

Agricultural Cyberbiosecurity

Where's the bacon?

About this activity

This activity is an introduction to some ways that our agricultural systems might be harmed when things go wrong. Your job is to use your critical thinking skills and the information provided to you to figure out what might have happened to make all the bacon disappear from the grocery store!

SOLs and CTE competencies

- CS 6.6: identify physical and digital security measures used to protect electronic information.
- CS 7.7: identify existing cybersecurity concerns associated with Internet use and Internet-based systems and potential options to address these issues.
- CS 8.6: evaluate physical and digital security measures used to protect electronic information.
- CS 8.7 identify impacts of hacking, ransomware, scams, fake vulnerability scans, and the ethical and legal concerns involved.
- Ag 8004: Explore the food industry as it relates to agriculture, agriscience, and agribusiness.
- CTE Prof Comp: Demonstrate an understanding of information security. Includes: describing cybersecurity (e.g., risks, threats, vulnerabilities).
- Sci 6.9: investigate and understand that humans impact the environment and that individuals can influence public policy decisions related to energy and the environment.

Learning

objectives:

1. Define cyberbiosecurity.
2. Describe interconnections between components of agricultural systems.
3. Identify roles that people play in cyberbiosecurity concerns affecting agricultural systems.

You will need:

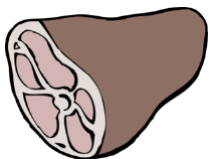
1. This activity guide
2. Pencil or pen

Vocabulary:


1. **Cyberbiosecurity:** Efforts to identify and minimize the weak spots between biosecurity, cybersecurity, and cyber-physical security to help safeguard our data and our systems.
2. **Cybersecurity:** Protection of computer systems and networks from the theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide.
3. **Biosecurity:** Procedures intended to prevent the introduction and/or spread of harmful organisms in order to minimize the risk of transmission of infectious diseases to people, animals, plants, and the environment caused by viruses, bacteria, or other microorganisms.
4. **Cyber-Physical Security:** Protection of physical and engineered systems whose operations are monitored, controlled, coordinated, and integrated by a computing core. Examples of cyber-physical systems include modern automobiles and medical devices.
5. **Agricultural system:** A set of interacting and interdependent components that work together to achieve the overall purpose of producing crops and raising livestock to produce food, fiber, and energy.



Attention agricultural cyberbiosecurity agents! You have been assigned to an ongoing case that requires your expert problem-solving skills and your ability to draw connections between agricultural, biological, and cyber systems. Understand that this case is full of twists and turns. Things may not appear as they seem. Proceed with caution and rely on your logic and wit to solve the case!



The other day I was in my local grocery store deciding what I wanted to have for dinner, strolling down the aisles, I started noticing that shelves were missing some items. Since I have been in the store before and seen this occurrence I wasn't too concerned. So, I decided that I wanted to have pork chops, applesauce, mashed potatoes, gravy and corn, and homemade rolls. I found all the items except for the pork chops. There wasn't one pork chop to be found. So, I decided I could fry up some ham instead. I looked for some of the ham that you just had to warm up you know? The kind that was already cooked? I looked and looked and NOT one ham. Not even the kind you have to cook. Now I am frustrated!! What's up? I got into my car and drove to another grocery store and found the same situation. Not one pork product was available in that store!



As a group, you will use the information on the cards (# 1-4) to determine different options for what might be going on. Record your options.



STEP 1

Idea 1:

Idea 2:

Idea 3:

Idea 4:



STEP 2

As a group, use the information provided on the new cards (#5-9) to add additional information to the options for what might be going on. Based on the new information, eliminate any options listed in step 1 that you no longer think are the cause.



STEP 3

As a group, look at the information you have and determine your top choice for the part of the system that is most likely causing the problem.

Record your choice here:

Why did you pick that one?



STEP

4

In this step, you will be provided additional information about the part of the system most likely responsible for the problem. Your job is to determine the root cause of the problem. Based on this new information you should develop a defense for your idea about what happened at the plant.

Conclusion

Based on your group's evaluation of the evidence, answer the following questions.

What was the cause of the problem?

How did you make this decision?

Who is impacted by this problem?

How do we fix it?

What questions do you still have?



Questions

Share

What are the components of an agricultural system?

Generalize

How does thinking about agriculture as a system help us identify potential problems and solutions?

Apply

What ideas do you have for reducing cyberbiosecurity risks in agricultural systems?

Learn more

To learn more about cyberbiosecurity concepts in this activity, you can read the Fact Sheets in the Cyberbiosecurity Education Resource Collection at <https://doi.org/10.21061/cyberbiosecurity>

These topics are a good place to start to build on what you learned in this activity:

- Cyberbiosecurity
- Biosecurity

Acknowledgments

Authors

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This definition of OER is provided by [The William and Flora Hewlett Foundation](#).

How to access these templates

The main landing page for these resources is <https://doi.org/10.21061/cyberbiosecurity>.

This page includes a downloadable and editable Word document for the:

- Student fact sheet
- Student activity sheet
- Faculty guide

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