**Abstract**

**The effect of diapause on digestive efficiency across different strains of European corn borer**

Since the early 20th century, the eastern United States has dealt with the European corn borer (ECB) as a pest on corn. The digestive efficiency of these larvae was not described until now and could provide comprehensive information to better manage the pest agriculturally. The European corn borer exists in two strains: univoltine (UZ) and bivoltine (BE). The effect of diapause on digestive efficiency was tested by comparing the consumption rate of these two strains of ECB in two diapause conditions during the fifth instar. We found that the shorter diapausing BE strain had a higher rate of digestive efficiency than the longer diapausing UZ strain. This is likely due to the fact that the shorter diapausing BE strain must utilize the same amount of nutrients as the longer diapausing UZ strain in a shorter span of time before entering the next stage of its life history. These results can be used to create better, more efficient pest management systems for farmers who are economically impacted by these larvae. Knowing that the shorter diapausing BE strain has a higher rate of digestive efficiency, farmers can expect more of their crops to be consumed in the months when this strain is reaching its ultimate instar, giving farmers more time to either plant different types of crops or to plant more crops for compensation.