

Inheritance and Stability of Resistance in Etoxazole Resistant Strain of Twospotted Spider Mite, *Tetranychus urticae*, and its Cross Resistance

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The development of resistance to etoxazole (resistance ratio=3,700 folds) was found in populations of the two-spotted spider mite, *Tetranychus urticae*, collected from rose greenhouses in Buyo at October 2000, Chungnam Province (Lee *et al.*, 2003). Buyo population was selected for 3 yr of etoxazole treatment (over 100 times) showed 5,000,000 folds increase in resistance as compared to S strain. Inheritance and stability of resistance, and cross resistance in etoxazole selected population (R) were investigated. There were differences of susceptibility in the etoxazole concentration-mortality relationships between F1, F2 progenies ($R\text{♀} \times S\text{♂}$, $S\text{♀} \times R\text{♂}$) obtained from reciprocal cross with the S and R strains. Degrees of dominance were 0.98 and 0.98 in the F1 and F2 progenies of $R\text{♀} \times S\text{♂}$, and -0.97 and -0.68 in the F1 and F2 progenies of $S\text{♀} \times R\text{♂}$, respectively. Inheritance type in the F1 and F2 progenies of $R\text{♀} \times S\text{♂}$ were incomplete dominant, and the F1 and F2 progenies of $S\text{♀} \times R\text{♂}$ were incomplete recessive. These results suggest that inheritance of etoxazole resistance is controlled by an incomplete dominant, being close to complete dominant inheritance type. In the stability of resistance, resistance level of R strain was kept up to 1 yr without selection by etoxazole. In the cross resistant test, R strain exhibited cross resistance to acequinocyl and emamectin benzoates in adult females and milbemectin, amitraz and pyridaben in eggs, but negatively correlated cross-resistance to bifenthrin belong to carbamate acaricide. These results indicated that bifenthrin could be useful for the control of etoxazole resistant population, *T. urticae*.