

Cream of the Crop

Reflection Section Answer Guide

Introduction

State in your own words the questions the scientists were trying to answer with this research.

Students may have individual answers to this question. Generally, the scientists wanted to know the environmental impact of prairie strips, how prairie strips affect agricultural output, and whether prairie strips are a viable solution to environmental issues in the Midwest agricultural region.

The scientists knew their previous research showed the benefits of prairie strips. Why did scientists need to show that prairie strips were a practical solution? (Hint: Think about what you read in “Thinking About Science.”)

Students may have individual answers to this question. After reading the “Thinking About Science” section, students should be aware that not all solutions are viable. Scientists must weigh the scientific results with the likelihood that people can implement the solution. In this case, the scientists needed to show that prairie strips didn’t negatively impact agricultural output and farmers’ ability to make money.

Methods

The scientists tested 4 treatments, and each treatment was repeated 3 times. Why did the scientists test each treatment multiple times?

By using this experimental design, the scientists were able to identify patterns, averages, and anomalies in the research. If a treatment is tested multiple times and receives the same results, scientists can be more confident in the results. Additionally, repetition in experiments

guards against issues which might arise in one of the repeated treatments. Students may come up with additional answers for this question.

Have you ever taken a survey? Do you think surveys are a good way to get people’s opinions? Why or why not?

Students will have individual answers to this question. Surveys can take many forms, including formal and informal. A teacher asking students to raise their hands if they completed their homework is an informal survey, for example. Gathering opinions via surveys is scientific, making it accurate. However, there are ways they can be inaccurate. Students may discuss ways in which surveys are good or bad for gathering opinions.

Think of a recent survey of which you are aware. Describe that survey.

Students may have individual answers to this question. Ask students to describe the survey. Compare surveys, if possible. What makes them similar? What makes them different?

Findings

The scientists found little difference in benefits between the three prairie strip treatments. What does this tell you about how prairie strips should be arranged in agricultural areas?

Students may have individual answers to this question. After reading this section, students should know that the scientists did not see major differences between the treatment types. That means that prairie strips in any formation on an agricultural plot in the

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Reflection Section Answer Guide *continued*

sizes researched (i.e., 10%, 20%) would provide the valuable environmental benefits they were hoping to find. A good follow up question might be, how much prairie strip (in percentage of the agricultural plot) is needed to get these same environmental benefits?

Are you surprised that Iowa residents shared the priority of improving water quality? Why or why not?

Students may have individual answers to this question. In one sense, rural and non-rural Iowa residents may have different priorities for their state. However, water is important to all people no matter where they live. It's necessary for drinking, eating, agriculture, recreation, and many other reasons. With that in mind, it's not surprising that people from all over Iowa value water quality.

Review the various priorities listed in figure 14. Think about the place where you live. What is your top priority from that list? Why?

Students will have individual answers to this question. Remind students to provide reason and evidence for their top priority. Compare student answers to find commonalities and differences.

Discussion

The scientists recognize that farmers may need encouragement to adopt prairie strips as a solution. What would you tell a farmer to convince them to adopt prairie strips in their agricultural lands?

Students may have individual answers to this question. Students can cite various things they learned from the research, including that prairie strips don't negatively impact

agricultural output. Additionally, prairie strips provide many environmental benefits which are priorities noted by Iowans in the survey. Additionally, prairie strips are practical, as they are fairly easy and inexpensive to implement and maintain, especially compared to other techniques to improve the environment.

Do you think replacing crops with prairie plants is a good idea? Why or why not?

Students may have individual answers to this question. Encourage students to support their ideas and opinions with evidence. After reading this research, student should be aware of the many benefits of prairie strips in agriculture. There are other ways to get the environmental benefits provided by prairie strips. Encourage students to compare and contrast those practices with prairie strips.