

Manure Management Systems

Manures are almost exclusively used as soil amendments for agricultural crop production. Solid manure, liquid manure, litters, composts, and lagoon effluents represent the most common types of manure that are now applied to soils through a variety of spreading, tillage, and irrigation practices. Although manures are known to improve the physical properties of soils by adding organic matter that helps to build soil structure, application rates are usually based on the manure's nutrient value. Because most manures are bulky, heterogeneous, and relatively low-analysis fertilizer materials, the amount of a manure required can easily be 10- to 100-fold the amount of commercial inorganic fertilizer needed by the same crop. The logistical problems associated with the storage, handling, transport, and application of literally millions of tons of manures each year create formidable economic problems for U.S. farmers, even if environmental constraints are not considered. Nevertheless, the lack of widespread adoption of alternative end uses for manures such as

- incineration as a fuel,
- composting for horticultural markets,
- enrichment and pelletizing with mineral fertilizers to facilitate wider agricultural use, and
- re-feeding to other animals

has meant that land application of manures remains the only viable option for most farmers.

Solid manure, liquid manure, litters, composts, and lagoon effluents represent the most common types of manure that are now applied to soils through a variety of spreading, tillage, and irrigation practices.