

# Pest & Crop

October 20, 2000 - No. 27

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This issue contains the Pest&Crop Survey for 2000. Please fill out and return. Thanks!

## Insects, Mites, and Nematodes

### Overwintering European Corn Borer Population -

(John Obermeyer, Rich Edwards, and Larry Bledsoe) -

- 2000 statewide corn borer activity about the same as last year
- Next year's corn borer threat cannot be accurately predicted at this time
- Early-planted corn may attract first generation moths
- Second generation corn borer generally attacks late planted / pollinating fields
- Return on investment with Bt corn may depend on planting date along with other production practices/inputs
- Implement an ECB resistance management program with Bt corn

Ron Blackwell's overwintering European corn borer (ECB) survey is complete and statewide corn borer numbers are about the same as last year, although the areas of the state varied considerably from 1999 (see accompanying graphs and table). When compared to 40 years of survey data, the 2000's overwintering population is about average. What does this mean for 2001?

Mature ECB larvae now nestled in crop residue around the state form the bulk of next year's threat to Indiana corn. However, environmental factors during the growing season, more than anything else, will determine whether this insect becomes an economic threat in 2001. Entomologists are cautious when making predictions since it is very difficult to accurately predict if an insect such as the corn borer will reach its biotic potential. Under optimal conditions, each female moth can produce over 400 eggs spread among many plants and fields!

Producers should carefully scrutinize production purchases for the upcoming season, including genetically modified seeds, i.e. Bt corn. Should one invest in this technology for 2001? Putting all other considerations aside, such as marketability of genetically modified crops and reduced technology fees, producers will need to consider the probability of corn borer occurring in their fields. The following is our best guess on the risk of economic corn borer damage in 2001.

First brood females are generally attracted to the tallest, greenest corn for egg laying - normally early-planted corn. This, coupled with conventionally tilled,



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and rotated fields and adequate soil fertility levels increases risk of first generation attack. Many producers traditionally plant certain fields first, e.g., fields close to the farmstead, well drained fields, etc. If these fields are expected to be ahead in their growth and development compared to neighboring corn the first week in June, then there is a greater likelihood of return on investment in Bt corn.

Predicting second, or even third generation populations and damage is impossible due to an extensive list of variables. Our advantage when dealing with second generation ECB is that we understand the pest's behavior enough to know that these later flights are attracted to actively pollinating corn – late-planted or late-maturing corn. For late-planted fields the investment in Bt corn may pay for itself.

Producers who grow Bt corn must implement a resistance management program, that is, plant a corn

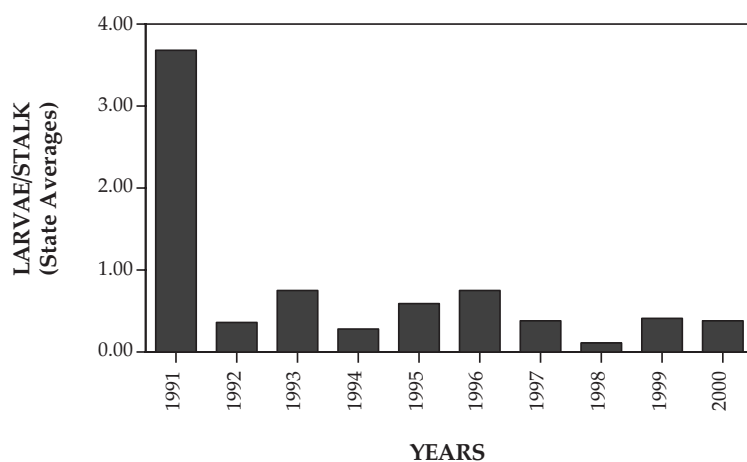
borer refuge of non-Bt corn. Refuges should be planted within a half mile of the Bt corn at approximately the same time and with a similar maturity corn. Academia, industry, and producer organizations support the EPA requirement of a 20% refuge for the 2001 growing season. Neighbors planting non-Bt corn cannot be considered as providing the refuge for another producer. Without these refuges, which preserve genetic diversity of the corn borer population, this technology will likely be short lived. More specific information on resistance management is available from seed company agronomists.

*The Economics of Bt Corn: Adoption Implications* (ID-219), is an in-depth look at this technology and analyzes the possible financial returns/losses with its use. It can be viewed on the web at <http://persephone.agcom.purdue.edu/~agcom/Pubs/agecon.htm#8>.

