



Algae Harvesting Benefits and New Techniques

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Algaeventure Systems (AVS)

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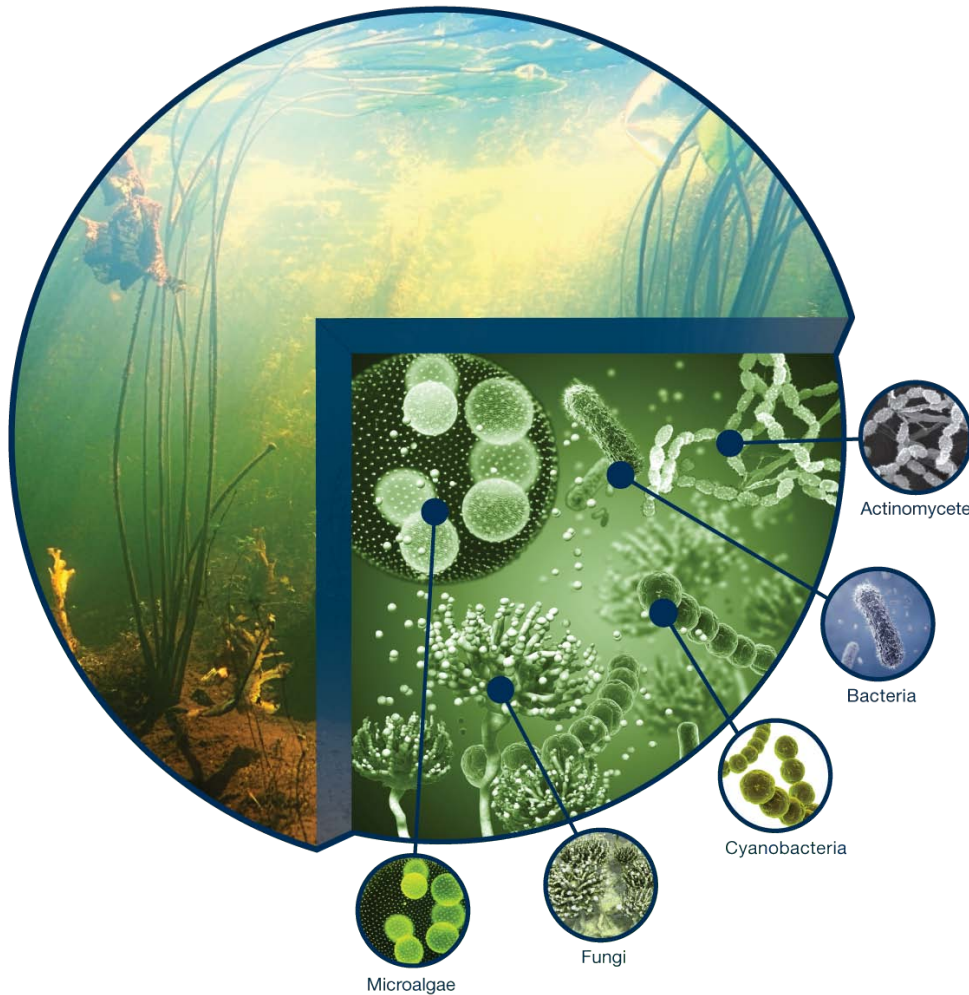
Overview of AVS-Our Focus

Our track record of success



- Algaeventure Systems founded in 2008 with multiple patented and patent pending technologies
- CRADA with NOAA
- AVS received \$6 million ARPA-e DOE grant for Solid Liquid Separation (SLS) technology
- Patented technologies demonstrating harvest of 100s of kg dry weight solids (DWS) from the water column
- We access and identify novel chemical compounds **previously unobtainable**, by utilizing our patented SLS technology to concentrate harvested algae micro-organisms.

Why Micro-Algae Consortia?



- Complex biology with **defense mechanism chemistry**
- Highly potent chemistry that is **pre-optimized by nature**
- **Proprietary patented technology** to acquire and maintain the consortia at scale

Broad Based Collaborations-

Looking for More!



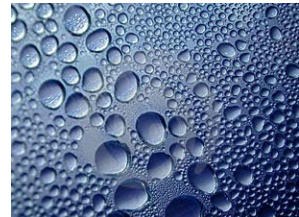
- Pharma and Agrochemical - Lilly, AZ, etc
- Academic - OSU, Texas A&M-CC, UCSC
- Government - NOAA (CRADA)

