

# Inheritance and Cross Resistance of Bifenazate Resistance in Twospotted Spider Mite, *Tetranychus urticae*

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The development of resistance to bifenazate (resistance ratio=50 folds) was found in populations of the two-spotted spider mite, *Tetranychus urticae*, collected from rose greenhouses in Chilgok, Gyeongbuk province in December 2000. This population was selected for 4 yr with bifenazate treatment (over 150 times) showed 2,073 folds increase in resistance as compared to susceptible (S) strain. Inheritance and cross resistance in bifenazate to 9 acaricides of the bifenazate resistance strain (R) were investigated. There were differences of susceptibility in the bifenazate concentration-mortality relationships  $F_1$  progenies obtained from reciprocal cross with the S and R strain ( $R_{\text{♀}} \times S_{\text{♂}}$ ,  $S_{\text{♀}} \times R_{\text{♂}}$ ). Degrees of dominance were 0.62 and 0.92 in adult females and eggs of  $R_{\text{♀}} \times S_{\text{♂}}$ , and -0.58 and -0.25 in adult females and eggs of  $S_{\text{♀}} \times R_{\text{♂}}$ , respectively. Inheritance type in the  $F_1$  progeny of  $R_{\text{♀}} \times S_{\text{♂}}$  was incomplete dominant, and  $F_1$  progeny of  $S_{\text{♀}} \times R_{\text{♂}}$  was incomplete recessive. These results suggest that inheritance of bifenazate resistance is controlled by an complete dominance. The R strain exhibited cross resistance to acequinocyl and fenpyroximate in adult females, and amitraz, emamectin benzoate, milbemectin, pyridaben and spiroadiclofen in eggs. However they showed negatively correlated cross-resistance to emamectin benzoate and milbemectin in adult females, and abamectin in eggs.