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## Lepidopteran preference test of *Glossy* mutants and *Glossy15* alleles for maize resistance

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Every year fall armyworm and Southwestern corn borer cause severe yield loss in maize. Both fall armyworm and the Southwestern corn borer are known to specifically attack the whorl leaf tissue resulting in major crop losses. Over the past few years maize resistant lines have been developed. In our study we have compared the larval feeding habits of both insects on resistant and susceptible genotypes, and on maize mutants that affect epicuticular wax formation. A previous study has shown that the *Glossy15* and *Glossy8* genes have Lepidopteran resistance in maize during the whorl stage. Our objectives in this study are to analyze both fall armyworm and Southwestern corn borer feeding preferences on various glossy mutants, and to further examine their feeding habits on different alleles of the *Glossy15* gene. In both studies we compared feeding preferences on three inbreds ( Mp705, Oh28, and Va35 ) to the glossy mutants. Mp705 has resistance to whorl stage Lepidopteran feeding while Oh28 and Va35 are susceptible. An inbred adult leaf was placed directly next to a glossy mutant adult leaf in a Petri dish. We then placed a single larva between the two adult leaves. We evaluated the larvae preference by using the AlphaEaseFC software. With this software we measured the areas of damaged leaf tissue. In the first study we have concluded that the adult leaves of bm1 , G11 , gl2-PF , G13 , G17 , G114 , and gl15-Sprague are very susceptible to insect feeding. There was no preference for adult leaves of bm4 , G14 , G111 , gl3-N531 , gl13-U440B , G118 , gl18-N166A , and G121 . However, we have found that G18 , gl15-KEW, and gl15-LAM exhibit some resistance. We also examined insect preference on different alleles of *Glossy15* gene. We observed allelic differences; gl15-63 and gl15-L are susceptible to insect feeding, while gl15-S , gl15-H , gl15-956 , and gl15-94317 have no preference. The goal of this study is to determine which mutants and alleles are more resistant than the others. The resistant alleles can then be inserted into different maize lines to improve resistance to Lepidopteran insects.