Medfly Control on Table Grapes in Spain by the Mass-trapping System Cera Trap®

The Mediterranean fruit fly (Medfly), Ceratitis capitata, is a worldwide agricultural pest with an extremely high invasive potential, which makes this species difficult to control. Mass trapping techniques are currently one of the most common control methods applied against Medfly as an alternative to standard insecticide sprays. Cera Trap® is a pesticide-free bait formulation of natural origin, based on a liquid protein mixture obtained by an exclusive method of enzymatichydrolysis. Cera Trap® has a strong attraction capacity for Medfly, with a higher ratio of attraction for females vs. males. Cera Trap® mode of action is physical, with flies simply drowning in the liquid as they are unable to escape the trap. Many field trials have been carried out worldwide over the last ten years showing that Cera Trap® is an effective system against Medfly. It is registered in Spain as plant protection product under Regulation 1107/2009 on citrus, pome and stone fruits, tropical and subtropical fruits. Three field trials were carried out in 2016 in Spain to extend its use to table grapes.

Field trials			
	Field trial 1	Field trial 2	Field trial 3
Location, year 2016	Blanca, Murcia (Spain)	Blanca, Murcia (Spain)	Abarán, Murcia (Spain)
Crop	Table grape cv. Itum Ten	Table grape cv. Autumn Royal	Table grape cv. Crimson
Cera Trap Plot	100 traps /ha	100 traps/ha	100 traps/ha
Untreated Plot	Non treated	Non treated	Non treated

Table 1. Summary sheet for the three field trials.

In order to test the efficacy of each treatment and to check the number of captures, four monitoring traps (Decis Traps) were placed in the center of each plot. For each treatment, an area of 6,000 m2 in size was subdivided into four subplots, to obtain four replicates. Traps were installed approximately 45 days before harvest. The number of captures per trap and day in the center of the plot were counted and punctured bunches (based on 200 bunches per plot) were assessed.

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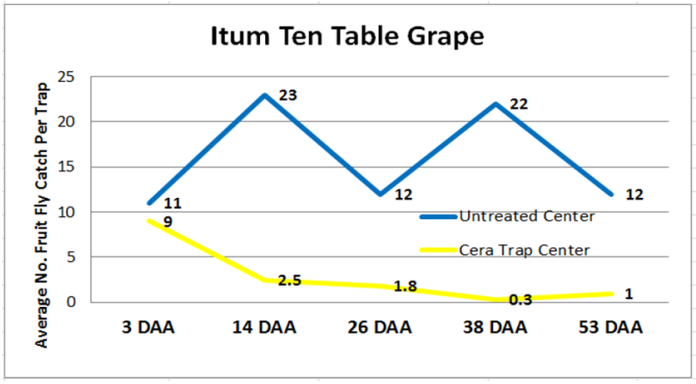

Figure 1. Average catch of 4 monitoring traps on 5 dates within treated and non-treated plots. DAA refers to days after application. The data shows significantly more flies are present and being captured in the untreated plot.

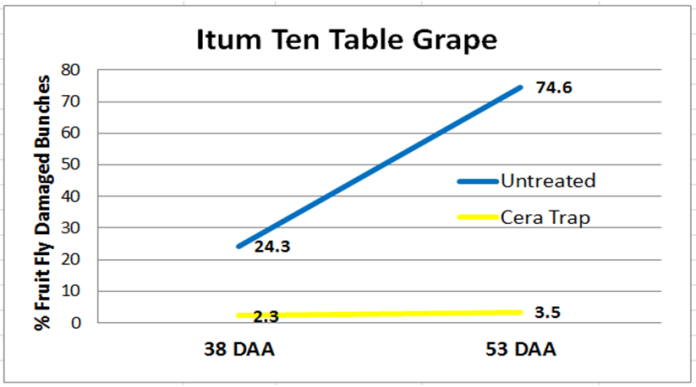

Figure 2. Percent fruit fly damaged bunches per treated and untreated plots on 2 dates close to harvest. DAA refers to days after application. The data shows significantly more bunches are being punctured in the untreated plot.

