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## Japanese Orange Fly, *Bactrocera tsuneonis* (Miyake) (Insecta: Diptera: Tephritidae)<sup>1</sup>

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### Introduction

The Japanese orange fly, *Bactrocera tsuneonis* (Miyake), is one of the most important pests of citrus in Japan. Extensive outbreaks have occurred in some commercial citrus areas since 1947 when up to 60 percent or more of the fruits were infested. This fruit fly has also been reported to have infested 50 percent of the oranges at Kiangtsin, in the Szechwan Province of southwestern China during 1940.

There have been no interceptions of the Japanese orange fly in the United States, probably due in a large part to the protection provided by a U.S. embargo of long standing against citrus from the orient. There have been some efforts recently to effect the removal of this embargo in order that citrus from Japan might be exported to the U.S. If this were to be done, the danger of introducing the Japanese orange fly into the U.S. would be greatly increased.

### Synonyms

*Tetradacus tsuneonis* (Miyake)

*Dacus chenia* Chen

*Dacus tsuneonis* Miyake

### Distribution

Japan (Kyushu, Amami-O-shima Island and Ryukyu Islands), southwestern China (Szechwan and Kweichow Provinces) and probably Taiwan (White and Elson-Harris 1994).

### Life History

In Japan there appears to be only one generation per year. There, adult emergence begins in early June and lasts through mid-July. Adults may be found occasionally as late as October. The ratio of males to females is approximately one to one. The preoviposition period of the female is 17 to 25 days. Oviposition occurs primarily in July and August, and

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eggs are laid under the rind. Thick-skinned fruit seldom are attacked as the ovipositor is not long enough to reach the pulp. Typically a single oviposition puncture is made in a fruit; from two to six eggs are deposited in a puncture from which only one larva emerges.

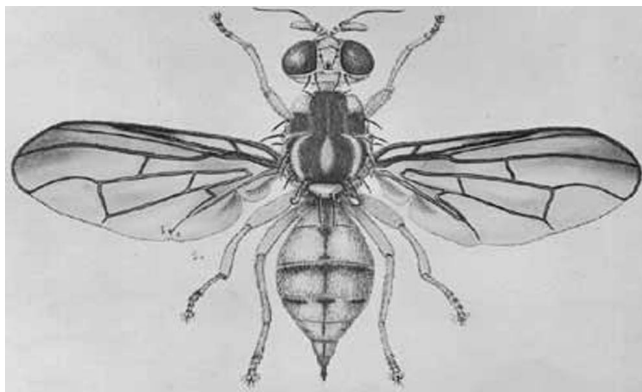
Larvae appear about the first of October and devour the contents of one carpel after another, from two to ten carpels being infested by a single maggot. By early November the larvae are mature, and about this time the infested fruit drops to the ground. Pupation occurs in the top two inches of soil. Occasionally larvae drop to the ground to pupate while the fruit is still on the tree.

Adults feed on honeydew excreted by aphids, coccids, and psyllids; this appears to be necessary for health, longevity, and egg production during the preoviposition period. Frequent copulation apparently is necessary, as this occurs after each batch of eggs has been deposited.

### Identification

Immature stages are similar in appearance to those of other *Bactrocera*. Each of the two anterior spiracles of mature larvae bears approximately 34 tubules. Adults are larger than those of most other species of *Bactrocera*. The adult female is approximately 11 mm long, excluding the ovipositor, with a wing expanse of about 10 mm; the male is slightly smaller. The head is predominately yellow, with a black ocellar triangle; antennae ochraceous, arista piceous, with yellow base. Thorax densely punctate, predominately ochraceous, with short, yellowish pubescence; a median longitudinal Y-shaped purplish testaceous streak on dorsum, terminating posteriorly in center of scutum; a pair of rather faint submedian, somewhat wavy, purplish testaceous lines, interrupted at transverse suture and united posteriorly with posterior branches of Y-shaped streak, a yellowish patch on each humeral callus; scutellum yellowish with two bristles. Halteres ochraceous. Legs ochraceous, with yellow pubescence. Abdomen densely punctate, bright ochraceous above, yellowish beneath, and brownish at end, with a short, yellowish pubescence; a longitudinal median black, rather broad, streak

extends length of abdomen, or almost so; transverse bands present on third, fourth, and sometimes the fifth segment, band on third segment cross-marking longitudinal streak.



**Figure 1.** Adult female Japanese orange fly, *Bactrocera tsuneonis* (Miyake). Credits: Division of Plant Industry

### Hosts

Citrus, including orange, grapefruit, and mandarin orange.

### Attractants

Males are not known to be attracted to any synthetic lure (White and Elson-Harris 1994).

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