**Abstract**

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

Since the early 20th century, European corn borer (ECB) has remained a primary pest of agricultural corn. ECB is responsible for approximately $1 billion dollars in costs related to yield loss and managing this pest. . The digestive efficiency of these larvae was not described until now and could provide comprehensive information to better manage the pest agriculturally. To understand the relationship between digestive efficiency and diapause we used two sympatric strains of ECB with different diapause lengths. . The effect of diapause on digestive efficiency was tested by comparing the consumption rate of each strain during the fifth instar when feeding on corn plant leaves. We found that the shorter diapausing strain had a higher rate of digestive efficiency compared to the strain with a longer diapause . For the shorter diapausing strain of ECBa higher digestive efficiency could be beneficial (why, specifically) 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.