

Agriculture and Environmental Sustainability

A 360 DEGREE OPPORTUNITY

The heightened awareness of global warming is changing how we live and work. A focal point of many governments and increasingly of private industry is the reduction of the carbon footprint, defined as the measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced. Political and market leaders must provide fully contemplated guidance to industry to effect the desired outcome. In many industries, focusing strictly on the carbon footprint is not the total solution for true environmental sustainability. One industry which deserves broader consideration is confined animal feeding operations (CAFOs), which must deal with extraordinary volumes of animal waste. This waste, when left untreated:

- Emits methane gas into the atmosphere, exacerbating global warming
- Contains deadly pathogens e-coli and salmonella, potentially entering the food chain
- Is laden with phosphorus and nitrogen, which in uncontrolled run-off can cause algae blooms and dead zones in our watersheds
- Creates significant insect and odor problems

Recent guidance to the dairy industry by a leading retailer has been to focus on reduction of their carbon footprint. A minimalist, profit driven response to this guidance may well be the installation of a lagoon system in which animal waste is “digested” in a covered retention area and the resultant methane gas is captured for use. While reduced carbon footprint is accomplished, dairy operators are left to contend with residual wastes. A currently accepted practice is to land apply this residual waste, still containing pathogens and laden with nitrogen and phosphorus, thus exposing the community to dangerous health risks and detrimental environmental conditions. The minimalist, one dimensional approach to waste treatment only meets half of the challenge, and is not environmentally sustainable. Government and industry leaders must move beyond “carbon footprint” and provide strong leadership and support for the implementation of technologies that provide a total 360 degree environmental solution. Such an approach would:

- Optimize the production of methane as a green energy, offsetting energy production by coal generation or other conventional means
- Optimize organic fertilizer production, reducing production of chemical fertilizer which is petroleum based and an energy intensive process
- Eliminate pathogens in the waste treatment process allowing the organic fertilizer to be safely utilized in food production
- Re-circulate the process water, minimizing both the demand on the fresh water supply as well as the energy expended to treat and convey that water
- Operate in a fully enclosed environment, mitigating the insect and odor issues, thus providing for a healthier rural/urban interface

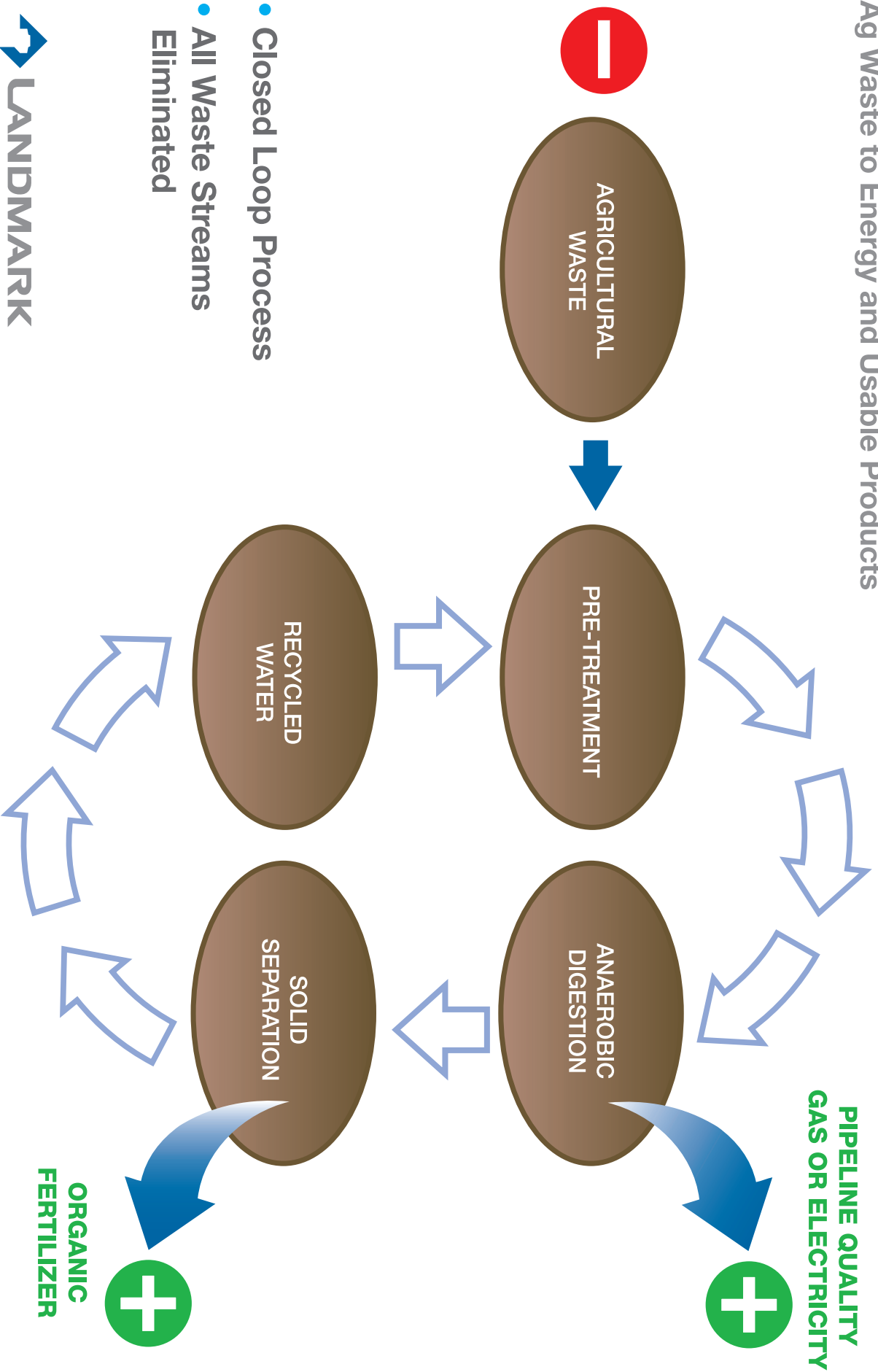
Agriculture is tasked with feeding the world. Legislators and industry leaders are tasked with providing a clear direction to implementing total and environmentally sustainable food and energy production and waste management solutions. Adopting a full view, 360 degree approach can enhance agriculture’s economic viability, and position the industry as an innovator and true steward of the environment.

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BIOMASS DIGESTION PROCESS

Ag Waste to Energy and Usable Products



- Closed Loop Process
- All Waste Streams Eliminated