

Methane Reduction Strategies on California Dairies

Bucher Dairy, Sonoma County

Description of Operation:

Bucher Farms is an organic dairy farm with 600 milking cows near Healdsburg. The farm also consists of 100 dry cows, 700 replacement heifers, and a 40-acre vineyard. The animals graze on over 2,000 acres of land on various ranches. The milk cows have grazing access to 450 acres near the milking and feed barns. Organic dairy rules require that the cows spend a minimum of 120 days per year on pasture; the remaining time, when the ground is too wet or the forage is gone, the cows are under cover in barns or in dry lots near the barns.

Manure Management Approach:

The dairy makes use of a flush system and a series of ponds located on hills above the dairy barns. Water is gravity-fed from the ponds to flush the stalls while the cows are moved out twice daily for milking. The slurry flushes into a concrete tank where it is agitated. It is then pumped under pressure through a screen and a screw auger separator that removes most of the solid material and sends the liquids into another holding pond. That water is pumped back up to the highest pond to recirculate back through the system or is used to irrigate pastures. The solids are dried and composted on site, sometimes mixed with spent bedding, straw or woody material, and sold offsite. In an average year, more than one million pounds of manure is converted to compost.

Benefits to Producer:

- Compost production turns manure into valuable economic product
- Gravity-fed water recirculation system takes advantage of the hilly topography, minimizes water demand and keeps the farm in compliance with water quality regulations
- Minimal land area required for relatively small ponds, an advantage in a county where land costs are significant and land near dairy barns needed for grazing organic milking cows

Challenges, Barriers, and Desired Improvements:

- Equipment is costly (compost turners, spreaders, loaders, dump trucks)
- Ponds produce ammonia which causes odor problems at some times of year and corrosion of metal
- Aeration of ponds could help achieve aerobic conditions that may enhance metabolism of organic material and minimize ammonia off-gassing, but equipment is costly
- Hilly landscape and creek flowing through the property limit the land that can be used for larger ponds or larger compost piles
- Addition of offsite organic material could enhance composting process, but there are sometimes logistical and cost barriers to accessing it

Cost Estimate for System = \$250 per cow

\$150,000 for equipment (pumps, separator, agitator). Cost of pond construction would be additional and would vary site to site. Bucher Dairy installed their auger ten years ago and it has required little maintenance.



Screw auger separation of liquid and solids



"Composting my manure turns a liability into an asset as soon it leaves my farm and the trucker drops off a check in the office on his way out."

— John Bucher



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