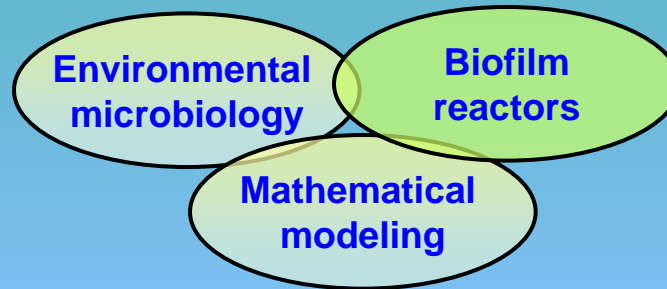


Sarina J. Ergas, Dept. Civil & Environmental Engineering USF



Sarina Ergas

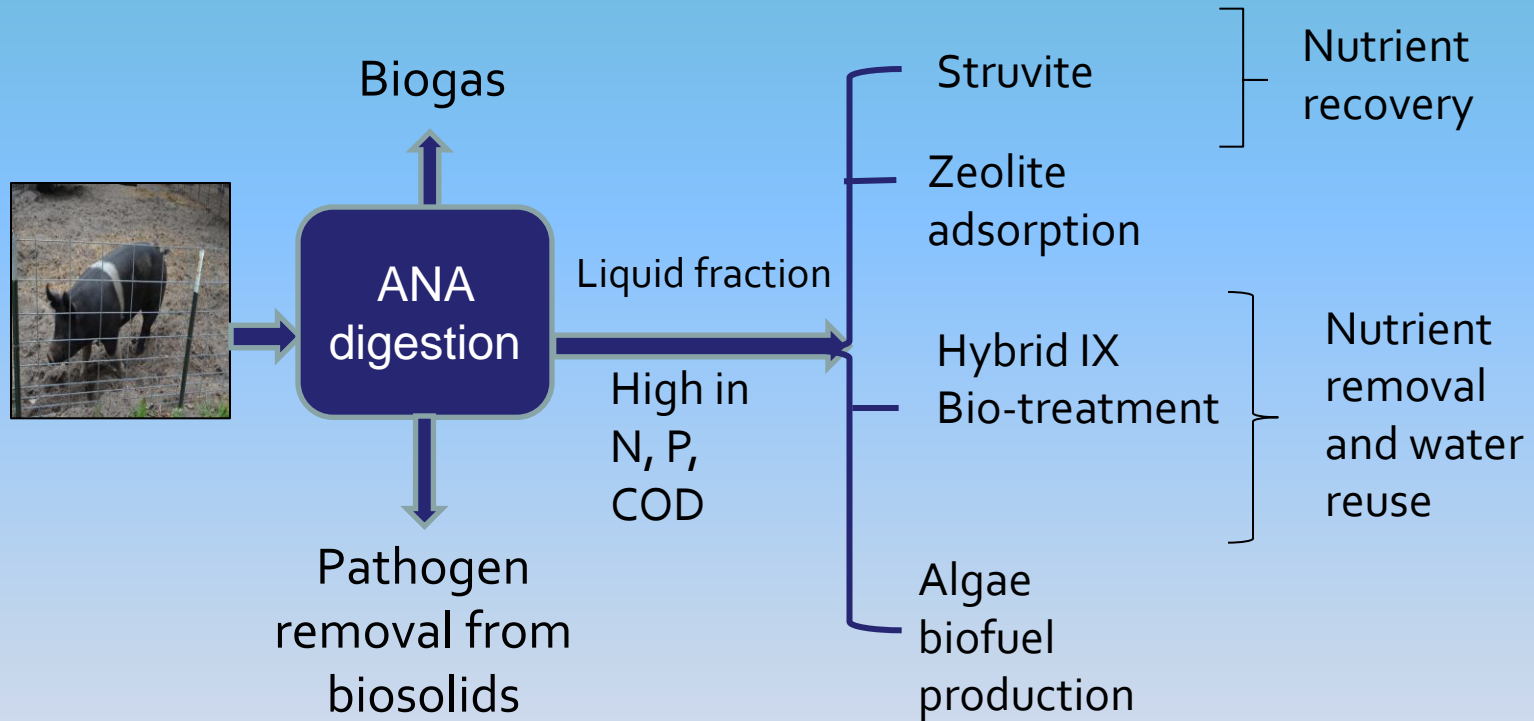


Engineering Grand Challenges, which were both achievable and sustainable to help people and the planet thrive

