

研究论文

蜡蚧轮枝菌毒素对温室中烟粉虱种群控制作用的评价

王联德¹, 黄建^{1*}, 刘波²

1.福建农林大学生物农药与化学生物学教育部重点实验室, 福建 福州 350002

2.福建省农业科学院生物技术中心, 福建 350003

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摘要 在室内测定蜡蚧轮枝菌毒素对烟粉虱种群干扰作用基础上, 通过分别组建蜡蚧轮枝菌毒素和化学杀虫剂作用下的烟粉虱第5、6代自然种群生命表, 采用种群趋势指数(I)和干扰作用控制指数(IIPC)分析法, 比较蜡蚧轮枝菌毒素和化学杀虫剂对茄子上烟粉虱的防治效果, 评价蜡蚧轮枝菌毒素对烟粉虱的防治作用。结果表明, 毒素对烟粉虱室内种群的干扰作用主要表现在对成虫的忌避作用和对若虫的毒杀作用; 温室大棚中施用400mg/L的蜡蚧轮枝菌毒素, 对烟粉虱第5代和第6代的控制指数IIPC分别为0.064和0.023, 连续施用毒素后, 第6代种群趋势指数I为0.68, 烟粉虱种群基本得到控制; 温室大棚中施用重量10%吡虫啉可湿性粉剂(稀释1000倍), 对烟粉虱第5代和第6代的控制指数IIPC分别为0.44和1.01, 化防区第5代的I为12.95, 第6代的I为30.23, 分别为对照区的0.44倍和1.01倍, 连续使用化学杀虫剂, 容易造成烟粉虱再猖獗。重要因子分析揭示毒素比化学杀虫剂更利于温室烟粉虱种群控制。

关键词 烟粉虱 蜡蚧轮枝菌毒素 控制效果 种群趋势指数; 干扰作用控制指数

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Assessment of the control effectiveness of insecticidal toxins from *Verticillium lecanii* on the population of *Bemisia tabaci*(Gennadius) in greenhouse

WANG Lian-De¹, HUANG Jian^{1*}, LIU Bo²

1. Key Laboratory of Biopesticide and Biochemistry MOE., Fujian Agriculture & Forestry University, Fuzhou 350002, China;

2. Biotechnology Center, Fujian Academy of Agricultural Sciences, Fuzhou 350003, China

Abstract Laboratory and field experiments were conducted to assess the effectiveness of insecticidal toxins from *Verticillium lecanii* (Zimm.) Viégas on *Bemisia tabaci* (Gennadius) (Homoptera: Aleyrodidae) in the greenhouse. In the laboratory, crude toxins from three strains of *V. lecanii* (V3450, Vp28, and V16063) at 1000 mg/L were applied systemically to eggplant seedlings that were then exposed to whiteflies. Deterrence of adults and toxicity to offspring were then evaluated. The formulae $IIPC_{Tox} = \frac{NITrN}{I} Ck = \frac{PhTr \cdot NFr \cdot SETr \cdot SNTr \cdot SPT r PhCk \cdot NF Ck \cdot SE Ck \cdot SN Ck \cdot SP Ck}{I}$ were used to assess the interference of the toxin to the laboratory population of whiteflies. Insecticidal toxins from *V. lecanii* at 400 mg/L and chemical pesticides diluted 1:1000 were tested against *B. tabaci* on eggplants in the greenhouse. Estimated population indices from life tables constructed for the 5th and 6th generation of *B. tabaci* were respectively 1.88 and 0.68, for *V. lecanii* toxins and 12.95 and 30.23 for chemical insecticides. The interference index of population control (IIPC) values were 0.064 and 0.023, and 0.41 and 1.01, respectively. It is predicted a decreased 7th generation whitefly population after spraying the crude toxin in contrast to an increase on plants treated with chemical insecticide that surpassed that on untreated plants, this despite a smaller index of the whitefly population immediately after spraying chemical insecticide. These results indicated that application of crude toxins from *V. lecanii* to be the preferred treatment for control of *B. tabaci* and conservation of their natural enemies in the greenhouse environment

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通讯作者 黄建 wangliande@yahoo.com