GROWING AMERICA

Improving crop yield

Focus questions	How might we make accurate predictions to improve crop yield? What information helps us best prepare for and see an improved crop yield?
Vocabulary	Nutrients, ammonia, potash, yield, central pivot irrigation

Procedure

1. Looking at "Grain Harvest 2019: Corn", what are some things your group notices about the circle? List at least three observations.

2. Make a guess as to what may have caused these conditions.

3. What are some areas within this crop circle that your group feels might need extra nutrients?

4. Looking at the image of the "Fertilizing Prescription (Dry) 2020: Ammonia (NH_3)" application to the field, why was it not applied evenly everywhere?

5. Using the "Grain Harvest 2019: Corn" and the "Fertilizing Prescription (Dry) 2020: Ammonia (NH_3)" images, what does your group think happened that required more ammonia to be applied where it was?

6. Looking at the image of the "Fertilizing Prescription (Dry) 2020: Potash (0-0-60)" application to the field, why was it not applied evenly everywhere?

7. With your group, list some reasons why potash might not be applied more towards the edges of the field.

8. With your group, predict what the “Grain Harvest 2020: Corn” image will look like.

Take a few minutes to compare the application images and the harvest images.

9. Where on the “Grain Harvest 2020: Corn” image do you see the most change?

10. What are some variables that will affect the “Grain Harvest 2020: Corn” image even after the farmer has applied the nutrients as needed?

11. Looking at the image of “Grain Harvest 2020: Corn”, list some practical suggestions for the farmer to try to increase crop yield.

12. Farmers claim that the 4Rs of fertilizer are important for fertilizer application: *right rate, right time, right source* and *right place.* Explain why each term is important.

After completing the questions above with your group:

13. Construct an explanation of the impact of added fertilizer in this case including evidence and reasoning.

14. Address how a farm field is different from a natural ecosystem in terms of dynamics, function, and resilience.

Rubric for self-assessment

Skill	Yes	No	Unsure
I am able to read and interpret soil test data.			
I used the data from nutrient applications to make a prediction about harvest 2020.			
I understand that adding nutrients (fertilizer) is not all that a farmer is concerned about when growing a crop.			
I constructed an explanation of the impact of added fertilizer in this case with evidence and reasoning			
I described the difference between a farm field and a natural ecosystem (re: dynamics, function and resilience).			