Welcome!
Opening Remarks:

• Dr. Glenn Morris
• Dr. Jack Payne, Senior Vice President, UF/IFAS
• Dr. Mike Perri, Dean, College of Health & Human Performance
• Dr. Andy Kane
Research Presentations
Occupational Health and Safety Surveillance of Gulf Seafood Workers

Andy Kane PI, Melvin Myers Co-PI, Robert Durborow Co-PI
Cedar Key

Workplace observations
Cedar Key

Workplace observations
Apalachicola & Eastpoint

Project Outreach at SMARRT, ABOMG, NFWF Community Meetings
Apalachicola & Eastpoint
Apalachicola & Eastpoint
Apalachicola & Eastpoint

Piloting survey, workplace observations
Revised Survey Instrument

SCCAHS Seafood Worker Survey

Survey ID#: ____________  Interviewer’s initials: ____________

[CHRONIC PAIN]
Do you now have pain in any part of your body that has lasted at least 3 months? ☐ Yes  ☐ No

If yes, please indicate where on your body you have this pain (indicate on diagram).

When you have pain, does having a lot of pain make some part of your job more dangerous? ☐ Yes  ☐ No  If Yes, how?

________________________________________

What pain level prevents you from working? [circle one:]

1  2  3  4  5  6  7  8  9  10

No pain

No Hurt  No Hurt

Worst pain imaginable
Pensacola & Escambia Co.

Robert Terpin

Frank Patti
Next Steps: Survey implementation & workplace observations; Community engagement
Extent of Agricultural Pesticide Applications in Florida Using Best Practices

No Plan Survives Contact With the Enemy – Barnett, C
Gregory Glass, Jane Southworth, Tyler Schaper & Reza Khatami
Study Aims

- **Aim 1.** Develop a Remote Sensing (RS) framework to calibrate the timing and volumes of historical applications of aldicarb, carbaryl and glyphosate on citrus, strawberry and snap bean crops in Florida between 2007 and 2009.
  
  - Use historical (2009) data of state-wide pesticide applications for initial comparisons with the model that use weather patterns during the growing seasons.
  
  - We will also use University of Florida 12 agricultural research sites located throughout the state to confirm calibration both of the crop type signatures and the timing and impacts of herbicide/pesticide applications on resulting remotely sensed imagery.

- **Aim 2.** Extend approach in Aim 1 to 2015-2016 using current information from IFAS REC and newly acquired satellite imagery. Extend the approach to Pendimethalin, Atrazine, and Paraquat and their associated commercial crops.

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Bonnie Wells and Frederick M. Fishel
Original Plan: The Flaw(s)

Crop Census 2016

Current RS Analysis Low Accuracy

Ground truthing
Where crops occur is a problem
Study Activities/Methods

Current Classification and Data Source tends to:

-- Overestimate acreage

-- Poor recognition of specific crops
Classification approach: Improved Imagery & Analysis

Random Forest (RF): Decision-tree classifier

Random forests or random decision forests are an ensemble learning method for classification that operates by constructing a multitude of decision trees at training time and outputting the class that is the mode of the classes (classification) of the individual trees. Random decision forests correct for decision trees’ habit of overfitting to their training set.
Combining New RS & Improved Algorithms Provide Higher Detail and Decrease Acreage Estimates

% Difference from Census

- Citrus
- Peanuts
- Strawberries
- Sugarcane

Sugarcane

- CDL 2016
- New Classification
- High Resolution Imagery

Citrus

- CDL 2016
- New Classification
- High Resolution Imagery
High Resolution Continuous Meteorological Data are Within Needed Accuracy
Next Steps

High Res: More detail than Landsat; More repeat than Google

Change in spectral signature and higher resolution – crop ID? Timing

Google  Landsat  Hi-Res
Pesticidas e Insolación que es Culturalmente Apropiada
Pesticide & Heat Stress Education for Latino Farmworkers
that is Culturally Appropriate

PISCA Project Team

- Joseph G. Grzywacz, PhD, Florida State University (FSU), CoPI
- Antonio Aguilar Tovar, PhD, Farmworker Association of Florida, CoPI
- Melinda Gonzales-Backen, PhD, FSU, CoI
- Antonio J. Marin, MA, FSU, Project Manager
- Maribel Trejo, FSU, Project Coordinator
- Cecilia Ordaz Gudino, FSU, Promotora
- Mariela Garcia Rendon, FSU, Promotora
- Amy K. Liebman, MPH, Migrant Clinicians Network, Consultant
- Jeannie Economos, Farmworker Association of Florida, Consultant
**PISCA Goal and Study Aims**

- **Goal**
  - Reduce poor health outcomes among Latino farmworkers attributed to exposure to pesticide and extreme heat and humidity.

