



Strategies to Control Farmstead Odors

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Controlling odors on the farm is not as difficult as you might think. All odor abatement plans, no matter how complicated, follow four basic odor control strategies:

- Prevent** the creation of odors.
- Alter** strong odors to less intense odors.
- Capture** odors so they do not escape to the surroundings.
- Disperse** odorants once they leave the farm.

Prevention

Rotting manure is the number one source of farmstead odors. Manure is food to bacteria, and bacteria give off odors as they digest manure. You can reduce odors by preventing bacteria from growing in manure. Methods to reduce bacterial growth include killing bacteria with disinfectants, adding lime to raise manure pH, and keeping manure dry.

It is hard to completely stop bacteria from growing. Manure is just too good a meal for them to pass up. A second prevention strategy is to move waste away from trouble spots before bacteria can begin to grow. For example, flushing raw manure from buildings means fewer odors are released into the building by rotting manure.

Changing animal diets may also reduce odors. Odors released by manure containing large doses of nitrogen and sulfur are particularly strong smells. If we reduce nitrogen and sulfur content of feed, we might prevent creation of nitrogen and sulfur odors in manure.

Alteration

The second strategy for controlling odors is to change strong odors given off by decaying manure into weaker odors. Sometimes a second batch of bacteria are used to alter strong odors. For instance, raw manure settles to the bottom of a lagoon. Bacteria in the lagoon digest the raw manure and release strong-smelling liquids. The smell will improve if another group of bacteria, living above the sludge, convert the odorous liquids into odorless gas.

Chemicals are also used to alter farm odors. Oxidants convert organic matter to odorless gases. Counteractants bind to odorous chemicals and weaken their smell. Masking agents are not usually effective on the farm. Masking agents do not alter odors; they merely try to hide them. The smell of manure is a strong odor, and trying to cover up the smell of manure with a stronger scent just adds to its power.

Capture

A third strategy is to keep odors from escaping to the surroundings. In other words, trap and hold odors before they can leave the place they are created. Hydrogen sulfide is a strong smelling gas associated with manure. Hydrogen sulfide also sticks to iron. If you pass manure odors through a filter made of iron filings, hydrogen sulfide will stay with the iron and not escape to the surroundings.

Some of the most effective filters not only capture but alter odors as well. Living filters — sometimes called biofilters — trap odors, then use bacteria to eat the trapped odors. Biofilters can operate for a long time without having to be replaced. The earth around us is a living filter. Raw manure worked into the soil is held on silt and clay particles. Soil microbes digest manure odors before they can escape to the air.

Dispersion

The last strategy uses the wind to disperse odors once they leave the farm. Plans that include separation distances between farms and residences rely on dispersion to dilute farmstead odors before they reach the neighbors' nose. Trees strategically placed on the farm help the wind mix and dilute odors.

You cannot always count on the wind to disperse odors, though. On calm nights, heavy farmstead odors are carried to low spots in the landscape by gravity. You must fall back on other strategies (prevention, alteration, and capture) to reduce odors during windless periods.

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