RESEARCH ON THE BIOLOGICAL CHARACTERISTICS OF THE SPECIES ALEUROCANTHUS SPINIFERUS (QUINTANCE, 1903) IN THE CLIMATIC CONDITIONS OF THE DUBROVNIK-NERETVA COUNTY

Ivana Paladin Soče¹, Mladen Šimala², Tanja Gotlin Čuljak³

¹ University of Dubrovnik, Marka Marojice 4, 20000 Dubrovnik <u>ivana.paladin@unidu.hr</u>;
² Croatian Agency for Agriculture and Food, Gorice 68b, 10000 Zagreb
³ University of Zagreb, Faculty of Agriculture, Svetošimunska cesta 25, 10000 Zagreb

Introduction

The Orange Spiny Whitefly (OSW), Aleurocanthus spiniferus (Quaintance,1903) (Hemiptera:Aleyrodidae) was first recorded in Croatia in 2012. when it was eradicated (Šimala i sur., 2013). During the 2018. The presence of OSW was reported in Dubrovnik –Neretva valley, Vitaljina (Šimala i sur., 2019). OSW is a new entomological species in Croatia and currently has the status of a quarantine pest on the Union list, Part II, Annex B (EU 2019/2072). This pest continued to spread through the area of Konavle and the presence of OSW on the island of Hvar was recorded. In the following years, the pest then spread to the northwest, reaching Split-Dalmatia County, Šibenik-Knin County and, in 2023, Primorje-Gorski Kotar County (island of Krk) (NN 23/2023). The main concern is the heavy infestations recorded in citrus orchards located in an important commercial district in Dubrovnik-Neretva county, which are located mostly in the valuable Satsuma mandarins producing areas.





Materials & Methods

Field research on the life cycle of the pest *A. spiniferus* in natural conditions was conducted from January 1, 2020, to January 1, 2022, in the locality of Vitaljina, in a private mandarin orchard. The life cycle of *A. spiniferus* was determined based on monitoring and recording data on the occurrence of all developmental stages of the pest. Yellow sticky traps were used to signal the beginning of the flight of the adult stage, and every 7-10 days during the vegetation period, all present developmental stages were recorded on the underside of the leaves using a 60x hand magnifier. Subsequently, the time frames for the duration of each individual life stage were calculated.







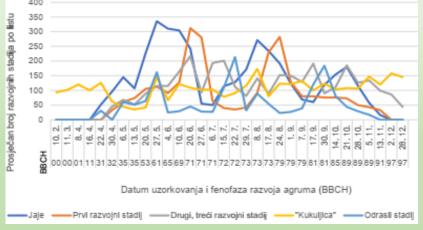


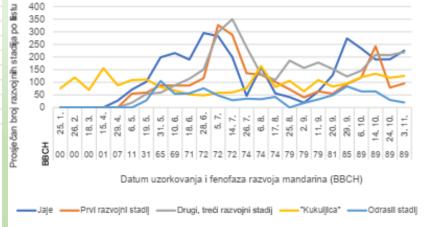




Results

The study revealed that the development of individual stages of OSW showed minimal differences across two research years, with variations of only 8 to 12 days, indicating consistent developmental patterns across generations. The OSW developed three generations annually of mandarin, with overlapping generations observed throughout the year. Climate analysis highlighted that 2020 was 1.6°C warmer than 2021, influencing the pest's development cycle, which lasted between 41 and 105 days in 2020, compared to 49 to 93 days in 2021. This temperature difference impacted the overall development rate of the species. The rapid response of the Mediterranean basin to climate changes, combined with increased international trade, poses a growing risk of new invasive species establishing in Croatia. The expected rise in temperatures could further facilitate the introduction and adaptation of economically harmful organisms in the region. Future monitoring of OSW, particularly recording the adult stages during winter months, could provide valuable insights into the species ability to survive and adapt to changing climatic conditions (Paladin Soče, 2024).





References

- 1. Šimala, M., Pintar, M., Masten Milek, T., Markotić, V., Kajić, Z., Kotlar, A., Paladin, I. (2019): Narančin trnoviti štitasti moljac- opasan invazivni štetnik. Glasilo biljne zaštite 6: 640-648.
- 2. Šimala, M., Masten Milek, T., Pintar, M. (2013). Narančin trnoviti štitasti moljac Aleurocanthus spiniferus (Quaintance, 1903) (Hemiptera, Aleyrodidae, Aleyrodidae). Hrvatski centar za poljoprivredu hranu i selo.
- 3. Paladin Soče, I. (2024). Životni ciklus i molekularna karakterizacija novog karantenskog štetnika agruma trnovitog štitastog moljca Aleurocanthus spiniferus (Quaintance, 1903) (Hemiptera: Aleyrodidae) u Republici Hrvatskoj. Sveučilište u Zagrebu, Agronomski fakultet. Doktorska disertacija.
- 4. Službeni list Europske unije (2019). Provedbena uredba Komisije (EU) 2019/2072 od 28. studenoga 2019. o utvrđivanju jedinstvenih uvjeta za provedbu Uredbe (EU) 2016/2031 Europskog parlamenta i Vijeća u pogledu zaštitnih mjera protiv organizama štetnih za bilje te o stavljanju izvan snage Uredbe Komisije (EZ) br. 690/2008 i izmjeni Provedbene uredbe Komisije (EU) 2018/2019. L 319/1.