To develop and validate novel OFF-and ON-Season precision IPM strategies for *Ceratitis* *capitata* management in complex landscapes, three farms (IPM units) were selected in the municipality of Paliano (Latium).

**Pilot site characterization:**

Full characterization of both sites was conducted. Visual detailed inspection was carried out to identify the location of all relevant host plants/cultivars into the farm and orthomaps were provided.

The three farms in Paliano have the following characteristics:

Donati farm (250 m/a.s.l., coordinates 41°45’18.62’’N, 13°01’45.96’’E). Extension of approx. 27 ha of fruit orchards composed of peach (16.2 ha, several early and late cultivars), kiwi (8.26 ha, Hayward cv), apricot (1.08 ha, different cultivars), apple (0.78 ha, Fuji cv), and pear (0.84 ha, Coscia cv). In the site, there are also sporadic trees of persimmon, cherries and some grape plants.

Nicoli farm (260 m/a.s.l., coordinates 41°46’17.74’’N, 13°01’26.49’’E). Extension of approx. 1 ha of fruit orchard composed of peach (0.38 ha, different early and late cultivars), apple (0.15 ha, different cultivars), plum (0.1 ha, Mirabolano cv), pomegranate (0.16 ha), blackberry and goji berries (0.1 ha).

Loffredi farm (290 m/a.s.l., coordinates 41°48’19.92’’N, 13°05’28.42’’E). Extension of approx. 1.5 ha of fruit orchard composed of peach (1.16 ha, several early and late cultivars), apple (0.23 ha, Mela rosa and Royal Gala cv), pear (0.05 ha, Coscia cv), and plum (0.05 ha, Fortuna cv). There are also sporadic fig trees.

**Seasonal crop phenology:**

The flowering time (full bloom stage), color changes (from green to yellow or similar), harvest maturation, harvest time (if not the same as harvest maturation), and non-harvested fruit drop were recorded with visual inspection in the pilot sites. The data were noted for each cultivar on the farms.

**Population monitoring:**

Trap installation was performed in January 2020. 10 Conetrap baited with Biolure and 10 Jackson traps baited with TML were placed.

In June 2020, a full set of traps was placed in the pilot site, according to the protocol for monitoring medfly adult population. In particular, 32 Jackson traps baited with TML, 14 Tephri traps in a “wet” system baited with PTA, and 18 Decis traps were positioned. All trap positions were marked with a GPS and coordinates recorded. Trap checking was carried out weekly.

In July, the Tephri traps have been replaced with Decis traps.

During 2020-2023: The full set of traps were in the field for monitoring medfly adult population. Trap checking was carried out at weekly interval during all reporting period with the exception of the winter season in which traps were checked every 15-20 days.

**Overwintering resources of medfly:**

During winter 2019-2020 and 2020-2021, surveys to assess the presence of pre-imaginal stages was carried out. Fruit samplings (mainly apple) were conducted in December and January. The fruits collected according to the protocol. In addition, also the area with “winter fruits” and the number of trees for each “winter” species were estimated.

**Fruit sampling:**

Fruit sampling was carried out from July to August 2020, 2022, 2023 and September-October 2022 to assess on-season infestation rates. According to the protocol, fruit were collected from the ground (50 fruits) and from the tree (50 fruits).

In particular, these seasonal host categories were investigated:

Early summer apricot (in Donati farm)

Early summer pear (in Donati and Loffredi farms)

Early summer peach (in Donati farm)

Summer peach (in Donati farm).

These seasonal host categories were investigated in 2022:

Early summer apricot (in Donati farm)

Early summer peach (in Donati and Loffredi farms)

Early summer pear (in Donati and Loffredi farms)

Summer peach (in Donati and Loffredi farms).

These seasonal host categories were investigated in September-October 2022:

Summer peach (in Donati farm)

Autumn/Winter apple (in Donati and Loffredi farms).

These seasonal host categories were investigated in 2023:

Early summer apricot (in Donati farm)

Early summer peach (in Donati and Loffredi farms)

Early summer pear (in Donati and Loffredi farms)

Summer peach (in Donati and Loffredi farms).

During 2021: No fruit sampling was conducted in the pilot sites.

**Evaluation:**

During 2022-2023, implementation of mass trapping for medfly control with the use of Decis and Magnet traps was conducted.

**Results:**

**Infestation:**

During winter 2019-2020, Infestation rates varied from 4 to 54%. in Loffedi farm. In other farms, no larvae or pupae retrieved from the collected fruits.

During winter 2020-2021 no larvae or pupae retrieved from the collected fruits.

**Monitoring:**

During 2020: The first capture of *C. capitata* adults was recorded on July, 15. A total of 830 flies (157 males and 673 females) were trapped until 31 August.

During 2020-2021: The presence of *C. capitata* adults in traps lasted until the beginning of December 2020 in Donati and Loffredi farms and until beginning of November 2020 in Nicoli farm. In the period from January to June 2021, no catches were recorded on farms in the pilot sites. From June to August 2021, a total of 129 flies (56 males and 73 females) were trapped.

During 2021-2022: The presence of *C. capitata* adults in traps lasted until the beginning of December 2021 in Donati and Loffredi farms and until beginning of November 2021 in Nicoli farm. In the period from January to June 2022, no catches were recorded on farms in the pilot sites. The first capture of medfly adults in 2022 were recorded on July, 6 in autumn/winter apple orchard in Donati farm. In the trap checking of the July, 20 the traps set in the three farms started to catch few samples in a widespread manner. From July to August 2022 a total of 2,334 flies (762 males and 1,572 females) were trapped.

During 2022-2023: The presence of *C. capitata* adults in traps lasted until the last week of November 2022 in Donati and Loffredi farms and until beginning of November 2022 in Nicoli farm. The maximum number of catches in the three farms during 2022 season was recorded in early-September. In the period from December 2022 to June 2023, no catches were recorded on farms in the pilot sites. The first capture of medfly adults in 2022 were recorded on June 20 in early summer peach orchard in Donati farm. The following week the catches of a few samples were reported in the three farms. A total of 45,229 flies (13,934 males and 31,295 females) were trapped in 2023. At the beginning of December, the traps recorded no more catches.

**Fruit sampling:**

During 2020: No damage was found in the collected fruits.

For 2022 summer: Damage was found in the early summer pear from Loffredi farm (cultivar Coscia, 5% of damaged fruits) and in the summer peach from Donati farm (cultivar Symphonie, 4% of damaged fruits) and from Loffredi farm (cultivar unknown, 35 % of damaged fruits).

For 2022 autumn: Damage was found in summer peach from Donati farm (60% fruits on tree). In autumn/winter apple damage was found from Loffredi farm (34% fruits on tree and 36% fruits on ground).

During 2023: In Donati farm, damage was found in the early summer peach (cultivar Honey Royale, 10% of damaged fruits) and summer peaches (cultivar Rome Star and O’Henry, respectively with 8% and 3% of damaged fruits). In Loffredi farm, the cultivar Coscia (summer pear) recorded 1% of damaged fruits.