

MEXICAN FRUIT FLY (ANASTREPHA LUDENS (LOEW))<sup>1</sup>  
(DIPTERA: TEPHRITIDAE)  
H.V. WEEMS, JR.

INTRODUCTION: THE MEXICAN FRUIT FLY IS A SERIOUS PEST IN MANY OF THE REGIONS WHERE IT OCCURS. CALIFORNIA, ARIZONA, AND FLORIDA ARE ESPECIALLY VULNERABLE TO ATTACK BY THIS FLY. IF IT WERE TO BECOME ESTABLISHED IN SOUTHERN CALIFORNIA, ARIZONA, OR FLORIDA, IT PROBABLY WOULD CAUSE HEAVIER LOSSES THAN IT DOES IN SOUTHERN TEXAS BECAUSE MORE KINDS OF HOST FRUITS ARE GROWN IN THESE STATES THAN IN SOUTHERN TEXAS. THIS SPECIES IS THE ONLY IMPORTANT MEMBER OF THE GENUS ANASTREPHA THAT IS SUBTROPICAL RATHER THAN TROPICAL, OCCUPYING THE NORTHERN PORTION OF THE RANGE OF THE GENUS AND EXTENDING SOUTHWARD ONLY AT THE HIGHER ALTITUDES. A. LUDENS CAN WITHSTAND FREEZING WEATHER WELL, WHEREAS IN HOT AREAS IT MAY BE KILLED BY THE HEAT OF THE SUN.

DISTRIBUTION: THE MEXICAN FRUIT FLY IS INDIGENOUS TO MEXICO AND IS FOUND ALSO IN CENTRAL AMERICA AND NORTHERN SOUTH AMERICA. EACH YEAR IT MIGRATES INTO THE RIO GRANDE VALLEY OF SOUTHERN TEXAS FROM ITS ORIGIN IN NORTHEASTERN MEXICO. IT HAS SPREAD ALSO INTO THE CULTIVATED CITRUS SECTIONS OF THE WEST COAST OF MEXICO AND NORTHWARD TOWARD ARIZONA AND CALIFORNIA, RESULTING IN CONTINUAL DETECTION, SURVEY, AND ERADICATION CAMPAIGNS IN THESE AREAS.

HOSTS: ALL VARIETIES OF CITRUS EXCEPT LEMONS AND SOUR LIMES ARE ATTACKED. GRAPEFRUIT IS THE PREFERRED HOST, WITH ORANGES SECOND. PEAR, PEACH, AND APPLE ARE PREFERRED AMONG THE DECIDUOUS HOSTS, AND WHITE SAPOTE AND MANGO ARE PREFERRED AMONG THE SUBTROPICAL FRUITS. AVOCADO, WHILE NOT A PREFERRED HOST, IS ATTACKED. OTHER HOSTS INCLUDE POMEGRANATE, QUINCE, ROSE APPLE, CHERIMOYA, CUSTARD APPLE, JINICUIL, MAMEY, AND YELLOW CHAPOTE. STILL OTHER FRUITS AND VEGETABLES HAVE BEEN INFESTED UNDER LABORATORY CONDITIONS (BAKER ET AL., 1944), INCLUDING CACTI, FIGS, BANANAS, TOMATOES, PEPPERS, SQUASH, AND BEANS.

QUARANTINE: CONTINUAL DETECTION, SURVEY, AND ERADICATION CAMPAIGNS ARE BEING CONDUCTED IN THE CULTIVATED CITRUS SECTIONS OF NORTHWESTERN MEXICO, ADJACENT TO CALIFORNIA, AND OCCASIONALLY IN THE SOUTHERN PART OF CALIFORNIA WHEN NEW INVASIONS ARE DETECTED. STERILIZATION OF FRUIT BEFORE SHIPMENT FROM QUARANTINED AREAS IS REQUIRED. ORANGES, SWEET LIMES, GRAPEFRUIT, MANGOS, SAPOTES, PEACHES, GUAVAS, AND PLUMS ARE DENIED ENTRY FROM MEXICO INTO THE UNITED STATES BY FEDERAL QUARANTINE No. 5. FEDERAL QUARANTINE No. 64 WAS ENACTED TO PREVENT THE SHIPMENT OF CERTAIN FRUITS (MANGOS, SAPOTES, PEACHES, GUAVAS, APPLES, PEARS, PLUMS, QUINCES, APRICOTS, MAMEYS, CIRUELAS, AND CITRUS FRUITS, EXCEPT LEMONS AND SOUR LIMES) FROM SEVERAL COUNTIES IN TEXAS TO OTHER PARTS OF THE COUNTRY EXCEPT UNDER CERTIFICATION BY THE U.S. DEPARTMENT OF AGRICULTURE.

