Reducing Inputs:
Irrigating with Winery Wastewater
*Mai Ann Healy, Regional Manager - BioFiltro*
Winery Wastewater Characteristics

- Primary Source Points: Wash downs, barrels, pressing, crush pads, rackings.
- Industry Average Wine to Water Ratio 1:6 gallons

- Industry Average Biological Oxygen Demand Discharge: 2,500 - 10,000 mg/L
- Industry Average Total Suspended Solids: 500 - 2,000 mg/L

- BOD Requirement for Vineyard Irrigation: 40 - 160 mg/L (99 - 94% Reduction)
- Salt and Nitrogen
Traditional Wastewater Treatment Methods
Methods With No Resource Recovery

- Industrial Sewer
  - Industrial discharge fees and city discharge limits
  - Slugs can result in hefty fines or cease and desist
- Septic System
  - Solution for small scale wineries with low BOD loadings
  - High BOD and constant fluctuation can alter performance
  - Can only function with certain soils & effluent cannot be recaptured
- Hold & Haul
  - Production is limited to storage tank capacity
  - Price range is $0.15 - $0.35/gallon
Aeration Ponds

- High energy demand - aerators operate 16-24 hours a day
- 30 - 90 day retention - odors
- Sludge management and chemical expense
- Cost opportunity of land designation
Traditional Wastewater Treatment Methods
Methods With Resource Recovery

Fine Bubble Air Diffusion

- Utilize approximately 50% of energy when compared to traditional aeration ponds
- Sludge management and chemical expense
- Maintenance requires draining entire lagoon - interruption in production
Traditional Wastewater Treatment Methods
Methods With Resource Recovery

- Membrane Bioreactors (MBR)
  - Energy Intensive
  - Sludge management and chemical expense - membrane reject
  - Limited Production Capacity
  - Replacement Cost of Membrane
  - Heavy Operational Cost
  - Underperform in extreme climates
Challenges of Reutilizing Wastewater

- Biological Oxygen Demand
  - Reduce >99% onsite
- Controlled Application Nitrogen
  - Groundwater contamination
- Salinity
- Suspended Solids
  - Plugging of drip line irrigation systems
- Monitoring Regulations
  - NPDES
  - WDR
  - Untreated and Treated Wastewater
- What is the Price (Cap) of Doing Business Right?
What We Do
Provide a patented wastewater filtration system which harness the power of Mother Nature to remove up to 99% of contaminants in 4 hours
Our BIDA® System

• Modular Passive Aerobic Percolating Biofilter
  • Open top 5’ tall structure
  • 4 hour process
  • 95% less energy
  • Completely automated
• Symbiotic Relationship of Worms and Bacteria
  • Chemical Free
  • Sludge Free - Zero Waste
  • pH Range: 6 - 8
• Beneficial Byproducts
  • Irrigation grade quality effluent
    • >99% BOD & TSS and >95% Total Nitrogen
  • Worm castings
Replicating Mother Nature
Physical & Biological Filtration

- Sustainable & Natural Byproducts
  - Drainage Basin
  - River Cobble
  - Wood Shavings
  - Earthworms & Microbial Bacteria
Our Track Record

- 6 Countries
- 26 Years of Research and Development
- 130 Plants Worldwide
- 3.2 Billion Gallons Treated Annually
- Plants on Antarctica and in the Atacama Desert
- Offices in the United States, Chile, and New Zealand
Pros and Cons of BioFiltro

Pros

• Cost Effective
  • Modular, retrofit or new closed system
  • Uses up to 95% less energy than traditional wastewater solutions
  • California utilities give incentives/rebates, up to 50% of total installation cost
• Sustainable & Natural System
  • Odorless, chemical & sludge free system
  • Onsite resource regeneration
• Effluent can be used in drip line - has already passed through one irrigation system
• Performance Guarantee
  • Unlike equipment warranties, BioFiltro guarantees water quality parameters and executes all major maintenance and upkeep

Cons

• System Start Up Time
• Footprint
  • The size of a BioFiltro can be estimated using GPD/4
  • “New Technology” - too simple to be true
Closing Points

- Variety of technologies
- Wastewater reuse is becoming common practice
- Increasing regulations demand innovation in traditional treatment systems
- Consumer push for sustainable practices and processes
- The duty to be double or triple bottom line companies.
Thank You