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Funding Source: USDA/Agricultural Research Services

Analysis of the effects of dietary ascorbic acid on a beneficial wasp

Elisha Odoom and Thomas Coudron

Recent development in genetic engineering has paved the way for researchers to produce crops of high nutritional value, high yield and resistant to diseases and pests. Ascorbic acid is one of the nutrients that researchers are trying to enhance in plants. Studies have shown that the effectiveness of a baculovirus to control the insect pest, the budworm, and *Heliothis virescens* was inversely proportional to the concentration of ascorbic acid. A recent study investigated the effect of different levels of ascorbic acid in the diet of a beneficial wasp, *Euplectrus comstockii*, by measuring life history parameters of the wasp when reared on larvae fed a basal diet containing low and high levels of ascorbic acid. Data included oviposition, egg hatch, percent pupation, pupal weight, percent adult eclosion and the sex ratio. Analysis of variance (ANOVA), odds and odds ratio statistical analyzes were used to interpret the results. ANOVA showed that there was no significant effect of ascorbic acid on the number of eggs laid and on pupal weight. Odds and odds ratio analyses showed that the probability of egg hatch and adult emergence for the wasp increased with the amount of ascorbic acid in the diet of the budworm, and that the rate of development and probability of female or male progeny remained at 2:1 for all levels of ascorbic acid tested. Collectively, this would indicate that as the ascorbic acid concentration is increased in the pest insect (and perhaps as the ascorbic acid concentration in the plant is increased) the effectiveness of a baculovirus was reported to decrease, but the effectiveness of the wasp is likely to increase.