Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Using Landsat to Monitor Cover Crops**

**Agriculture and the Eastern Shore of the Chesapeake Bay**

1. Explain the importance of agriculture to the Delmarva Eastern Shore of the Chesapeake Bay.

**Agricultural impacts on the Chesapeake Bay**

1. What is the problem (human impact)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the cause?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the effect? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What could be a potential issue that farmers could face (something that people could disagree about)?
5. Use the data from the graph and calculate the percent difference of nitrogen total and phosphorus total between Eastern shore and the rest of the Chesapeake Bay watershed (show your set up).
6. **Overall, do you think that the impacts of agriculture outweigh the benefits of agriculture? Argue your position using the text and the graphs.**

**Cover crops as a way to reduce nitrogen and phosphorus from agriculture**

Listen to the audio clip

1. Draw a diagram (flow chart) that explains how nitrate enters into the water.
2. What are the advantages of using cover crops? Why are farmers reluctant to plant cover crops?

**Using Landsat data to monitor cover crops: A case study of Greensboro watershed on the Chesapeake Bay’s**

1. The nitrate concentration has
2. Decreased
3. Increased
4. Not changed
5. Explain your choice
6. How certain are you about your claim based on your explanation?
7. Not certain
8. Somewhat certain
9. Very certain
10. Explain what influenced your certainty rating.

**Click on the maps below to analyze the changes in cover crop between 1987 and 2011**

1. Click on the map and record the Cover Crop area for each of the following years.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **1987** | **1992** | **2001** | **2002** | **2008** | **2011** |
| **Cover crop area (hectares)** |  |  |  |  |  |  |

1. Graph the years along the X axis and the cover crop area along the Y axis

Title\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Explain the changes in cover crop implementation between 1987 and 2011
2. The following graph shows the implementation of cover crops on the Eastern Shore of the Chesapeake Bay. Compare the cover crop implementation in Greensboro to the cover crop implementation on the Eastern Shore of the Chesapeake Bay



1. Based on the data that you analyzed do you think cover crops have helped reduce nitrate levels in the Greensboro watershed? Support your claim using the data that you analyzed.