

ORIENTAL FRUIT FLY (DACUS DORSALIS HENDEL)¹
(DIPTERA: TEPHRITIDAE)
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INTRODUCTION: THE FRUIT FLIES, FAMILY TEPHRITIDAE, COMPRISING SOME 4,000 SPECIES DISTRIBUTED OVER MOST OF THIS PLANET, INCLUDE SEVERAL OF THE GREATEST POTENTIAL THREATS TO FLORIDA AGRICULTURE. THE NEW WORLD GENUS ANASTREPHA, THE PRIMARILY AFRICAN GENUS CERATITIS, AND THE GENUS DACUS CONTAIN MOST OF THE WORLD'S MOST SERIOUS FRUIT FLY PESTS. THE GENUS DACUS, WITH 350-375 SPECIES, IS INDIGENOUS TO AFRICA, THE MEDITERRANEAN REGION, THE NEAR AND FAR EAST, AUSTRALIA, AND THE PACIFIC. ONE OF THESE SPECIES, THE ORIENTAL FRUIT FLY (DACUS DORSALIS HENDEL), IS REGARDED AS THE MOST DESTRUCTIVE PEST OF FRUIT IN MANY AREAS WHERE IT OCCURS. FOLLOWING ITS INTRODUCTION INTO THE HAWAIIAN ISLANDS, APPARENTLY BY U. S. MARINES RETURNING FROM SAIPAN ABOUT 1945, THE ORIENTAL FRUIT FLY SOON BECAME A MORE INJURIOUS SPECIES THAN THE MEDITERRANEAN FRUIT FLY OR THE MELON FLY IN HAWAII BEFORE IT WAS PARTIALLY BROUGHT UNDER CONTROL BY PARASITES INTRODUCED FOR ITS CONTROL. IN HAWAII ALONE, LARVAE HAVE BEEN FOUND IN MORE THAN 125 KINDS OF HOSTS. INFESTATIONS OF 50-80 PER CENT HAVE BEEN RECORDED IN PEAR, PEACH, APRICOT, FIG, AND OTHER FRUITS IN WEST PAKISTAN. IT IS THE PRINCIPAL PEST OF MANGOES IN THE PHILIPPINES AND REPORTEDLY A SERIOUS PEST OF CITRUS IN FORMOSA. INJURY TO FRUIT, AS WITH OTHER MEMBERS OF THIS GENUS OF FRUIT FLIES, OCCURS THROUGH OVIPOSITION PUNCTURES AND SUBSEQUENT LARVAL DEVELOPMENT.

THIS PEST HAS BEEN INTERCEPTED ON MANY OCCASIONS AT PORTS OF ENTRY ON THE U. S. MAINLAND. THE EXTENSIVE DAMAGE CAUSED BY THE ORIENTAL FRUIT FLY IN AREAS SIMILAR TO FLORIDA WHERE IT HAS BEEN ACCIDENTALLY INTRODUCED, INDICATES THAT THIS SPECIES COULD RAPIDLY BECOME A VERY SERIOUS PEST OF CITRUS AND OTHER FRUIT AND VEGETABLES IF IT WERE TO BE INTRODUCED INTO FLORIDA AND BE PERMITTED TO BECOME ESTABLISHED.

DISTRIBUTION: IT IS WIDESPREAD THROUGHOUT MUCH OF PAKISTAN, INDIA, CEYLON, SIKKIM, BURMA, INDONESIA (CELEBES, BORNEO, SUMATRA, JAVA), MALAYA, THAILAND (SIAM), CAMBODIA, INDOCHINA (LAOS, VIETNAM), SOUTHERN CHINA, FORMOSA (TAIWAN), PHILIPPINE ISLANDS, RYUKYU ISLANDS (INCLUDING OKINAWA), MICRONESIA, MARIANA ISLANDS (GUAM, ROTA, SAIPAN, TINIAN), BONIN ISLANDS (CHICHI JIMA), AND HAWAIIAN ISLANDS.

HOSTS: D. DORSALIS HAS BEEN RECORDED FROM MORE THAN 150 KINDS OF FRUIT AND VEGETABLES, INCLUDING CITRUS, GUAVA, MANGO, PAPAYA, AVOCADO, BANANA, LOQUAT, TOMATO, SURINAM CHERRY, ROSE-APPLE, PASSION FRUIT, PERSIMMON, PINEAPPLE, PEACH, PEAR, APRICOT, FIG, AND COFFEE. THE AVOCADO, MANGO, AND PAPAYA ARE THE MOST COMMONLY ATTACKED.

LIFE HISTORY: DEVELOPMENT FROM EGG TO ADULT UNDER SUMMER CONDITIONS REQUIRES ABOUT 16 DAYS. PUPATION OCCURS IN THE SOIL. ABOUT 9 DAYS ARE REQUIRED FOR ATTAINMENT OF SEXUAL MATURITY AFTER THE ADULT FLY EMERGES. THE DEVELOPMENTAL PERIODS MAY BE EXTENDED CONSIDERABLY BY COOL WEATHER. UNDER OPTIMUM CONDITIONS, A FEMALE CAN LAY MORE THAN 3,000 EGGS DURING HER LIFETIME, BUT UNDER FIELD CONDITIONS FROM 1,200 TO 1,500 EGGS PER FEMALE IS CONSIDERED TO BE THE USUAL PRODUCTION. RIPE FRUIT APPARENTLY ARE PREFERRED FOR OVIPOSITION, BUT IMMATURE ONES MAY BE ATTACHED ALSO.

