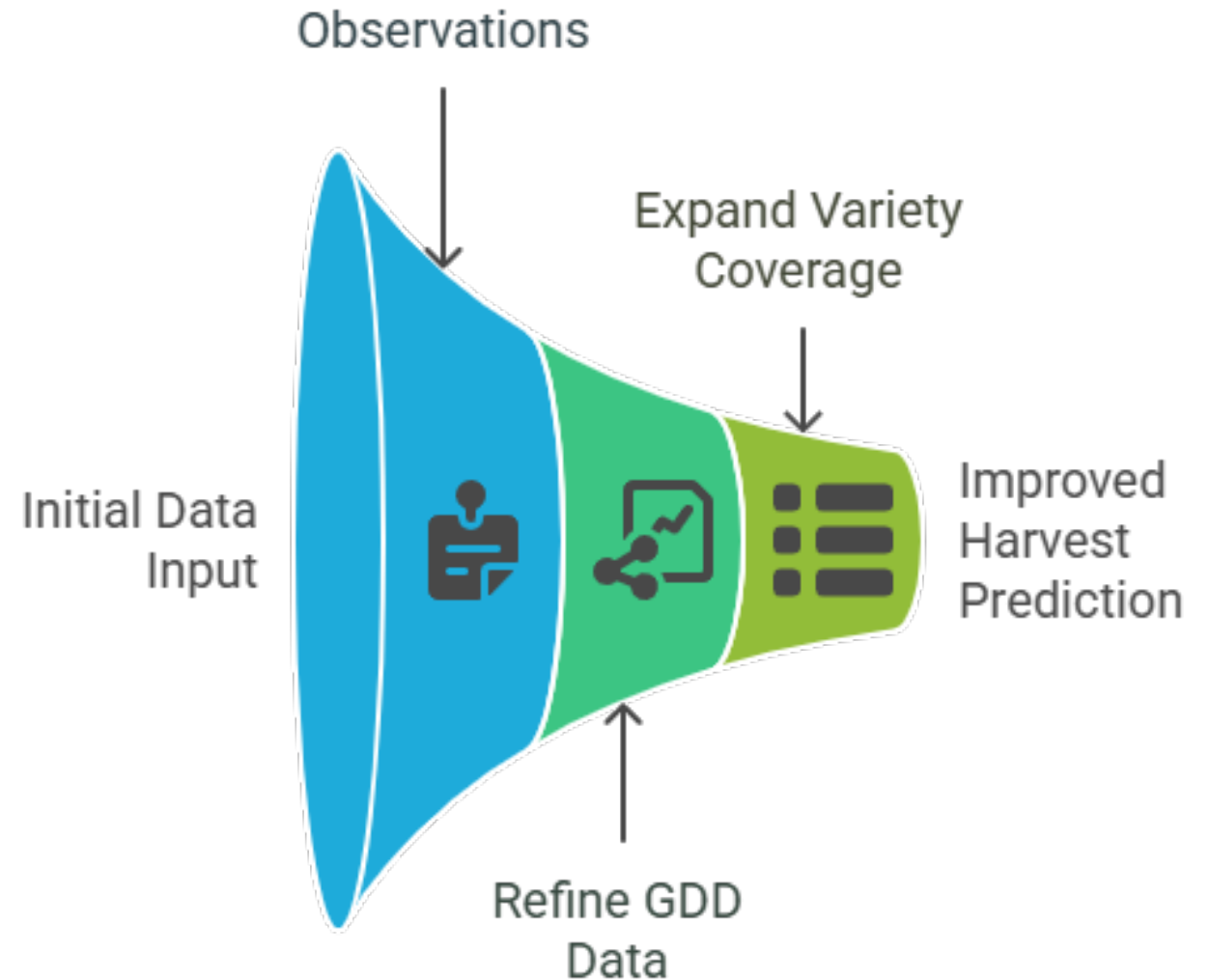


[Download GDD Data \(CSV\)](#)

Future Goals



Small Fruit Lab







Ike Inniss

Southern University and A&M College



IKE INNISS, your dominant personality Type: **SOCIAL**. enjoy working with people, empowering and uplifting them.

Social personality trait: usually compassionate and patient, with strong communication skills used to bring people together. Take commitments very seriously.



Environmental Educator: enjoy teaching about forests; leading community groups focusing on ecosystem and environmental conservation.; executing field trips to experience nature first hand.



Sociologist: studying the relationship between people and the natural world; answering the 'hardest question of why' or explaining the role of trees in urban environments.

Map of St. Kitts and Nevis



St. Kitts and Nevis is known for:

- Friendly people.
- Good Food.
- Tourism (main economic activity).
 - Sun, sand and sea (cruise tourism).

Pristine Beaches



Leisure Time



Snorkeling

Major threat to tourism - Influx of Sargassum Seaweed



Sargassum

Threats

- Tourism
- Fisheries
- Economic Growth
- Marine Ecosystems

Opportunities

- Biogas
- Fertilizer
- Biosorbents
- Food Products

Possible Opportunities

- Repurpose Sargassum seaweed - solves an environmental problem.
- Creation of various streams of steady income and employment opportunities.
- Use of Sargassum as a soil amendment, on selected crops.

At Southern University, I have been afforded the opportunity to pursue my passion:

- attend a fundamentally sound HBCU university.
- to undertake a program that I am actually passionate about and WILL make a difference.
- making lifetime connections.

Presenter Biography



Name: Ike Inniss

Master of Science: Disaster Risk Management and
Climate Control

Designation: PhD. Candidate - Urban Forestry
(Southern University and A&M College)

Area of Study: Sargassum seaweed and its potential
use in agriculture.

Country: St. Kitts and Nevis

Ike.inniss@sus.edu





Jordan Knapp-Wilson

University of Georgia



A New Revolution:

How TLS and 3D Modelling Can Help Advance the Automation, Horticulture, and Genetics of Our Orchards

Farm Foundation Cultivator:

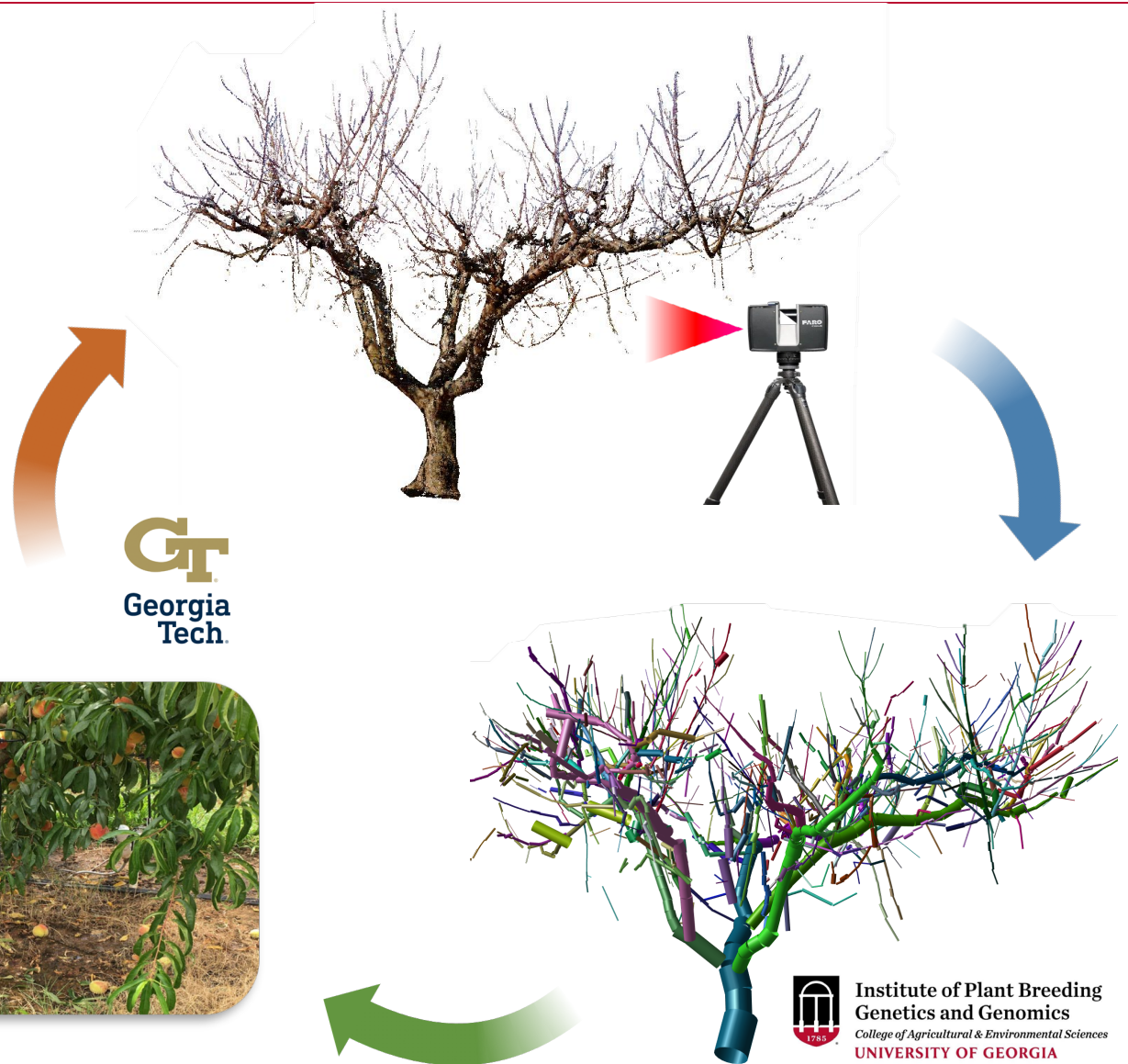
Jordan Knapp-Wilson

Advisors & Collaborators:

Dario Chavez (UGA)

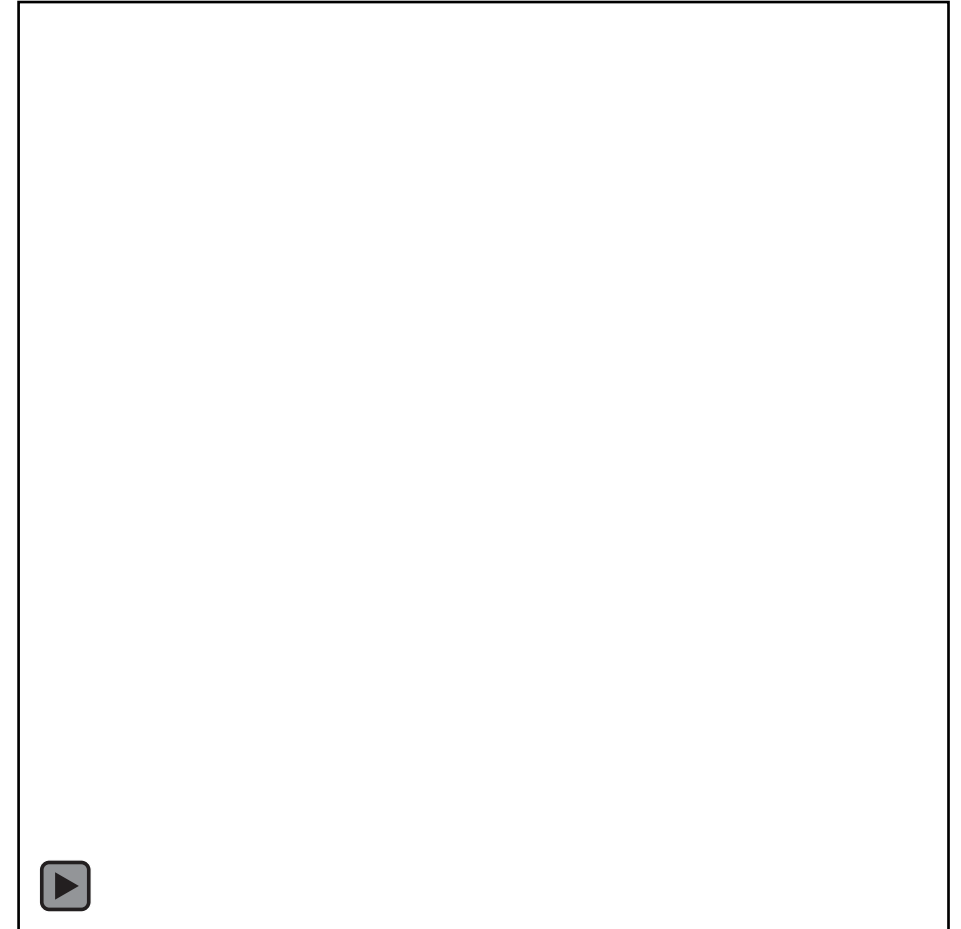
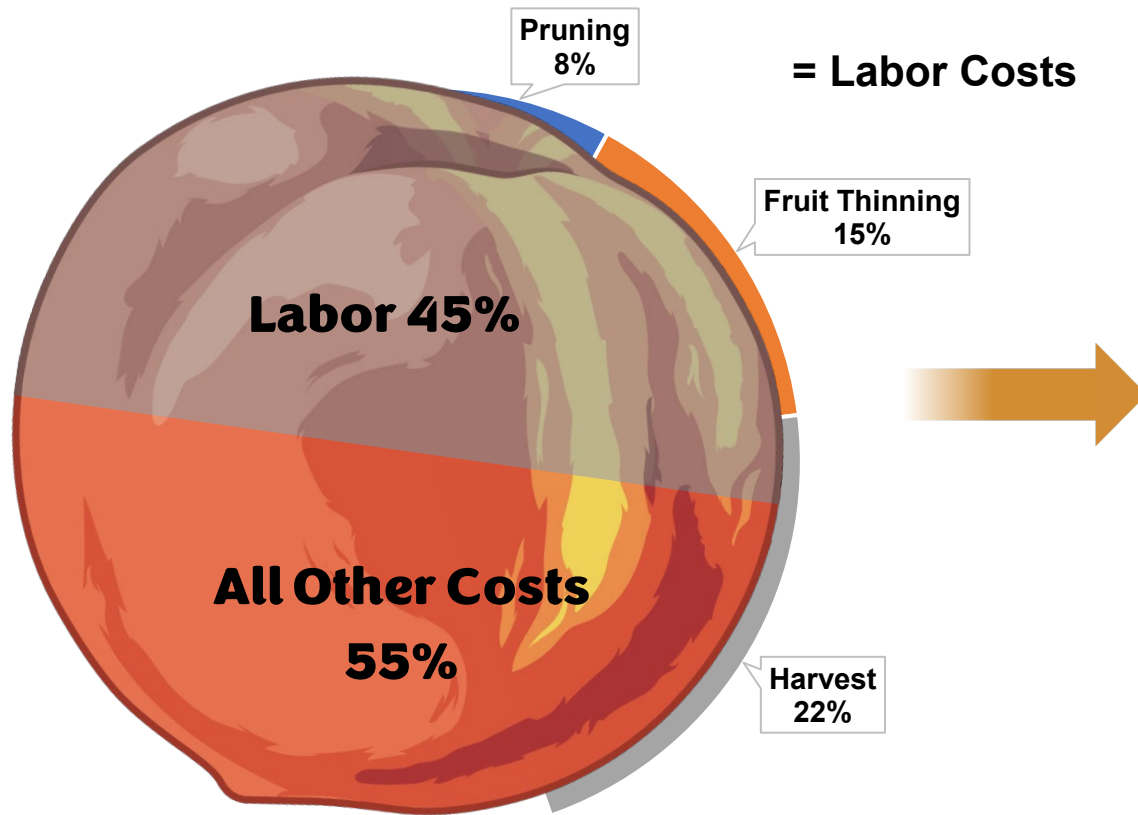
Alexander Bucksch (UAZ)

Ai-Ping Hu (GaTech)



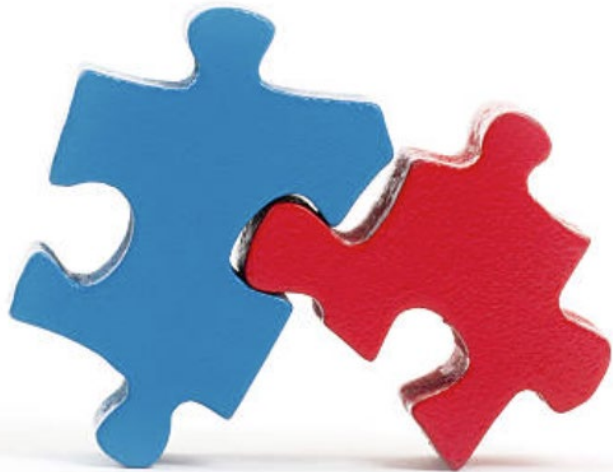
A Crisis of Labor

Operating Costs – Peach Orchard

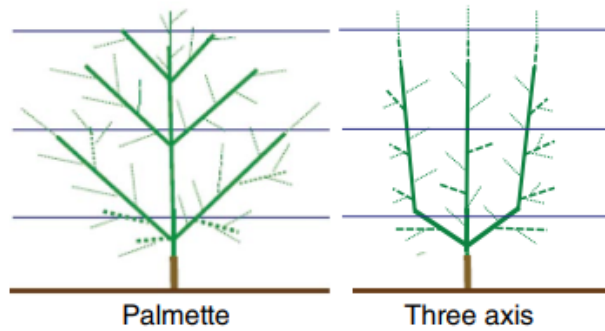


If Only It Was That Easy – Med vs. High Density

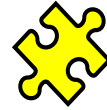
3D, Low – Medium Density



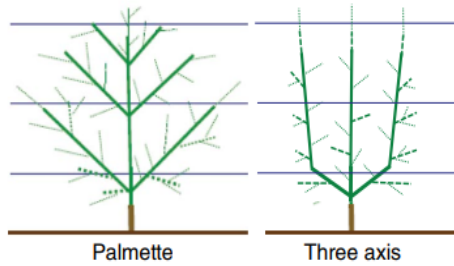
2D, High Density



The Answer: Tree Architecture



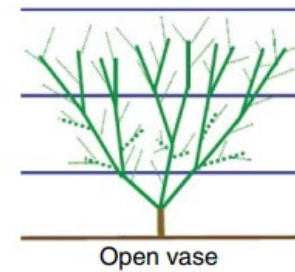
2D, High Density



Tree Architecture

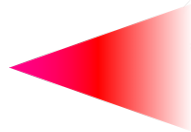
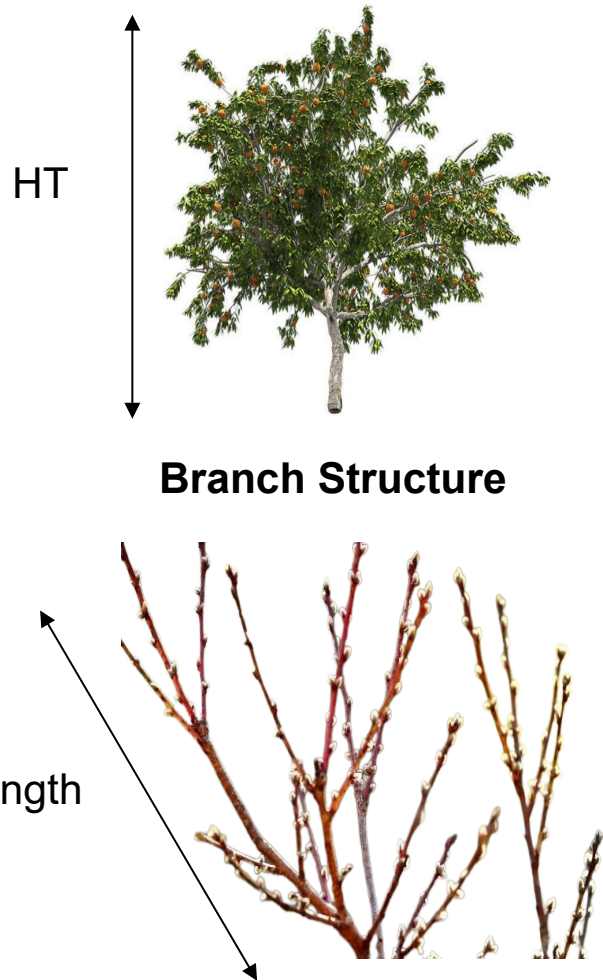


