

**Appendix F: Manure and Excess Nutrient Alternatives for West  
Central Ohio (Ohio Department of Natural Resources)**



## Manure & Excess Nutrient Alternatives for West Central Ohio

- Grand Lake Watershed and Wabash Watersheds contain an estimated 151,000 to 152,000 acres of agricultural cropland. Both have excess nutrients due to the livestock industry in the watersheds.
- Livestock in this region consists primarily of poultry (layers and turkeys), swine, and dairies.
- Estimates show that a majority of the nutrients from manure are contained in poultry manure. Estimates of 55% to 70% of the nitrogen, phosphorus, and potassium are generated by either turkeys or laying hens.
- The poultry industry is the “lowest hanging fruit” to achieve a mass nutrient balance in the watershed, and address a majority of nutrient over-application problems on cropland within these watersheds
  - Poultry litter is the most portable
  - Poultry litter has the highest fertilizer value per ton of manure.
  - According to resource staff at ODA, a large percentage (50%?) is already brokered and exported from the watershed.
  - Programs need to encourage livestock producers, manure brokers, and grain producers to exploit the value in poultry litter.
  - Support would be useful to foster the brokering, storage, and transport of poultry litter that is not yet moved out of the watershed.
- In general most of the dairy farms have an adequate storage capacity and overall nutrient balances are manageable; however, over the years the most economical structures have been based on liquid systems to store manure.
  - Liquid systems have proven effective storages, but pose a considerable management challenge with application considerations.
  - Due to tightened standards, application windows for liquid manure applications have been significantly decreased as compared to solid manure systems. This shortened window of application can be counter productive in terms of the need to over apply due to the lack of custom applicators and/or shortened potential application periods.
  - Moreover limited number of custom applicators often leaves producers to apply when it's convenient for the applicators, and not necessarily the best time to apply.
  - Efforts should be made to segregate manure into semi solid and liquid streams, this will allow the application of liquids during the growing season, increasing the application window. To encourage this, irrigation equipment will be needed by the producer, or available to them locally. Help in setting up “equipment coops” would be useful.
  - Furthermore, the semi solid portion can be hauled with conventional manure spreaders and tractors using farm labor – increasing the application capacity from a few custom applicators to most farmers in the area.
  - Most dairy farms could store wastewater in the existing liquid storage on the farm, new storage structures for scraped manure would have to be built for manure - these are expensive as compared to liquid storages and funding should be prioritized to encourage producers to adopt these measures.
  - Programs need to encourage farms with adequate liquid storage systems to invest in additional storage for solids, semi solids, or slurry that can be hauled with conventional tractors and spreaders.
  - Roofing open lots should be encouraged to prevent additional wastewater. Liquid solid separators should also be encouraged to help segregate the solid/liquid manure.

- Programs to encourage set-aside acres or ground to lay fallow for a season could also greatly ease manure-spreading concerns.
- The swine industry has done a good job at reducing the phosphorus content used in feeds over the past several years, thereby reducing acreage requirements for manure application, However nutrient balances are a challenge on most swine farms.
  - Encouraging further adoption of phosphorus reducing feeds is a must.
  - Mechanical separation of manure holds promise for nutrient export, but is extremely expensive for a single producer to adopt.
  - Facilitating and encouraging industry expansion in other areas that are not overloaded with nutrients is also a possibility.

ODNR DIVISION OF SOIL AND WATER CONSERVATION, 2/14/07