New Decision-Making Tool to Estimate the Net Benefit of Bt Corn in Wisconsin

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Overview

- Explain new decision aid for Bt corn
- Farm specific net benefit (\$/ac)
- Farm specific break-even probability

- Bulletin with worksheet
- Excel spreadsheet

ECB Analysis Summary

- DATCP annual fall survey of 2nd generation ECB populations in corn fields
- Mitchell et al. (2002) to estimate distribution of stalk tunneling as function of ECB population distribution
- Hurley, Mitchell, and Rice (2004) to estimate distribution of % yield loss as function of stalk tunneling distribution
- Final Result: Distribution of % Yield Loss from ECB for each WI crop reporting district

WI Crop Reporting Districts BAYFIELD **DOUGLAS** IRON ASHLAND VILAS FLORENCE BURNETT SAWYER **ONEIDA PRICE** RUSK FOREST MARNETTE POLK BARRON LANGLADE LINCOLN TAYLOR 000 ST. CROIX **CHIPPEWA** DUNN **OCONTO** MARATHON MENO-PEPIN MINEE SHAWANO CLARK PIERCE EAU CLAIRE TREMPEALEAU **PORTAGE** WOODCN KEWAUNEE **BUFFALO** OUTA- E BROWN **JACKSON** CALU-MET WAUSHARA WINNE-BAGO ADAMS CROSSE MONROE MAR-FOND DU OUETTE'S SHE-BOYGAN LAC VERNON GREEN LAKE DODGE SAUK CRAMORD RICH-WASH-COLUMBIA **OZAUKEE** LAND INGTON **IOWA** DANE MILWAUKEE **GRANT** RACINE WAL-GREEN WORTH KENOSHA ROCK LAFAYETTE

Farm Specific Economics

Farmer uses Own

- Expected/Average Yield (bu/ac)
- Expected Price (\$/bu)
- Bt Corn Cost/Technology Fee (\$/bag)
- Planting Density (seeds/ac)

Decision Aid estimates

- Expected Net Benefit of Bt Corn (\$/ac)
- Break-Even Probability (%)

Expected (Average) Net Benefit

- Expected increase in net returns (\$/ac) if plant Bt corn
- Estimate of the average increase of net returns if planted Bt corn over many years
- E[NB] = price x yield x % yield saved– cost of Bt corn
- Depends on assumed price, yield, and cost

Break-Even Probability

- Net Returns to Bt corn are not certain because the actual yield loss prevented by Bt corn is not certain: ECB population and damage are unknown when you plant
- If the <u>average</u> net benefit is \$5/ac does not mean the <u>actual</u> net benefit will always be \$5/ac
- Break-Even Probability: Probability that the value of the yield saved by Bt corn will equal or exceed the extra cost of Bt corn

Go to Spreadsheet

http://www.aae.wisc.edu/mitchell/Economics%20of%20
Bt%20Corn%20in%20WI.xls

Where to get the Decision Aid

- My Extension web page
 www.aae.wisc.edu/mitchell/extension.htm
- Contact me: Paul D. Mitchell
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- I will mail you bulletin & spreadsheet
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