LIFE CYCLE: THE FEMALE TYPICALLY OVIPOSETS IN CITRUS AND OTHER FRUIT AT THE TIME WHEN THE FRUIT BEGINS TO SHOW COLOR. AN INCUBATION PERIOD OF 6 TO 12 DAYS PRECEDES THE HATCHING OF THE EGG. THE NEWLY HATCHED LARVAE EAT AND BURROW INTO THE PULP OF THE FRUIT, TAKING ON THE COLOR OF THEIR FOOD SO THAT WHEN SMALL THEY ARE OVERLOOKED EASILY. MANY MAGGOTS MAY BE FOUND IN A SINGLE FRUIT. WHEN FULLY GROWN, THE LARVAE EMERGE THROUGH CONSPICUOUS EXIT HOLES, USUALLY AFTER THE FRUIT HAS FALLEN TO THE GROUND, AND PUPATE IN THE SOIL. LARVAL DEVELOPMENT REQUIRES APPROXIMATELY 3 TO 4 WEEKS, DEPENDING LARGELY UPON TEMPERATURE CONDITIONS DURING THESE PERIODS OF DEVELOPMENT. THE DEVELOPMENT IS MORE RAPID WHERE COMPARATIVELY HIGHER TEMPERATURES PREVAIL, AND AS A GENERAL RULE, THE SHORTER THE PERIOD FOR FRUIT MATURATION THE MORE RAPID IS THE DEVELOPMENT OF THE LARVA.

ADULTS MAY SURVIVE FOR MANY MONTHS, OCCASIONALLY ALMOST A FULL YEAR, AND MALES APPEAR TO BE ABLE TO SURVIVE MUCH LONGER THAN FEMALES, EVEN AS MUCH AS 16 MONTHS.

IDENTIFICATION: THE MATURE LARVA MEASURES 9 TO 11 MM. IN LENGTH AND 1.5 MM. IN DIAMETER. THE BODY IS OF THE USUAL CYLINDRICAL SHAPE CHARACTERISTIC OF FRUIT FLY LARVAE; THERE ARE 7 FUSIFORM AREAS VISIBLE TO THE NAKED EYE, WITH AN 8TH SMALLER ONE BETWEEN THE THORAX AND ABDOMEN, APPARENT IN MOUNTED SPECIMENS. THERE

IS ONLY A SINGLE BAND OF SPINULES COMPLETELY ENCIRCLING THE BODY, AND IT IS LOCATED BETWEEN THE FIRST AND SECOND SEGMENTS. THE ANTERIOR SPIRACLES BEAR 12 TO 16 TUBULES.

THE ADULT (FIGS. 1 AND 2) IS SLIGHTLY LARGER THAN A HOUSEFLY AND IS MOSTLY YELLOWISH-BROWN IN COLOR. SOMEWHAT LIGHTER LONGITUDINAL MARKINGS OCCUR ON THE THORAX, ESPECIALLY NOTICEABLE ON NEWLY EMERGED FLIES. THERE IS A SMALL MEDIAN DARK BROWN SPOT ON THE POSTERIOR PART OF THE MESOTHORAX. THE WINGS ARE TRANSPARENT WHERE THEY ARE NOT MOTTLED AND ARE STRIPED WITH YELLOWISH-BROWN BANDS. THE INVERTED V ON THE LOWER PART OF THE OUTER HALF OF THE WING TYPICALLY IS NOT CONNECTED AT THE TIP AND IS NOT CONNECTED WITH THE MAIN PATTERN, THUS DISTINGUISHING THIS SPECIES FROM SEVERAL CLOSELY RELATED SPECIES. THE SLENDER TUBE-LIKE OVIPOSITOR SHEATH OF THE FEMALE IS LONGER THAN THE REMAINDER OF THE ABDOMEN (FIG. 1).

REFERENCES:

- BAKER, A.C., W.E. STONE, C.C. PLUMMER, AND M. MCPHAIL. 1944. A REVIEW OF THE MEXICAN FRUITFLY AND RELATED SPECIES. USDA MISC. PUB. No. 531, WASH., D.C. 155 P., 82 F.
- EBELING, WALTER. 1959. SUBTROPICAL FRUIT PESTS. UNIV. OF CALIF., DIV. OF AGR. SCI. 436 P.
- PHILLIPS, VENIA TARRIS. 1946. THE BIOLOGY AND IDENTIFICATION OF TRYPETID LARVAE (DIPTERA: TRYPETIDAE). MEM. AMER. ENT. SOC. 12:161, 16 PL. (192 F.).
- STONE, ALAN. 1942. THE FRUITFLIES OF THE GENUS ANASTREPHA. USDA MISC. PUB. No. 439, WASH., D.C. 112 P., 23 PL.



FIG. 1. FEMALE



FIG. 2. MALE