

SURVIVAL OF CONSECUTIVE GENERATIONS OF CIGARETTE BEETLES
REARED ON MEDIA CONTAINING LESS THAN 1 PPM METHOPRENE

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Abstract

Kabat[®] or methoprene is a potent insect growth regulator which will control cigarette beetle populations when incorporated into tobacco at the recommended dose of 5 ppm. This dose of methoprene will prevent emergence of the first generation of cigarette beetles. It was found that doses below 1ppm, although they did not significantly affect adult emergence, did control the second generation of cigarette beetles. Cigarette beetles were allowed to oviposit on media containing methoprene at levels of 0.66, 0.33, 0.15 and 0 ppm. Only the 0.66 ppm level significantly reduced cigarette beetle emergence. F-1 generation adults were transferred to new containers and given the opportunity to oviposit. No larvae developed in containers where beetles had been reared on media containing 0.66 and 0.33 ppm methoprene. A significant reduction in the number of emerging F-2 adults was found even at the 0.15 ppm level. Since adults do not feed significantly, damage at the lower doses, 0.66 and 0.33, will be no greater than at the recommended higher dose, 5 ppm. The ultimate test is the effectiveness of methoprene to control the cigarette beetle on tobacco. Control of the F-1 generation on tobacco at 1.04 and 0.60 ppm methoprene was 79 and 12% respectively. Control was obtained at the F-2 generation at these concentrations.

Introduction

Kabat[®] or methoprene is a potent insect growth regulator. It is registered for control of cigarette beetle populations in stored tobacco. At the recommended dose of 10 ppm, it is very effective in preventing development of the insect at the pupal stage. This concentration gives residual activity for up to four years (3). Although it is highly effective, cost has slowed its incorporation into many control programs. Even at the newer recommended dose of 5 ppm, cost is still a problem.

The juvenile hormone of the insect also controls vitellogenesis and oocyte development. Marzke *et al.* (4) found that exposing sexually mature females of the cigarette beetle to methoprene resulted in a dose-dependent decrease in reproduction. They indicated that the effect was manifest during late embryogenesis.