Research Note

SEASONAL ABUNDANCE OF ANASTREPHA SUSPENSA *(DIPTERA: TEPHRITIDAE) FROM CITRUS IN PUERTO RICO*[1,2]

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Fruit flies are the main dipterous pests on citrus, but are not considered a key pest in any of the tropical regions where citrus is commercially produced (Smith and Peña, 2002). Although fruit flies can cause significant damage to citrus, their importance is mainly due to concerns from quarantine aspects (Vijaysegaran, 1993; Smith and Peña, 2002). The biology, distribution, management, ecology and pest status of the most important citrus fruit flies have been summarized by Smith and Peña (2002), six genera of fruit flies affect citrus worldwide: *Anastrepha*, *Bactrocera*, *Ceratitis*, *Dirioxa*, *Monacrostichus* and *Rhagoletis*.

Little information is available on the economic importance and life history of fruit flies in Puerto Rico. The Caribbean fruit fly, *Anastrepha suspensa* (Loew) (Diptera: Tephritidae), has been reported on citrus in Puerto Rico since the early 1930s (Martorell, 1976), whereas another species, *A. obliqua*, has been reported affecting citrus and mangoes (McAlister et al., 1941; Segarra et al., 1990). The economic importance of fruit flies on mangoes in Puerto Rico was established by Segarra et al. (1990) and Segarra (1988), but no data are available on *A. suspensa* incidence in citrus on the island.

Anastrepha suspensa [also known as *Trypeta suspensa* (Loew), (*Trypeta*) *Acrotoxa suspensa* (Loew), *Anastrepha unipuncta* Séin, and *Anastrepha longimacula* Greene] was originally described from specimens collected in Cuba, but current distribution includes Jamaica, Dominican Republic, Haiti, Puerto Rico, and southern Florida (Martorell, 1976; White and Elson, 1994; Smith and Peña, 2002). This insect has established itself in Florida and is a potential pest for many fruits in that state (Peña and Johnson, 2005); however, the strain from Florida is believed to have a different host preference range since in that state citrus is not economically affected by this species (Hennessey et al., 1992).

In this study we report on the population dynamics of the Caribbean fruit fly, *A. suspensa*, in citrus of central Puerto Rico. Sampling was conducted from January to December of 1991 and from 1993 to 1996. All samples were collected from the Agricultural Experiment Station in Adjuntas, Puerto Rico (18°10.528N, 066°47.96W, and 571.5 meters above sea level).

McPhail traps were placed at 1.5 to 2.0 m above ground level on citrus trees. A protein-water mix was used as lure (Balock and López, 1969; Mason and Baranowski, 1989). Fourteen citrus cultivars (one trap per tree, one tree per cultivar) were sampled during

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TABLE 1.—*Mean number of adult* Anastrepha suspensa *in citrus cultivars, Adjuntas, Puerto Rico, 1991-1996.*

Cultivar	Mean number fruit flies ± SEM
Encore	7.9 ± 3.1
Orlando	6.1 ± 2.1
Weikina	5.1 ± 1.7
King	4.9 ± 3.0
Cleopatra	3.5 ± 1.3
Seminol	1.0 ± 0.6
Navel	0.9 ± 0.5
Valencia	0.8 ± 0.6
Ortaniqe	0.6 ± 0.4
Chironja	0.3 ± 0.2
Rico	0.3 ± 0.2
Grapefruit	0.3 ± 0.2
Parson	0.1 ± 0.1
Pomelo	0.1 ± 0.1

N = 60 samples per cultivar.

the five-year trial (Table 1). Lures were replaced monthly; at the same time adult flies were collected. Flies were brought to the laboratory and sorted under a stereoscope.

Table 1 presents the mean number of *A. suspensa* adults per trap and cultivar during the sampling period. Citrus cultivar Encore presented the highest mean number of fruit flies (7.9 adults per trap) followed by cultivar Orlando (6.1 adults per trap). Cultivars Weikina and King presented similar fruit fly densities (five adults per trap), whereas cultivar Cleopatra attracted about half of the number of adult flies attracted by

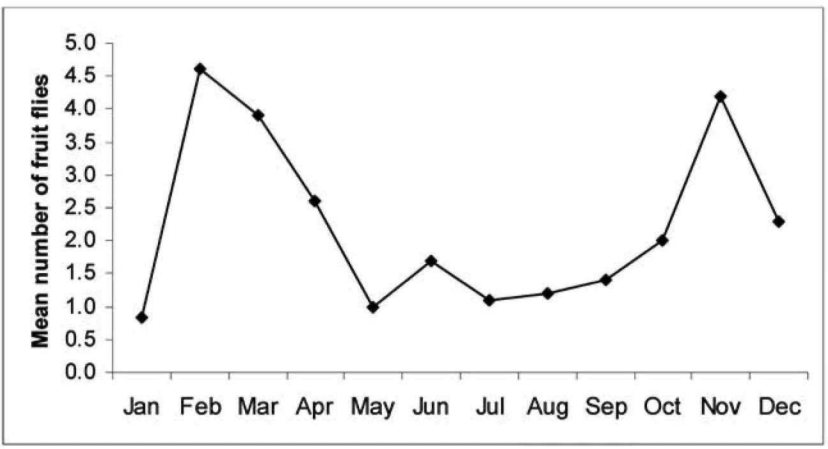

FIGURE 1. Mean number of *Anastrepha suspensa* adults by month, Adjuntas, Puerto Rico, 1991-1996.

Encore. The remaining seven cultivars presented population levels of less than one adult fly per trap during the sampling period. It is not clear which factors affect the incidence of fruit flies in citrus on the island. *Anastrepha suspensa* is known to be attracted to ripe and overripe fruits (Peña and Johnson, 2005). Data on fruit set and maturity were not collected in this trial. Future studies should correlate fruit fly incidence with presence of fruits on the trees.

Figure 1 presents the population dynamics of fruit flies by month. The highest population density was reached in February, declining sharply from May to September, when populations started to build up again, reaching a second peak by November. The data suggest that sampling for this pest should be concentrated from November to April, when adult flies are more active. Additional studies are needed to correlate McPhail catches with larval infestations in fruits.

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