

Corn Borer Control with the Fungus *Beauveria*

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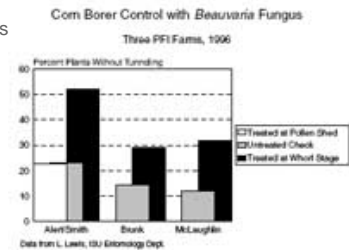
Beauveria bassiana (say "bo-vá-ri-a") is a widely distributed fungus that kills insects including the European corn borer, *Ostrinia nubilalis*. Recent research at the USDA-ARS, Corn Insects Research Unit

demonstrated what we

call an endophytic relationship between *B. bassiana* and corn plants. *Beauveria bassiana* applied to corn in the V7 stage of plant development enters the plant, colonizes the tissues and kills European corn borer larvae that bore into the stalk.

Together with PFI, we applied for and received a SARE grant to evaluate *B. bassiana* as a component to manage European corn borer on the farm. Three farms were involved in this research.

ISU entomologist Les Lewis passed around samples of infected corn borers at the Brunk field day July 9.



Research on the **Doug Alert/Margaret Smith** farm, Hampton, IA had four treatments - 1) *B. bassiana* applied at V7 stage of corn development, 2) *B. bassiana* applied at R3 stage of corn development, 3) *B. bassiana* applied post harvest to crop residue and, 4) an untreated check. Research on the **Ron and LaDonna Brunk** farm, Eldora, IA and the **Dennis and Kate McLaughlin** Farm, Cumming, IA had treatments 1, 3, and 4. The *B. bassiana* (726 Mycogen Corp., Butte, MT) was applied to the respective plants at 0.4 grams/plant using a hand-held applicator. Treatment 4 (post harvest) was applied with a hand-operated cyclone spreader. (Editors' note: the V7 stage of development is roughly equivalent to seven fully expanded leaves and typically occurs in early June. R3 is about the "sweetcorn" stage of ear development.)

The design of the experiment was similar to PFI field trials but with more treatments. A replication contained five rows of corn 400 ft. long at the Alert Farm, six rows 400 ft. long at the Brunk Farm, and four rows 400 ft. long at the McLaughlin Farm. At black layer (physiological maturity) the number of plants in two adjacent rows 22 ft. long were counted and the ears harvested. These ears were stored in burlap bags, and the corn will be shelled and weighed. The plants in each sample were split from tassel to base and the inches of tunneling was measured. An additional five plants were harvested and will be evaluated for *B. bassiana*. Following harvest two 1-meter squares of crop residue within each replicate were dissected. Number of live larvae and number of *B. bassiana*-infected larvae were counted.

Data from these studies are presented in [Table 8](#) and Figure 7. Preliminary results suggest to us that an application of *B. bassiana* at whorl stage reduces tunneling by the European corn borer and decreases the percentage of plants with insect damage.

TABLE 8. OBSERVATIONS WITH THE FUNGUS *BEAUVARIA BASSIANA*

FARM/ TREATMENT TIME	TUNNELING/PLANT (cm)	% PLANTS WITH NO TUNNELING	NO. LARVAE PER 2 m²
ALERT/SMITH			
WHORL STAGE	3.0 c	52.0 a	2.5 a
POLLEN SHEDDING STAGE	5.1 b	22.8 b	4.8 a
POST HARVEST	–	–	–
UNTREATED CHECK	6.6 a	23.2 b	5.7 a
BRUNK			
WHORL STAGE	3.1 b	29.0 a	2.5 a
POST HARVEST	–	–	3.5 a
UNTREATED CHECK	6.5 a	14.5 b	2.1 a
MCLAUGHLIN			
WHORL STAGE	4.7 b	31.7 a	3.0 b
POST HARVEST	–	–	7.3 a
UNTREATED CHECK	8.7 a	12.0 b	6.8 a

MEANS FOLLOWED BY THE SAME LETTER, WITHIN A FARM, ARE NOT SIGNIFICANTLY DIFFERENT FROM EACH OTHER.