

Methane Reduction Strategies on California Dairies

Bordessa Family Farms, Sonoma County

Description of Operation:

Bordessa Family Farms owns and operates two organic dairy farms with a total of 700 milking cows in western Sonoma County. The farm has about 1,000 acres of pasture and rents an additional 1,300 acres nearby. Jarrid is a fifth generation California dairy farmer.

Manure Management Approach:

Approximately 10 years ago, the dairy installed three cement pits to receive manure flushed from the milking barns with recycled water. The slurried manure is held in one of the three pits until it full, which is enough to hold the manure accumulated during milking and in the one or two months each winter when the cows cannot be pastured due to rain. At the end of each pit is a “weeping wall,” a screen of wooden slats through which solids are separated as the water moves through the screen, pressurized by gravity. As more solids collect, greater filtration occurs since the solids themselves act as a filter. The liquid is recycled either back through the barn for flushing or is used to fertigate pasture. The solids are dried, composted and used on pasture to enhance soil health and add fertility. Spent bedding is mixed with into the compost piles, and sometimes purchased chicken manure for additional nitrogen.

Benefits to Producer:

- Labor costs for spreading the dry manure are lower than for liquid manure because it spreads more easily, they can move larger loads, and there is no odor like there is when spreading liquid manure
- Compost makes excellent fertilizer and produces better forage
- Minimal odor in the pits once the solids and liquids are separated and the solids are dried

Challenges, Barriers, and Desired Improvements:

- Ponds produce ammonia which causes odor problems at some times of year and corrosion of metal
- Interested in experimenting with a relatively simple and expensive technology used in the manure pits called a Sludgehammer™, a submerged air diffuser with a dimpled surface that encourages the growth and dispersion of beneficial bacteria to digest the organic material that can cause odors and emissions of ammonia, methane and other harmful volatile organic compounds
- Interested in addition of humic acids to compost piles to improve compost quality

Cost Estimate for System = \$86 per cow

Ten years ago, the farm spent approximately \$50,000 for the cement pits and \$10,000 for the flush pump system. Very little maintenance has been required since.



Weeping wall solid separator



Gravity-fed channels from barn to three flush pits

“It seems to me that having cows on pasture as much as possible is better for the environment since they are spreading their own manure and fertilizing the soil rather than piling it up in one place.”

— Jarrid Bordessa



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