

4-H Hands-on Science

Inquiry Card

Mind Your Manure

Type of Inquiry:

Technological Problem Solving

Process Skills:

Observing, modelling, selecting, measuring, gathering data, recording, constructing, inventing, comparing, contrasting, evaluating and reflecting.



The Scenario:

Manure can be an extremely good source of nutrients for the soil when it's properly composted. It can also be very damaging to the groundwater when it's not properly stored and seeps into the ground. Young scientists will be challenged to find a way to properly store manure until it's composted and ready to be used in the fields.

Open-Ended Inquiry Questions:

- How can I design my container to prevent seeping into the ground while providing enough aeration for proper decomposition?
- What material would be cost effective and environmentally friendly?
- What other factors can improve the composting of manure?

Instructions:

1. Describe the challenge to the young scientists.
2. Give them time to do research (on the Internet, in books, in textbooks) about the danger of manure finding its way into groundwater and the best ways to compost manure.
3. Explain the criteria that will be used to assess their container:
 - efficiency at preventing seeping into the ground
 - improving the composting of manure
 - material used is cost efficient and environmentally friendly.
4. After they have designed their container, they should build a small scale model and test the decomposition of manure in it.

Scientific Principles:

Manure contains harmful bacteria that, when they find their way into groundwater and streams, can become toxic to humans. Composting of manure is essential. In order to maximize decomposition, the manure should be properly aerated and mixed regularly. It should be moist, but not too wet.



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