*Manure*

Our analysis considers manure generated at dairy, beef and pig operations. Resource quantities were estimated in FY2016 (Milbrandt et al. 2017). Since these operations are required to manage animal waste, the cost of manure as a feedstock can be seen as an avoided cost. Most manure is applied as a fertilizer on cropland, so from that perspective the value (or price farmers would sell for) is directly tied to the value as a crop nutrient and thus is tied to the local/regional fertilizer prices.

Dairy manure: A study by the Iowa State University estimated the cost of dairy manure at about $120 per cow per year (Bentley and Tranel 2015). These costs include manure storage (structure), storage and handling equipment, storage and equipment depreciation, repairs, taxes and insurance, other expenses (e.g. fuel and supplies), and labor per cow. A dairy cow can produce about 54,020 lbs (27 tons) of wet manure per year, depending on the size and breed of the animal. Thus, the cost of dairy manure would be about $4.44 per ton (in $2015). A participant from west central Iowa in a farmers’ forum indicated that the price of manure is $2 - $4 (in $2013) per ton picked up on the farm. The forum participants also indicated that the value of manure is about 60% - 75% of commercial fertilizer.

Beef manure: Still under investigation. A study by the University of Minnesota Beef Team indicates that the net manure value, gross value minus hauling costs, for solid manure is $6.29 and $7.99/ton for bed-pack and open lots, respectively (Rambo 2016). We have not yet had a discussion with the team to gather more information.

Swine manure: There are regional differences in manure storage and handling systems that affect the cost and value/price of swine manure. In NC, SC and other Southern states, the swine facilities use liquid manure handling systems that require the use of a lagoon or storage pond (manure is flushed from the building and stored outside in lagoons). In the Midwest, swine operations store manure below slotted floors in pits. The deep pit slurry system is far superior to most lagoon systems, as it preserves more nutrients as well as organic matter (Jordahi 2011). Therefore, from a Midwest farmer's perspective, the manure value is directly tied to its value as a crop nutrient and thus tied to the local/regional fertilizer prices; whereas, from a Southeast (NC) perspective, with the lagoon system, the waste as it comes out of storage has a relatively low nutrient density, thus low value, and many farmers would give it away (personal communication with Mark Rice, NCSU). NCSU staff provided some cost parameters for the Southeast to consider in our analysis and a summary is provided below. For the standardized 4,320 head feeder to finish farm, the approximate total cost of manure management is $106.08 per 1,000 pounds Steady State Live Weight (SSLW) per year (in $2017). For a 4,000 sow farrow to wean farm the estimate is $69.03 per 1,000 pounds SSLW per year (NCSU 2004). Deep pit manure (slurry) typically contains between 5-10% solids, while liquid manure (lagoon treatment system) is mostly water with less than 4% solids (typically 2% solids in the Southeast). A solids separator, co-located at the farm, would cost around $104.34 per 1,000 pounds SSLW per year (NCSU 2013). Depending on the amount of solids and the nutrient value of those solids, pig manure is sold for land applications. As mentioned earlier, the price received for the product is tied to the price for traditional fertilizer, which would be considered the lowest price that these farms would be willing to sell their manure to other uses. Otherwise, the cost would approximately be the cost of the dewatering facility. We will continue our discussions with industry and research entities to gather more information and better understand regional differences.

Manure

* Pig manure would be (roughly) production in SE for $104/1,000 lbs SSLW and production elsewhere for the price of traditional fertilizer (times 75%?).
* Dairy manure would be $2-4/ton (universal?) for production. How does this vary by region?
* Actual production = available production so can’t get more manure for higher price.
* Do costs really matter?

Manure

Here I really want to get a better sense for how costs and fertilizer price vary by location. For instance, are there broad difference between dairy farms in different states?

* Dairy - I know that dairy manure is around $2-4/ton for production. How does this vary by location?
* Swine – What is the approximate cost of a dewatering facility? Does it matter what the solids content is?