3D, Low – Med Density



Automation Requires Better Robots & Better Trees

Biometrics

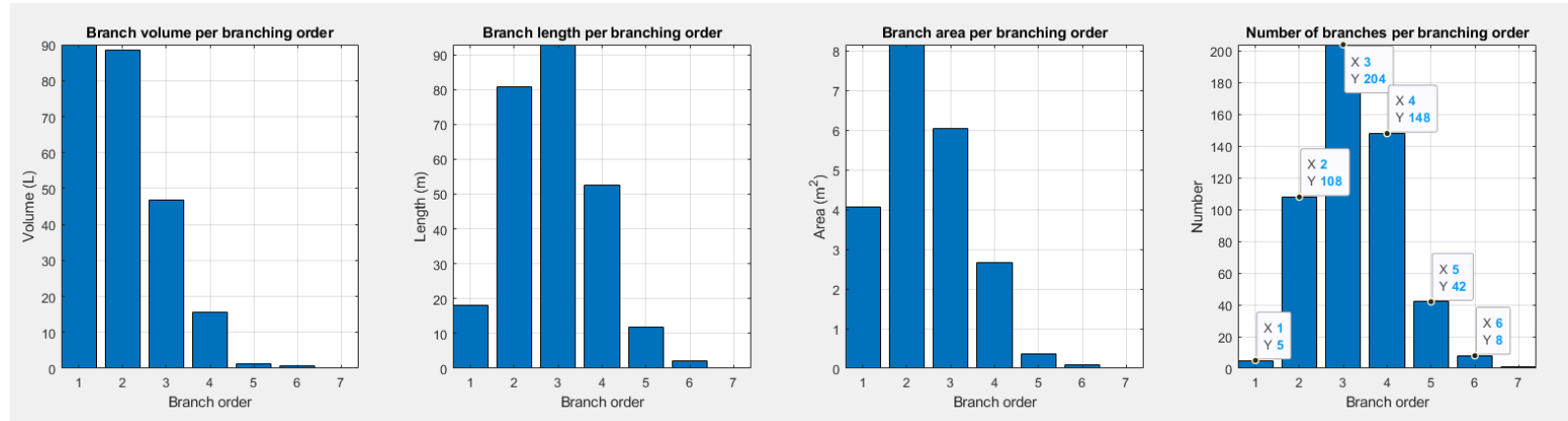
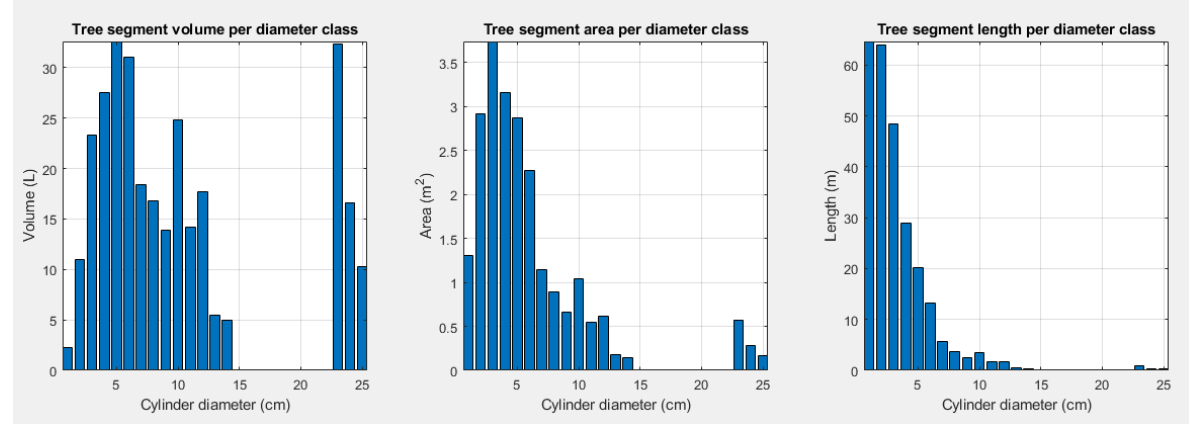
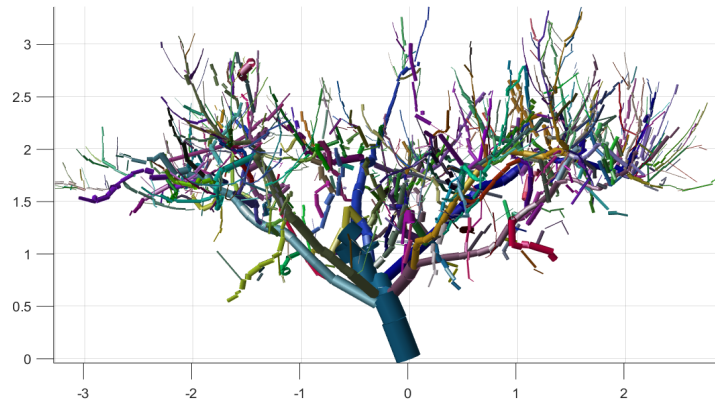
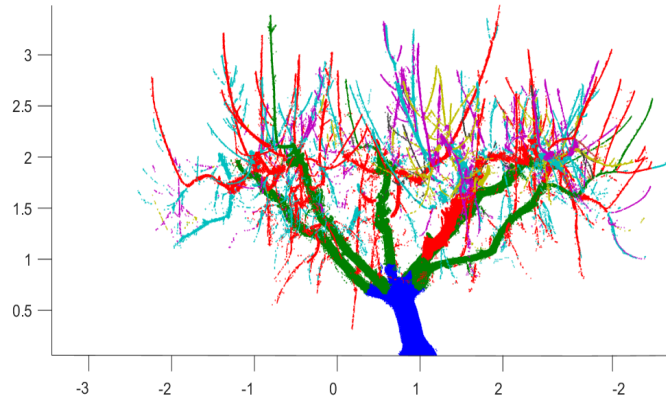


Quantitative Structural Models - QSMs



QSMs – What Can They Tell Us?

