

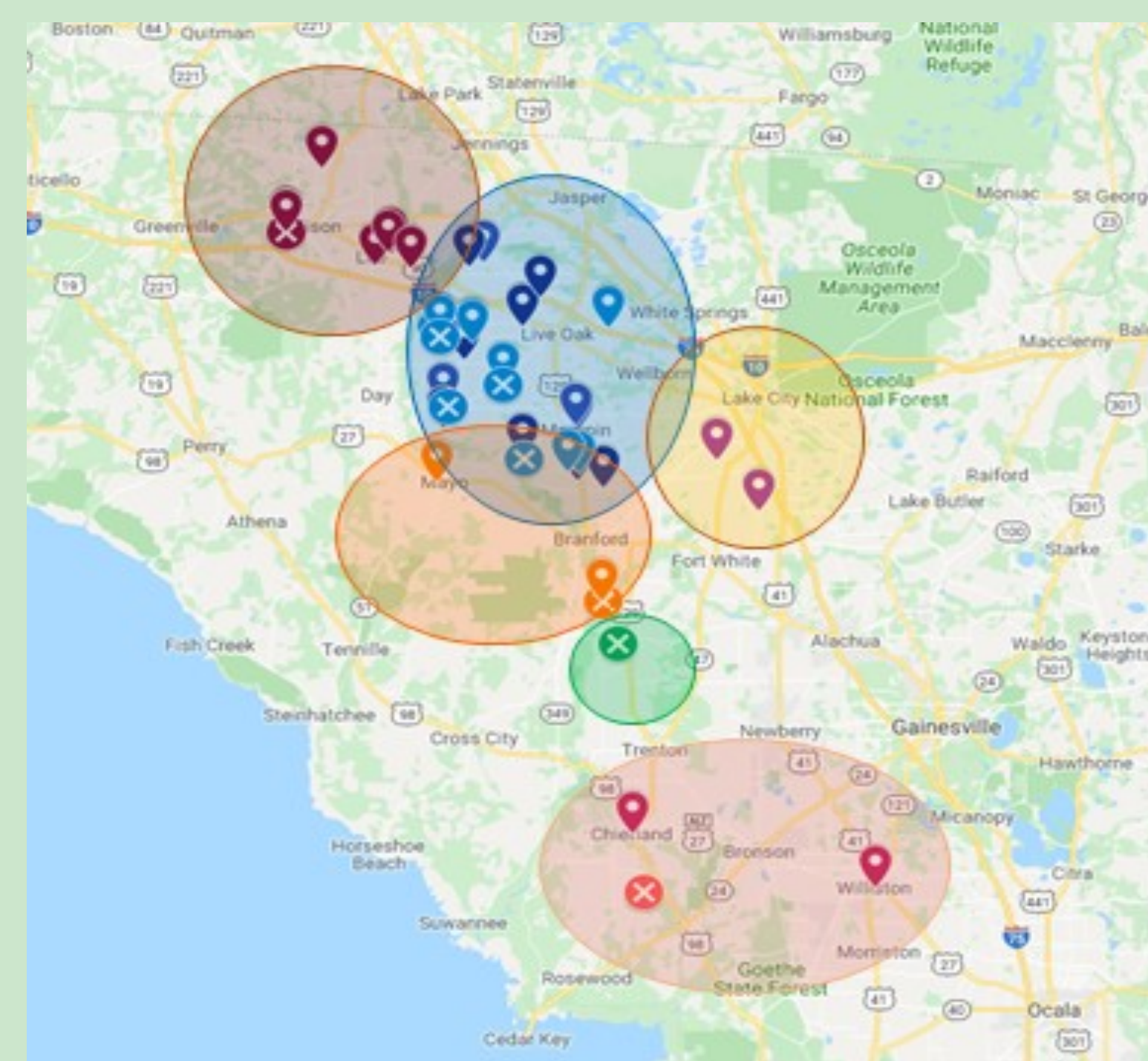


De Broughton, deonne@ufl.edu, Keith Wynn, kwynn@ufl.edu, Jay Capasso, jcapasso@ufl.edu, Chris Vann, lafayett@ufl.edu, Dan Fenneman, dfenneman@ufl.edu, Mark Warren, mwwarren@ufl.edu, Sylvia Willis, swillis1@ufl.edu, Alicia Halbritter, aliciah1221@ufl.edu, Kevin Korus, kkorus@ufl.edu, Tyler Pittman, pittmanh1@ufl.edu, Luke Harlow, harlow1231@ufl.edu, Luke Miller, lukemiller1@ufl.edu, Cassidy Dossin, cdossin@ufl.edu, , Clay Cooper, coop1632@ufl.edu, Ethan Carter, ethancarter@ufl.edu
University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS)