AVS Patented Technologies

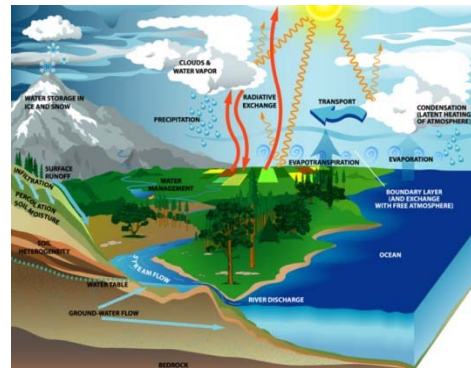
Biomimicry, emulating nature



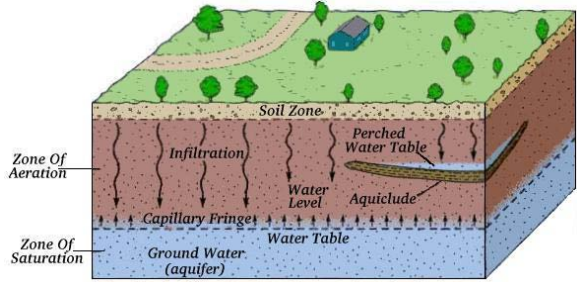
Gravity



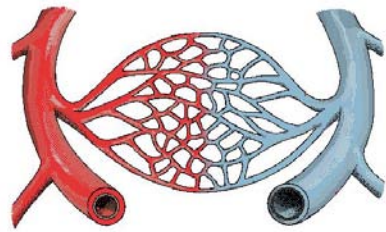
**Evaporation -
Condensation**



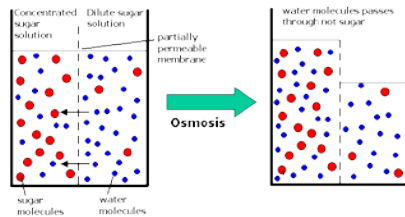
Hydrology



Capillary



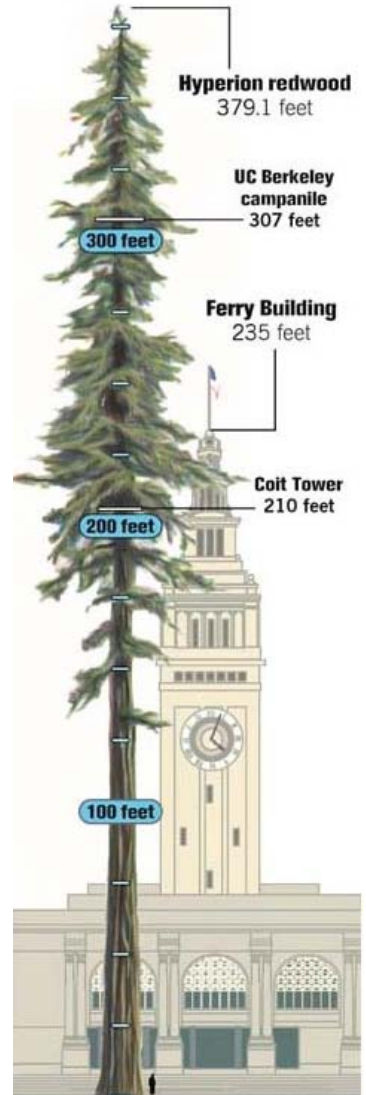
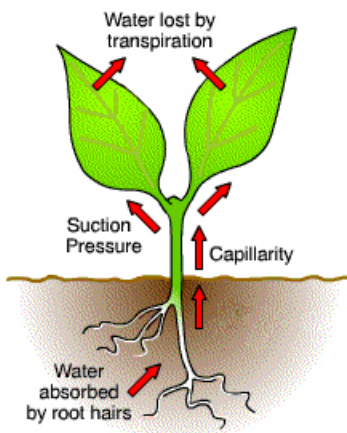
**Osmosis -
Diffusion**



**Cohesion -
Adhesion
Absorption**



**Transpirational
Pull**



Our patented dewatering technology allows for 99.9% concentration



1 million gallons of water to 1,100 gallons of concentrate



“It would take my team 30 years to capture what AVS/Biosortia can do in 3 weeks” - Dr. Peter Moeller, NOAA

How AVS technology works

Our technology is focused on biomass solids removal



Concentration

1. We input water with biomass solids into our system
2. We settle solids via two types of systems
 - Passive Filtration Model - uses fibers
 - Normal Clarifying System - uses iron plates and polishing system (remove Fe and Mn)

Dewatering

1. SLS uses **properties of nature** like adhesion of water
2. Biomass is removed, N & P removed with it.

AVS harvesting current limitations



- our systems are currently configured for land based harvesting
- concentration levels can range from as little as 0.20 g/l (total solids)
- ideal concentration levels range from 0.40 g/l (total solids)
- If provided access to barge and/or assets, we can conduct “on-water” harvesting

Harvesting Operations



Louisiana



SE Texas



Grand Lake St Marys Ohio

Costs associated with AVS' technologies & harvest operations



- AVS has invested \$12+ million in our systems and technologies
- We invest > \$250K per harvest from site selection, harvest, and material processing
- We are seeking:
 - 1) assistance in finding unique bloom locations,
 - 2) permissions and access to locations,
 - 3) the biomass we recover for AVS study and purposes,
 - 4) any logistical or cost support for harvest operations.
- We provide:
 - 1) data of the resulting biomass, analysis conducted in collaboration with NOAA. Leads to a better understanding and potential advancements in remediation,
 - 2) economic activity.

Frequently asked questions



- Does your system clean the water?
- How many gallons/hr. can you process now? Will these volumes increase in the future?
- How much biomass do you remove during a harvest?
- Can it obtain things other than algae?
- What testing and quality standards do you maintain?
- What are your site requirements?