Nitrogen Losses after Manure Application
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July 7, 2015

Manure is a good source of plant nutrients, especially nitrogen and phosphorus. One of the logistical problems with using manure as a source of nutrients is that nitrogen can be lost as a volatile gas (ammonia) between the time of application and incorporation of the material. Phosphorus is not subject to volatilization losses. The form of nitrogen that is subject to volatilization losses is ammonium (NH$_4$), which comprises most of the inorganic fraction of the manure. When manure is exposed to air, ammonium readily reacts to form ammonia (NH$_3$), which is a volatile gas. In a study conducted in Ontario, Canada 25% of the ammonium nitrogen in manure was lost after 1 day without incorporation, 45% after 5 days without incorporation, and 66% if the manure was not incorporated at all (Atria, 2008). Ammonium may comprise 44% of the total nitrogen in solid dairy waste without bedding according to figures from the University of Missouri (Fulhage and Post, 1993) or as little as 5% in dairy corral scrapings in California (Pettygrove et al., 2009). Despite potential losses of nitrogen from manure, this material is a good source of plant nutrients and perhaps more importantly, improves the physical condition of the soil. The problems with manure are that it is difficult to predict release of nitrogen from the material and salt and weeds may be introduced.

Sources

