

WESTERN CORN ROOTWORM

RESPONSE TO CROP ROTATION

RESISTANT

SUSCEPTIBLE

LOW
(mostly corn & soybean)

LANDSCAPE DIVERSITY

HIGH

As landscape diversity increases, rotation resistance declines

MORE ACTIVE

LESS ACTIVE

BEHAVIOR

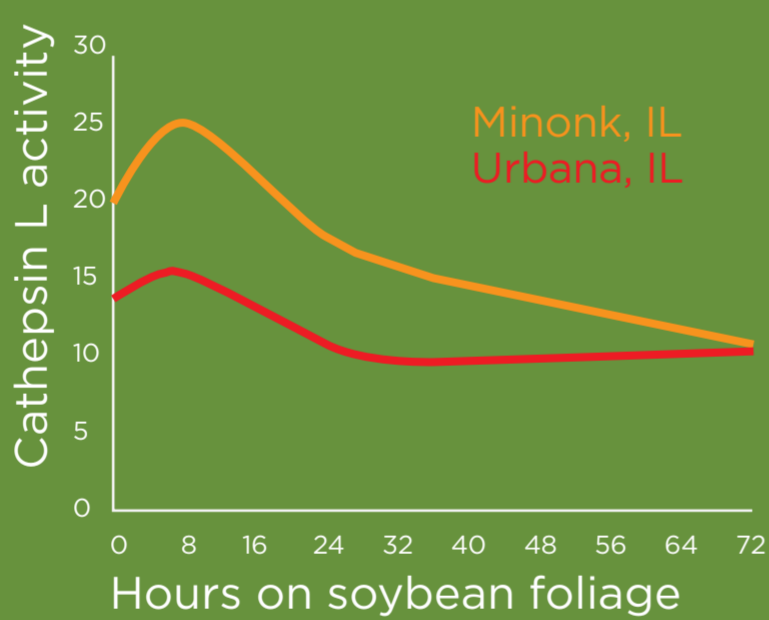
Rotation-resistant WCR adults are more active and thus more likely to stray into soybean fields