Tree 2a - 2024

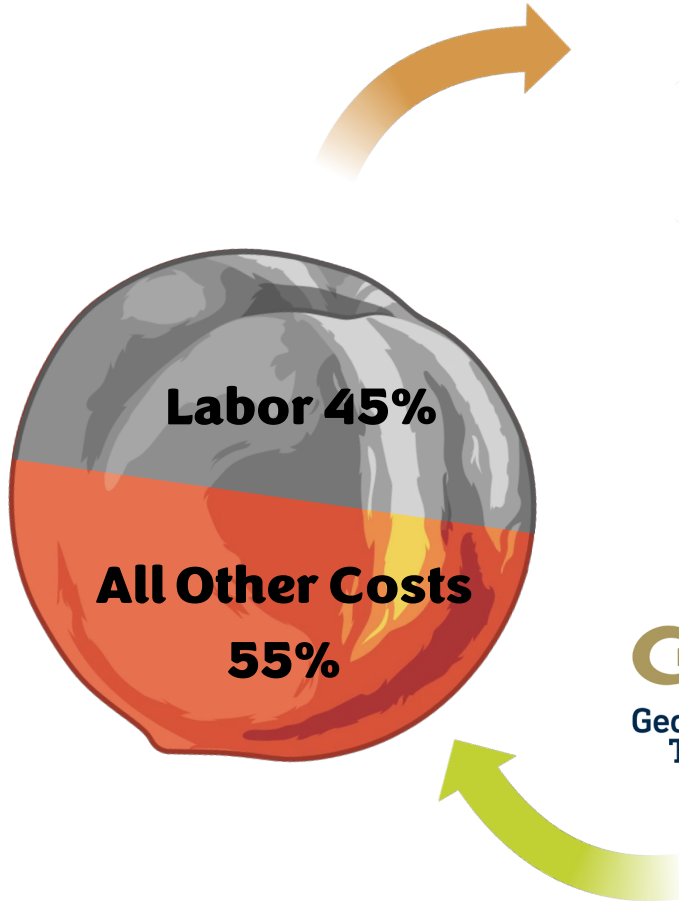


Summary: Important Take-Aways

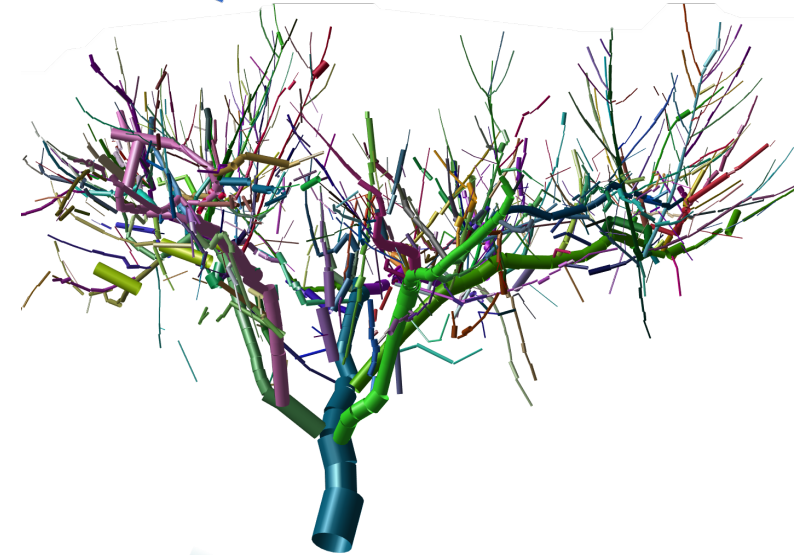
- Labor = 45% operational cost of a peach orchard, with that figure projected to quickly rise
- Automation will be the answer, but requires better robots and better trees (high-density orchards)
- Our 3D cylinder models provide the data to tackle the problem at both ends; machine learning, and selecting better trees



Thank You! Any Questions or Comments?



**Institute of Plant Breeding
Genetics and Genomics**
College of Agricultural & Environmental Sciences
UNIVERSITY OF GEORGIA







Duplicate Sambani

University of Florida



Remote Sensing-Based Assessment of Soil Health Indicators in HLB-Affected Citrus Agricultural Systems in Florida and Texas

Duplicate Sambani

PhD Student

Soil, Water, and Ecosystem Sciences Department

University of Florida

Advisor: Davie M. Kadyampakeni, PhD

Introduction

Citrus production decline

- Citrus is one of the world's most significant crops, grown in over 140 countries (FAOSTAT, 2019).

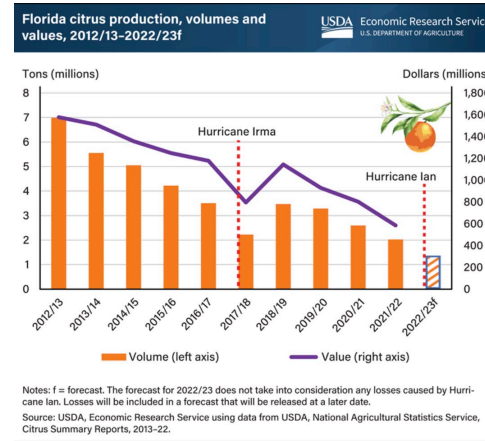


Figure: Citrus decline. (USDA, 2022)

- HLB (Huanglongbing) affects tree roots, causing a significant reduction in fruit yield and quality.

Why Soil Health?

- Soil directly influences tree resilience
- HLB alters soil health by influencing microbial communities, nutrient cycling, and soil structure.

Why remote sensing?

- RS methods provide high-resolution, spatially and temporally extensive data, crucial for understanding soil health dynamics.
- Non- Destructive

Methods and Approach

Table 1: Description of spatial data used in this study.

Data Source	Data Owner	Available From	Attributes	Scale/ Resolution	Time of collection
SoilGrids	ISRIC – World Soil Information	https://soilgrids.org and Google Earth Engine	Organic carbon, pH, sand, silt, clay, bulk density, cation exchange capacity (CEC), nitrogen,	250 m	2023 Jan to 2025 march
Sentinel-2	European Union (EU)	COPERNICUS/S2	NDVI	10m	2023 - 2025

Methods and Approach

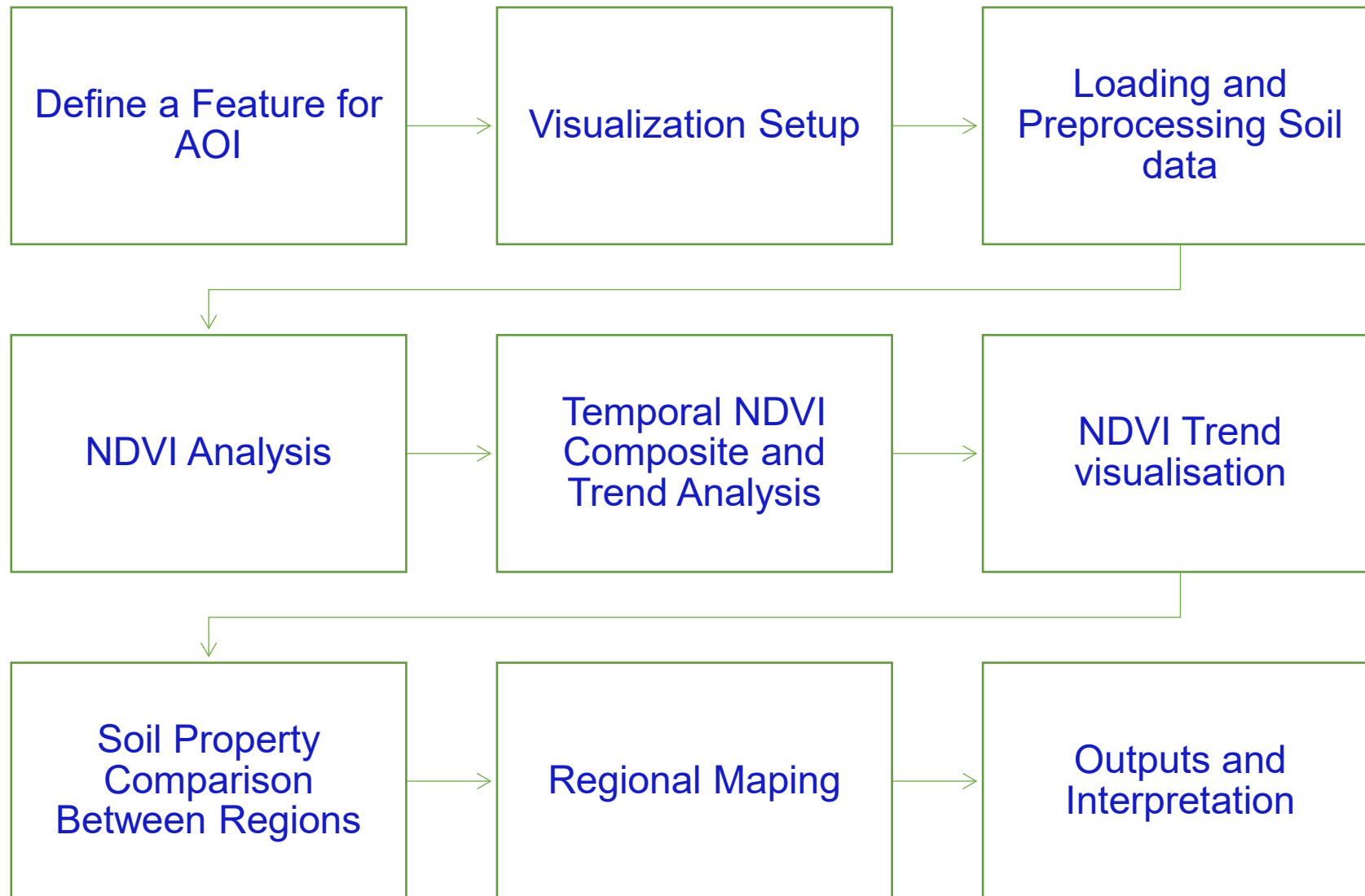
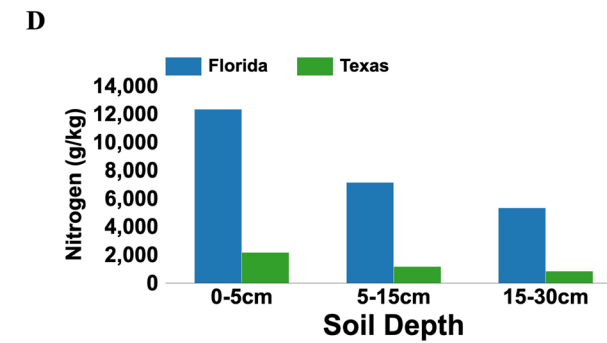
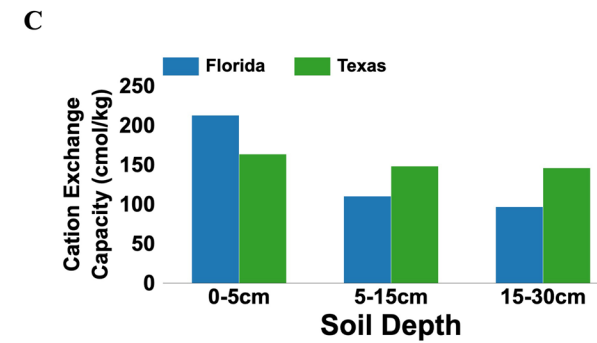
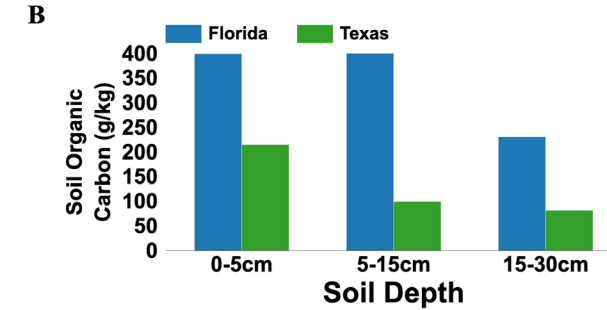
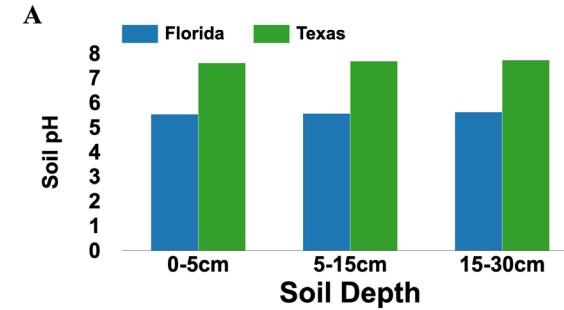
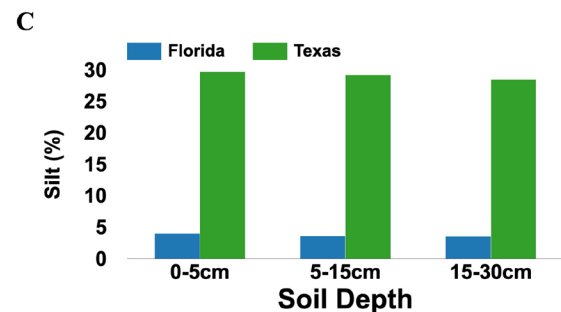
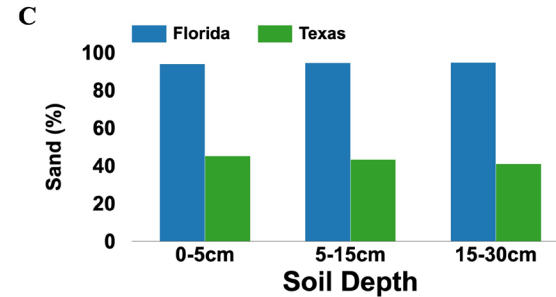
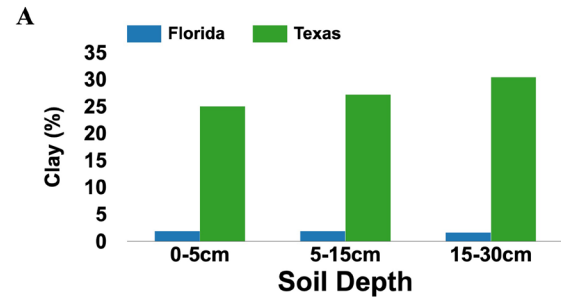
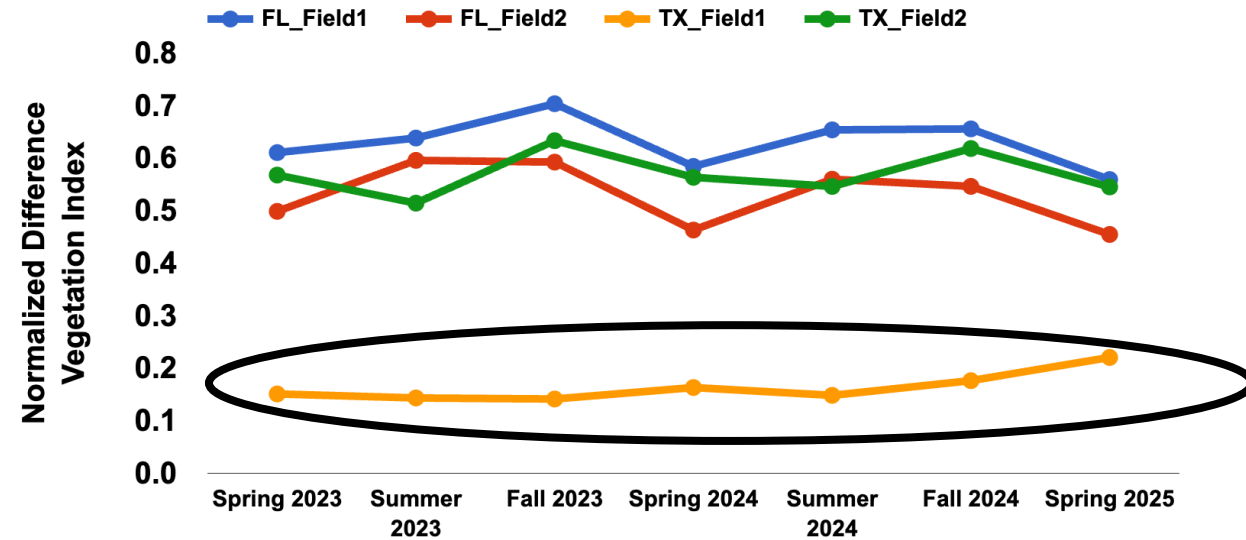


