Farmer interview guide for SARE 2021 Bioacidification

Intro Material: [Included informed consent document]

Thank you for participating in this project concerning the use of whey or paper fibers to help retain nitrogen in manures. Your responses will be kept confidential (that is, your names will not be associated with your responses without your consent). First I want to provide a little background information.

Bio-acidification, or fermentation, via the addition of carbon, can reduce ammonia losses and methane emissions, and retain nitrogen in manures, by reducing pH. This has the advantage of reducing the need to handle dangerous concentrated acids such as sulfuric or nitric acid which are sometimes used for the same purpose. In our current project, we are testing three different carbon sources - sweet and acid whey and paper fibers (pulp sludge) - on liquid dairy manure, digestate, and pasteurized human urine and determining appropriate recipes to reduce ammonia losses with the least amount of additive needed. We are also testing an additional biostimulant culture. We will be conducting two in-depth site visits to determine feasibility of this approach.

The goal of these interviews is to better understand farmer perspectives on the challenges you face with regard to nitrogen (and other nutrient) management and the interest you have in various approaches to increase nutrient retention of manures. We will be talking to farmers at 10 – 15 farms in New England and New York state, including farms of different sizes, crops and management types to document your current nutrient management practices; your thoughts, concerns and recommendations about our approach; and the types of indicators of soil health that are important to you. I have a number of questions here, but I am most interested in having a conversation with you about this, so if you have other things you want to discuss that I'm not asking, feel free to jump in!

Background Questions: [Eliminate if previously interviewed]

1. I'd like to begin by learning about your farm. Can you please tell me a little bit about your farming operation?

    a. How long have you been farming? Farming here? What is the history of past ownership/management here?
    b. How many acres do you have? How many do you have in production (crops, pasture, woodlot, sugarbush)?

c. What livestock do you have? (how many head of each?)
d. What crops and/or forage do you grow?

2. Tell me more about how you would describe your operation.

    a. Would you consider yourself a conventional farmer? Organic? Transitioning? Or something else?
    b. Can you say a little more about your overall farming goals or objectives?

3. We'll talk about this in more detail in a minute, but as you think about the idea of using paper fibers for bioacidification, what are your initial reactions?
    a. Are there any benefits to it you can think of?
    b. What disadvantages or concerns might there be?

4. Similarly, when you think of using whey for bioacidification, what are your initial thoughts?
    a. Are there any benefits to it you can think of?
    b. What disadvantages or concerns might there be?

Current Nutrient Management and Soil Health Practices:
Now I'd like to discuss a little more broadly, your current nutrient management and soil health practices.

5. Please tell me about your current nutrient management practices. What types of fertilizers and/or amendments do you currently use on your farm? For:
    a. Vegetable crops
    b. Forage crops
    c. Tree crops
    d. Pasture
    e. Other? Non-edible crops – flowers?

6. Tell me about your manure management system. How do you store your manure?
    a. What is the volume of your storage tank or lagoon?
    b. How long is the manure stored?
    c. Do you agitate the stored manure at any point? If so, how and when?
    d. Is there a way that whey or paper fibers could be mixed into the manure in the manure storage tank/lagoon?

7. Tell me about your manure application system.
    a. When do you apply?

b. What equipment do you use for application?

8. How do you determine your fertility and soil health needs? (Ex: soil tests? If so, how often, and what lab do you use?)

9. What are the most important indicators of soil health in your view? (Ex: plant health and yield; fertility; SOM; texture/tilth; microbial activity; other)

Prompt: Tell me more about why that/those are important to you?

Prompt: For microbial activity - are there specific changes in microbial composition that would indicate improved soil health, in your view?

10. What would you say are the main factors that influence your decision to use these fertilizers and amendments?

Prompts: Cost? Source? Effects on soil? Organic certification? Other?

11. Tell me about the main benefits you've experienced with these fertilizers/amendments

12. Tell me about any problems you've experienced in using these fertilizers/amendments? With regard to manure in particular, what challenges have you experienced with nitrogen loss?

a) How have you tried to address these challenges?

13. Do you use cover crops or green manures?

a) Which ones?

b) How many acres per year would you say you cultivate with cover crops?

c) Can you say a little more about the costs/benefits of using cover crops?

14. Are you currently enrolled in a nutrient management plan?

Potential Use of Bioacidification

15. Beyond what we've addressed so far, are there any other benefits you can foresee using bioacidification on your farm?

a). Do you have any familiarity or experience with using biostimulants?

b) What are your thoughts about their value?

16. What questions or concerns would you have about using the bioacidification methods we've talked about?

17. What information would be helpful for you to consider using bioacidification as a method of nitrogen retention? (Ex: information about costs, source of the additive, volume needed, effects on plant health, other?)

18. Is there other data or research results you would want to see?

19. What support would you need regarding the use of these amendments?
Prompts: (technical info, educational materials, appropriate application equipment)

20. Does your overall farming philosophy or strategy affect your thinking about this? If so, how?

21. Overall, what would it take for you to consider adopting this practice?

22. [For certified organic farmers] Are there any aspects of using bioacidification that would come under the purview of the USDA National Organic Program?
[If yes]: What issues do you believe could arise? How could these best be addressed? [If no]: Explain why not.

23. Where do you get most of your information and advice about soil and nutrient management?

a) What do you think they [the source of information] would think about the use of whey or paper fibers for bioacidification?
b) What do you think they [the source of information] would need to know to better be able to advise farmers on this practice?
c) Are you part of any farming organization? What information do you think it would be helpful for them to have about this practice?

24. What do you think your customers would think about the use of whey or paper for bioacidification?

a. [If negative] What do you think would be the best way to address these concerns?

25. All of this information is optional, but for our research statistics, it would be helpful to know your:

a) age,
b) gender identity,
c) racial and/or ethnic identity
d) educational level, and
e) education/specialized training