

THE BLUEBERRY BUD MITE, ACALITUS VACCINII (KEIFER)

(ACARINA: ERIOPHYIDAE)<sup>1</sup>

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INTRODUCTION: THE BLUEBERRY BUD MITE, ACALITUS VACCINII (KEIFER), WAS ORIGINALLY DESCRIBED BY H. H. KEIFER IN 1939 FROM SPECIMENS COLLECTED IN NORTH CAROLINA, AND AT THAT TIME, WAS CALLED ERIOPHYES VACCINII KEIFER. HOWEVER, IN 1965 WHEN KEIFER ERECTED THE GENUS ACALITUS, THE MITE WAS TRANSFERRED TO THIS GENUS BASED ON ITS MORPHOLOGICAL CHARACTERISTICS. THIS MITE HAS BEEN REPORTED ON BOTH CULTIVATED AND WILD PLANTS OF THE GENUS VACCINIUM.

DISTRIBUTION: A. VACCINII HAS BEEN COLLECTED IN FLORIDA AT MELROSE AND PALATKA ON COMMERCIAL STANDS OF BLUEBERRIES.

HOSTS: TO DATE THIS MITE HAS BEEN TAKEN ON THE COMMERCIAL VARIETIES OF BLUEBERRY--'TIFBLUE' AND 'WOODARD' AS WELL AS SEVERAL NEW CULTIVARS. BASED ON TYPICAL INJURY, NO VARIETY APPEARS TO BE IMMUNE TO BUD MITE ATTACK.

ECONOMIC IMPORTANCE: IT WAS ESTIMATED BY ONE GROWER IN MELROSE THAT OVER 60% OF HIS CROP WAS LOST AS A RESULT OF MITE AND THRIPS DAMAGE. KEIFER STATED THAT MITE FEEDING CAUSED AN UNNATURAL SUCCULENCE AND EPIDERMAL ROUGHENING OR BLISTERING AT THE BASE OF THE FRUIT BUD SCALES, CAUSING THEM TO HANG IN A TIGHT ROSETTE AT THE BASE OF THE FRUIT STEM (FIG. 1). ALSO, THE BASE OF THE FRUIT STEM USUALLY IS BLISTERED, RETAINING THE JUVENILE RED COLOR OF GROWING VACCINIACEOUS TISSUE. IN NORTH CAROLINA, THE ROSETTING IS ACCOMPANIED BY FRUIT ROUGHENING OR DEFORMATION OF THE ENTIRE CLUSTER, WHILE IN GEORGIA IT IS REPORTED NOT ONLY THAT FRUIT CLUSTERS ARE DEFORMED BUT THAT RETARDED LEAF GROWTH ALSO OCCURS. IN FLORIDA, OUR OBSERVATIONS INDICATE THAT BUD LOSS IS THE PRIME DAMAGE FROM MITE FEEDING. FIGURE 2 SHOWS AN ENLARGED UNINFESTED BUD.

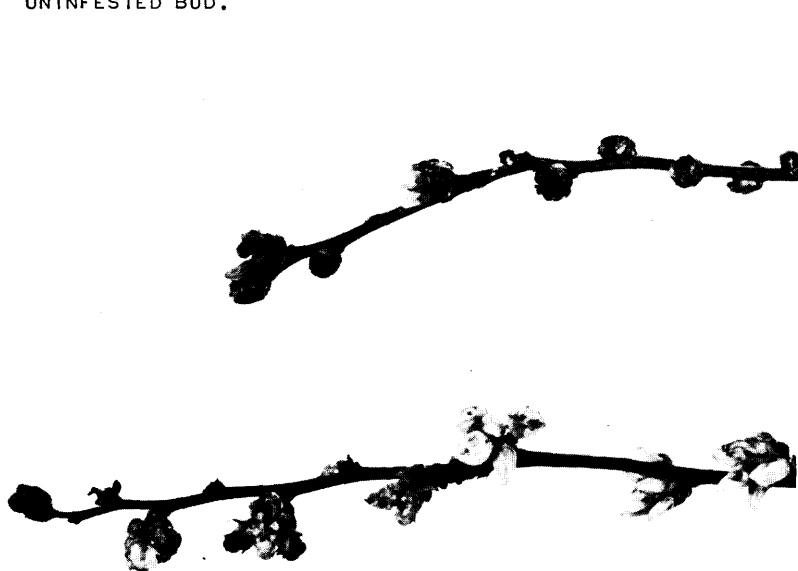


FIG. 1. TOP: MITE INFESTED BUDS.  
BELOW: UNINFESTED BUDS.

DESCRIPTION: THE BLUEBERRY BUD MITE IS WHITE, MINUTE AND ABOUT 200 MICRONS OR 1/125 OF AN INCH LONG. THE MITE LACKS A FORETIBIAL SETA WHICH PUTS IT IN THE GENUS ACALITUS. SPECIFICALLY, IT HAS A SHIELD PATTERN WITH A PAIR OF OBSCURE CURVED LINES TOWARD THE REAR CENTER BETWEEN THE BACKWARD-DIRECTED SHIELD SETAE (FIG. 3). THE FEMALE GENITAL COVERFLAP HAS LONGITUDINAL TUBERCLES (FIG. 4).