Figure 2: General workflow of the methods used in this study.

Key Findings & Implications

Seasonal NDVI (2023–2025)



Most of the remotely sensed free soil health data is static; it's hard to see the changes in the land use and land management over time.

Thank You.





Wendell Scales Jr.

University of Arkansas





ARKANSAS COMMUNIVERSITY PARTNERSHIPS INITIATIVE

Transforming AGRI-STEM Pathways

PhD Student: Wendell Scales Jr.

Studies show that by 2026, nearly 25 percent of the U.S. workforce will be aged 55 and older (Bureau of Labor Statistics).

The goal of ARCommUniversity is to increase the number of predominantly rural, first-generation students from K-12 to career-pursuing agricultural degrees and to enter the Agricultural and STEM workforce in Arkansas.

Through multidisciplinary and collaborative partnerships, AR Communiversiity focuses on expanding access and strengthening agricultural career pathways.



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of Agricultural, Food & Life Sciences



Setting the Stage

Literature Review

The agricultural workforce faces urgent challenges in the 21st century. Climate change, food insecurity, labor shortages, and the digital transformation of agri-food systems all demand a more diverse and better-prepared pipeline of future leaders (Alston et al., 2020).

According to USDA Economic Research Service (ERS), in less than nine years, more than 5.35 million jobs will be available and necessary in the agriculture and food sectors.

Underrepresented Minority (URM) and first-generation students, particularly from rural communities, remain severely underrepresented in agriculture and agricultural education pathways (Hartmann & Martin, 2021).

There is a strong need to develop a community-integrated secondary education Agri-STEM pathway program that impacts underserved and marginalized communities Scales et al., 2023).

Despite the large role parents may play in the college preparation and choice process, scarce research exists from the viewpoint of minoritized parents in rural areas regarding their expectations, aspirations, and what might make college possible for their child (Cutler White & Chapman, 2024).

235,193

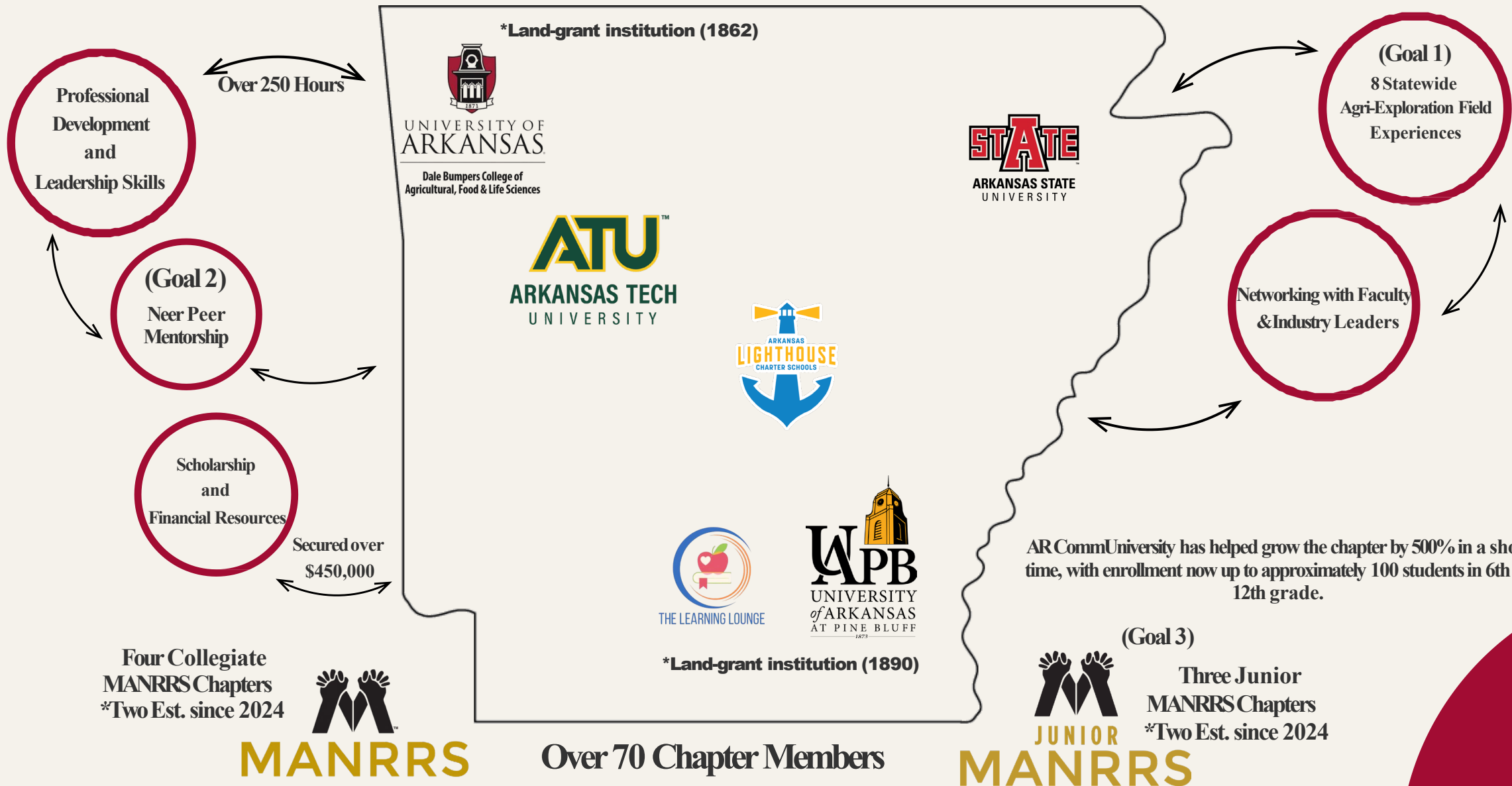
Jobs in Arkansas are created
by the agriculture industry. (AR Farm Bureau)

