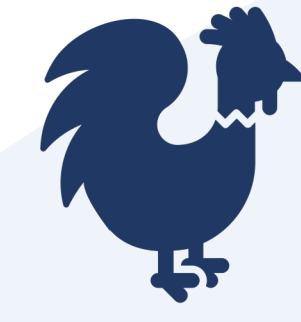


## Introduction

- Efficient utilization of nutrient-rich poultry litter (manure) is challenging due to issues associated with its distribution.
- The poultry industry has various moving parts, where multiple groups constantly interact with one another; the poultry growers, manure brokers, and crop growers
- The objective of this study is to understand the individuals who raise poultry, how many flocks per year, how often they clean out the litter from the houses, and where it goes afterward.
- Litter is high in Phosphorus and in historically poultry producing areas the soils is rich with P, when excessive poultry litter is applied it increases the chance of runoff which could negatively impact local water quality



## Methods

- Designing a survey for Delmarva poultry growers to learn more about the supply of litter in the region; pretesting with small groups, and getting feedback from people and organizations within the poultry industry
- Preparing documents for IRB approval
- Compiled a complete contact list of poultry growers around Delmarva

## Expected Results

- We expect that approximately 20% of poultry growers will complete the survey
- From this data, we plan to analyze how much litter is removed from each house, how often, and where it goes after it is removed



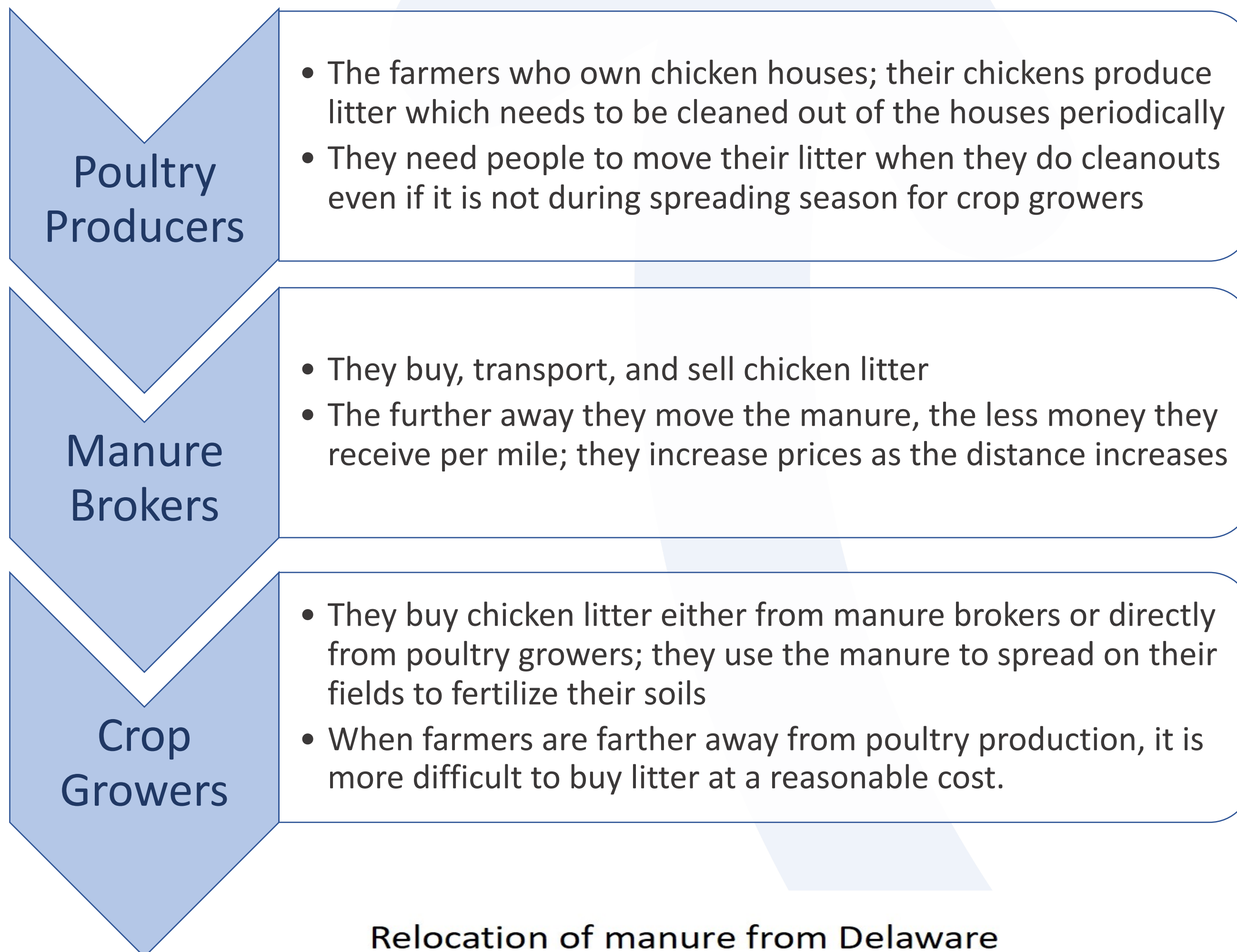
Figure 4: Photo of the inside of a chicken house (Source: Delmarva Poultry Industry)



Figure 5: Outside of a chicken house (Source: Delmarva Poultry Industry)



Figure 6: Storage of poultry litter (Source: Delmarva Poultry Industry)



## Example Survey Questions

- By understanding the relationship between how often a farmer uses litter management practices and how many flocks they have per year, we can calculate the average amount of litter produced

### Current litter management practices frequencies

	How often do you conduct this practice?	Approximately how much manure is removed per house for this practice?
Partial clean-out	<input type="text"/>	<input type="text"/>
Windrow	<input type="text"/>	<input type="text"/>
Pulverize	<input type="text"/>	<input type="text"/>

Considering only partial clean-outs, how much poultry litter do you remove from all of your houses over an entire year, on average?

