INTRODUCTION

Several of the important tomato pests are foliage feeders although many of them inflict damage directly to the fruit as well. Reduction of marketable yield is, therefore, not solely related to the amount of foliage consumed but includes yield reduction due to damaged fruit. Damage by leafminers, *Liriomyza* spp., in contrast, is restricted to the leaves and the injury is different from that caused by most foliage feeders. Only the leaf mesophyll is consumed, leaving both upper and lower epidermis intact. The presence of a large number of leafminer larvae within one leaf may result in leaf death and subsequent abscission. In addition, yellowing and necrosis of the leaf tissues around the mines may occur, even if the larval population is small, again sometimes resulting in abscission of the entire leaf. Partial or even complete defoliation of tomato plants may result from the combined effects of direct leafmining and subsequent leaf abscission.

In recent years, the population of leafminers has become so large that growers consider these insects their most serious pests (25). Because of the clearly visible damage inflicted on tomato plants, a negative effect on the yield is often suspected. However, it has been shown repeatedly that consumption of leaves and other plant tissues by insects does not necessarily reduce plant vigor (reproductive capacity) (7). In fact, Harris (8) suggested that sometimes a certain density of "pest" insects may be required for a crop to attain its maximum yield. Potato yield increase following partial defoliation has been demonstrated (30). Despite many attempts to find a correlation between leafminer damage and tomato yield, no consistent results have been obtained. Most reports have found no significant effect of naturally occurring leafminer populations and insecticide-induced populations on tomato yield (11, 12, 15, 28). However, in some fields and in some years yield reduction was found (29, 35).

The greatest damage by leafminers is often considered to be imposed on seedlings or young plants which, as a result of weakening, may die or become stunted (2, 5, 16). Severe damage by leafminers to cantaloupe, resulting in complete crop loss (9), and to honeydew melon, resulting in reduction in yield and fruit quality (20), has been reported.

Defoliation by means other than insect injury has also been found to have varying effects on fruit production in tomato. The various levels of defoliation resulting from varying degrees of early blight control with fungicides, appeared not to be correlated with tomato yield (26). Defoliation by a bacterium (*Xanthomonas campestris* pv *vesicatoria* (Doidge) Dye) resulted in significant reduction in fruit