

桔全爪螨对阿维菌素和甲氰菊酯的抗性现实遗传力及风险评估

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Resistance Realized heritability and risk assessment of *Panonychus citri* to avermectin and fenpropathrin.HE Heng-guo^{1,2}, ZHAO Zhi-mo¹, YAN Xiang-hui^{1,2}, WANG Jin-jun¹

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摘要 在实验室抗性选育的基础上, 应用数量遗传学中的域性状分析法, 研究了桔全爪螨北碚种群对阿维菌素和甲氰菊酯2种杀螨剂的抗性现实遗传力, 并对2种药剂在不同杀死率下抗性发展的速率进行了预测. 结果表明: 用阿维菌素和甲氰菊酯分别不连续汰选11及16代后, 桔全爪螨对两者的抗性分别为3.8和29.9倍, 抗性现实遗传力分别为0.0475和0.1544. 在室内选择条件下, 杀死率为50%~90%时, 要获得10倍抗性, 甲氰菊酯仅需要7~16代, 阿维菌素则需要12~26代. 而在田间选择情况下, 2种药剂都将需要更长的时间. 抗性筛选结果表明, 生物源农药阿维菌素的抗性风险明显低于菊酯类农药甲氰菊酯. 试验结果可为桔全爪螨抗性治理提供参考.

关键词: 桔全爪螨 杀螨剂 抗性现实遗传力 风险评估

Abstract: On the basis of resistance breeding and selection in laboratory, and by using the threshold trait analysis in quantitative genetics, this paper studied the realized resistance heritability of *Panonychus citri* (McGregor) collected from Beibei of Chongqing to avermectin and fenpropathrin, and predicted the resistance risk of *P. citri* to these two acaricides. After 11- and 16-generations of selection with avermectin and fenpropathrin, the resistance of *P. citri* to the two acaricides increased by 3.8- and 29.9-fold, and the realized resistance heritability was 0.0475 and 0.1544, respectively. Under laboratory condition, to develop a 10-fold increase of resistance required 12-26 generations of selection for avermectin, and 7-16 generations of selection for fenpropathrin under the selection pressure of 50%-90% mortality for each generation. Under field condition, it would require more generations to develop the same resistance level. Comparing with bioacaricide avermectin, pyrethroid fenpropathrin had obviously higher resistance risk to *P. citri*. The results provided references for the resistance management of *P. citri* to acaricides.

Key words: *Panonychus citri* acaricide resistance realized heritability risk assessment**引用本文:**

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