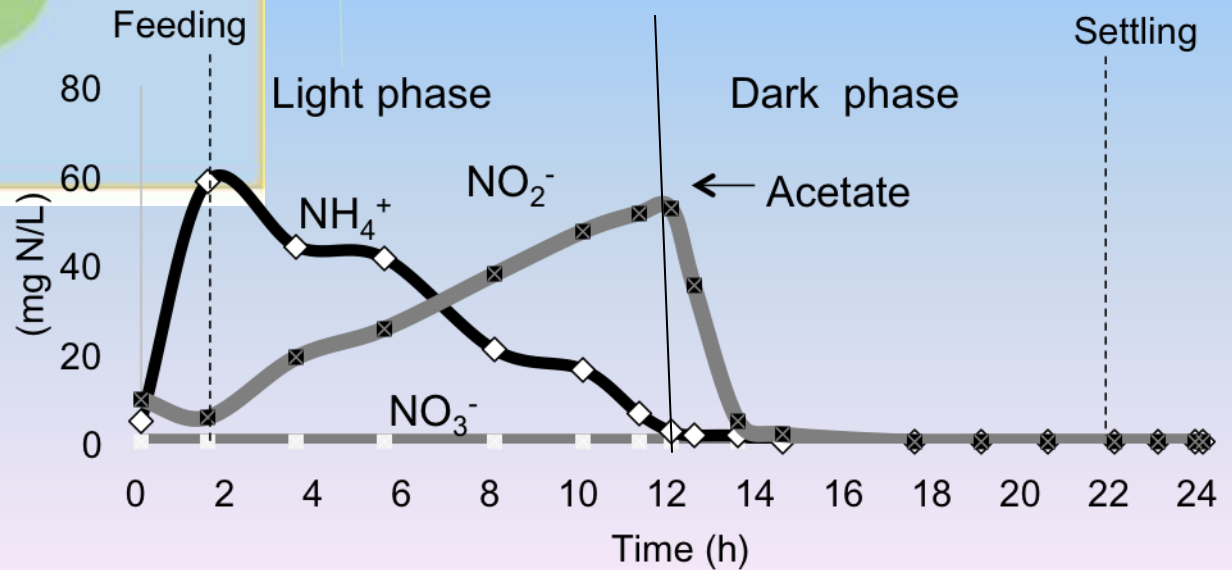
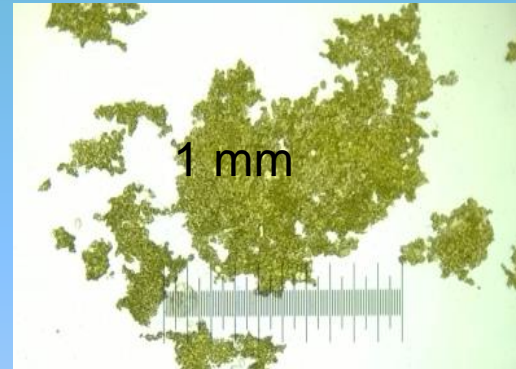
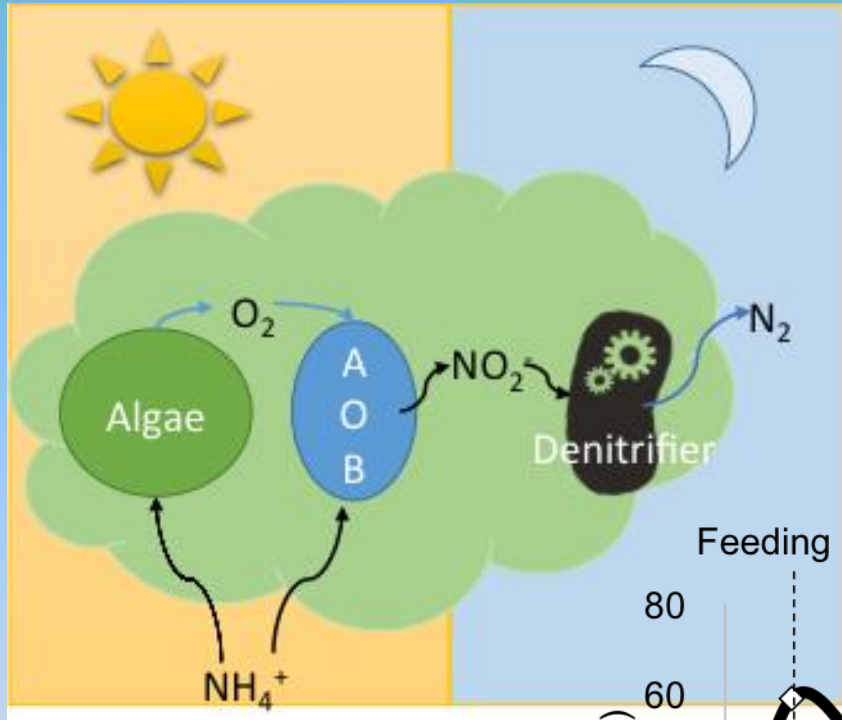
(www.engineeringchallenges.org):

