ANOTHER PIECE OF THE PUZZLE: NOVALURON'S IMPACT ON TARNISHED PLANT BUG, *LYGUS LINEOLARIS*

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Abstract

The tarnished plant bug (TPB), *Lygus lineolaris* (Palisot de Beauvois) (Miridae: Hemiptera) is the most economically important pest in cotton in the mid-south region. It is highly polyphagous, and the most widely distributed species of *Lygus* in North America. Novaluron is a chitin synthesis inhibitor, which has primarily been recommended for its activity on immature stages. However, field applications on adult TPB populations have reduced nymph densities for several weeks, suggesting that this insecticide may be influencing adult reproduction. Here, we examined the impacts of novaluron on TPB ovaries and egg development and maturation. Results indicate that novaluron has a detrimental effect on ovaries and eggs as revealed from histological studies showing degenerated follicular epithelial cells coupled with distorted oocytes with large vacuoles in vitellogenic sites. Field exposure caused a reduction in hatch rate and nymphs/female/day compared to TPB from non-treated fields. Laboratory studies on exposure of males and/or females indicated no differences in fecundity compared to controls. However, differences in egg hatch rate were observed, with the least eggs hatching following exposure of females to novaluron. Therefore, exposure of TPB adults to novaluron can reduce nymph populations through sub-lethal effects on adult female TPB. Impacts varied depending on adult age at the time of exposure, but effects persisted throughout the life of the adult. Taken together, our results support the application of novaluron on young TPB adult populations to disrupt ovarian development and reduce egg hatchability, thereby reducing nymph densities.