

Two-Stage Mixed Plug Flow Anaerobic Digester

ACEEE FORUM
Des Moines, IA

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Biological System

- **MANURE COLLECTION SYSTEM**
- **DIGESTER VESSEL**
 - Plug-Flow Digester
 - First In, First Out
 - Acid Chamber
 - Methanogenic Chamber
- **DIGESTER MIXING**
 - Biogas Recirculation
- **TEMPERATURE**
 - 101°F

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Our Patented System

- WASTE FROM NUMEROUS SOURCES
 - Dairy
 - Hog
 - Poultry
 - Beef
 - Municipal
 - Organic Processing
 - Vegetable / Food Processing
 - Industrial Biodegradable

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Biogas Consumption

- 55 to 60% METHANE (CO₂ ~ 45%)
- 5 to 5.5 COWS TO PRODUCE 1 KWH
- GEN-SET PROVIDES ELECTRICITY & HEAT
- SMALL AMOUNT OF H₂S
- EXCESS BIOGAS IS FLARED

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Digester Effluent

- SEPARATION W/ SCREW PRESS
- SOLIDS USED FOR QUALITY BEDDING
 - 65 to 70% Moisture
 - Pathogen Reduction
 - Clean Cows
 - Somatic Cell Count / Herd Health
 - Fly and Vector Control

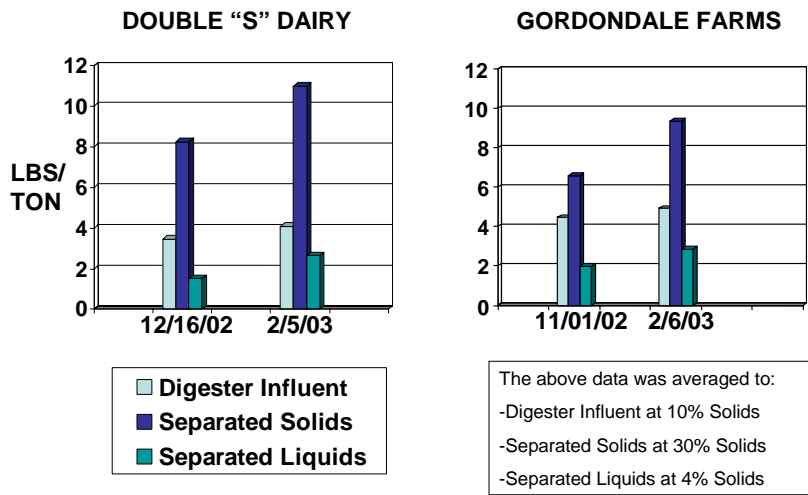
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Digester Effluent

- LIQUID FOR INORGANIC FERTILIZER
 - 1.5 to 2% Solids
 - Irrigation vs. Trucking
 - Reduction in NPK

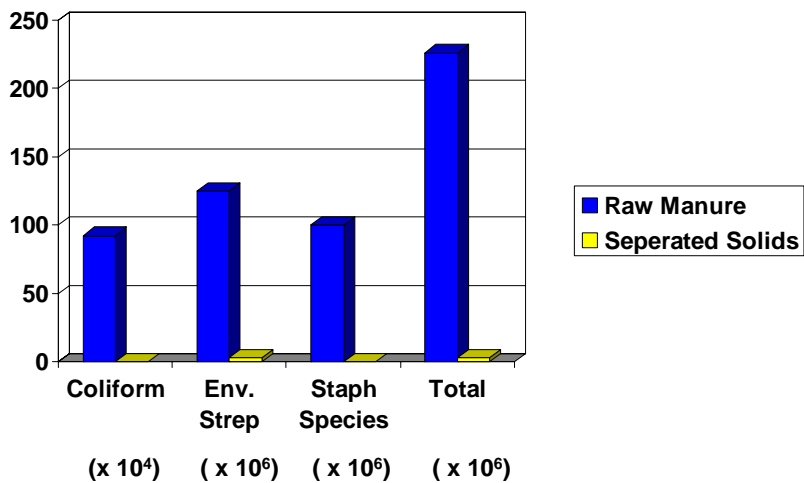
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PHOSPHOROUS



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PATHOGEN REDUCTION Gordondale Farms



NOTE: SAMPLES COLLECTED 2/7/03

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