**Assessment for Module 7: Integration of AD and farming**

***Instructions:***

1. *Watch the video for each topic.*
2. *Answer the questions for that topic. You are welcome to type your answers to this Word document.*
3. *Some questions will refer to links provided with this module’s web page.*
4. *Email the completed document to jrichmond@vtc.edu.*

**7.1: On-farm vs. partnering with AD**

1. What is meant by “stacking multiple benefits”?

2. Now that you’ve spent some time working at VTCAD, which of the caveats and advice resonate most strongly with what you’ve observed?

3. I would argue that VTCAD stands for ‘Vermont Tech *Community* Anaerobic Digester’. In what ways is the digester’s relationship with the farms more like a farm-AD partnership than a stand-alone on-farm digester?

**7.2: Manure only or co-digestion**

4. What are the advantages of a manure-only on-farm AD system?

5. In what ways is co-digestion more complicated than manure-only AD?

**7.3: Production of AD feedstock**

6. Is food processing waste ever considered to be an on-farm feedstock material? If so, under what conditions?

7. Spoiled dairy feed, haylage or silage can be a valuable anaerobic digester feedstock. What are its potential drawbacks?

8. Would you recommend storing energy crops for anaerobic digestion by chopping and ensiling them, or as round bales? Why?

9. Is there a disadvantage to feeding brush-hogged forage to digesters (or using it as any sort of biofuel) if the brush-hogged field is not fertilized?

**7.4: Clean collection of feedstock**

10. List the likely contaminants of manure if it is not collected with great care.

11. What two types of problems will manure contaminants cause?

12. Describe two common methods of collecting off-farm feedstock material like food waste.

**7.5: On-farm use of co-products**

13. List AD co-products in order of likely value to farmers.

14. Anaerobic digestion vastly reduces the level of pathogens in separated solids, but post-separation microbial contamination is quite common. Explain how this could happen?

15. Which is more critical for controlling mastitis, type of bedding or management of bedding?

16. Why are Vermont regulators concerned about moving AD solids between farms if beef has been used as a co-digestion feedstock.

17. Vermont has a great need for renewably produced heat. What are the challenges of using heat from AD gensets?

**7.6: Effects of AD on nutrient management**

18. Why does AD reduce the level of carbon in effluent?

19. Why is it more hazardous to apply AD effluent incorrectly than to apply manure incorrectly when fertilizing fields?

20. Why should AD effluent be injected into soil rather than spread by broadcasting from the top of a manure tanker?

**7.7: Transportation & storage issues**

21. List three reasons that co-digestion increases the need for storage more than digestion of manure only.

22. Why should separated solids be stored under cover rather than field stacked?

23. Who has responsibility for the increased transportation needed for co-digestion?

**7.8: Opportunities for synergy**

24. Synergy cannot be achieved unless farmers know their own farming practices very well. Which of the factors listed do you think is most critical or most likely to be overlooked?