FIG. 2. TOP: ENLARGED INFESTED BUDS.  
BELOW: ENLARGED UNINFESTED BUD BLOOM.

LIFE HISTORY: THERE IS LITTLE KNOWN ON THE LIFE HISTORY OF THIS MITE IN FLORIDA. THE SEMITROPICAL CONDITIONS IN THE STATE WOULD SEEM TO INDICATE THAT THE MITE DOES NOT HAVE AN OVERWINTERING FEMALE AS IN NORTH CAROLINA.

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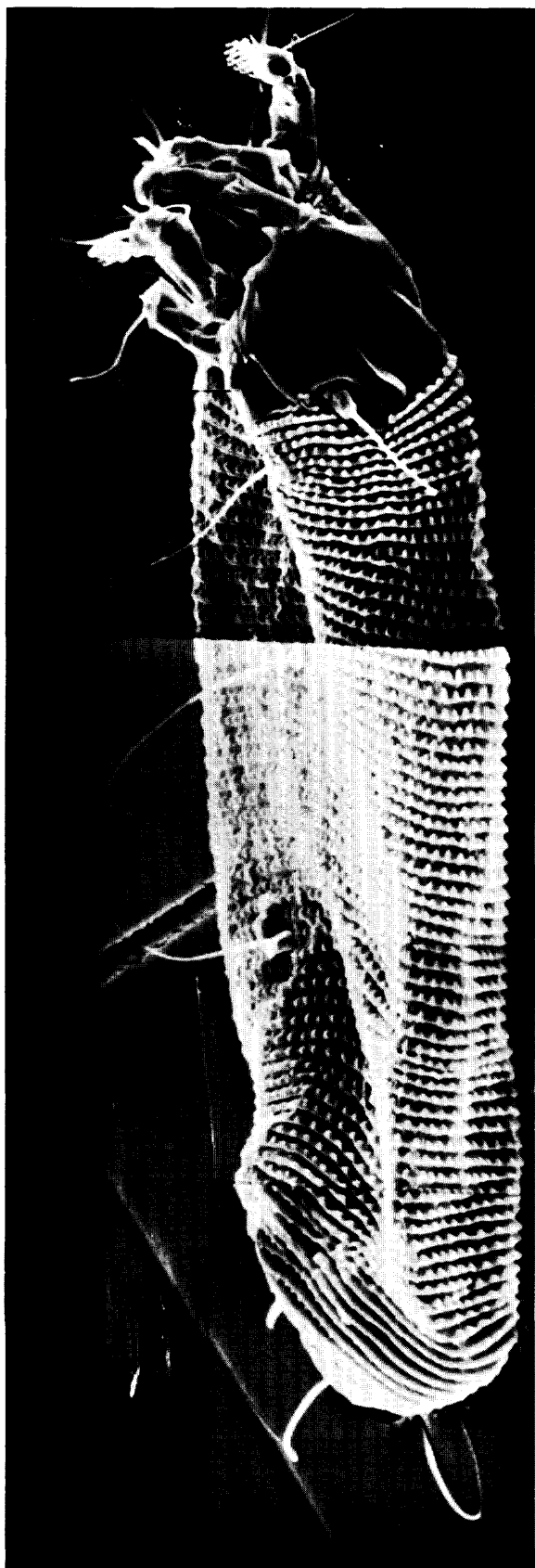


FIG. 3. DORSOLATERAL VIEW AT 1250X WITH SCANNING ELECTRON MICROSCOPE WITH ASSISTANCE OF MRS. THELMA C. CARYLE IN DR. P. CALLAHAN'S LABORATORY.

CONTROL: EFFECTIVE CONTROL IS EXTREMELY DIFFICULT SINCE THE MITES ARE PROTECTED BY THE BUD SCALES. IT IS ESSENTIAL THAT SPRAYS BE APPLIED AT FAIRLY HIGH PRESSURE (150 TO 200 PSI) AND HIGH GALLONAGE TO OBTAIN EFFECTIVE COVERAGE AND PENETRATION. TIMING OF THE APPLICATION IS IMPORTANT BUT POORLY UNDERSTOOD UNDER FLORIDA CONDITIONS. APPLICATIONS OF OIL EMULSION AND DIAZINON HAVE REDUCED THE INFESTATIONS. IN EXPERIMENTAL TESTS A DECREASE IN THE BUD MITE POPULATION WAS OBTAINED WITH META-SYSTOX-R, A SYSTEMIC PESTICIDE. APPLICATIONS WERE MADE AT PETAL DROP IN LATE MARCH AND EARLY APRIL AND AT POST HARVEST IN JULY AND AUGUST.



FIG. 4. VENTRAL VIEW OF BUD MITE AT 2000X. ARROW POINTS TO GENITAL FLAP WITH LONGITUDINAL TUBERCLES. DISTORTION PRODUCED BY VACUUM TREATMENT OF MITE.

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