LONGER

SURVIVAL
on
soybeans

SHORTER

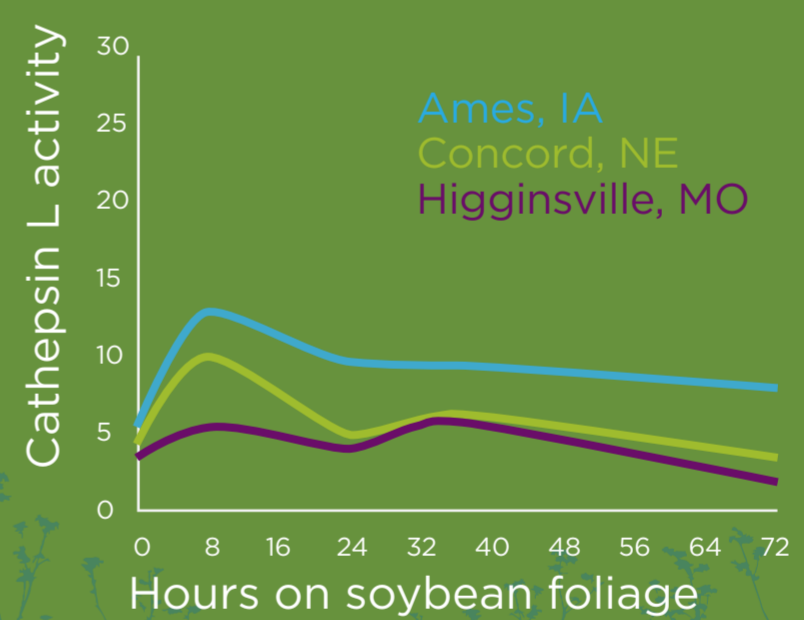
HIGHER



ENZYME
ACTIVITY

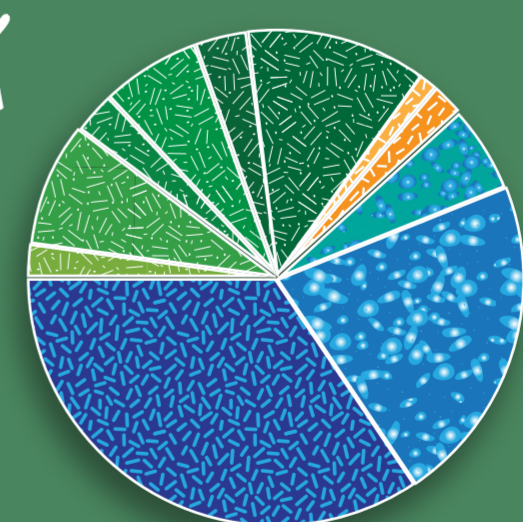
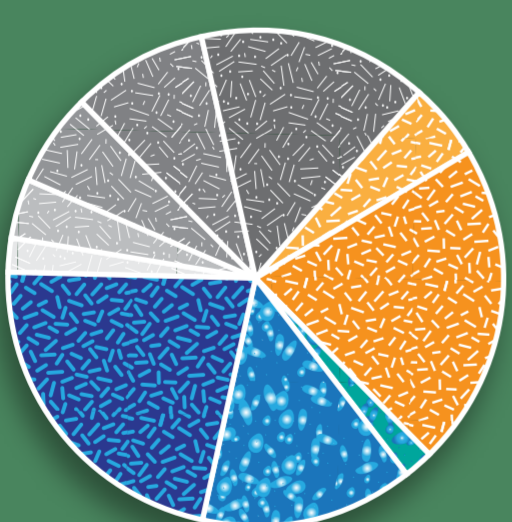
Protease enzymes help the bugs overcome plant defenses

LOWER



MICROBIAL COMMUNITY

Changes in relative abundance of microbes help bugs resist crop rotation

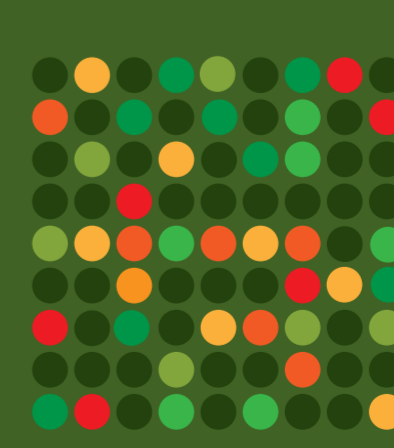
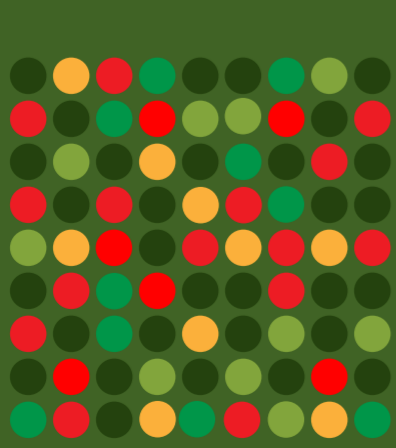


GUT BACTERIAL
COMMUNITY

- | | | | |
|----------------------|------------------|----------------|-------------------|
| Enterococcus sp. | Klebsiella sp. | Kluyvera sp. 1 | Weissella sp. |
| Lactococcus sp. | Dysgonomonas sp. | Pantoea sp. | Tsukamurella sp. |
| Enterobacter sp. | Pseudomonas sp.1 | Serratia sp. | Pseudomonas sp. 2 |
| Stenotrophomonas sp. | Kluyvera sp. 2 | Comamonas sp. | Acinetobacter sp. |

GENE EXPRESSION

Thousands of genes in the WCR gut are regulated differently between rotation-resistant and non-resistant bugs



A report of this work appears in the journal *Evolutionary Applications*.
News release: [Study: Crop-rotation resistant rootworms have a lot going on in their guts](#)