

SARE 22 Partnership Buyer Interview Guide

First: Go over informed consent procedure.

Introduction: Some researchers, farmers and homeowners are currently diverting human urine from the waste stream and making it available as a fertilizer. Urine diversion refers to separating urine from solid waste at the source, so that the urine can be dealt with as a unique product. This practice has the potential to prevent the nutrients in urine from entering waterways, secure an abundant source of nutrients for agriculture, and conserve water that would otherwise be flushed. I have a list of questions to guide our conversation, but if there are things you would like to talk about that don't seem to be coming up, please feel free to jump in with those thoughts! Thank-you!

1. First, could you describe your role here at _____, and the types of produce or other agricultural products you might buy?

2. There are multiple ways of implementing the process of urine diversion. For instance, at Rich Earth, urine is collected at a depot in the town, and then sanitized using a pasteurization process. Some people are considering [or currently] using sanitized human urine as a fertilizer. I'd like to begin by asking you to share your initial reaction to this idea?

- a. [PROBE] explain if needed - sanitized urine [for example, it can be pasteurized at 80 degrees Celsius (176 F) for 1.2 minutes or 70 Celsius (158 F) for 30 minutes OR storage with high ammonia levels for 30 days]

2. In exploring an idea like this, it can be useful to share some background information. As you may know, urine contains nitrogen, phosphorus, and potassium and these are the essential nutrients found in commercial fertilizers that stimulate plant growth. Is this information new to you, or is this something you're already familiar with? How much, if anything, have you heard about this idea before today?

- a. [PROBE] Are you familiar with other fertilizers and amendments that farmers normally use? [Ex. commercial fertilizers, manures, etc]
- b.

3. Now I'd like to ask you how comfortable you would be personally (i.e. not in your role as buyer) with the idea of fertilizing crops with urine. For example, with:

- a. [PROBE] ...non-edible crops, such as flowers?
- b. [PROBE] ...crops for food that you eat?
- c. [PROBE] ...annual vs. perennial crops (like fruit trees)?
- d. [PROBE] ...thinking more about this, are there some crops that you would be comfortable eating if they were fertilized in this way but others that you would not be? (For example, leafy crops like lettuce versus crops where you eat the fruit like tomatoes or peppers?)

[PROBE IF NEC.]: Tell me more about the situations in which you are comfortable with the idea of using a sanitized urine or a urine-derived fertilizer (UDF) and those where the idea is more difficult for you to accept - ex. pasture or forage/feed for animals

4. Now thinking about buying crops fertilized with urine, I'd like to ask a similar question. Would you consider buying:

- a. [PROBE] ...non-edible crops, such as flowers?
- b. [PROBE] ...crops for foods that people eat?
- c. [PROBE] ...annual vs. perennial crops (like fruit trees)?
- d. [PROBE] ...thinking more about this, are there some crops that you would be comfortable buying if they were fertilized in this way but others that you would not be? (For example, leafy crops like lettuce versus crops where you eat the fruit like tomatoes or peppers?)

[PROBE IF NEC.]: Tell me more about the situations in which you are comfortable with the idea of buying crops grown with urine-derived fertilizer (UDF) and those where the idea is more difficult for you to accept - ex. pasture or forage/feed for animals

5. Do you know people who are already using urine as a fertilizer? (Or doing it yourself?) If so, say more about your thoughts about that....

6. We are interested in learning more about how you choose the crops that you buy for _____. What are some of your current criteria for choosing food – what do you look at or think about when you are making these choices?

- a. [PROBE] ...nutritional value
- b. [PROBE] ...where products are grown (local or not)?

- c. [PROBE] ...organic?
- d. [PROBE] ...or other forms of certification/labeling? (e.g. Certifications: Non-GMO Project, Rainforest Alliance, Fair Trade Certified, Certified Humane, Labels: All Natural, Made with Natural Ingredients)
- e. [PROBE] ...do you think at all about how crops are fertilized when you make crop purchases? [Are you aware that cow manure is often used as an amendment?]
- f. [PROBE]: Are there other factors that influence your choices?

7. Given what you know about this so far, do you have any positive feelings about this potential? If so, what are they?

8. Negative feelings or concerns? If so, what are they?

9. What, if any, other information would you need in order to consider buying agricultural products for _____ that had been fertilized with urine?

10. Would you personally buy or consume agricultural products which have been fertilized with urine or a urine-derived product? (Why/Why not?)

- a. [PROBE]: How would you feel about serving your friends and family foods grown with urine or a UDF? [Note, tease out whether people feel differently about urine alone or a UDF – i.e. further processing]
- b. [PROBE]: Have you eaten food you have grown and fertilized with your urine? (Tell me more about that...)
- c. [PROBE]: How might you feel about eating food fertilized with other people's urine or a UDF?

11. Most produce is not labeled specifically with the type of fertilizers used (whether manure, biosolids from wastewater treatment plants, blood meal, etc.). What (if any) kind of information do you think should be shared about the produce grown using nutrients derived from human urine?

- a. [PROBE]: Where should that information be shared?
 - i. Label on the produce itself? If so, what should the label convey?
 - ii. On the food distributor's website or newsletter?
 - iii. Other:

12. We have used the terms "sanitized urine" and "urine-derived fertilizer" or "UDF." This practice is also sometimes referred to as "urine-diversion", "urine recycling" or "pee-cycling". In your opinion, what would be the best terminology to use to describe this process to someone for the first time? Why do you say that?

13. In our introduction today, I briefly mentioned that this practice has the potential to prevent pollution, secure an abundant source of nutrients for agricultural inputs, and conserve water. Do any of these possible benefits carry more or less weight for you in thinking about urine diversion and its use in agriculture?

- a. [PROBE] ... Are there other potential consequences of the practice that might influence your thinking?

14. What additional factors might affect your thinking about the use of urine as fertilizer?

- a. [PROBE] Some people have raised concerns about pharmaceuticals or other contaminants, such as PFAS (explain if needed). Would this be a concern for you?

15. How do you think customers of the crops you purchase would react to the idea of using urine as fertilizer on food crops?

16. What questions do you have that need to be answered before you would be comfortable with the idea of using urine to fertilize food crops?

17. Now that we've discussed all this, let's take a quiet moment just to reflect on what we've talked about... [pause at least 30 seconds] Do you have any other questions, concerns, or suggestions about this?