- **Develop carbon sequestration methods** – algal biofuel production using wastewater as a nutrient source.
- **Manage the nitrogen cycle** – sulfur oxidizing denitrification, N removal from stormwater and domestic, and agricultural (fish and livestock production) wastewaters.
- **Provide access to clean water** – improving biosand filters for household treatment of drinking water in the developing world and biological treatment of perchlorate and nitrate contaminated groundwater.
- **Restore and improve urban infrastructure** – decentralized wastewater treatment, low impact development for stormwater management, bioenergy from agricultural and municipal solid waste.

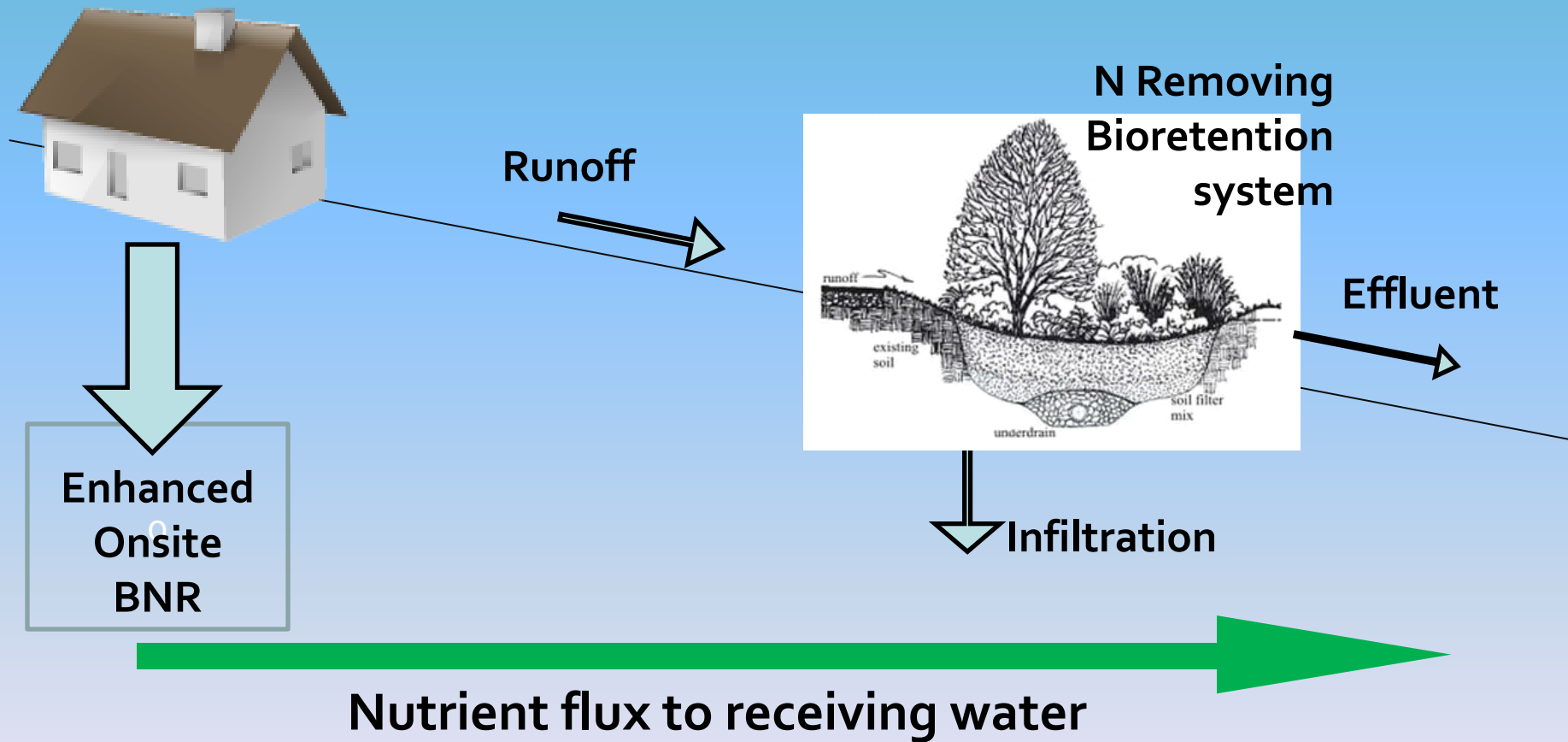
Swine Manure Research Team (SMaRT)



