Corn With a Catch

Weigh the benefits and risks of GM crops using evidence.

BOT.4.5 "Explore the impacts (both positive and negative) of plant biotechnology/GMOs on human society. Present findings using digital media or technology and include evidence using graphs or charts."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two possible benefits, circle two limits or risks, and number the three percentage results in the table to connect claims with numerical evidence.

Should Farmers Plant Bt Corn?

1 A corn grower finds caterpillars feeding inside ears, where sprays may miss them. Some genetically modified, or GM, corn carries a gene from the bacterium *Bacillus thuringiensis* (Bt). The corn makes a protein toxic to certain insect pests. Farmers may lose less crop and apply less insecticide, but Bt corn does not control every pest.

2 How large might the benefits be? A 2014 analysis by Klümper and Qaim combined results from 147 studies of GM crops, including different crops and traits. The table reports average differences from comparable conventional crops. These findings suggest possible gains for farmers and consumers, but an average across studies cannot predict the harvest or costs on one farm.

AVERAGE DIFFERENCES FOR GM CROPS IN A 2014 ANALYSIS OF 147 STUDIES

Measure	GM crops compared with conventional crops
Chemical pesticide use	37% lower
Crop yield	22% higher
Farmer profits	68% higher

3 There are trade-offs. Bt seed may cost more, and insects can evolve resistance if farms rely on the same toxin repeatedly. Planting areas of non-Bt corn can help slow resistance. Decisions should also weigh local seed prices, pest pressure, and who can afford the investment. A study average is evidence for discussion, not a promise to every farmer.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which table result supports a claim that GM crops may reduce chemical pesticide use? State what the percentage compares.

2. A grower wants evidence about both production and income. Which two table results apply, and what does each measure?

3. How could repeated use of Bt corn reduce one of its benefits over time? Name a practice from the passage that could help.

4. A post claims, “Every Bt corn farm earns 68% more profit.” Give two reasons the evidence does not support that claim.

3 YOUR TURN

Your own words

Write the text for one digital presentation slide advising a farmers’ cooperative whether to consider Bt corn. Include a recommendation, two numbers from the table, one possible downside, one safeguard, a source label, and why the study averages cannot predict results on every farm.

Corn With a Catch

PART 1 · READ AND MARK

Underline two possible benefits, circle two limits or risks, and number the three percentage results in the table to connect claims with numerical evidence. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which table result supports a claim that GM crops may reduce chemical pesticide use? State what the percentage compares.	**Chemical pesticide use was 37% lower on average for GM crops than for comparable conventional crops in the analysis.**
2	A grower wants evidence about both production and income. Which two table results apply, and what does each measure?	**Crop yield was 22% higher on average, measuring production. Farmer profits were 68% higher on average, measuring income after costs.**
3	How could repeated use of Bt corn reduce one of its benefits over time? Name a practice from the passage that could help.	**Insect pests could evolve resistance to the Bt protein, reducing pest control. Planting areas of non-Bt corn can help slow resistance.**
4	A post claims, "Every Bt corn farm earns 68% more profit." Give two reasons the evidence does not support that claim.	**The 68% figure is an average, not a result for every farm. The analysis included different GM crops and traits, not only Bt corn.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Slide title: Consider Bt corn, with safeguards. A 2014 analysis by Klümper and Qaim of 147 GM-crop studies found 37% less chemical pesticide use and 22% higher yields on average than conventional crops. Bt corn could reduce damage from certain insects, but resistant insects may spread if it is used repeatedly. I recommend considering it alongside a non-Bt refuge and a check of local seed prices. These averages cover different crops and traits, so they cannot predict results on every farm.

Accept other evidence-based recommendations, including a decision not to adopt Bt corn, if students address both benefits and risks. Students should identify the table figures as averages across GM-crop studies rather than guaranteed Bt corn outcomes.