

Programs for Anaerobic Digester Owner/Operators



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Pennsylvania has seen a dramatic increase in operation of farm based anaerobic digester/biogas production systems.



Infrastructure to support design, construction and operation of agricultural biogas production systems is not well developed



Anaerobic digestion/ biogas production is not new!

- Mother nature/swamps
- Used in sewage treatment



Anaerobic digestion/ biogas production in agriculture - Graves

- 1960's – black box to make manure disappear
- Late 1970's – oil embargo, energy independence
- 1990's -odor control maybe energy on the side
- 2000's – odor control plus energy to help defray the cost
- Late 2000's – “renewable energy rush” maybe odor control on the side

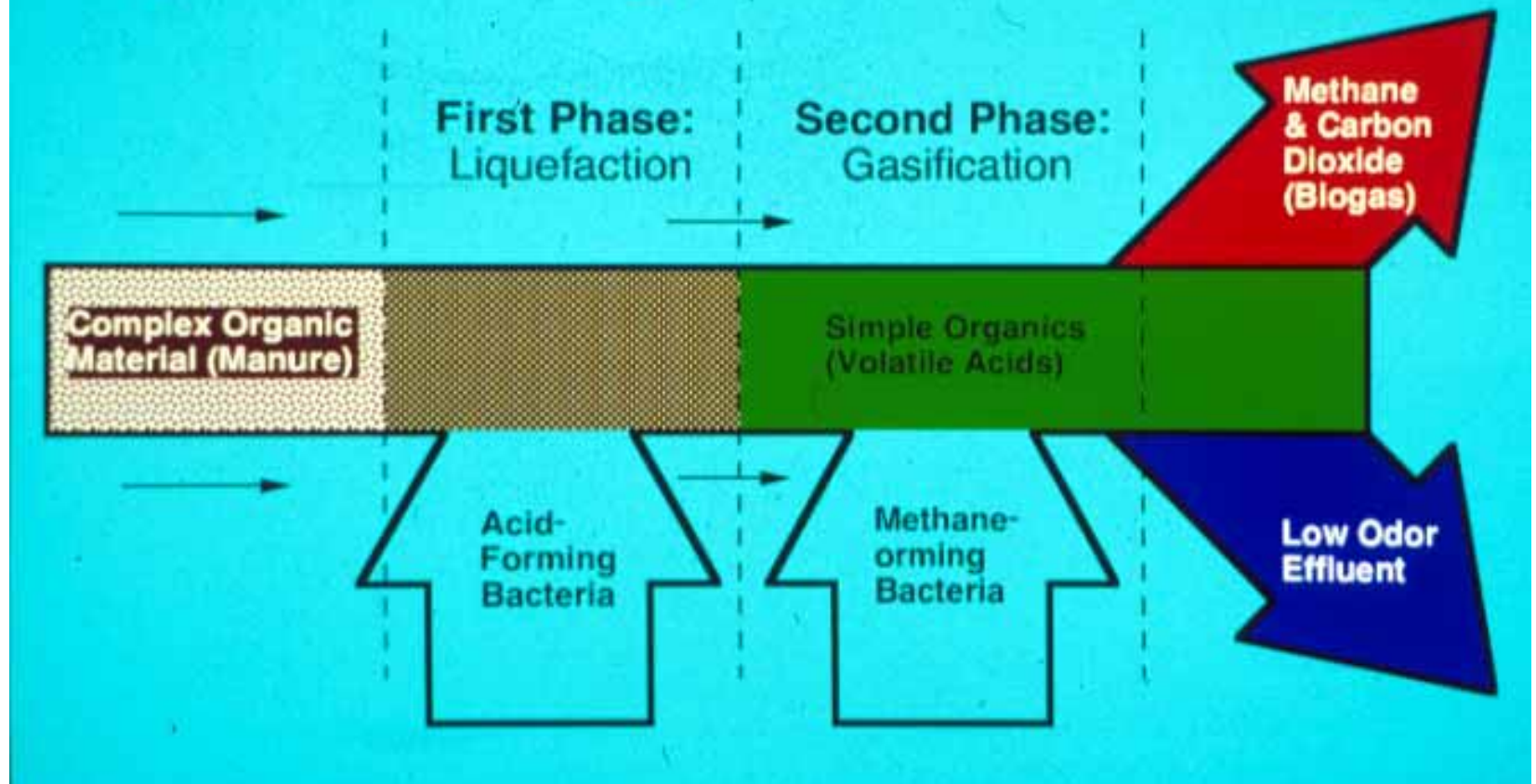


Goals (dreams?) PA

- Supply farm electricity
- Income from sale of electricity
- A profit center that returns costs +++
- Reduce design, construction and operating costs
- Increase efficiency
- Reasonable cost for any size farm
- Tipping fee for off-farm organic materials
- Take advantage of carbon, energy, etc. credits



Two Phases of Methane Production by Anaerobic Digestion



Digesters on PA Farms

- 1978 – Dairy; Mason Dixon Farms
- 1984 – Layers; Brendle Egg Farm
- 1985 – Swine; Rocky Knoll Farm
- 1986 – Dairy; Oregon Dairy Farm
- 1998 – Swine; High Farm
- 2004 – Swine; Pine Hurst Acres Farm



Energy Harvest Supported Digesters

- 2006 – 6 Dairy
- 2007 – 2 Dairy, 1 Beef/Broilers
- 2008 – 1 Dairy
- 2009 – 2 Dairy, 1 Swine under construction
- 2009 – 1 Dairy just funded



Estimate of Animal Numbers

- Dairy - 9850 cows
- Swine – 9600 swine
- Poultry – 72000 layers
- Poultry – 120,000 broilers
- Beef – 1000 finishing



PA Digester Owner/Operator Group

- Winter 2007/2008 – interest expressed in opportunity for digester owner/operators to get together
- July 2008 1st meeting held
- November 2008 2nd meeting held
- March 2009 3rd meeting scheduled



Rules of the Road

- Free open candid discussion
- Only owner/operators of PA ag digesters invited
- No vendors, designers or press were present
- Summary notes but no minutes or transcripts