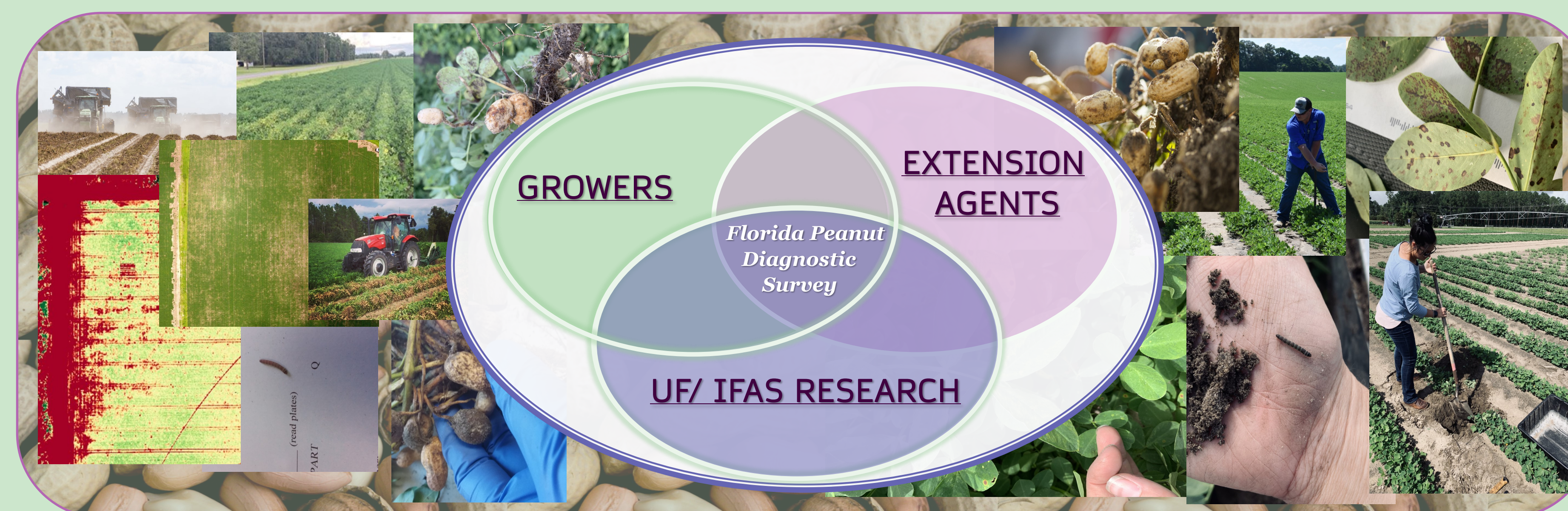
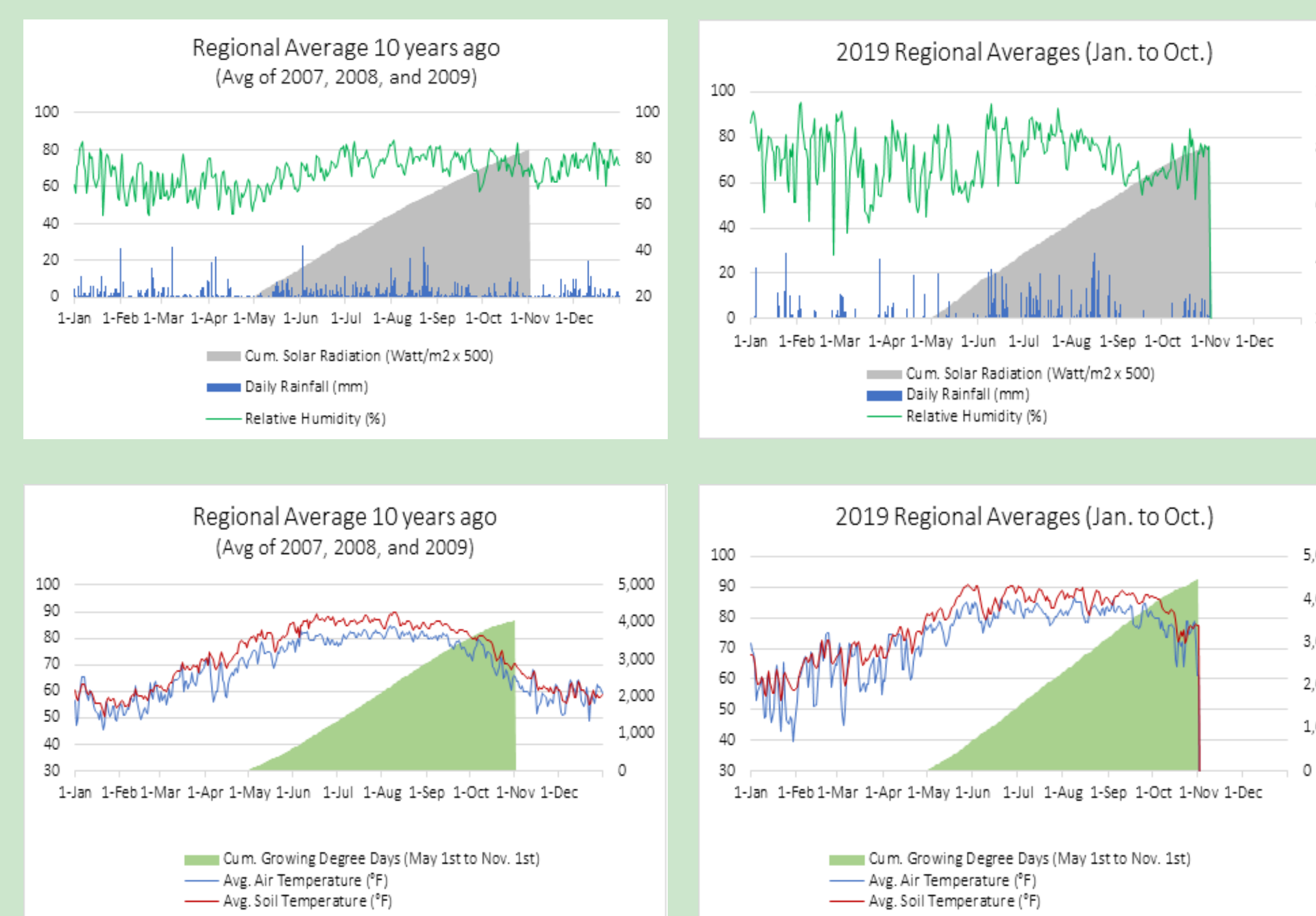
Florida Peanut Federation, McAlpin FL
Florida Peanut Producers Association, Marianna FL
National Peanut Board, Southeastern Peanut Research Initiative (SPRI)