- **Aims**
  - Create reproducible, culturally- and contextually-relevant safety education curricula for Latino farmworkers targeting pesticide exposure (suitable for meeting revised Worker Protection Standard) and heat-related illness.
  - Determine the effectiveness of developed curricula in promoting advocated safety behavior when implemented by professional educators.
  - Identify the comparative effectiveness of *promotora*-based implementation of developed curricula relative to professional educators.
Research to Practice (R2p): The 3 phases of PISCA

**Phase I**
- Develop beta-version of Curricula
- Test: Do curricula change knowledge & Attitudes (n=125)

**Phase II**
- Finalize Curricula
- Test: Does PISCA WPS-r curricula produce better outcomes (knowledge and behavior) than standard EPA training (N=325)

**Phase III**
- Train and deploy promotoras to delivery PISCA curricula
- Test: Are effects seen from promotoras comparable to those from professional educators
**PISCA Study Activities/Methods**

- **Design & Finalize Curricula**
  - Cultural & contextual relevance

- **Community Relationship Building**
  - Migrant Clinic Advisory Board; Festival Latina; Valdosta Hispanic Council

- *Promotoras* direct farmworkers to training PISCA training sessions

- Data collection: pretest, posttest, and 3-month follow up
Results (Phase I): PISCA WPS-r Improves Pesticide Knowledge & Behavioral Intention

Covariates appearing in the model are evaluated at the following values: 11. ¿Cuántos años lleva trabajando en la agricultura en los Estados Unidos? = 6.09, 2. ¿Es usted hombre o mujer? = .68

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Results (Phase I): **PISCA** WPS-r Improves Heat-related Illness Knowledge & Behavioral Intention

Covariates appearing in the model are evaluated at the following values: 2. ¿Es usted hombre o mujer? = 68, 11. ¿Cuántos años lleva trabajando en la agricultura en los Estados Unidos? = 6.09
**PISCA Next Steps in Research**

- Implement Phase II (9/1/17 – 8/31/19)
  - Compare the effectiveness of PISCA WPS-r curricula relative to typical EPA-available training (via video)
  - Recruit farmworkers and conduct pretest; farmworkers are directed to community-based training sessions; farmworkers complete training and posttest; 3-month behavioral follow-up
- Continue building community partnerships, and expand to other regions of GA (e.g., Tifton, Moultrie) and FL (e.g., Dundee, Homestead)
- Instructional Designers to finalize curricula manuals for Phase III
- Disseminate results (East Coast Migrant Stream Forum, APHA) & publish manuscripts
- New Collaborations
  - Juan Luque, PhD (FAMU) assist with implementation of SCCAHS pilot evaluating use of Heat Stress app
  - Drs. Bob Hickner & Gregg Stanwood (FSU) are developing a project focused on pesticide exposure and fat metabolism among farmworker children
**PISCA** Next Steps in the Community

- *Vamos a la Escuelita de Terapia de Arte* in partnership with East Coast Migrant Head Start Project

- *Familia Adelante*, a multi-risk reduction interventions for middle school-aged children, in partnership with Echols County Schools

- Promoting continuing education among Latino youth, particularly those in farmworker families
  - Lowndes County College Day, Echols County Career Day

- Fiesta Latina, Lake Park GA

- Farmworker Outreach in partnership with Emory University Physician Assistant program
Heat Stress and Biomarkers of Renal Disease

Emory University School of Nursing
Valerie Mac PhD, RN, Antonio Tovar-Aguilar, PhD, Vicki Hertzberg, PhD, & Linda McCauley, PhD, RN,
Study Aims

1. Characterize the occupational environment of these workers
2. Characterize the physiologic profile of these workers
3. Determine if biomarkers indicating kidney injury are present
4. Explore the molecular mechanisms of renal dysfunction with metabolomics

**Question:** Do the these findings differ from controls who do not work in the heat?
Study Activities/Methods

• Funding received 1/2018
• IRB approved
• Updated survey
• Assembling and training study team for recruitment and fieldwork
• Purchasing Supplies
Pre-Workday

