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 Campomarino (Molise).

**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 of Campomarino have the following characteristics:

Di Labbio farm (45 m/a.s.l., coordinates 41°53’48’’N, 15°53’40’’E). Extension of approx. 3.8 ha of fruit orchard composed of peach (2.90 ha, different early and late cultivars), apple (35 trees of Fuji cv and 35 trees of Stark Delicious cv), plum (0.1 ha, different cultivars), apricot (0.675 ha, several cultivars), and pomegranate (35 trees). There are also sporadic trees of fig, pear and prickly pear.

Rinaldi farm (24 m/a.s.l., coordinates 41°54’40’’N, 15°05’40’’E). Extension of approx. 13.5 ha of fruit orchards composed of peach (2.03 ha, several early and late cultivars), apricot (about 50 trees of different cultivars), plum (about 50 trees of different cultivars), and grape (11 ha of different cultivars). There is also a garden in which are present trees of apple, apricot, fig, persimmon, pear, and citrus.

Palmucci farm (25 m/a.s.l., coordinates 41°55’50’’N, 15°03’56’’E). Extension of approx. 3.2 ha of fruit orchards composed of peach (1.16 ha, different early and late cultivars) and plum (2.03 ha). There are also sporadic trees of fig, medlar and citrus.

**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. 13 Conetrap baited with Biolure were placed.

In May 2020, a full set of traps was placed in the pilot site, according to the protocol for monitoring medfly adult population. In particular, 26 Jackson traps baited with TML, 13 Tephri traps in a “wet” system baited with PTA, and 15 Decis traps (commercially available dry system with deltamethrin) were positioned. All trap positions were marked with a GPS and coordinates recorded. Trap checking was carried out weekly. In addition, 4 Decis traps were installed in the buffer zone around the three farms.

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. 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, 2021, 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 in 2020:

Early summer apricot (in Di Labbio farm)

Early summer peach (in Di Labbio, Rinaldi and Palmucci farms)

Summer plum (in Palmucci farm)

Summer peach (in Di Labbio farm).

These seasonal host categories were investigated in 2021:

Early summer apricot (in Di Labbio and Rinaldi farms)

Early summer peach (in Di Labbio, Rinaldi, and Palmucci)

Summer plum (in Palmucci farm).

These seasonal host categories were investigated in 2022:

Early summer apricot (in Di Labbio and Rinaldi farms)

Early summer peach (in Di Labbio, Rinaldi, and Palmucci farms)

Summer plum (in Palmucci farm).

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

Summer peach (in Rinaldi and Palmucci farms)

Autumn/Winter apple (in Di Labbio farm).

These seasonal host categories were investigated in 2023:

Early summer apricot (in Di Labbio and Rinaldi farms)

Early summer peach (in Di Labbio, Rinaldi, and Palmucci farms)

Summer plum (in Palmucci farm).

**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 and 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, 13. A total of 3,115 flies (1,753 males and 1,362 females) were trapped until 31 August.

During 2020-2021: The presence of *C. capitata* adults in traps lasted until the middle of January 2021 in Di Labbio and Palmucci farms and until middle December 2020 in Rinaldi farm. The maximum number of catches in the three farms was recorded in mid-September. 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 562 flies (414 males and 148 females) were trapped.

During 2021-2022: The presence of *C. capitata* adults in traps lasted until the beginning of December 2021. The maximum number of catches in the three farms was recorded in mid-September. 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, 20 in pomegranate orchard in Di Labbio farm and the following week the catches of a few samples were reported in the three farms. A total of 314 flies (211 males and 103 females) were trapped up to the end of August 2022.

During 2022-2023: The presence of *C. capitata* adults in traps lasted until the last week of November 2022. The maximum number of catches in the three farms during 2022 season was recorded in late-September-October. 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 2023 were recorded on June 23 in early summer peach orchard in Di Labbio farm and the following week the catches of a few samples were reported in the three farms. A total of 115,770 flies (81,720 males and 34,050 females) were trapped in 2023. At the beginning of December, the traps recorded no more catches.

**Fruit sampling:**

During 2020: Damage was found in the early summer peach from Di Labbio (4%) and Rinaldi (2%) farms and in the summer peach from Di Labbio (7%).

During 2021: Damage was found only in the early summer peach from Rinaldi (1%) farm.

For 2022 summer: No damage was found in collected fruits.

For 2022 autumn: Damage was found in summer peach from Rinaldi farm farm (2% fruits on ground and 4% fruits on tree), Palmucci farm (4% fruits on ground and 4% fruits on tree). In autumn/winter apple damage was found from Di Labbio farm (2% fruits on tree and 6% fruits on ground).

During 2023: Damage was found only in early summer peach in Palmucci farm (cultivar Baby Gold 7, 2% of damaged fruits)