

Infestation of Grape *Vitis vinifera* by *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) in Sub-Medium Sao Francisco Valley, Brazil

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ABSTRACT: The objective of this study was to assess the infestation level in grapes, *Vitis vinifera*, by the medfly, *Ceratitis capitata* in the São Francisco River Valley (SFV). The adult population was monitored with Jackson trap baited with trimedlure. Samples of grapes for larval infestation assessment were taken along three months, with a total of 116 kg. The average FTD (flies/trap/day) for medfly males was 0.26. The number of pupae obtained from the fruit samples was 471; 287 adults emerged (60.4%), all *Ceratitis capitata*. The infestation level was 4.0 pupa/kg of fresh fruit. We conclude that grape is a medfly host in SFV, occasionally causing high damage to production.

Key Words: Medfly, Infestation, Host Status

The expansion of areas under fruit production in the Sub-Medium São Francisco River Valley (VSF) and in other irrigated fruit production areas in Northeastern Brazil has increased the population of medfly, *Ceratitis capitata* (Nascimento et al., 2001). In 2005, grapes represented 198.852 of the 948.908 ha under fruit production in VSF (Codevasf, 2005).

According to Haji et al. (1991), *C. capitata* was limited to urban VSF areas until the 1990s. However, recent fruit fly monitoring has shown the expansion of the species into production areas. 95% of the 627.272 tephritid specimens trapped from 1989 to 2005 were medflies (Haji et al., 2005). The high populations of the pest-species in fruit growing areas, is a major quarantine constraint for export of fresh table grapes to the United States and Japan.

Carvalho (2003) and Botton et al. (2005) reported a low *C. capitata* infestation (0.05

pupae/grape) of the grape *Vitis vinifera* in VSF. For Reis et al. (1998), the fruit fly infestation index in grapes is usually low. In Brazil, data on the fruit fly infestation of grape are scarce and this host still has not been formally registered.

In this study, we report medfly infestation in commercial orchards in VSF, by monitoring the adult population of insects with Jackson traps baited with trimedlure (acid tert-butyl-4 (or 5) chlorine-2-metil-ciclohexano-carboxylic), from May to November 2005. We also estimate larval grape infestation by collecting the fruits from October to December de 2005.

Adult monitoring - 1703 individuals captured, a 0.26 fly/trap/day (FTD) index (Fig. 1). Adults were captured throughout the monitoring period, an indication of the fly population establishment in grape orchards.

Larva monitoring - 481 pupae were obtained, resulting in an infestation index of 4.0 pupae/ Kg of fruit (Table 1). According to the infestation data, the adults captured in traps were infesting the grapes.

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Table 1. Infestation of six grape cultivars by fruit flies in the Sub-medium São Francisco River Valley, Brazil, from October to December 2005.

| Cultivar | Location | Sample Mass (kg) | Number of Samples | Number of Pupae | Pupae/kg | Total emerged C. capitata | Number and % of emerged C. capitata | | Emergence% |
|----------------|-----------|------------------|-------------------|-----------------|----------|---------------------------|-------------------------------------|-----------|------------|
| | | | | | | | ♂ | ♀ | |
| Christman rose | Juazeiro | 21.30 | 06 | 50 | 2.35 | 35 | 14 - 66.7 | 21 - 33.3 | 70.0 |
| Red globe | Juazeiro | 48.28 | 12 | 60 | 1.24 | 45 | 21 - 46.7 | 24 - 53.3 | 75.0 |
| Festival | Petrolina | 25.41 | 07 | 271 | 10.66 | 139 | 61 - 43.9 | 78 - 56.1 | 51.3 |
| Itália | Petrolina | 10.84 | 05 | 09 | 0.83 | 8 | 3 - 37.5 | 5 - 62.5 | 88.9 |
| Benitaka | Petrolina | 9.53 | 07 | 94 | 9.90 | 68 | 35 - 51.5 | 33 - 48.5 | 72.3 |
| Total | - | 115.36 | 37 | 484 | 4.19 | 295 | 134 | 161 | 71.5 |

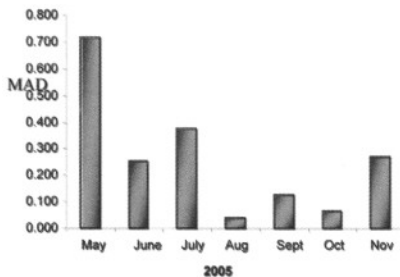


Figure 1. Monthly mean of the fly/trap/day (FTD) index for *Ceratitis capitata*, collected in Jackson traps at commercial grape orchards, in the Submédio do) São Francisco River Valley, Curaçá, Bahia.

In table grape (cultivar Christman Rose), the infested fruit is red in the middle and lighter red toward both ends (Fig. 2). During their development, the larvae build galleries in the grape; in some cases, the galleries can be seen through the fruit skin. These galleries are typical, thus characterizing grape infestation (Reis et al., 1998). When compared with the larval development in preferred hosts, the larvae in our study occasionally seem underdeveloped; what suggests that grapes have not yet been completely colonized by the medfly (Fig. 3). Based on our preliminary results, the grape cultivars grown at VSF are medfly hosts and can occasionally cause significant damage to production. Grape varieties that host fruit

flies must be characterized and their infestation threshold determined to efficiently monitor the insect and control its population growth.

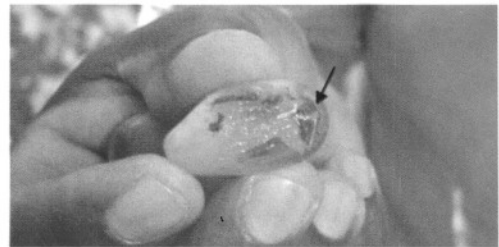


Figure 2. Christman rose grapes infested by larvae of *Ceratitis capitata*



Figure 3. Grape cut, with the larva of *Ceratitis capitata*

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