**Urine:** Dehydration was assessed on-site via urine specific gravity (usg)

During the Workday

**Physiologic Biomonitoring**
- Work Intensity
- Heat Exposure

Post-Workday

**Urine:** Dehydration was assessed via urine specific gravity (usg), protein, hgb

**Blood:** Kidney Injury Markers and Metabolomics
AKI in Girasoles

**Presence of AKI:**
33% of participants had the criteria indicating AKI on at least one workday
   - 28% on one workday
   - 4% on two workdays
   - 1% on three workdays

**Stages of AKI:**
26% had stage 1 AKI on at least one workday; 3% on two; 0.5% on three
3% had stage 2 AKI on at least one workday
0.5% had stage 3 AKI on at least one workday

(Increase of post-shift serum creatinine by at least 0.3 mg/dL OR
≥ 1.5 times the pre-shift creatinine)
Results and Implications

This study will be the first to document the extent of association between heat exposure and CKD in a migrant farmworker population in the US.

Implications=Interventions
Heat and Pesticide Stress in the Kidney

Chris Vulpe, Physiological Sciences
Steve Roberts, Physiological Sciences
Nancy Denslow, Physiological Sciences
Study Overview

• Using a rodent model system, this project will examine gene expression and metabolomics data to determine both individual and interactive impacts of heat stress and pesticide exposure.

• This is an innovative application because the study evaluates the potential interaction between heat and pesticide exposure using a combination of pathology, metabolomics and gene expression profiling as analytical tools.

• Our central hypothesis in this two-year exploratory study is that heat stress comparable to that experienced by farmworkers increases the renal injury from nephrotoxic insecticides and herbicides.
Study Aims

• **Aim 1:** Characterize the nephrotoxicity of the most commonly used formulations of an insecticide, permethrin, and two herbicides, paraquat and glyphosate in the rat.
  • Hypothesis: Subchronic exposure to permethrin, paraquat, and glyphosate commercial formulations produces renal injury in the rat.

• **Aim 2:** Develop a model of hyperthermia and mild dehydration in the rat resembling heat stress in Southeastern US agricultural workers.
  • Hypothesis: Hyperthermia and dehydration comparable to that observed in Southeastern U.S. farmworkers produces minimal evidence of renal injury using standard assessment methods.

• **Aim 3:** Determine the combined effect of heat stress and pesticide exposure on renal injury in rats.
  • Hypothesis: Heat stress produces a significant increase in the renal injury produced by pesticides
Potential Impact of Proposed Work

• Improved understanding of the physiological effects of heat stress and pesticide exposure on kidney function
• Provide Insight into interaction between heat and pesticides in farmworkers
• Could help inform appropriate occupational health and safety guidelines for farmworkers simultaneously exposed to heat stress and agricultural chemicals.
Chronic Low Back Pain in Seafood Workers: a Pilot Intervention Study to Identify Modifiable Work & Movement Solutions

Kim Dunleavy, Andrew Kane, Mark Bishop
Specific Aim 1

1. Identify modifiable, sector-specific, work and movement solutions with potential to reduce the burden of chronic lower back pain

- **Rapid prototype - task analysis**
  - Existing video clips

- **Focus group – prioritize tasks solutions**
  - 6-8 key participants using video clips
  - Perceptions of major tasks related to LBP
  - Feasibility of solutions

- **Surveys piloted**
  - Patient specific functional scale
  - Numeric pain ratings
  - Oswestry Disability Index
  - Self efficacy, coping

1. Prioritized solutions
2. Demonstration videos
3. Job aids
Specific Aim 2

2. Determine the extent that participants adopt identified solutions, and impact on functional difficulty

**Baseline**
- Surveys
- Introduction principles groups (videotapes, demo)
- Feasibility focus groups

**Intervention**
- 3 strategies 8 weeks
- Weekly follow up

**Post**
- Surveys
- Focus group

- 3-6 groups (12-24 people)
- Identify 3 preferred strategies

- Patient specific functional scale & pain ratings

1. Community workshop
2. Video clips
3. Adoption, consistency, feasibility
• Position reversal
• Relationship to load
• Leg and trunk timing
• Limiting Flexion/rotation

• Modification
• Organization

• Work breaks
• Task rotation
• Freq lifting
• Amount load

• Stretching
• Unloading
Pilot study of mobile app monitoring to reduce heat-related symptoms among Hispanic Farmworkers

John Luque, PhD, MPH, Associate Professor, Florida A&M University
Brian Bossak, PhD, MPH, Associate Professor, College of Charleston
Antonio Tovar-Aguilar, PhD, Farmworker Association of Florida
Study Aims

• Test and evaluate a HRI prevention intervention using the OSHA Heat Safety Tool app among Hispanic farmworkers
• Assess the feasibility of recruiting farmworker crew leaders to a train-the-trainer intervention
• Measure implementation of the mHealth pilot intervention
Phase 1: Focus Group Demographics (N=29, 5 focus groups)

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Next Steps

• Working on receiving IRB approval at FAMU and new subcontract following Dr. Luque’s recent job change from MUSC to FAMU.

