

# Methane Reduction Strategies on California Dairies

## Pete Verburg & Sons Dairy, Stanislaus County

### Description of Operation:

The Verburgs have been operating their dairy for 54 years, and milk about 700 head of cows twice daily. They produce oats and corn on about 216 acres. They have been using their current manure management system for about 20 years.

### Manure Management Approach:

Each lane is flushed during milking. The flush water is gravity-fed to a receiving pit where it travels through two solids separators made of stainless steel mesh that are organized in series. Most solid separator systems use only one; this system removes a larger amount of solids, close to 50 percent. A revolving paddle on the surface of the pit removes the solids trapped behind each screen and dumps them onto a nearby concrete slab. During summer, the solids are moved to windrows to compost, which is turned about every five days. The composted manure is usually used as bedding in free stalls or is sometimes applied to fields.

The wastewater is pumped through a series of three large lagoons below the separators, which facilitates the breakdown of remaining organic matter. In spring, the lagoons bloom with phototrophic purple sulfur bacteria that are responsible for much of the digestion. The water in the last lagoon is used for irrigating crops, applying to compost windrows to maintain the optimal moisture level, and for flushing lanes in the barn.

### Benefits to Producer:

- Use of three large lagoons (three times more storage than required) improves water quality, reduces clogging of valves in irrigation system, and prevents excess nutrient loads on fields
- Using two separators removes more solids, which maximizes amount of compost produced and minimizes nutrient load in lagoons
- Final wastewater product is pathogen-free, safer for recycling in barn and on fields; creates healthier environment for animals and workers
- Use of composted manure reduces bacteria and pathogens in bedding; fly populations are low

### Challenges, Barriers, and Desired Improvements:

- Need sufficient land for the larger lagoon area, a slab for solids piles, and for compost windrows
- Have to manage the windrows to assure optimal compost conditions (e.g., moisture, temperature, oxygen) make high quality compost

### Cost Estimate for System = \$570 per cow

\$200,000 for concrete pits and two separators; cost of lagoon construction and plumbing and electrical will vary widely but the total project could cost \$400,000



*"With this system, I get peace of mind and don't have to worry about emergencies, like my pond overflowing or the technology breaking down. I don't know why more people don't do something like this."*

— Pete Verburg



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