\$20.9B

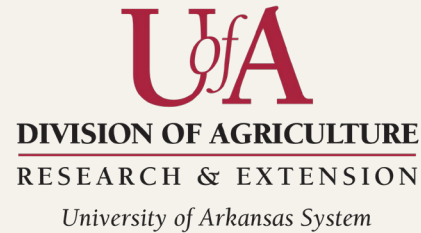
Agriculture is Arkansas largest industry, contributing
annually to Arkansas' economy. (AR Farm Bureau)

MANRRS ON THE MOVE

BY THE NUMBERS



Statewide Partnerships



ARKANSAS COMMUNIVERSITY PARTNERSHIPS INITIATIVE

Discussion & Next Steps

**500 %
Growth Among
Junior MANRRS Chapters**

**Celebrated 5th Year
Residential Component**

**Host
AGRI-STEM
Outreach Summit**

Research Applications with O Methodology

The concourse could be organized into

Six Emerging Trends:

Access and Barriers

Family and Community Influence

Agricultural STEM Pathways

Mentorship

Support Systems

College Preparation



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Jared Trask

Purdue University



Agent-Based Models for Disease Transmission in Agriculture

Jared Trask, PhD Student
jtrask@purdue.edu

Supervisor: Dr. Darrin Karcher
Poultry Management Lab



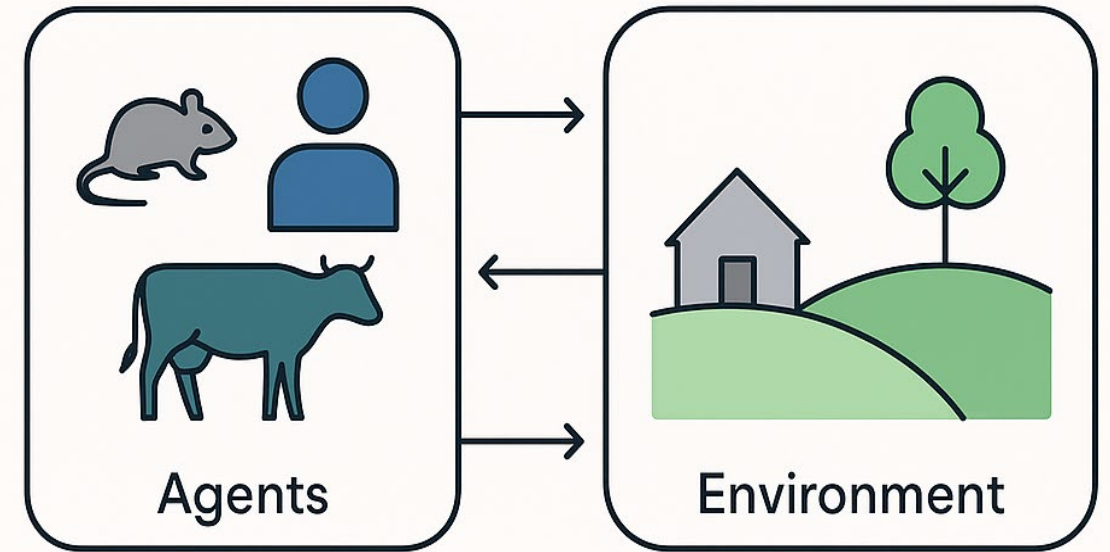
*Hypothetical
Transmission Case*



Salmonella
HPAI
Fowl Pox
Leptospirosis



What is an Agent-Based Model?

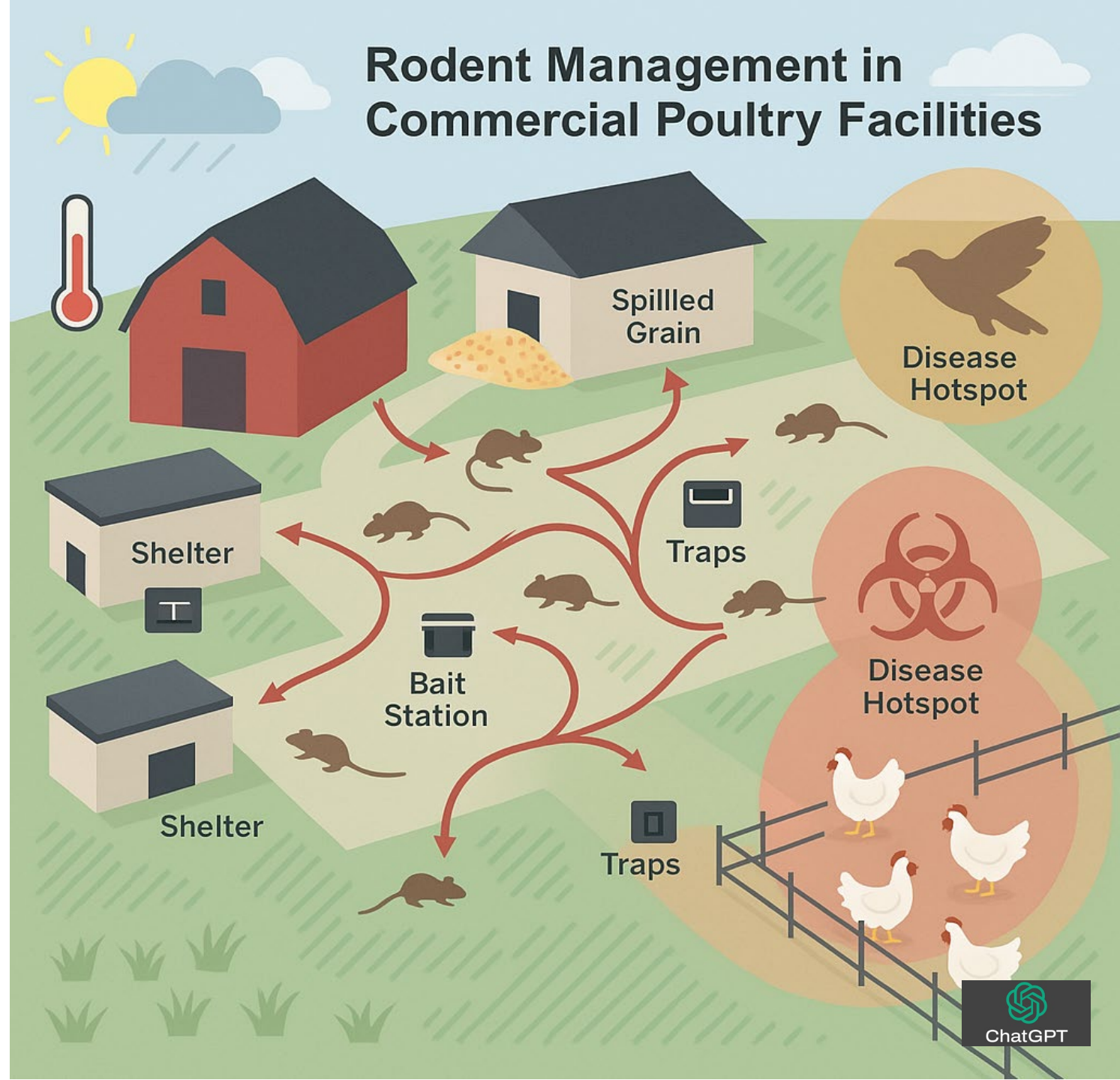


An agent-based model is a computational tool that simulates the actions and interactions of individual agents—like rodents, animals, or humans—within a defined environment. Each agent follows simple rules, but together they produce complex, emergent patterns.



