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Short Communication

Notes on the Developmental Period in Various Fruits and Artificial Egging and Rearing of the Mexican Fruit Fly, *Anastrepha ludens* Loew (Diptera : Tephritidae)

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The present study was undertaken to elucidate the developmental period of the Mexican fruit fly, *Anastrepha ludens* Loew, in various fruits and to demonstrate a possibility of artificial egging and rearing of this fruit fly. All experiments were conducted under laboratory conditions (26.5±1°C, 16L-8D). Eleven species of domestic or imported fruit (Table 1) were exposed to mated females in a cage (45×45×45 cm) for 72 hours. Thereafter the fruits were placed on sand in a container. The container was daily examined for adult emergence. The results are shown in Table 1. The developmental period varied across the fruits ranging from 33 days in peach to 57 days in Satsuma mandarin, *Citrus unshiu*. The results were almost similar to those by Baker *et al.* (1944). Larvae pupated

Table 1. Developmental period of the Mexican fruit fly in various fruits.

Fruit	Developmental period (days)*
Peach	33
Grapefruit	36
Mango	36
Persimmon	40
Avocado	52
Sweet orange	52
Hassaku orange	53
Satsuma mandarin	57
lemon	—**
apple	—**
lime	—***

* Period from egg laying to emergence of the first adult.
** Larvae pupated but no adults emerged.
*** No larvae developed.

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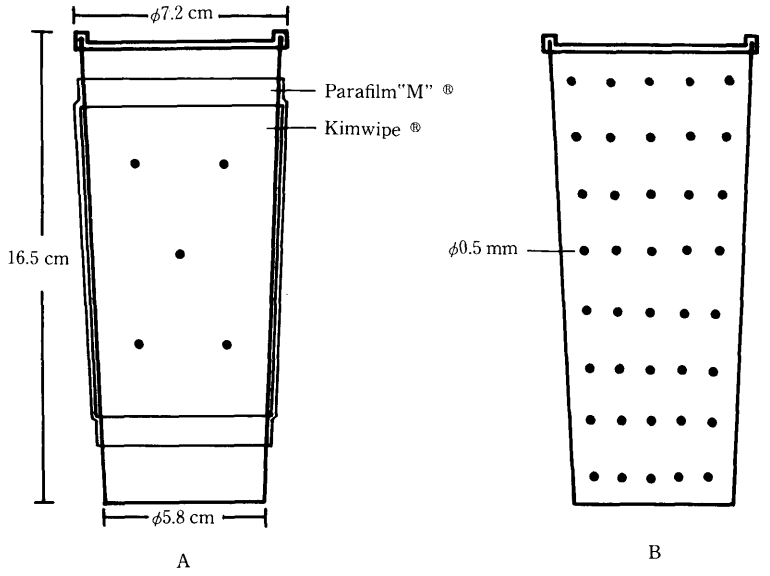

Fig. 1. Egging receptacles for fruit flies.
A : Egging receptacle for the Mexican fruit fly.
B : Egging receptacle for the melon and the oriental fruit fly.

in lemon and apple but no adults emerged from these fruits. Larvae could not develop in lime. High acidity of these fruits may have inhibited development of the fruit fly (Baker *et al.* 1944).

Although an egg receptacle (an apparatus for collecting eggs) for the Mexican fruit fly was devised by McPhail and Guiza (1956), their receptacle is rather difficult to make. A new receptacle was devised to get many eggs for artificial rearing using a slightly tapered yellow-polypropylene container, with a diameter of 7.2 cm at top and 5.8 cm at bottom, and 16.5 cm height. The container was wrapped with Kimwipe® soaked with grapefruit juice to stimulate egg laying and covered with Parafilm "M"® perforated with 10 needle holes (ca. 0.5 mm in diameter) (Fig. 1A). Another type of egging receptacle devised for the melon fly and the oriental fruit fly in our laboratory was also used. The container used for the receptacle was the same polypropylene container that was used for the new type one but its side wall was perforated with 88 needle holes of ca. 0.5 mm diameter (Fig. 1B). Inside of the container was wetted with grapefruit juice. These two types of egg receptacles were separately exposed to 10 females of the Mexican fruit fly for five hours and there were 10 replications. The mean number of eggs laid in the layers between Parafilm "M" and Kimwipe or Kimwipe and container wall of the new type receptacles was 34.1 eggs/5 hours/10 females, but no eggs were laid in the latter receptacles for the melon and the oriental fruit flies. This clear difference in egging between the two types of receptacles seemed to be due to that oviposition manner of the Mexican fruit fly was different from that of the melon and the oriental fruit flies. The melon and the oriental fruit flies are attracted to the egg receptacles and the females search for needle holes to insert their ovipositor. The Mexican fruit flies are also attracted to the receptacles, however, the

Table 2. Formula of larval medium.

Materials	Quantity
wheat bran	150 g
toilet paper	20 g
dried brewer's yeast	20 g
granulated sugar	30 g
methyl-*p*-hydroxy-benzoate	0.4 g
sorbic acid	0.4 g
conc. HCl	1 ml
water	600 ml

females do not search for holes but try to stick their ovipositors into the Parafilm. Eggs collected with the new egging receptacles were put on an artificial larval medium for the melon fly (Table 2). The larvae grew up on the medium and the developmental period from egg laying to emergence of the first adult was 53 days. This period was equivalent to that observed in Hassaku orange, *Citrus hassaku*.

References

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