

TEA SCALE, *FIORINIA THEAE* GREEN^{1/}
(HOMOPTERA: DIASPIDIIDAE)

L. C. KUITERT^{2/} AND G. W. DEKLE^{3/}

INTRODUCTION: SINCE TEA SCALE IS ALMOST ALWAYS RESTRICTED TO THE LOWER SURFACE OF HOST LEAVES, IT OFTEN GOES UNNOTICED UNTIL MUCH OF THE LOWER LEAF SURFACE IS COVERED (FIG. 1.B), AND SYMPTOMS BEGIN TO APPEAR ON THE UPPER SURFACE (FIG. 1.C). THE FIRST EVIDENCE OF ITS PRESENCE IS THE APPEARANCE OF SMALL WHITE SPOTS ON THE UNDERSIDE OF THE LEAF. AN INFESTATION IS USUALLY RECOGNIZED BY YELLOWISH BLOTCHES AND STREAKS ON THE UPPER SURFACE (FIG. 1.C), A GENERALLY UNHEALTHY APPEARANCE OF THE SHRUB (FIG. 2), AND OCCASIONAL PREMATURE DROPPING OF THE FOLIAGE. BOTH FEMALE AND MALE PROTECTIVE COVERS ARE USUALLY COVERED BY A TANGLE OF WHITISH, COTTONY THREADS OF WAX (FIG. 1.E). THE ADULT MALE IS A MINUTE TWO-WINGED, GNAT-LIKE INSECT THAT IS RARELY SEEN.