Shortcut N removal in Photo-SBR

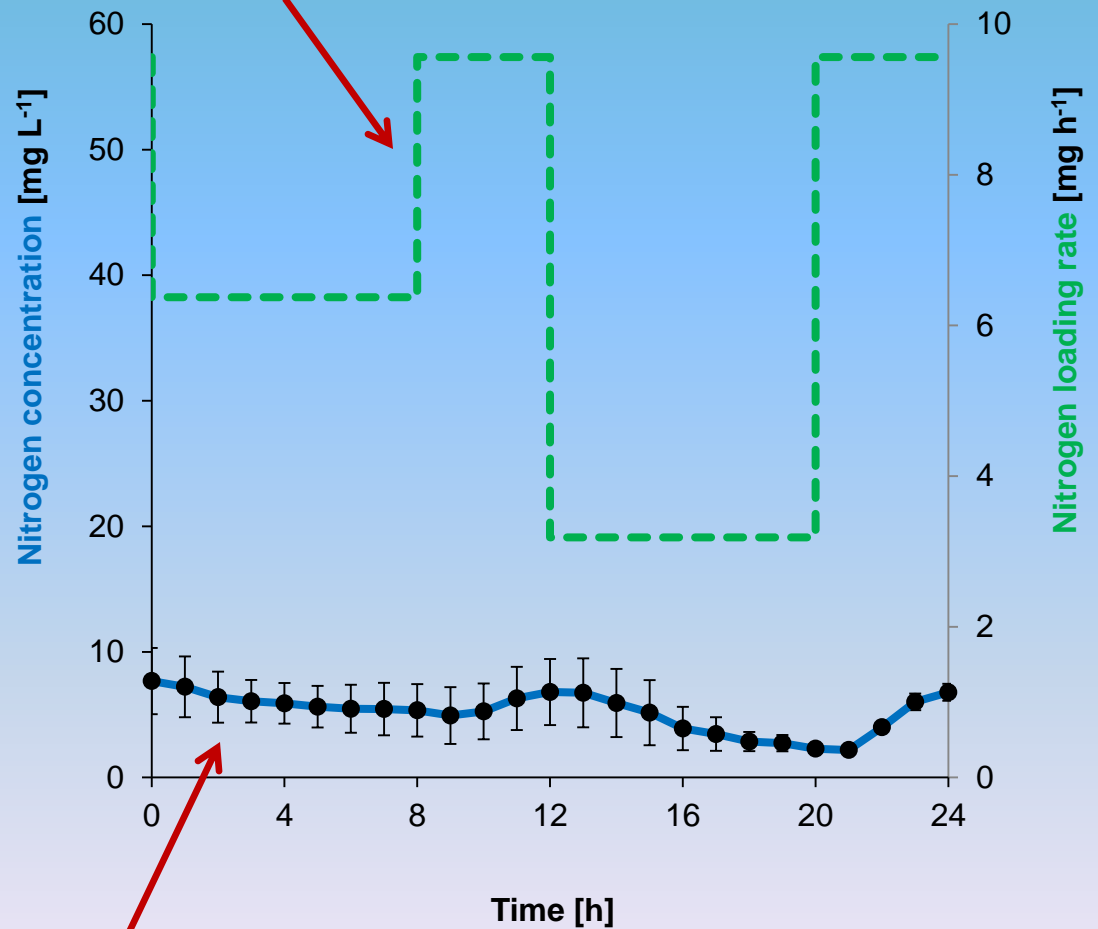
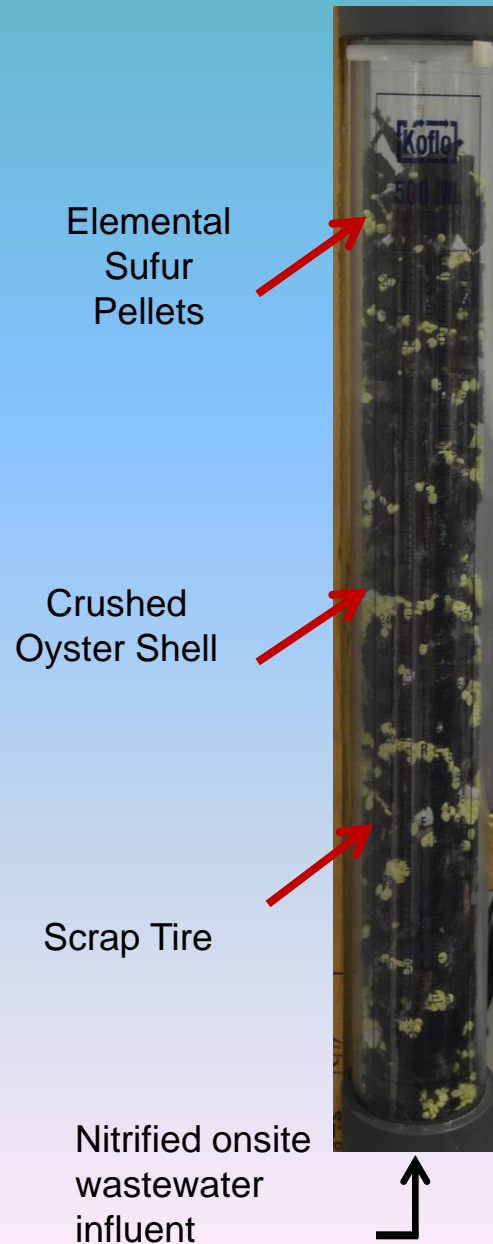


