

2-16. Oviposition Model of Overwintered Adults of *Tetranychus urticae* and Its Field Validation

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Adult longevity, daily survival, and daily egg numbers per female of winter-form *Tetranychus urticae* adult were investigated at 10, 19, 22, 30, and 35°C, and an oviposition model was developed. Adult longevity decreased with increasing temperatures. The longevity was longest at 10°C while was as short as 6.5 d at 35°C. The longevity completion rates (1/median longevity) were well described by the modified Sharpe and DeMichele model in the range of 10-35°C. Total egg production per female showed a typical rising and falling pattern with increasing temperature. *T. urticae* showed a maximum fecundity at 30°C. For the purpose of modeling, data of 12, 15, and 25°C were added from the data of Lee et al. The overall adult survival exhibited a reverse logistic curve. Three temperature-dependent components, age-specific oviposition rate, total fecundity, and age specific survival rate, were incorporated into the oviposition model. Estimated egg production curves showed flatter and wider shapes at low temperatures, and sharply increased to the peak up to optimal temperature. The peak gradually decreased with shorter range as temperature increases. Oviposition model simulation well described the field occurrence patterns of *T. urticae* egg population on weeds under apple trees in early season.