

研究论文

## 玫烟色拟青霉和吡虫啉对烟粉虱种群的联合控制作用

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**摘要** 利用生命表技术评价了在网室条件下玫烟色拟青霉和吡虫啉对烟粉虱种群的控制作用。在0.3%吡虫啉+ $1 \times 10^6$ 分生孢子/ml、0.1%吡虫啉+ $1 \times 10^6$ 分生孢子/ml、10%吡虫啉、 $1.0 \times 10^6$ 个孢子/ml菌液、 $1.0 \times 10^6$ 个孢子/ml菌液连续施用2次等5个不同的处理区, 玫烟色拟青霉对第一代和第二代烟粉虱的种群干扰作用控制指数(IIPC)分别为0.5476、0.6836、0.3123、0.7278、0.4959和0.1566、0.1625、0.9830、0.2532、0.1349。其中, 以使用0.3%吡虫啉+ $1.0 \times 10^6$ 分生孢子/ml处理区对烟粉虱种群的控制效果最好。玫烟色拟青霉与低浓度的吡虫啉混合使用能较好地发挥联合控制作用, 对玫烟色拟青霉的累积控制效应无负面影响。

**关键词** 玫烟色拟青霉 烟粉虱 IPM 吡虫啉 杀虫剂 混合物

**分类号** [Q143](#), [Q958.9](#), [Q968.1](#), [Q969.48](#)

## Combined effects of *Paecilomyces fumosoroseus* (Deuteromycotina: hyphomycetes and imidacloprid for managing *Bemisia tabaci* (Homoptera: Aleyrodidae))

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**Abstract** Combining *Paecilomyces fumosoroseus* and imidacloprid as an integrated approach to control *Bemisia tabaci* was evaluated using life table parameters. In the laboratory, the index of population trend (I) of *B. tabaci* was 9.0216 in the untreated control after one generation. After applications of *P. fumosoreosus* at a concentration of  $1 \times 10^6$  conidia/ml alone and in combinations with 0.3 and 0.1% of imidacloprid, the Is of *B. tabaci* decreased to 3.3769, 1.1986, and 1.8512, respectively. The results show that combinations of *P. fumosoreosus* with imidacloprid exhibit strong synergistic effects against *B. tabaci*, and the interference index of population control (IIPC) of *B. tabaci* with the same treatments were 0.3743, 0.1329, and 0.2052, respectively. Under greenhouse conditions, the I and I I P C of *B. tabaci* in the first generation were evaluated with five treatments: one application of *P. fumosoroseus* ( $1 \times 10^6$  conidia/ml) alone and in combination with 0.3 and 0.1% of imidacloprid, and 10% of imidacloprid alone, and two applications of *P. fumosoroseus* ( $1 \times 10^6$  conidia/ml) alone. The Is for the five treatments were 8.4348, 6.3458, 7.9336, 3.6191, and 5.746, respectively, and the corresponding IIPC values were 0.7278, 0.5476, 0.6836, 0.3123 and 0.4959, respectively. The I values were reduced by 27.2, 45.2, 31.6, 68.8, and 50.4%, respectively, as compared with that in the untreated control. We found that the combinations of *P. fumosoroseus* and imidacloprid caused high mortality of young *B. tabaci* nymphs, whereas *P. fumosoroseus* alone caused high mortality of old *B. tabaci* nymphs. We also found that one application of the combinations of *P. fumosoroseus* with imidacloprid were more effective against *B. tabaci* than one application of *P. fumosoroseus* alone, but were not as effective as two applications of *P. fumosoroseus* used alone.

After applications of *P. fumosoroseus* with combinations of 0.3 and 0.1% of imidacloprid, and 10% of imidacloprid alone, the Is of *B. tabaci* in the second generation were 1.2443, 1.2915 and 7.8124, and the IIPC values were 0.1566, 0.1625 and 0.9830, respectively. When *P. fumosor*

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oseus was used alone once and twice, the Is were 2.0125 and 1.0718, and IIPC values were 0.2532 and 0.1349, respectively. Compared with the untreated control, the corresponding Is values in the above treatments were reduced by 84.3, 83.8, 1.7, 74.7, and 86.5%, respectively. *P. fumosoroseus* ( $1 \times 10^6$  conidia/ml) applied twice provided the best control of *B. tabaci*, whereas 10% of imidacloprid alone was the least effective. Based on the life table parameters of *B. tabaci* for two generations, *P. fumosoroseus* combined with imidacloprid provided better control than each of the two used alone, and continuous applications of these two materials for controlling *B. tabaci* for two generations provided better control than for one generation. Practically, early application of *P. fumosoroseus* ( $1 \times 10^6$  conidia/ml) blended with 0.3% of imidacloprid would provide the best control of second instar *B. tabaci*.

**Key words** *Paecilomyces fumosoroseus* \_ *Bemisia tabaci*; IPM; imidacloprid; insecticides; mixture

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