• Recruiting another study site in Lake Park, Georgia for Phase 2 thanks to Dr. Joe Grzywacz and his study team.
PILOT STUDY OF THE ACUTE PSYCHOLOGICAL AND HEALTH IMPACTS OF HURRICANE IRMA IN IFAS EXTENSION WORKERS

Lynn M. Grattan, Ph.D. PI; Angela Lindsay, Ph.D. Co-Inv.; Tracy Irani, Ph.D., Co-Inv.; J. Glenn Morris, MD, MPH & TM, Co-Inv.
Study Aims

1) To document the stresses, behavioral/mental health status, and coping strategies of FL County Extension Workers 6 to 8 weeks post Hurricane Irma toward increasing understanding of the acute psychological impacts of a severe hurricane.

2) Examine the association between demographic, hurricane exposure, self-reported resilience, coping strategy, and information processing speed and health outcome (physical and behavioral health) one to two months post Hurricane Irma.

3) Obtain baseline data for monitoring recovery over time.
Methods

• Recruitment by Dr. Angela Lindsay targeting most heavily impacted UF extension office communities.

• Two Listening Sessions with extension worker communities to identify stressors and reactivity 4 weeks post hurricane.

• Examined of 43 participants: Demographics, medical symptoms, Hurricane Impact (HI), information processing speed, everyday memory, self-reported resilience, coping strategies, symptoms of PTSD, Depression.

• Resilience Training of a subset of extension workers (3/4)

• Participants received $25 for study participation
Results and Implications

1) No one had a score below the average to superior range on measures of information processing speed. The reported difficulty was likely the inability to apply this skill in the stressful environment.

2) Higher level of HI: significantly more medical symptom complaints, higher PTSD scores, elevated Depression. 
   - Medical Sx: musculoskeletal, gastrointestinal, cognitive 
   - Damage to home and personal property → worst outcomes. 
   - Employee Assistance Programs; time off for home repairs

3) Logistic regression modeling: HI, past hurricane exposure, and education, predicted PTSD and medical symptoms. 
   - Lower education was associated with more problems (mean edu = 17.6 yrs, sd = 1.5)
Mental, Physical, and Occupational Health Issues among Haitian and Mexican Farm Workers in Immokalee, FL

Dr. Gulcan Onel, UF-IFAS (PI)
Dr. Antonio J. Tovar-Aguilar, Farmworker Association of Florida (Co-PI)
Dr. Jeanne-Marie Stacciarini, UF, College of Nursing (Co-PI)
Study Methods

- A three-module questionnaire measuring 1) mental and physical health status, 2) social networks, and 3) demographic and occupational background (in Spanish and Haitian Creole).
- Community-Based Participatory Research (CBPR) principles to foster a partnership and trust with the community gatekeepers and gain access to this vulnerable population.
- Recruitment based on a Respondent Driven Sampling (RDS) scheme with the help of Promotora (i.e., community health worker) associated with the FWAF.
Thank You for Coming!
Background

The National Institute for Occupational Safety and Health (NIOSH) awarded the University of Florida a grant of nearly $10 million for a 5-year project to work with other Southeastern states to explore the occupational safety and health challenges of people working in agriculture, fishing and forestry in the Southeast.
Background

- As the lead on this project, the **UF College of Public Health & Health Professions** brought **UF Institute of Food and Agricultural Sciences (IFAS)** into the project to work on the Extension, evaluation, outreach and community engagement efforts.
Background

• Other universities involved:
  • University of South Florida
  • Florida State University
  • Florida A&M University
  • Emory University
  • University of the Virgin Islands

• The center’s goal is to promote occupational health and safety among employers, families, and workers at the 240,000 farms estimated by the US Department of Agriculture to be operating in the SE region, as well as forestry and fishery industries.