Non-point Source Nutrient Control



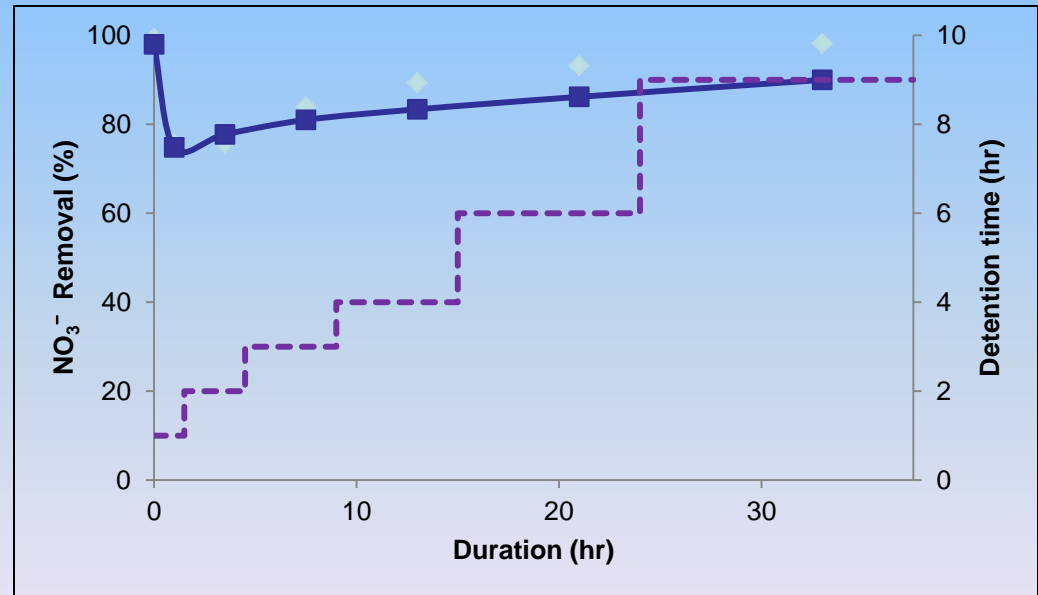
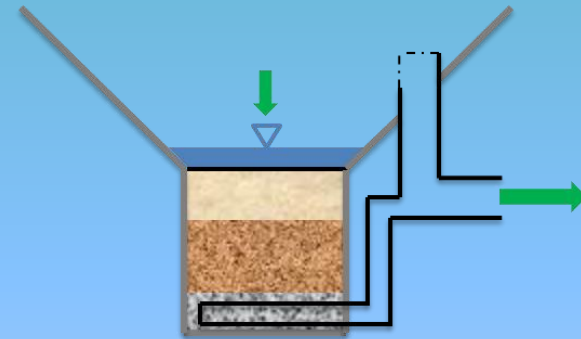
T-SHAD: Tire-Sulfur Hybrid Adsorption Denitrification

Highly variable N loading rate



Low & stable effluent N concentration

Denitrifying Bioretention Systems



Sustainable Aquaculture

