# Inventory of Arthropod pests in Azorean orchards: The project CUARENTAGRI

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## Resource Citation

Lamelas-Lopez L, Borges P A V, Lopes D H (2022): Inventory of Arthropod pests in Azorean orchards: The project CUARENTAGRI. v1.0. Universidade dos Açores. Dataset/Samplingevent. http://ipt.gbif.pt/ipt/resource?r=cuarentagri_azores_2022&v=1.0

## Abstract

The data we present are part of the CUARENTAGRI project, which involves all archipelagos of the Macaronesia region (Azores, Madeira, Canary Islands, and Cabo Verde). The project aims to identify and evaluate the risk associated with the introduction of new arthropod pests and also to study the population evolution of those present and the arthropod pests responsible by damaging crops, as well as develop monitoring systems based on prediction and/or evolution of the crop pests, creating warnings and a phytosanitary prevention system. The presented data comprised three islands of the Azores archipelago (Terceira, São Jorge and São Miguel islands), where pheromones-baited traps were placed in several orchards types (banana, olives, orange, strawberry, chestnuts, pasture, potato and apples), during 3 consecutive years (2020, 2021 and 2022). This publication contributes to a better knowledge of the arthropods pests that can affect the Azorean crops, and will serve as a baseline for future monitoring actions, pest risk assessments, and impacts warning and prevention systems.

**Keywords:** Agriculture, Dataset, Orchards, Pest Risk, Pheromones Traps, Invertebrates, Macaronesia.

**Project details**

**Project title:** Inventory of Arthropod pests in Azorean orchards: The project CUARENTAGRI

**Personnel:** David Horta Lopes, José Asterio Guerra, Miguel Angelo Carvalho, Luis Dantas Raimundo Cabrera, Estrela Hernandez, Lucas Lamelas-López, Elisa Tarantino, Maria Manuela Juliano, Jose Carlos Fontes, Cristina Moules, Ricardo Rodrigues, Jéssica Machado, Adriano Mota, Beatriz Sousa, Helder Amaral, Maria da Conceição Filipe, Paulo A.V. Borges

**Study area descriptions/descriptor:** The study comprises three islands of the Azores archipelago, which is located in the Northern Atlantic Ocean (roughly at 38°43'17"N 27°13'14"W), and is formed by nine islands of volcanic origin and several small islets, divided into three main groups: The Western Group (Flores and Corvo), the Central Group (Faial, Pico, São Jorge, Graciosa and Terceira) and the Eastern Group (São Miguel and Santa Maria). The studied islands were Terceira (area: 402 km2, 1023 m.a.s.l.), São Jorge (area: 246 km2, 1053 m.a.s.l.) and São Miguel (757 km2, 1103 m.a.s.l.). The climate of the archipelago is temperate oceanic, characterized by regular and abundant precipitations, high levels of air relative humidity and persistent winds, mainly during the winter season.

**Design description:** The sampling methods included the installation of traps baited with pheromones, using different attractants types. The traps were installed during the appearance of the adults of the different pests, sometimes during all year (Ceratitis capitata, Cosmopolitus sordidus, trips) and sometimes only for few months, depending of the pest life cycle. The traps were monitored each two-weeks, collecting the samples and replacing the attractant every fifteen days or pheromone every nine weeks. The collected individuals were identified by an expert taxonomist in laboratory, determining the individual sex when possible. The sampling protocol was implemented during three consecutive years (2020, 2021 and 2022). Additionally, phytosanitary sheet reports were regularly elaborated (every fifteen days), and provided to technicians and farmers in order to inform them about pest identity and its population evolution and spread.

**Data published through** GBIF: http://ipt.gbif.pt/ipt/resource?r=cuarentagri_azores_2022

**Taxonomic coverage**

**General taxonomic coverage description:** The following Insecta Classes are covered: Insecta: Coleoptera, Hemiptera, Lepidoptera, Diptera, Thysanoptera

**Taxonomic ranks**
Phylum: Arthropoda
Order: Coleoptera, Hemiptera, Lepidoptera, Diptera, Thysanoptera

**Common names:** Arthropods, Beetles, Bugs, Moths, Flies, Thrips

**Spatial coverage**

**General spatial coverage:** Terceira, São Jorge and São Miguel islands, Azores, Portugal
**Coordinates:** 37°41'48.7"N and 38°48'42.81"N Latitude; 28°20'21.24"W and 25°7'2.97"W Longitude

**Temporal coverage:** April 11, 2020 - September 1, 2022

**Methods**

**Method step description:** The sampled habitats were selected by investigators of the University of Azores in cooperation with the technicians from the Agricultural Development Services and FRUTER Producers Cooperative of Terceira island, which included several types of crops and orchards. Pheromones-baited traps were used to sample the arthropod pests, which remain deployed during the appearance of the adults of the different pests, sometimes during all year (Ceratitis capitata, Cosmopolitus sordidus, trips) and sometimes only for few months, depending of the pest life cycle, and monitored in 2-weeks period. The sampling protocol comprise three consecutive years (2020, 2021 and 2022). The collected individuals were identified by expert taxonomists in laboratory. Additionally, phytosanitary sheet reports to technicians and farmers were regularly elaborated, including information about pest identity and spread status.

**Study extent description:** The study was conducted in three islands of the Azores archipelago, São Jorge and São Miguel. The sampled agricultural areas included several crops and orchards types, as plum, banana, potato, coffee, chestnut, fig, orange, several citrus, apple, strawberry, vine, olive, and pastures.

**Sampling description:** The sampling methods included the installation of 3 traps per each plot baited with pheromones, using different attractant types. Most of the traps were commercial with the food attractant (e.g., Ceratitis capitate or Bactrocera dorsalis), sexual pheromone (e.g., Bactrocera oleae, Lobesia botrana, Ptorimea operculella or Tecia solanivora) or aggregation pheromones (e.g., Cosmopolitus sordidus) depending of the type of pest.

The traps were installed during the appearance of the adults of the different pests, sometimes during all year (Ceratitis capitata, Cosmopolitus sordidus, trips) and sometimes only for few months, depending of the pest life cycle. The traps were monitored each two-weeks, collecting the samples and replacing the bait. The collected individuals were identified by an expert taxonomist in laboratory, determining the individual sex when possible. The sampling protocol was implemented during three consecutive years (2020, 2021 and 2022). Additionally, phytosanitary sheet reports were regularly elaborated, and provided to technicians and farmers in order to inform them about pest's identity and spread status.

**Quality control description:** All collected individuals were identified by expert taxonomists in laboratory. When possible, the sex of the individuals was provided.

**Datasets**

**Dataset description**
**Object name:** Darwin Core Archive Inventory of Arthropod pests in Azorean orchards: The project CUARENTAGRI
**Character encoding:** UTF-8
**Format name:** Darwin Core Archive format
**Format version:** 1.0
**Distribution:** http://ipt.gbif.pt/ipt/archive.do?r=cuarentagri_azores_2022
**Publication date of data:** 2022-10-25
**Language:** English
**Licences of use:** Creative Commons Attribution (CC-BY) 4.0 License

**Metadata language:** English
**Date of metadata creation:** 2022-10-25
**Hierarchy level:** Dataset