- Low key



Format

- Biogas group in ABE worked with interested owner and county educators to plan first meeting
- Mailing list of known owner/operators assembled
- Group gathered in local fairgrounds building for informal discussion
- Ordered in pizza for lunch
- Visited host farmer in the afternoon to tour digester and related farm operations



July Meeting

- Topic: explore needs of owner/operators
- Local farm management and engr educators handled local arrangements
- 10 owner/op from 7 digesters
- 5 ext educ,
1 fac, 1 cons dist



Topics Identified

- Designs and designers: selection, contracts, familiarity with PA conditions, start up help, component materials selection
- Utilities: interconnection requirements, buy back arrangements, timeliness
- Digester management: feeding and mixing schedules, crusting and foam, settling
- Feedstocks: biosecurity, gas production, nutrients, regulation and permitting,



Topics Identified

- CHP systems: NOx, AQ permitting
- Alternative gas uses:
- Operator training:
- Trouble shooting:
- Regulation:



Future Plans

- Continue to meet
- Similar format
- 4 times per year
- Volunteer for host
- Next meeting November
- Invite Public Utility Commission experts



November Meeting

- Topic: net metering, utility interconnection requirements,
- Met in new shop addition
- Local agr engineering educator and host farmer made arrangements
- 14 owner/op from 9 digesters
- 2 PA Pub Ut Com reps
- 5 ext ed, 1 fac, 1 grad st



March 2009 Meeting

- Farm Identified
- DEP requirements for digesters and off farm feedstocks
- Host farmer and engr educator making local arrangements



Impacts

- 24 owner/operators of PA digesters have met to discuss problems of mutual concern
- Personnel from 10 of 16 digesters have attended owner/operator meetings
- 9 dairy and 1 swine digesters attended
- 14 personnel from 9 digesters met with representatives from the PA Public Utility Commission



Future

- Expect to hold another meeting
- Need to discuss ground rules
- How do we use this to provide better education and help to digester wannabes
- Education opportunities for operators



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