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Text

Viruses transmitted by the whitefly, *Bemisia tabaci*, threaten cucurbit production in the United States (US) and throughout the world, reducing yield and fruit quality. This threat increases with elevated whitefly populations, prevalence of mixed infections, and the introduction of new viruses. Large whitefly populations occur in summer and fall cucurbit production throughout much of the southwestern and southeastern US, including in areas that once had limited whitefly pressure. Recent surveys conducted in these regions demonstrated that mixed virus infections, which create challenges for disease management and plant breeding, are now common. These mixed infections often include the criniviruses, cucurbit yellow stunting disorder virus (CYSDV) and cucurbit chlorotic yellows virus (CCYV), and the begomovirus, cucurbit leaf crumple virus (CuLCrV) along with other viruses. Epidemiological research to clarify factors driving the perennial threat these viruses pose to production, including identification of weed and non-cucurbit reservoir hosts, impact of timing of infection, and competitiveness of viruses in mixed infections, varies by region. This research is highly dependent on multiplex RT-PCR assays to identify mixed infections. Additional efforts by the Emerging Viruses in Cucurbits Working Group (ecucurbitviruses.org), established in 2022, are underway to improve communication regarding virus threats throughout the industry with the goal of reducing virus spread and impact.

C4.4-6

EPIDEMIOLOGY OF YAM VIRUSES IN GUADELOUPE: ROLE OF CROPPING PRACTICES AND SEED-TUBER SUPPLY

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Text

Among the 25 viruses recognized officially in yams (*Dioscorea* spp.) worldwide, nine have been reported in yams in Guadeloupe. Since the epidemiology of these viruses remains largely unexplored, we undertook a large-scale epidemiological study of yam viruses in Guadeloupe based on the analysis of 1124 leaf samples collected from yams and weeds. We assessed the prevalence of cucumber mosaic virus (CMV), Cordyline virus 1 (CoV1), *Dioscorea* mosaic associated virus (DMAV), yam asymptomatic virus 1 (YaV1), yam mosaic virus (YMV), yam mild mosaic virus (YMMV), badnaviruses, macluraviruses and potexviruses, and evaluated the effects of key epidemiological drivers of these viruses. We identified several weed reservoirs of YMMV and provide evidence that YMMV isolates infecting weeds cluster together with those infecting yams, pointing to the role of weeds in the epidemiology of YMMV. We report on the occurrence of yam chlorotic necrosis virus (YCNV) in Guadeloupe, the introduction of YMMV isolates through the importation of yam tubers, and the absence of vertical transmission of YaV1. We identified specific effects of some cropping practices, such as weed management and the use of chemical pesticides, on the occurrence of several yam viruses, but no crop-related factor had a strong or general

effect on the overall epidemiology of the targeted viruses. Overall, our work provides insights into the epidemiology of yam viruses that will help design more efficient control strategies.

F4.4-1

STRIVING TO STAY CLEAN: DETECTION OF SWEETPOTATO VIRUSES ON MULTIPLE SEED GENERATIONS IN NORTH CAROLINA

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Text

Under the National Clean Plant Network (NCPN) economic study, the sweetpotato clean centers started an experiment aiming to assess the value of clean seed in comparison to older generation seed. The goal of this study was to evaluate the performance and quality of foundation seed after it had been integrated into commercial sweetpotato operations. In NC, trials started in 2021 with Covington and Beauregard as evaluated varieties. G1 seed was used as a reference to compare the yield and virus incidence of growers' generation 2 (G2), generation 3 (G3) and generation 4 (G4) seed roots. This experiment was repeated in 2022 with Averre and Bayou Belle added to the initial pool of varieties as well as older generations (G5 and G6). It is known that the accumulation and perpetuation of viruses in sweetpotato is a major constraint for production of seed and the commercial crop. The potyvirus complex is prevalent in North Carolina and comprises Sweet potato feathery mottle virus (SPFMV), Sweet potato virus G (SPVG), Sweet potato virus C (SPVC) and Sweet potato virus 2 (SPV2). In 2021, virus data suggested a low incidence of viruses (mainly SPFMV) on G1 material. Potyviruses (mainly SPVG, SPVC and SPFMV) started to be prevalent on G2 and G3 material. In the older generation evaluated (G4), all potyviruses (SPVG, SPVC, SPFMV and SPV2) were detected. In 2022, the same trend was observed as the prevalence of four potyviruses was associated to higher seed generations.

P4.4-001

CHARACTERIZATION OF A NOVEL ORTHOTOSPOVIRUS FROM MACADAMIA IN SOUTH AFRICA

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Text

South Africa is the largest producer of macadamias in the world. In order to ensure the continuation of the industry, it is important that research focuses on the control and eradication of economically-important pests and diseases. Macadamia trees in Mpumalanga show symptoms of severe chlorosis. This chlorosis coincides with a significant drop in production, with losses of up to 60% being recorded. In an attempt to determine whether the chlorosis may