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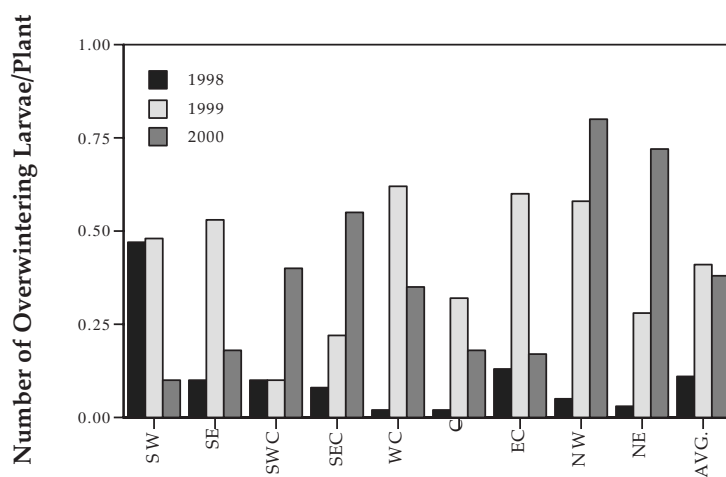
European Corn Borer Survey Results, Fall 2000 (Ron Blackwell)							
Region *	Borer Entries/ Tassel <sup>1,2</sup>	Borer Entries/ Above Ear Zone <sup>1,2</sup>	Borer Entries/ Ear Zone <sup>1,2</sup>	Borer Entries/ Below Ear Zone <sup>1,2</sup>	Borer Entries/ Ear Shank <sup>1,2</sup>	Total Borer Entries/ Plant <sup>1</sup>	Over- wintering Larvae/ Plant <sup>3</sup>
SW	0.00	0.20	0.15	0.18	0.06	0.58	0.10
SE	0.01	0.27	0.32	0.35	0.04	0.98	0.18
SWC	0.00	0.13	0.17	0.13	0.01	0.44	0.40
SEC	0.00	0.33	0.42	0.29	0.07	1.10	0.55
WC	0.00	0.38	0.75	0.23	0.24	1.61	0.35
C	0.00	0.14	0.45	0.34	0.11	1.04	0.18
EC	0.02	0.13	0.19	0.12	0.05	0.51	0.17
NW	0.00	0.63	1.04	0.58	0.43	2.68	0.80
NE	0.00	0.49	0.55	0.46	0.25	1.75	0.72
Avg.	0.00	0.30	0.45	0.30	0.14	1.19	0.38
<p>* Six fields were surveyed per region.</p> <p><sup>1</sup> Counts made on 20 plants/field.</p> <p><sup>2</sup> Plant zones are as follows: Tassel; Ear Zone, includes 2 nodes above and 2 nodes below primary ear; Above Ear Zone, includes all nodes between tassel and ear zone; Below Ear Zone, includes all nodes between ground and ear zone; Ear Shank, includes primary ear only.</p> <p><sup>3</sup> Numbers based on 10 plants dissected/field.</p>							

## INDIANA FALL CORN BORER SURVEY 1991 - 2000



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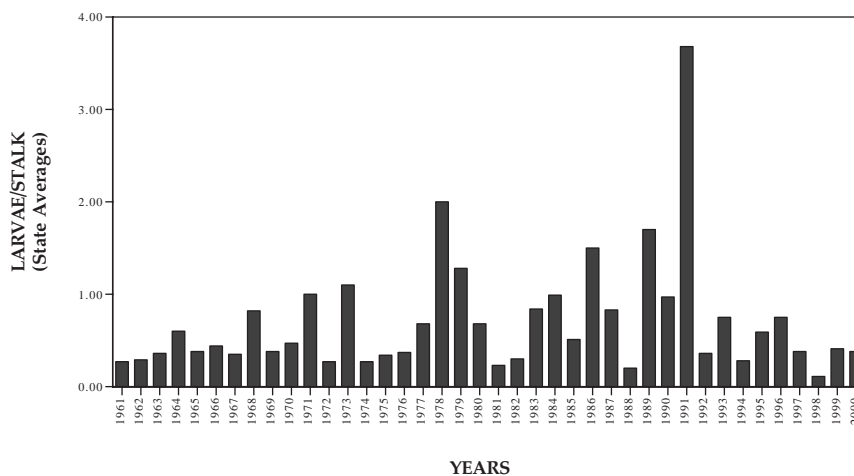
## 1998 - 2000 OVERWINTERING ECB LARVAE



State Regions

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## INDIANA FALL CORN BORER SURVEY 1961 - 2000



YEARS

**Pest Management and Crop Production Newsletter**

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The *Pest Management and Crop Production Newsletter* is produced by the Departments of Agronomy, Botany and Plant Pathology, and Entomology at Purdue University. The Newsletter is published monthly February, March, October, and November. Weekly publication begins the first week of April and continues through mid-September. If there are questions or problems, contact the Extension Entomology Office at (765) 494-8761.

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