



## Agricultural Biotechnology Assignment II

1.) Travel to this site: <http://usbiotechreg.nbio.gov/index.asp>

This site describes the Federal Government's coordinated, risk-based system to ensure that new biotechnology products are:

\_\_\_\_\_

The searchable database on the site covers which crops?

\_\_\_\_\_

Spell out the agencies that are involved in this effort:

USDA-APHIS: -

\_\_\_\_\_

EPA:

\_\_\_\_\_

FDA:

\_\_\_\_\_

Travel to the database of this site which contains information on genetically engineered crop plants intended for food or feed that have completed all required reviews in the U.S. On the bottom of the database web page, click to view a table of "All Products." Pick three products from the database and fill in the chart below.

Common Name	Scientific Name	Trait Category	Applicant	Trait Description
				*

2.) Travel to this site: Library of Crop Technology Lesson Modules

[http://croptechnology.unl.edu/viewLesson.cgi?min=1&max=11&topic\\_order=1&LessonID=99487776](http://croptechnology.unl.edu/viewLesson.cgi?min=1&max=11&topic_order=1&LessonID=99487776)

This lesson discusses the origin and biology of the \_\_\_\_\_ (ECB)  
 \_\_\_\_\_ (genus), and another organism, \_\_\_\_\_ (*Bacillus thuringiensis*)  
 (Bt).

How did the European corn borer get to North America?

\_\_\_\_\_

What plant species are impacted by the corn borer?

What are the four main stages of the ECB?

The egg masses appear white when first laid, but as the eggs mature they will turn pale yellow and then translucent at the

Click on the life cycle animation.

The corn borer larvae are able to withstand low temperatures during the winter by producing

In the "History of *Bacillus thuringiensis*," describe the size of the bacteria. They are so small that approximately

The bacterium produces a toxic crystalline

. The insect must ingest the toxic protein produced by Bt in order for death to occur. Is the protein of certain strains of Bt specific in which organisms it will kill?

Watch the animation "How Bt affects ECB." The toxins bind to cells within the gut and cause . The crystalline toxins paralyze the digestive tract of the ECB larvae and cause them to stop eating. What are the letters used to label the toxins?

3.) When were the first Bt crystal proteins used as a biological insecticide? Where did this occur?

In the late 1980's, scientists were able to isolate and clone the coding for one of the Bt toxic to ECB. How many different Bt CRY genes were discussed on the web site?

4.) Is Bt the Best Option? The advantage of these biotechnology improved crops is that they now have resistance to ECB without

Write one of the questions listed as an ethical question.

List the example cited as a food safety issue.

What is the second food safety concern discussed?

(Remember that scientists now use other markers.)

Finally, questions have been brought up as to the impact Bt corn could have on the environment. Such as:

How Bt corn affects non-target insects such as

How Bt inserted into plants affects the

A third environmental concern is the development of

5.) Travel to the site below.

<http://www.cls.casa.colostate.edu/TransgenicCrops/hotmonarch.html>

Certainly, the monarch butterfly issue is complex. State a “pro” argument and a “con” argument to describe the use of Bt transgenic plants in relation to monarch butterflies described by a scientific study.

Pro: \_\_\_\_\_

Con: \_\_\_\_\_

6.) Now travel to this site:

<http://www.cls.casa.colostate.edu/TransgenicCrops/spray.html>

Write two opposing statements (both scientifically supported) that describe the complex controversy of using Bt transgenics.

Pro: \_\_\_\_\_

Con: \_\_\_\_\_

7.) Travel to the following site and explore!

<http://www.cls.casa.colostate.edu/TransgenicCrops/index.html>