

Chemical Control/New Products

FEEDING ENHANCEMENTS FOR INSECTICIDE TARGETING NEONATE  
LEPIDOPTERAN LARVAE

Maciej A. Pszczolkowski and John J. Brown  
Department of Entomology, Washington State University, Pullman, WA, USA

*Keywords:* codling moth, Sweet 'n Low, Success, spinosad, feeding enhancements

We showed that neonates of the codling moth *Cydia pomonella* (L.) are capable of feeding and development on apple leaves and identified granulated sugar substitute Sweet 'n Low® (1%, w/v) and monosodium glutamate (0.0025%, w/v) as substances that increase leaf feeding in codling moth neonates. In laboratory trials, addition of Sweet 'n Low® or monosodium glutamate to standard concentrations of Success®, a pesticide formulation containing spinosad, significantly increased its efficacy without increasing the amounts of toxic component. However, our field experiments indicate that a better formulation of feeding stimulant/pesticide combination is needed to protect both from being washed off leaves by rain.

We also have preliminary data on spatial characteristics of leaf exploratory behavior and on glutamate-dependent pharmacology of feeding in codling moth neonates. These data could help to design a proper spray delivery system and improve field persistence of identified feeding stimulators.

Our data suggest a new strategy for rational pesticide reduction in control of lepidopteran pests. Our formulation increased the amounts of pesticide ingested by stimulation of feeding, thereby showing prospects of decreasing the amounts of toxic ingredients needed in pesticide formulation without affecting its efficacy.