Note: Do not include total clean outs in this calculation.

Tons per year

Figure 2: Sample question from survey showing frequencies of litter management practices

Please answer the following questions about litter that is transported off of your farm by you or someone you work with (not a broker): (Total must sum to 100)

What % of the removed litter is transported to another location in your county?	<input type="text"/>
What % of the removed litter is transported to another county within your state?	<input type="text"/>
What % of the removed litter is transported to another state?	<input type="text"/>
What % are you unsure about where it goes?	<input type="text"/>
<b>Total</b>	<input type="text"/>

Figure 3: Sample question from survey; this is an important questions as it shows where the poultry litter is being transported to

## Next Steps

- A survey for crop growers is also being implemented to learn about the demand for poultry litter as a nutrient source. The survey is being distributed by the National Agricultural Statistics Service (NASS)
- Analysis of data from both surveys will begin in June 2020.
- Results of these surveys will inform the development of a market platform to connect the people who have litter to the people who want it.

## References and Acknowledgements

- Bass, D.A., Palm-Forster, L.H, Shober, A.L, "Mapping the movement of poultry litter produced on the Delmarva Peninsula", DENIN Research Symposium, Newark, DE, May 2018
- Delmarva Poultry Industry, Inc., "All About Delmarva's Chicken Industry"
- Stephen Wemple and Laura Taylor for pretesting the initial survey countless times.

## Relocation of manure from Delaware

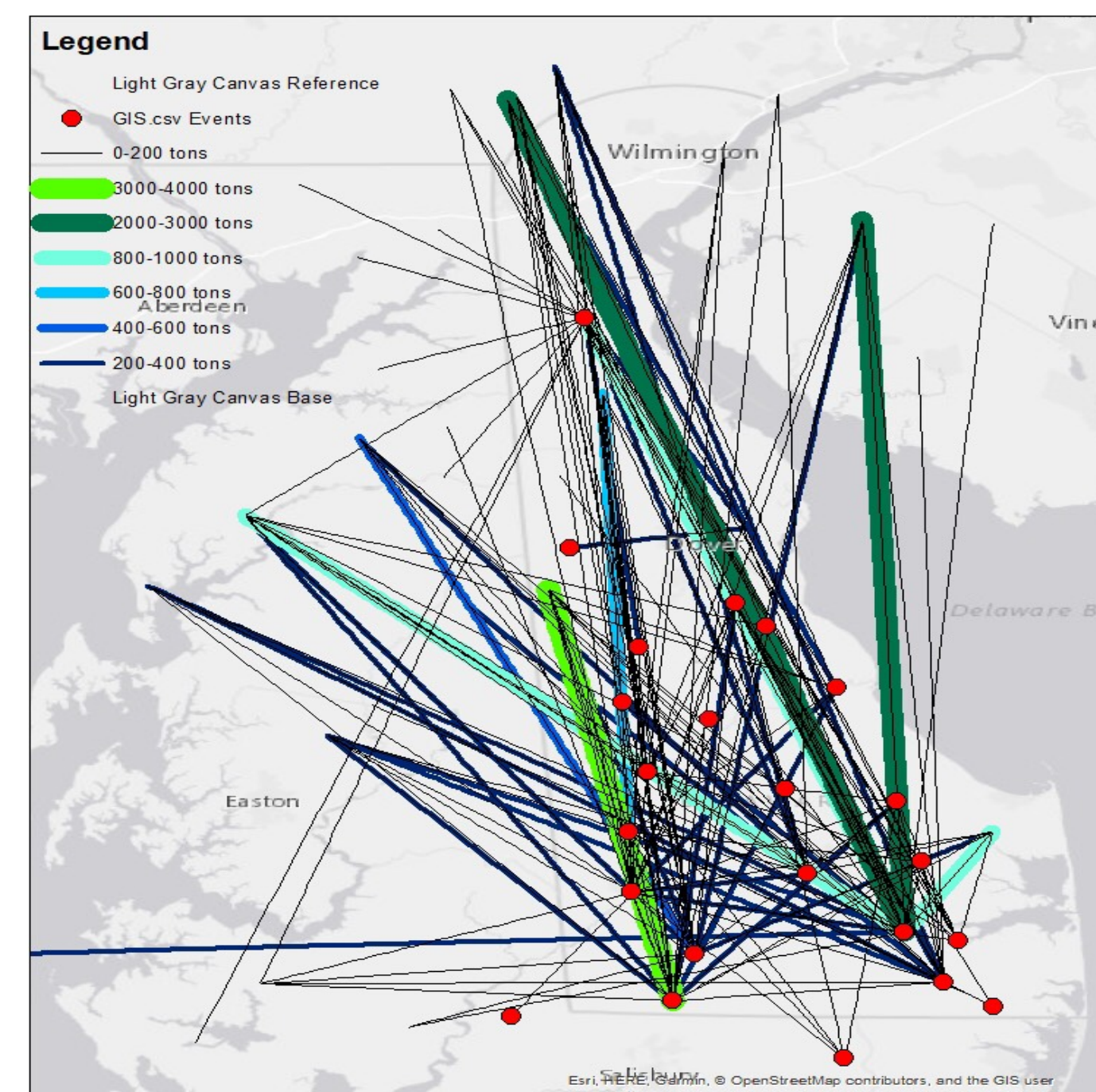


Figure 1: Depiction of the movement of poultry litter in the region (Source: Bass et al., 2018)