

## SPATIO-TEMPORAL DISTRIBUTION OF *CERATITIS CAPITATA* TRAP CATCHES IN AN AGRICULTURAL LANDSCAPE

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The Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae), is one of the most important fruit pests in the world. Because this insect develops on a wide range of fruit plants it can be a serious pest to many crops, determining economic losses, especially in late cultivars.

Early detection of *C. capitata* is very important and monitoring programmes using lures and attractants are required to localize presence foci. Identifying key habitats in which the fly develops early in the season under low population densities could help to prevent the establishment of infestations and increase the efficacy of pesticide application.

Hence, the main purpose of our work was to investigate the spatio-temporal dynamics of pest, inside and outside orchards and to evaluate the effect of the landscape elements on pest distribution by using traps baited with the trimedlure. The research was undertaken in an agricultural landscape of 5 km<sup>2</sup> located near Rome, Latium region in central Italy. In this area, mixed fruit orchards are surrounded by hedgerows, small woodlots, private gardens and cereal fields.

The activity of *C. capitata* adults was monitored using 40 baited-sticky traps of the delta type, placed at the end of April 2006; adults caught were removed and counted weekly.

Geostatistical methods were used to characterize the spatial distribution of Mediterranean fruit fly adults. Spatial analysis was carried out using Surfer software Version 8.05 (Golden software, Golden, CO, USA) with  $x$ ,  $y$  representing latitude and longitude expressed as Universal Transversal Mercator coordinates, and  $z$  the trap counts.

The obtained interpolation grid was graphically represented by a contour map, which shows the configuration of the surface by means of isolines representing equal  $z$ -values; a base map showing the experimental area, with the same coordinate system, was placed on top of the contour map.

Our results showed that the adults of *C. capitata* were primarily distributed inside the fruit orchards, with the peak of maximum density found, in the months of September and October, in late cultivars of peach orchard. Some captures were also observed in following periods, in proximity of peach, apple and kaki trees, when fruits remained on the trees. On the contrary, away from the principal host plants, particularly in cereal fields, the number of trapped individuals always resulted scarce or absent.

Contour maps allowed to highlight hot spot position, spread of *C. capitata* inside and outside orchards and to evaluate the role of cultivated or wild host plants and landscape elements on the spatial distribution of adults.

**Key words:** Mediterranean fruit fly, geostatistics, central Italy