

2015 Environmental Natural Resources Waste Management Practicum

Scenario 1

Farmer Smith operates a 500 cow dairy. The lagoon he uses for waste storage and treatment was originally sized for 400 cows. Due to the volume of waste entering the lagoon, limited crop acres to apply the waste on and limited application windows due to crop rotations, he is not able to properly manage the waste levels in the lagoon. The lagoon is overtopping and the waste is entering a nearby stream.

1. Choose the correct statement. (More than one may apply.)

- A. Nitrogen and phosphorous contained in the waste entering the stream can cause fish kills.
- B. The nitrogen and phosphorous from the waste entering the stream provides beneficial nutrients which enhances the stream ecosystem.
- C. The high concentration of E. Coli bacterium found in the waste increases water quality in the stream.
- D. There are no environmental threats.

2. What are feasible options that Farmer Smith can implement to help him better manage waste generated by his operation? (More than one answer may apply.)

- A. Convert from a waste treatment lagoon to a compost bedded pack barn to decrease the volume of liquid waste needing treatment.
- B. Decrease the dairy herd size to 400 cows.
- C. Use a solid separator to separate solid waste from the liquid waste. Store the solid waste in the lagoon and pipe the liquid waste to the stream. This will increase storage capacity in the lagoon making it easier to manage.
- D. Pipe the waste into the local municipal waste water treatment system instead of the lagoon.

3. Farmer Smith was able to lease additional cropland 3 miles from his operation. This gives him exactly enough land to apply all the waste generated in a year. What would be a benefit of securing additional cropland for waste application? (More than one answer may apply.)

- A. It allows Farmer Smith to manage his lagoon levels better.
- B. The cost of waste application would increase due to the fuel required to haul waste 3 miles.
- C. It allows Farmer Smith to increase his herd size without having to worry about future waste management issues.
- D. Farmer Smith can use 5 acres of cropland he currently is using for waste application to construct a 4 house poultry operation without having to worry about future waste management issues.

Scenario 2

A dairy producer utilizes straight pipes to convey milk bulk tank wash water and milking room wash water from the milk house. Runoff enters a ditch which flows to a stream.

4. Choose the correct statement. (More than one may apply.)

- A. The current management does not harm the environment in any way.
- B. The milk bulk tank wash water increases biodiversity in the stream ecosystem.
- C. The milking room wash water could be piped into a trough to provide an additional viable watering source for the cows.
- D. The current management causes water quality degradation.

Scenario 3

A producer is applying poultry manure on cropland which contains an open-throated sinkhole.

5. Choose the correct statement. (More than one may apply.)

- A. Nitrogen and phosphorous from the manure can be conveyed through the sinkhole into the groundwater causing water quality degradation.
- B. The current management does not harm the environment in any way.
- C. By not applying manure directly into the sinkhole, the producer is implementing all necessary best management practices to prevent water quality degradation.
- D. Applying poultry litter prior to a heavy rain is recommended to allow the waste to be incorporated into the soil and prevent runoff of waste into the sinkhole.

Scenario 4

A producer is currently managing his mortality by composting them in an area just uphill from a creek. The local Conservation District representative recommends the producer construct a roofed animal mortality facility at an alternative site away from the creek.

6. What are the deterrents to this recommended alternative? (More than one answer may apply.)

- A. The operation may require more management and may incur more maintenance costs.
- B. The compost will remain dry in the structure and therefore will be easier to manage when handling and spreading on cropland as fertilizer.
- C. The producer will incur a financial cost to construct the facility.
- D. Water quality will be improved.

Scenario 5

Silage leachate is flowing across a highly permeable soil type before entering a stream.

7. Choose the correct statement. (More than one may apply.)

- A. Since silage leachate is about 95% water, there is no environmental groundwater concern.
- B. Due to its high biochemical oxygen demand (BOD), the silage leachate may cause significant water quality degradation.
- C. Silage leachate would be prevented if the silage was left uncovered to dry in the sun.
- D. Low-flow, concentrated silage leachate can be collected in a tank to prevent water quality degradation.

Scenario 6

A beef cattle operator is using a paddock containing a well for his winter sacrifice area.

8. Choose the correct statement. (More than one may apply.)

- A. Since the well has a concrete cover on it, there is no environmental concern.
- B. Since the well is no longer in use, there is no environmental concern.
- C. Reestablishing vegetation in the paddock would eliminate any environmental concern.
- D. A change in livestock management by the producer could be beneficial to the environment.

Answer Key

1. A
2. A, B
3. A
4. D
5. A
6. A, C
7. B, D
8. D