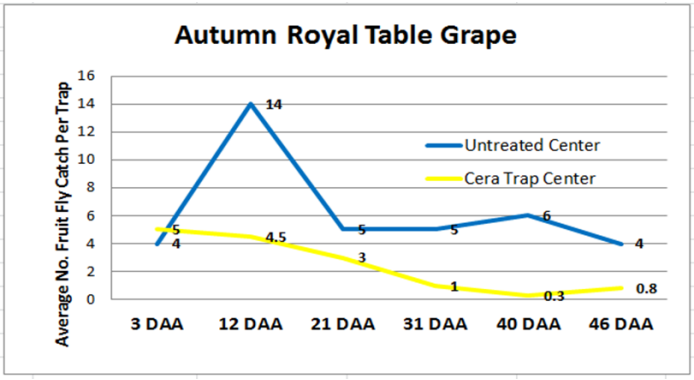

Figure 3. Average catch of 4 monitoring traps on 6 dates within treated and non-treated plots. The data shows significantly more flies are present and being captured in the untreated plot.

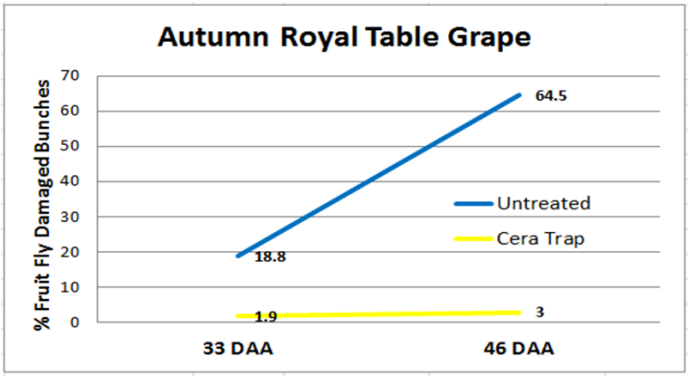

Figure 4. Percent fruit fly damaged bunches per treated and untreated plots on 2 dates close to harvest. The data shows significantly more bunches are being punctured in the untreated plot.

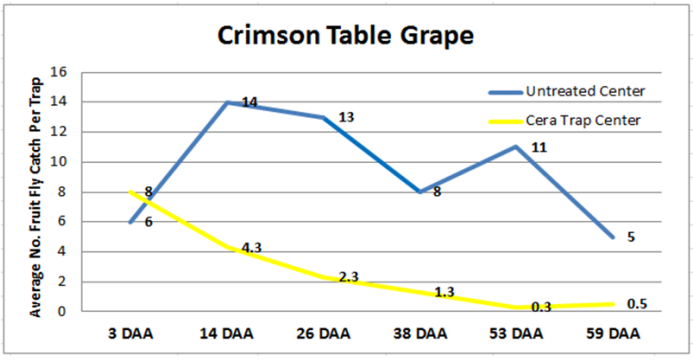

Figure 5. Average catch of 4 monitoring traps on 6 dates within treated and non-treated plots. The data shows significantly more flies are present and being captured in the untreated plot.

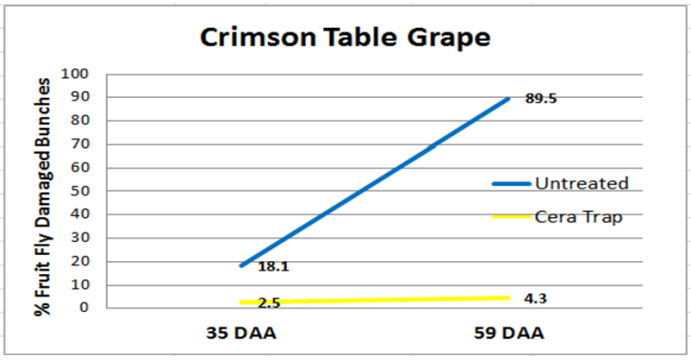

Figure 6. Percent fruit fly damaged bunches per treated and untreated plots on 2 dates close to harvest. The data shows significantly more bunches are being punctured in the untreated plot.

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Statistically significant differences (P=0.05, Student-Newman-Keuls) were observed between treated and untreated plots in the three field trials.

Regarding punctured fruits, statistically significant differences were observed between treated and untreated plots, in the three field trials.

In conclusion, field trials here show that the Cera Trap® system is effective at reducing Medfly populations and preventing damage to grape bunches with the advantage that Cera Trap® is an insecticide-free solution, which significantly reduces risks for the user and the environment.

CONCLUSIONS

Field trial results suggest that Cera Trap® is an effective system against Ceratitis capitata, it successfully controls the pest population due to its capture capacity, decreases medfly fruit damage and therefore provides assistance to the IPM strategies.

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