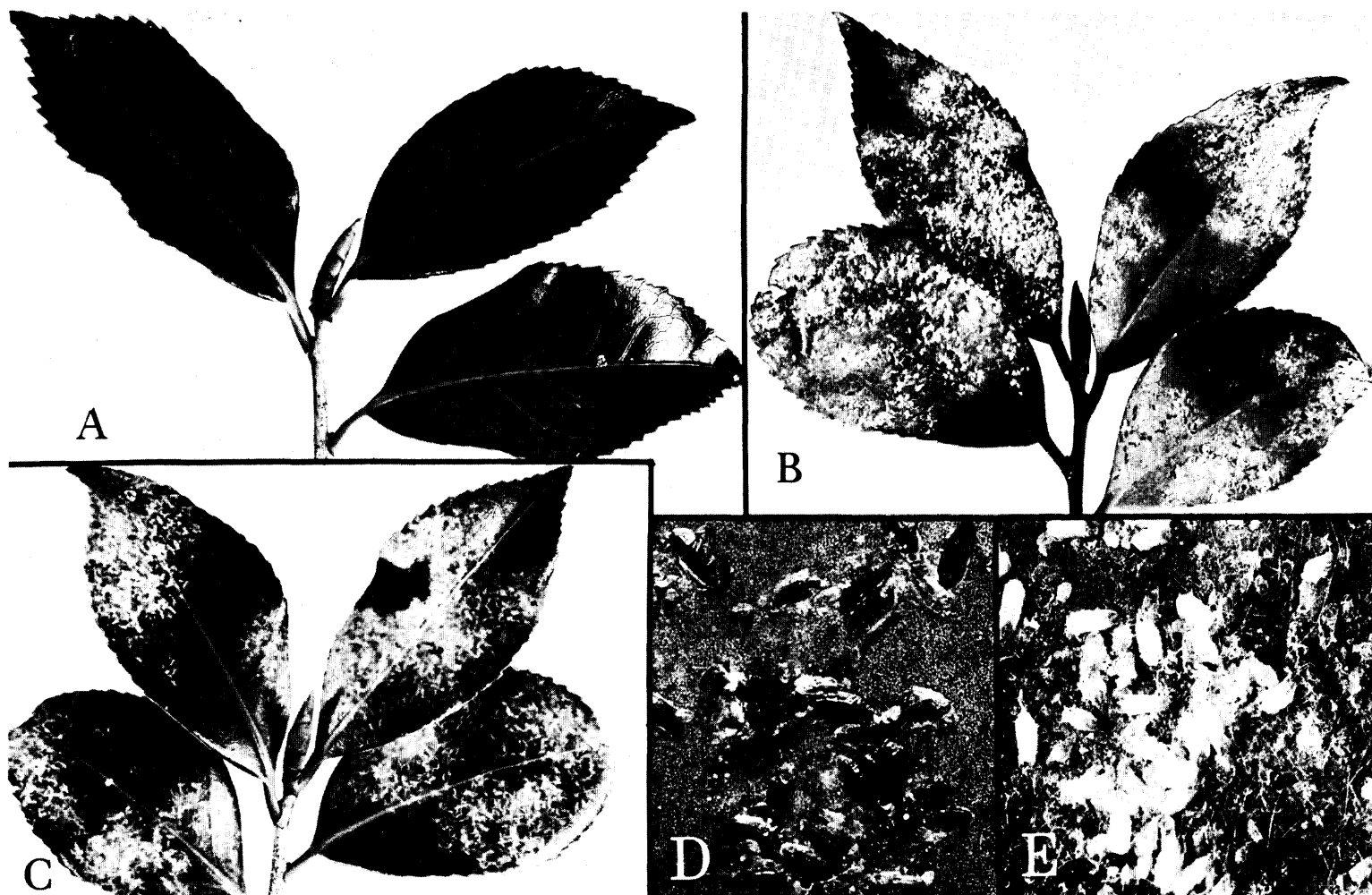


FIG. 1 A-E: A. A HEALTHY CAMELLIA CUTTING; B. TEA SCALE ON LOWER LEAF SURFACE; C. SYMPTOMS EXPRESSED ON UPPER LEAF SURFACE OF INFESTED LEAVES; D. MATURE FEMALE (♀) (X5); E. PRE-ADULT MALE (♂) (X6).

DESCRIPTION: THE FEMALE ARMOR IS ELONGATE-OVAL, 1/20 INCH IN LENGTH, DARK BROWN AND COVERED BY A THIN WAXY SECRETION (FIG. 1.D). THE ARMOR TERMINATES POSTERIORLY INTO A BLUNT POINT. A CONSPICUOUS LONGITUDINAL RIDGE IS ALSO PRESENT ON THE FEMALE ARMOR BUT THIS CAN BE DETECTED IN THE FIELD ONLY BY THE USE OF A HAND MAGNIFIER. THE PRE-ADULT MALE PROTECTIVE COVER IS RECTANGULAR WITH PARALLEL SIDES, 1/25 INCH IN LENGTH AND SNOW WHITE (FIG. 1.E).

ECONOMIC IMPORTANCE: TEA SCALE IS THE MOST WIDESPREAD AND DESTRUCTIVE SCALE THAT INFESTS CAMELLIAS IN FLORIDA. IT IS ALSO AN ECONOMIC PEST OF BURFORD HOLLY, *ILEX CORNUTA* 'BURFORDII'.

^{1/} CONTRIBUTION No. 229, BUREAU OF ENTOMOLOGY, DIVISION OF PLANT INDUSTRY, FLA. DEPT. OF AGRICULTURE & CONSUMER SERVICES
^{2/} IFAS, UNIVERSITY OF FLORIDA, GAINESVILLE, FLA. 32601
^{3/} FLA. DEPT. OF AGRICULTURE & CONSUMER SERVICES, DIVISION OF PLANT INDUSTRY, BUREAU OF ENTOMOLOGY GAINESVILLE, FLA. 32601

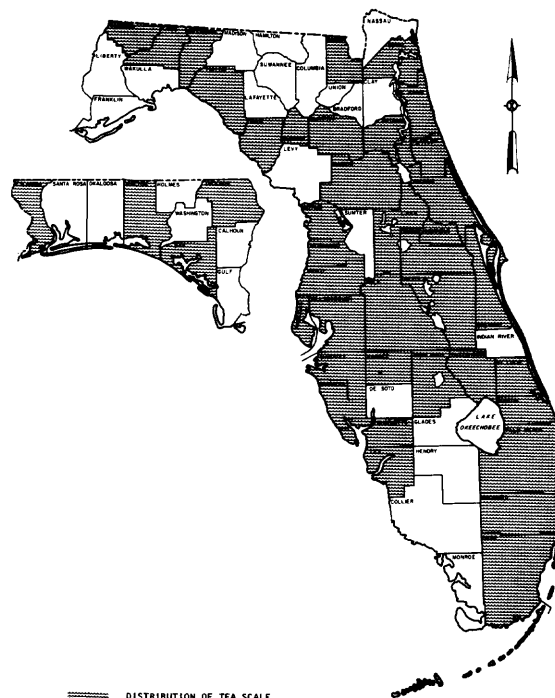
CONTROL: TO OBTAIN GOOD CONTROL OF TEA SCALE THE FOLLOWING POINTS SHOULD BE RECOGNIZED. SOON AFTER HATCHING FROM THE EGG THE CRAWLERS ATTACH THEMSELVES TO THE LEAF BY INSERTING A TINY NEEDLE-LIKE BEAK INTO THE LEAF; THEY DO NOT MOVE FROM THE FEEDING SITE FOR THE REST OF THEIR LIVES. IN CASES OF HEAVY INFESTATIONS, THEY MAY BE PRESENT IN LAYERS. ONE CANNOT OVER-EMPHASIZE THE IMPORTANCE OF THOROUGH AND COMPLETE COVERAGE AND TIMING OF SPRAY APPLICATIONS TO COINCIDE WITH PRESENCE OF IMMATURE STAGES. THE MOST EFFECTIVE MATERIALS ARE: DIMETHOATE* (CYGON OR DEFEND) 25% EC; DIAZINON 25% EC; AND META-SYSTOX-R 25% EC. APPLY AT THE RATE OF A PINT PER 50 GALLONS OR ITS EQUIVALENT OF 2 TEASPOONS PER GALLON OF WATER. THESE TREATMENTS SHOULD BE APPLIED ABOUT THE TIME THE SPRING FLUSH OF GROWTH BEGINS TO HARDEN OFF. ANOTHER VERY EFFECTIVE TREATMENT IS A COMBINATION OF MALATHION OR ETHION PLUS SUMMER OIL EMULSION. IN THIS INSTANCE, THE OIL EMULSION IS USED AT A REDUCED CONCENTRATION TO ELIMINATE THE POSSIBILITY OF PHYTOTOXICITY. MIXTURES ARE COMMERCIALY AVAILABLE IN MANY AREAS. THEY CAN BE PREPARED BY MIXING 2 TEASPOONS OF 50-57% MALATHION EC OR A TEASPOON OF 25% ETHION EC TO A GALLON OF WATER AND ADDING SUMMER OIL EMULSION AT THE RATE OF 2 TABLESPOONS PER GALLON. ALL LEAVES SHOULD BE THOROUGHLY MOISTENED, WITH THE SPRAY BEING DIRECTED TO THE LOWER SURFACES.