SITUATION

Peanut growers are facing increased environmental challenges due to abnormal weather trends. These challenges include higher than normal occurrence of diseases, and an increase of insect pests. Widespread and catastrophic peanut decline (Peanut Collapse) has occurred in recent years, leading to substantial state-wide yield reductions. These decline episodes made it clear to extension agents and specialists that an organized system of surveying peanut fields using various types of diagnostic reports, advanced aerial imagery, and an online data platform (FieldX) could help them better understand disease development and to predict future occurrences. Utilizing recorded field data helps involved teams and farmers correlate management practices, environmental conditions, and weather, to changes in disease and plant stress.



All data points (2017, 2018, and 2019) and counties



RESULTS

For 2019, samples from 60 field locations were collected and analysed for disease, and physiological and environmental stress. These locations comprised 6 Florida counties, whose agents monitored these sites throughout the growing season. Concurrent with the field work, aerial imagery was applied in select locations to help create a baseline of field conditions. Collaborators using FieldX (iOS app) were able to map and display multiple farms and fields simultaneously, while tracking unique picture geolocations and field notes. Field X afforded participants the ability to map, photograph, and described incidents of stress which aided the visualization of peanut diseases effects and abiotic stress for a large region.

OBJECTIVE

To create an organized peanut diagnostic survey in order to observe and study agricultural and environmental trends across a vast region, cultivating relationships among growers, agents, and researchers, and allowing collaborators to gain insight into the development of disease and plant stress from existing environmental and climatic variations over time.

YEAR	COUNTY	PEANUT VARIETY	Number of Samples	Irrigated Fields (%)	Presence of Canopy Fungal Diseases (%)	Presence of Nematodes (%)	Presence of Tomato Spotted Wilt Virus (TSWV) (%)	Presence of Underground Fungal Diseases (%)	Occurrence of Foliar Nutritional Deficiency (Yes/No)			
2017	Levy		2									
	Suwannee		5						Peanut collapse first observed in the region.			
	Lafayette	06G	1	0	100	0	0	100	No			
	Madison	331	1	100	0	0	0	0	No			
2018	Madison	06G	2	100	0	0	0	0	No			
	Madison	16HO	1		0	0	0	0	No			
	Suwannee	14N	2	50	0	0	0	100	No			
	Suwannee	06G	8	50	37.5	25	12.5	37.5	Yes			
	Suwannee	09B	1	100	100	0	0	100	No			
	Suwannee	16HO	1	100	0	0	0	100	No			
2018 Summary				3	5	17	59%	29%	12%	6%	47%	18%
2019	Columbia	06G	5	0	20	80	0	40	No			
	Hamilton	06G	1	100	0	100	0	0	No			
	Jackson		1	0	100	0	0	0	No			
	Lafayette	06G	2	50	0	50	0	50	No			
	Lafayette		3	67	0	0	0	33	No			
	Levy	331	3	100	0	0	0	0	No			
	Levy		3	67	0	0	33	67	No			
	Madison	06G	6	0	17	17	17	17	Yes			
	Madison	09B	4	100	50	50	0	0	No			
	Suwannee	06G	22	64	41	14	9	36	Yes			
Suwannee	09B	5	100	0	0	0	60	Yes				
Suwannee	331	2	100	0	0	0	0	Yes				
Suwannee	12Y	2	100	0	0	0	100	No				
Suwannee		2	50	100	0	50	50	No				
2019 Summary				7	6	61	59%	25%	18%	8%	34%	16%



A&B: Northern and Southern Suwannee County.
C: Madison County
D: Patchy Occurrence. Nutrient deficient symptomology and viral appearance.
E: Aerial view, Madison County.
F: Gilchrist County
G: Pod rot
H: Levy County

IMPACT

Collaborators acquired data intended to help farmers and stakeholders understand the seasonal progression of peanut disease/stress and apply it to their farms. In 2019 grower participation increased by 250% over the previous year. In three years, 80 samples were collected, saving producers \$4,497.00 in sample processing and analytical reporting costs. At the current \$10 per acre rate for Certified Crop Advisor (CCA) consultation services, the agent team has saved 18 producers \$150,000 by scouting and consulting on roughly 15,000 acres. Overall, the survey has provided \$154,487.00 in services directly to participating growers.

METHODS

The Nexus - Agents, Growers, Researchers, Technology

The survey team consisting of extension agents, growers, and UF/IFAS researchers, gathers data needed to predict potential problems associated with future peanut crops. They enlist the assistance of drone flights, a mobile app, and detailed plant diagnostic reports.

Data Collection

The survey groundwork includes collecting and processing samples for the analysis of disease, physiological, and environmental stress. Site visits with growers are instrumental in identifying stressed peanut locations and highlight the need for robust agent/grower relationships. Collected plant tissue and soil samples are delivered to appropriate labs for detailed diagnostics.

Drone multi-spectrum imagery

Concurrent with the field work, aerial imagery is applied in select locations. This technology is used to identify and document a range of potential issues including disease spread and environmental anomalies. Collectively, these help to predict risks to future peanut production.

Data Sharing

Collaborators use FieldX, an iOS app that maps multiple fields simultaneously, and tracks the geolocation of field pictures and notes. Plant stress is mapped, photographed, described and shared, allowing the team to visualize the effect of peanut diseases and abiotic stress for large regions. Researchers collect comprehensive data regarding the type, timing and location of plant stress while investigators track symptom progression and assist in formulating models to assess future risks.