

Tomato Fruits as an Alternative Host for a Laboratory Strain of the Olive Fruit Fly *Bactrocera oleae*

E.I. Navrozidis^{1,2*} and M.E. Tzanakakis¹

In nature, oviposition and larval growth of the olive fruit fly *Bactrocera oleae* (Rossi) (Diptera: Tephritidae) occur only in the mesocarp of fruits of the genus *Olea*, including the cultivated olive. Here we report on its growth in tomatoes, in the laboratory, as affected by a number of factors. Caged flies from a colony reared for more than 100 generations on an artificial diet, oviposited in intact fruits of four tomato cultivars in an unheated greenhouse and in the open. In choice tests, at 25°C, 16L:8D and 65% r.h., medium (5–6 cm diam) and large (>6 cm diam) fruits received more eggs than small (3–4 cm diam) fruits, but differences were not significant in all cases. In all cultivars, more eggs were laid in greenhouse than in open-air tomatoes of three different degrees of maturity, the differences being significant in most cases. The smaller the resistance of a cultivar's epicarp to penetration by flat ended 0.2 and 1 mm square probes, the greater the number of eggs a cultivar received. Green (unripe) fruits proved unsuitable for larval growth. Half-ripe and fully ripe (red) fruits of cvs. 'Isidro', '204', 'Tobo' and 'Ace' yielded pupae of acceptable weight (mean 5.6 to 6.7 mg) with a high percentage of adult emergence, yet the yield was considerably lower than that of olive fruit. Fully ripe greenhouse Isidro tomatoes yielded an average of 3.2 adults per fruit and 20.4% of the eggs laid developed into adults, whereas the other categories and cultivars yielded less. The mean percentages of pupae over eggs were higher in fully ripe Isidro and 204 fruits, than in half-ripe Tobo and Ace ones. The mean time from oviposition to pupation ranged from 16.2 to 25 days, depending on the cultivar and degree of fruit maturity. In fully ripe Isidro and 204 fruits, the fewer the eggs laid per fruit, the higher the percent yield in pupae and the longer the time from oviposition to pupation. Greenhouse fully ripe fruits of cv. 204 maintained under a low light intensity of 50 lux gave a much lower yield in pupae and slower larval growth than under 1600 lux. The usefulness of tomatoes as substitutes of artificial diets in rearing the fly is discussed.

KEY WORDS: Tomato; *Bactrocera oleae*; *Dacus oleae*, olive fruit fly; rearing Tephritidae.

Received Oct. 22, 2003; received in final form Feb. 21, 2005; accepted Feb. 22, 2005;
<http://www.phytoparasitica.org> posting May 20, 2005.

¹Laboratory of Applied Zoology and Parasitology, Aristotelian University of Thessaloniki, 54006 Thessaloniki, Greece.*Corresponding author.

²Present address: Dept. of Crop Production, Technological Educational Institute, 57400 Thessaloniki, Greece [Fax: +30-231-0473318; e-mail: navrozid@cp.teithe.gr].