DISTRIBUTION: WHEREVER CAMELLIAS OR BURFORD HOLLY ARE FOUND GROWING IN THE STATE, TEA SCALE IS LIKELY TO BE FOUND. DIVISION OF PLANT INDUSTRY RECORDS INDICATE THE FOLLOWING KNOWN DISTRIBUTION IN FLORIDA: ALACHUA, BAKER, BAY, BREVARD, CHARLOTTE, CITRUS, DADE, DIXIE, DUVAL, ESCAMBIA, FLAGLER, GADSDEN, GILCHRIST, HARDEE, HERNANDO, HIGHLANDS, HILLSBOROUGH, JACKSON, JEFFERSON, LAKE, LEE, LEON, MANATEE, MARION, MARTIN, OKEECHOBEE, ORANGE, OSCEOLA, PALM BEACH, PASCO, PINELLAS, POLK, PUTNAM, ST. JOHNS, ST. LUCIE, SARASOTA, SEMINOLE, TAYLOR, VOLUSIA, AND WALTON (SEE MAP).

HOSTS: AUCUBA JAPONICA THUNB. (JAPANESE AUCUBA); CALLISTEMON SP. (BOTTLEBRUSH); CAMELLIA JAPONICA L.; CAMELLIA SASANQUA THUNB.; CAMELLIA SINENSIS L. (TEA PLANT); CITRUS LIMON BURM.F. (LEMON); CITRUS PARADISI MACF. (GRAPEFRUIT); CITRUS RETICULATA BLANCO (SATSUMA); CORNUS SP. (DOGWOOD); EUONYMUS SPP. (BURNING BUSH, STRAWBERRY BUSH); EURYA JAPONICA THUNB.; FORTUNELLA SP. (KUMQUAT); GARDENIA SP. (CAPE JASMINE); GORDONIA SP. (LOBLLOLY BAY); ILEX AQUIFOLIUM L. (ENGLISH HOLLY); ILEX CASSINE L. (DAHON HOLLY); ILEX CORNUTA LINDL. & PAX. (CHINESE HOLLY); ILEX CORNUTA 'BURFORDII' (BURFORD HOLLY); ILEX LATIFOLIA THUNB. (LUSTERLEAF HOLLY); ILEX OPACA AIT. (AMERICAN HOLLY); ILEX ROTUNDA THUNB.; ILEX VOMITORIA AIT. (YAUPON); MALPIGHIA SP. (MALPIGHIA); MANGIFERA INDICA L. (MANGO); MELALEUCA LEUCADENDRA L. (CAJEPUT, PUNK TREE); OSMANTHUS FRAGRANS LOUR. (SWEET OLIVE, TEA OLIVE); PONCIRUS TRIFOLIATA RAF. (ORANGE, TRIFOLIATE); SENECIO CONFUSUS BRITT. (MEXICAN FLAME VINE); SYMPLOCOS TINCTORIA L. (COMMON SWEETLEAF).



FIG. 2. SHRUB WITH SEVERE TEA SCALE INFESTATION.



DISTRIBUTION OF TEA SCALE (FLORIDA THEAE GREEN).

REFERENCES:

- DEKLE, G. W. 1965. FLORIDA ARMORED SCALE INSECTS. ARTHROPODS OF FLORIDA AND NEIGHBORING LAND AREAS. VOL. 3, FLORIDA DEPARTMENT OF AGRICULTURE, DIVISION OF PLANT INDUSTRY. P. 64.
 ENGLISH, L. L. 1946. CAMELLIA PESTS. AMERICAN CAMELLIA YEARBOOK 1946. P. 31.
 KUITERT, L. C. 1949. CONTROL OF INSECT PESTS OF CAMELLIAS. AMERICAN CAMELLIA YEARBOOK 1949. P. 147.
 MERRILL, G. B. 1953. A REVISION OF THE SCALE-INSECTS OF FLORIDA. STATE PLANT BOARD OF FLORIDA - BULLETIN No. 1, JANUARY, 1953. P. 48.

* DIMETHOATE (CYGON) IS NOT TO BE USED ON HOLLIES DUE TO POSSIBLE PLANT INJURY.