The relationship between diapause preparation and diapause length: A possible target for European corn borer management

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The European corn borer (*Ostrinia nubilalis*) invaded the United States in the 1940’s and quickly became a primary corn pest capable of decimating crops. Conventional pesticides and biological control efforts have been used in management of this pest to varying effect. If these pests respond as predicted to anthropogenic changes in their environment with increased growth, development, and reproduction rates, new management approaches will be necessary. Resolving the relationship between the diapause strategy adopted by these pests to survive winter and the environmental resources on which they depend could uncover possible targets for future pest management strategies. We hypothesized that lipid accumulation in preparation for diapause significantly influences diapause duration. To understand this relationship, we characterized lipid content prior to diapause in two strains of European corn borer that differ only in diapause length. European corn borers with a shorter diapause period stored significantly less lipids in preparation for diapause in relation to larvae with longer diapause length. This work is fundamental to understanding the metabolic relationship between nutrients and diapause could lead to innovations in managing this pest.