IDENTIFICATION: THE EGG MEASURES ABOUT 1.17 x 0.21 AND IS WHITE, ELONGATE, ELLIPTICAL, CHORION WITHOUT SCULPTURING. THE THIRD-INSTAR LARVA, WHICH IS OF TYPICAL MAGGOT APPEARANCE, IS ABOUT 10 MM IN LENGTH AND CREAMY WHITE. THE ONLY BAND OF SPINULES ENCIRCLING THE BODY IS FOUND ON THE FIRST SEGMENT. THE EXTERNAL PART OF THE ANTERIOR RESPIRATORY ORGANS, THE SPIRACLES, LOCATED ONE ON EACH SIDE OF THE POINTED OR HEAD END OF THE LARVA, HAS AN EXAGGERATED AND DEFLEXED LOBE AT EACH SIDE AND BEARS MANY SMALL TUBERCLES (FIG. 1). THE CAUDAL SEGMENT IS VERY SMOOTH IN THIS LARVA. THE POSTERIOR SPIRACLES ARE LOCATED IN THE DORSAL THIRD OF THE SEGMENT AS VIEWED FROM THE REAR OF THE LARVA. THE PUPARIUM AVERAGES ABOUT 4.9 MM IN LENGTH AND VARIES IN COLOR FROM TAN TO DARK BROWNISH-YELLOW. THE ADULT, WHICH IS NOTICEABLY LARGER THAN A HOUSE FLY, HAS A BODY LENGTH OF ABOUT 8.0 MM; THE WING IS ABOUT 7.3 MM IN LENGTH AND IS MOSTLY HYALINE. THE COLOR OF THE FLY IS VERY VARIABLE BUT MOSTLY YELLOW WITH DARK MARKINGS ON THORAX AND ABDOMEN (FIG. 2). GENERALLY, THE ABDOMEN HAS TWO HORIZONTAL BLACK STRIPES AND A LONGITUDINAL MEDIAN STRIPE EXTENDING FROM THE BASE OF THE THIRD SEGMENT TO THE APEX OF THE

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ABDOMEN. THESE MARKINGS MAY FORM A T-SHAPED PATTERN, BUT THE PATTERN VARIES CONSIDERABLY. THE OVIPOSITOR IS VERY SLENDER AND SHARPLY POINTED.

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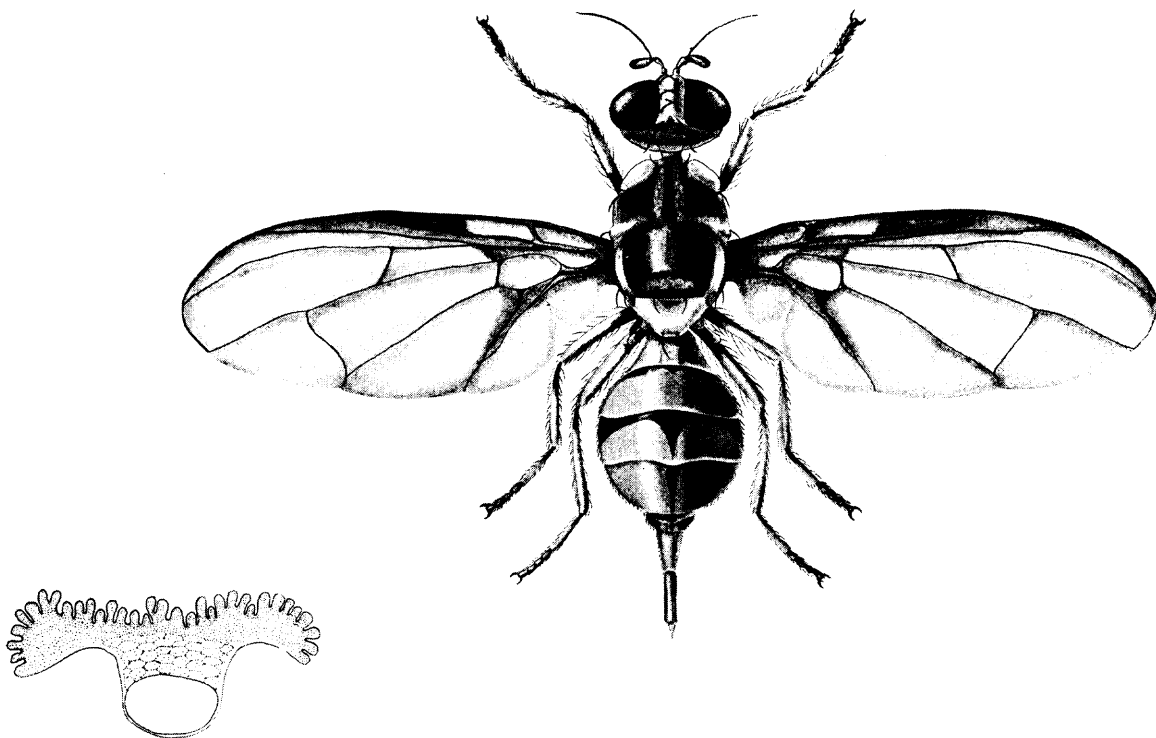


FIG. 1. ANTERIOR SPIRACLE OF THIRD INSTAR LARVA

FIG. 2. DACUS DORSALIS HENDEL, ADULT FEMALE