

MANURE - WASTE OR RESOURCE?

All animals including humans, pets, wildlife and agricultural animals produce manure. While it is sometimes called waste, UF IFAS Extension is working to change attitudes and build anaerobic digesters, also called biodigesters. Through a process called anaerobic digestion (AD), natural microbes convert manure and other organic material into usable water soluble fertilizer and renewable natural biogas. The biogas is a natural gas composed of carbon dioxide and methane which can be burned for energy for cooking or water heating or for gas lighting.

As animals use food for growth and energy, the byproduct is manure which contains chemical compounds such as nitrogen, phosphorus, potassium, and iron that are important nutrients for plant growth. In natural ecosystems such as forests, prairies, pond and lakes, nutrients are recycled as animals eat plants and animals eat other animals. When plants and animals die, natural fungi, bacteria and other organisms decompose them and nutrients are recycled through the soil and reused by plants and animals again. Commercial fertilizers also provide plant nutrients for growth and may be either slowly available or water soluble and readily available.

As manures decompose in the soil, nutrients are slowly released for plant growth. Farmers and gardeners often use dried animal manure as natural slow release fertilizer for growing crops, gardens, trees and flowers. Communities process human manure into “reuse water” and “biosolids” which contain important plant nutrients. The lavender pipe in landscapes provides nutrient-rich water for irrigation. Milorganite is a nationally marketed commercial fertilizer made from solids from the wastewater (aka sewage treatment process) in Milwaukee, Wisconsin.

Rapidly growing crops benefit from frequently applied, readily available fertilizer, however, over-irrigation and heavy rainfall can wash excess nutrients into nearby waterways and result in algae growth. In some situations, pets and farm animals may produce more manure than can efficiently be used by plants on the property. Florida agricultural producers are required to manage manure to reduce nutrient runoff going into ground and surface water. Pet “waste” can wash off yards and dog walk areas into our streets, ditches and eventually ponds and lakes. Pet owners are urged to pick up after their pets and dispose of manure in the garbage or toilet.

Anaerobic digesters (biodigesters) work like septic tanks, our home manure management systems that do not use air or oxygen. The biodigesters can be used to manage farm “waste”, including manure, chopped weeds, crop residue and food waste and convert it to natural biogas and soluble nutrients for use on the farm or as a value-added commodity for sale. Unlike septic tanks that release nutrient-rich wastewater into the soil, the biodigesters collect the liquid so it can be applied as needed, at rates and timing that minimize the chance for stormwater runoff or excess infiltration into ground water. The quantity of nutrients can be calculated and the liquid fertilizer applied to crops or pastures through an automatic irrigation system or applied separately.

Thanks to a Florida Department of Agriculture and Consumer Services (FDACS) mini-grant of \$10,608, UF IFAS Extension faculty in Central Florida are working with farmers and animal producers to understand the anaerobic digestion (AD) process, build small scale demonstration units and learn how the process can help prevent pollution. Workshops are being planned on farms to show the basic components and help farmers identify the quantity of manure and other organic materials to feed the biodigesters and the volume of liquid fertilizer and biogas that will be produced. The products can be used on the farm or sold off the farm to generate extra income. As a result, biodigesters can become a common, easy-to-use Best Management Practice (BMP) resulting in environmental and economic benefits to farmers/ranchers and the community.