Develop an agent-based model to quantify:

- Rodent behavior and movements
- Influence of environmental variables on disease transmission
- Effectiveness of biosecurity measures
- Impacts on poultry welfare

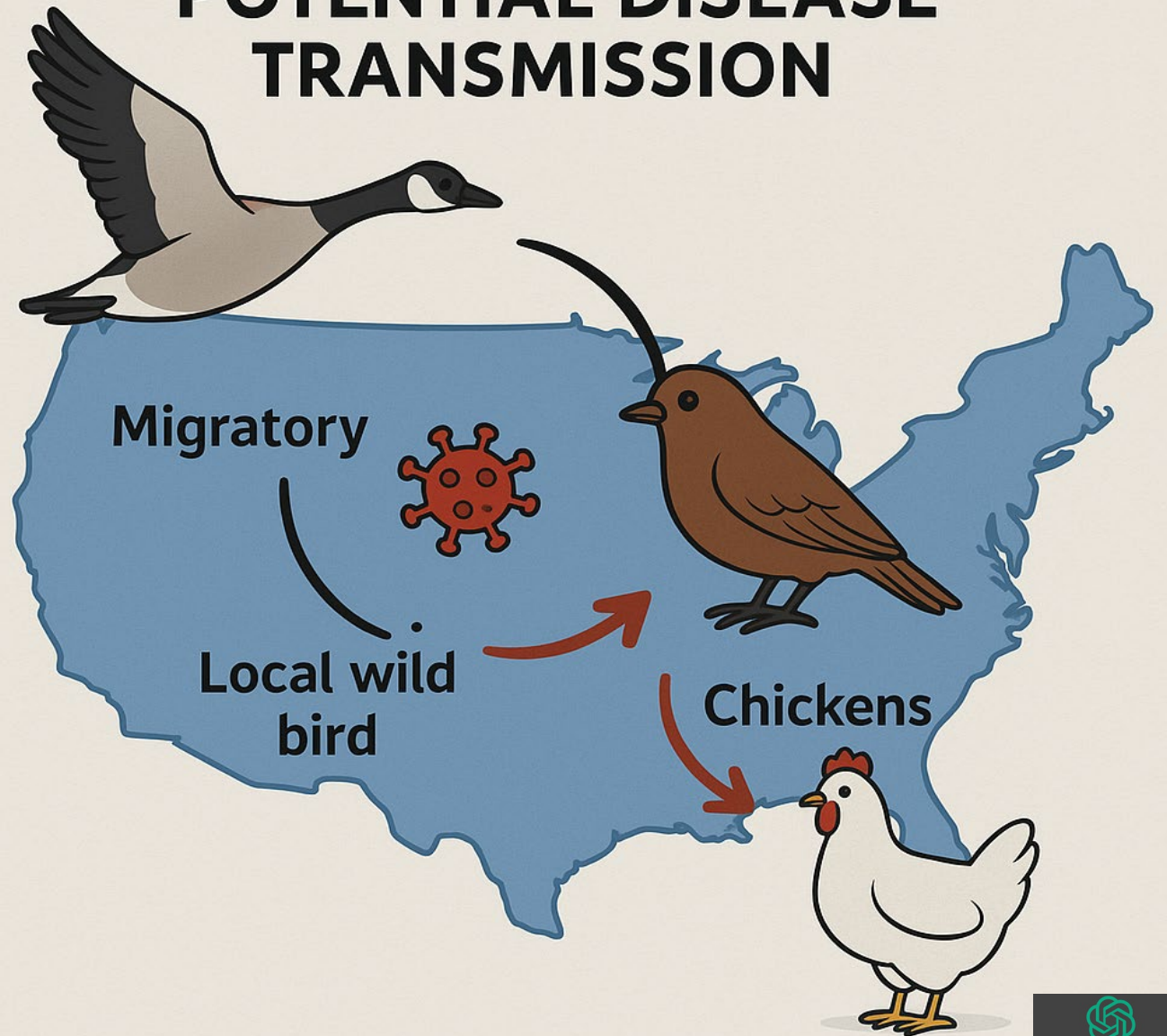


Agent based model to
simulate Highly Pathogenic
Avian Influenza (HPAI)
transmission from wild
birds to poultry

Opportunities for individualization



POTENTIAL DISEASE TRANSMISSION







Yasin Yildirim

North Dakota State University



Economic Integration Agreements and Agricultural Trade: Disentangling Extensive and Intensive Margin Effects

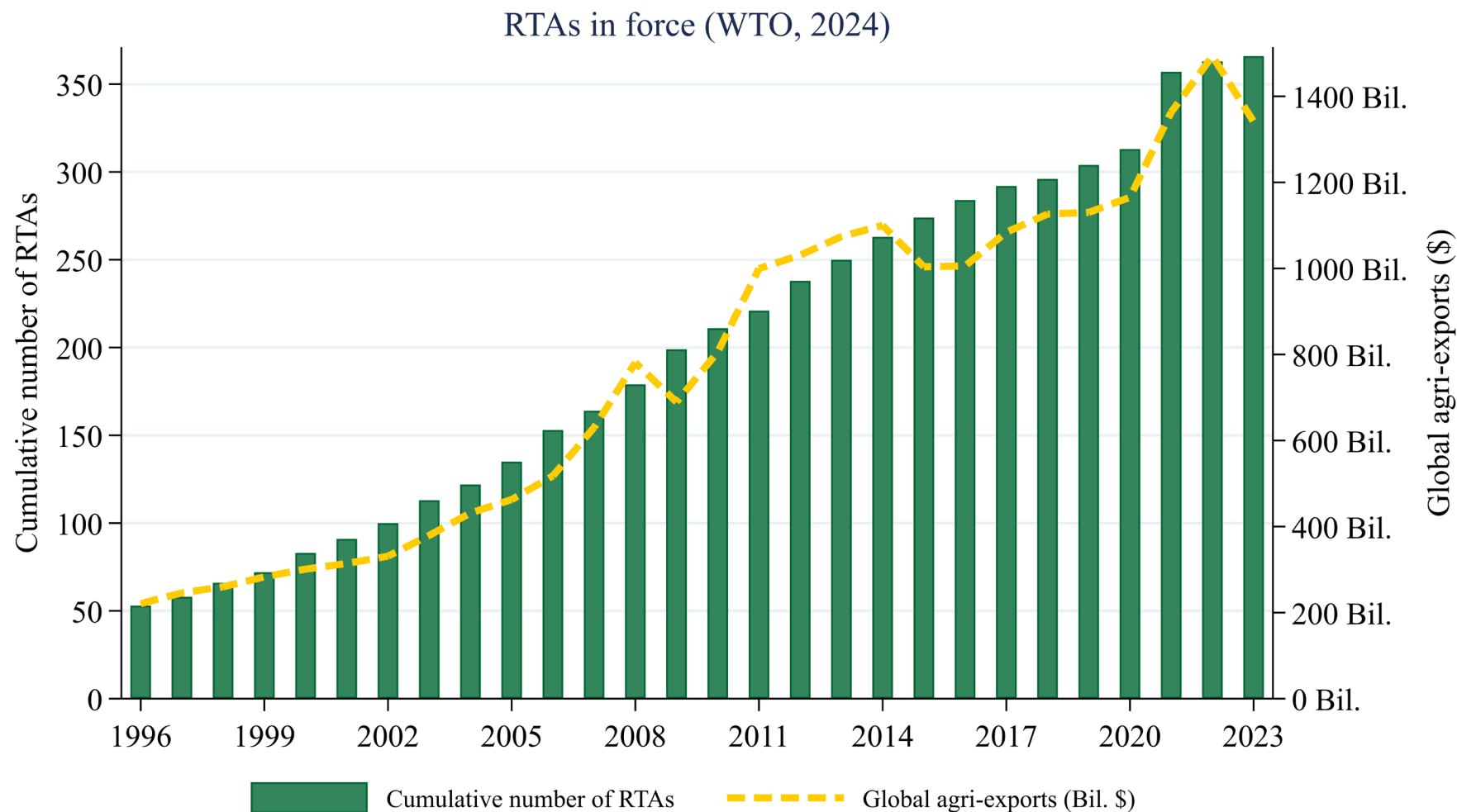
Sandro Steinbach, **Yasin Yildirim**, Carlos Zurita

Farm Foundation
Round Table Meeting

July 2025

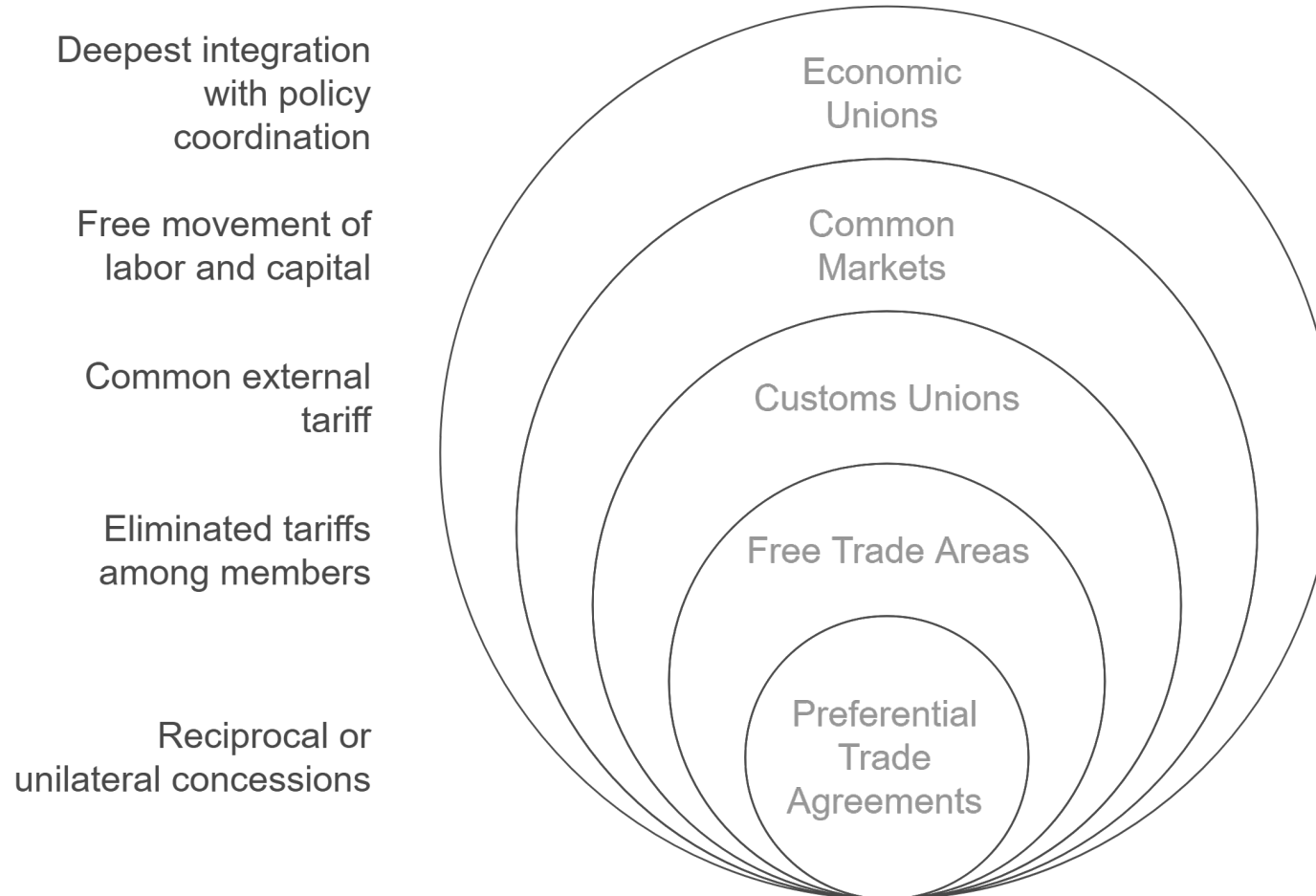


Why should agribusiness care about trade architecture?

