UF/IFAS • Everglades Research and Education Center

VEGETABLE PATHOLOGY LABORATORY

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NEWSLETTER

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Research Project Updates

The lab advanced six research projects this period, spanning celery, sweet corn, sugarcane, and sorghum. Each is summarized below, along with what it means for the people growing the crop.

1. Native Florida fungi as biocontrol agents against celery early blight

Project team: Larissa Carvalho Ferreira and Katia V. Xavier.

Celery early blight (*Cercospora apii*) is one of the most damaging foliar diseases of celery in the Everglades Agricultural Area and is currently managed almost entirely with weekly fungicide sprays. The team screened 48 native fungal isolates from celery fields and nearby natural areas; 12 reduced the pathogen by more than 50% *in vitro.* Two Mucor isolates stood out, and *Mucor nidicola* KX3187 significantly suppressed disease in greenhouse trials.

Why it matters for growers: This points toward a homegrown biological alternative to weekly fungicide sprays, especially valuable for organic growers, who have very few approved products, and for conventional growers worried about fungicide resistance and runoff into the surrounding Everglades. The result is promising but preliminary; field validation is the next step before it becomes a recommendation.

Read more here

2. Identifying the pathogens behind celery anthracnose in Florida

Project team: Fernanda R. Silva, Mario Lucio Vilela, and Katia V. Xavier.

Celery anthracnose (leaf curl) causes leaf curling, spotting, and stem lesions and appeared on 5 to 20% of plants on commercial south Florida farms in fall 2022, 2023, and 2024. Using multi-gene analysis of 18 strains, the team identified 17 as *Colletotrichum theobromicola* and one as *C. fioriniae*, then confirmed both cause the disease. This is the first record of *C. fioriniae* on celery in Florida and the first record worldwide of *C. theobromicola* causing celery anthracnose.

Why it matters for growers: You cannot manage what has not been correctly identified. This work pins down the actual pathogens behind anthracnose outbreaks in south Florida celery, including one never before linked to

the disease, and documents that they cause slightly different symptoms. That gives growers and diagnosticians a foundation for accurate scouting and targeted management instead of guesswork.

Read more here

3. A profitable fungicide program for corn leaf blights on sweet corn

Project team: Vitor Silva de Moura, Larissa Carvalho Ferreira, Simon S. Riley, Nicholas Steven Dufault, Marcio F. R. Resende Jr., and Katia V. Xavier.
Across four field trials in Belle Glade (2023 to 2025), the team compared fungicide programs for northern and southern corn leaf blight. Under high disease pressure, programs that started early (pre-tassel, at the V3/V7 stages) controlled disease far better than systemic-only programs begun at tasseling, cutting disease progress from 36 to 47% down to 6 to 19%. The best programs protected up to 2.44 tonnes per hectare of yield, mostly through better kernel fill, with returns on investment of 92 to 762%.

Why it matters for growers: This is direct spray-timing guidance for Florida sweet corn: start protection by V7 and maintain coverage through tasseling and silking. Streamlined two-pass programs matched heavier three- and four-pass schedules while cutting inputs, so growers can protect both yield and profit with fewer applications and lower resistance risk.

Read more here

4. Characterizing pineapple sett rot in Florida sugarcane

Project team: Tarciso Almeida Ferreira Junior, Fernanda R. Silva, Ludmila Lopes Silva, and Katia V. Xavier.
As Florida's sugarcane industry shifts from manual to mechanical planting (smaller, more heavily wounded billets), pineapple sett rot has intensified. The team characterized 93 isolates from the 2023 to 2024 season and confirmed all as *Thielaviopsis ethacetica*, the first molecular characterization from North American sugarcane. Isolates were highly virulent, reducing plant survival by 50 to 98%, and all tested uniformly susceptible to the fungicide propiconazole.

Why it matters for growers: Two practical takeaways for the EAA's most important crop: propiconazole is still highly effective against this pathogen, and these results set a baseline so any future loss of sensitivity can be caught early. The study also flags a cultivar (CPCL05-1201) with better resistance.

Read more here

5. Screening Florida sugarcane varieties for pineapple disease resistance

Project team: Simranjot Kaur, Katia V. Xavier, and Hardev Sandhu.
The team built and validated a reproducible single-bud greenhouse inoculation method for pineapple disease, then screened six widely grown Florida sugarcane varieties. All six were susceptible, with germination cut by more than 50%, and CP 03-1912 was the most severely affected.

Why it matters for growers: Current Florida varieties are vulnerable to pineapple disease, especially under mechanical planting with smaller seed pieces. Just as important, the new screening protocol lets breeders test for resistance early, speeding development of varieties better suited to mechanical planting.

Read more here

6. Host-associated strains of the sorghum anthracnose pathogen

Project team: Katia V. Xavier, Mark Farman, Fernanda R. Silva, Leandro G. Cordova, Eduardo S. G. Mizubuti, Etta Nuckles, Iffa Gaffoor, Surinder Chopra, and Lisa Vaillancourt.
Anthracnose of sorghum and Johnsongrass in the southeastern US is caused by *Colletotrichum sublineola*. This study resolved the pathogen into three genetically distinct subpopulations: one that infects cultivated sorghum only, one that infects Johnsongrass only, and one that infects both. The three can be told apart using specific DNA markers.

Why it matters for growers: This is foundational research more than an immediate recommendation, but it matters for breeding and diagnostics. Knowing that Johnsongrass, a common weed, harbors a distinct strain that can also jump to cultivated sorghum informs both resistance breeding and weed management as a lever for disease control.

Read more here

Bringing Drones Into the Field

This period, the lab expanded its use of drone-based imaging across several projects. The flagship effort pairs drones carrying advanced imaging sensors with real-time weather data and AI to detect celery disease earlier and more precisely than traditional field scouting, so fungicides can be applied only where and when they are actually needed. While celery is the focus, the same platform is being extended to other crops, including lettuce. New lab member Tarciso Almeida Ferreira Junior is now helping drive the early-detection work forward.

Why it matters for growers: Earlier, more targeted detection means fewer blanket sprays: lower input costs and less chemical load on the farm and surrounding ecosystem. Growers and crop consultants are directly involved in on-farm testing, and Extension field days and workshops are helping farmers adopt the tools with confidence.

What a video here