

## **Two sugar isomers influence host plant acceptance by a cereal caterpillar pest.**

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### **Abstract**

Plant sugars are often considered as primary feeding stimuli, conditioning host plant acceptance by herbivorous insects. Of the nine sugars identified from methanolic extracts of seven grass species, only turanose, a sucrose isomer, was negatively correlated with the survival and growth of the noctuid larva of cereal stemborer, *Busseola fusca*. Sucrose was the most abundant sugar, although it did not vary significantly in concentration among the plant species studied. Using Styrofoam™ cylinders impregnated with increasing concentrations of turanose or sucrose, the two sugars had opposing effects: turanose appeared phagodeterrent while sucrose was phagostimulatory. Electrophysiological studies indicated that *B. fusca* larvae were able to detect both sugars via their styloconic sensilla located on the mouthparts. The findings indicate that, whereas sucrose is a feeding stimulant and positively influences food choice by *B. fusca* larvae, turanose negatively contributes to larval food choice. The balance in concentrations of both sugars, however, somehow influences the overall host plant choice made by the larvae. This can partly explain host plant suitability and choice by this caterpillar pest in the field.