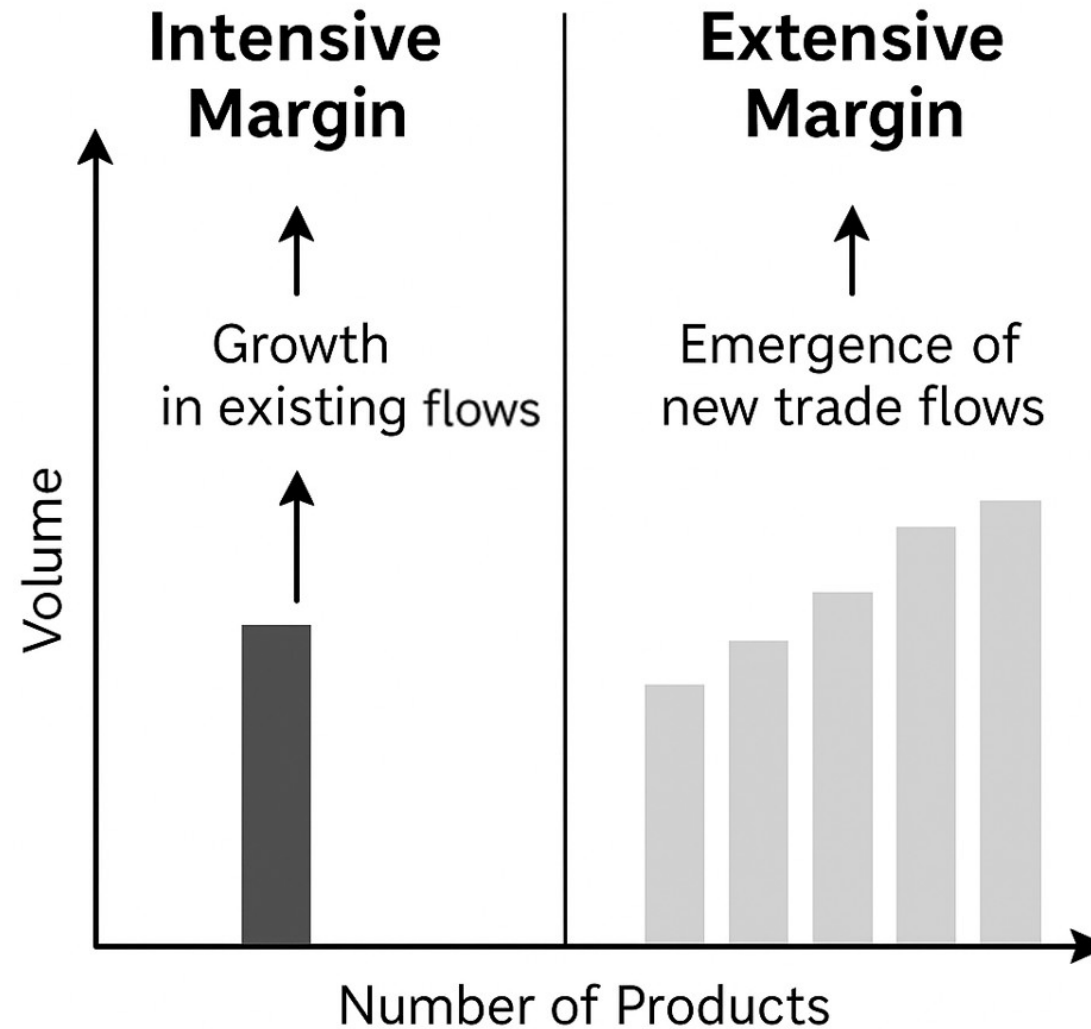


What kind of agreements are you trading under?

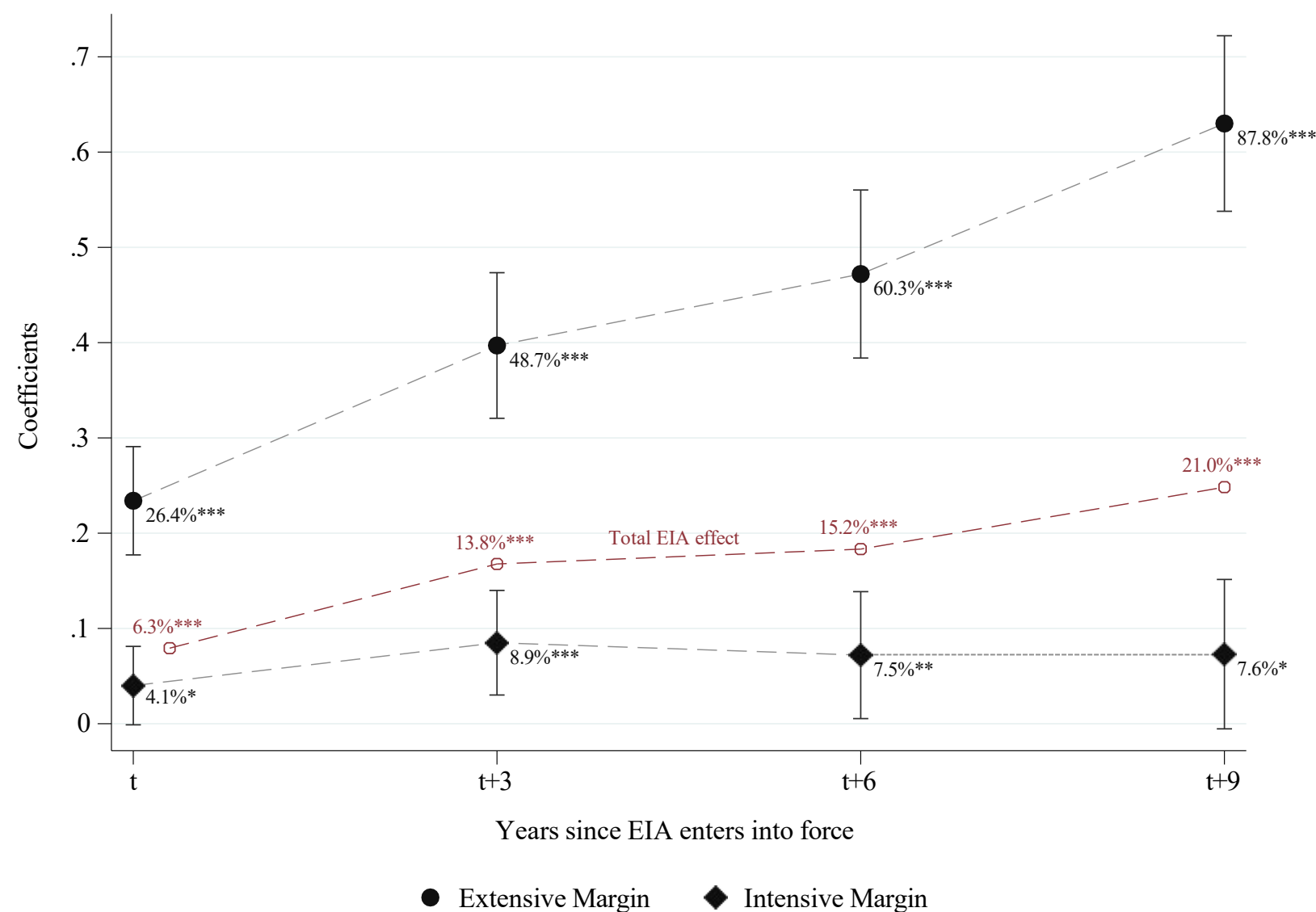
Economic Integration Levels



The two margins of export expansion



Findings: The agreements expand new ag export flows more



Conclusion: Deep deals, diversified exports, long-term gains

- The agreements, especially deeper ones, open the door to **new export opportunities**, particularly **for agri-goods that hadn't been traded intensely before**.
- **Value-added ag products grow faster** under trade deals, while raw goods see fewer gains, unless the agreement is deep.
- **Growth at the extensive margin** is especially strong **when developing countries export to developed markets**, and vice versa.
- The gains happen over time; **new agri-good exports** continue to **grow for at least 10 years** after the agreement starts.



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EXTENSION
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EDUCATION



Break Sponsors



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SEEDERS



MEET AND GREET & BOOK SIGNING

During Chair's Reception

6:30 - 7:30 pm

