

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

Bioenergy Technologies Office

Algal Biofuels Strategy

Report on Workshop Results and Recent Work

Roxanne Dempsey
Technology Manager

Algal Biofuels Strategy

Session Agenda—Report on Workshop Results and Recent Work



- Outcomes of the two DOE-hosted algae stakeholder workshops and the Algae Program’s plans for future research.
- Results of the National Alliance for Advanced Biofuels and Bioproducts consortium
- Testbed projects and industrial partner perspectives
- A panel discussion on the impacts of biofuel-enabling bioproducts on the algae industry.

Algal Biofuels Strategy Workshops

- The Algae Program held two stakeholder workshops:
 - Nov 2013, Arizona State University (88 attendees), and
 - Mar 2014, Charleston, South Carolina (125 attendees)
- These workshops convened university, national laboratory, industry, advocacy, and government stakeholders to consider:
 - Current barriers to algal biofuel commercialization
 - Research and development priorities for achieving near-term goals
 - Appropriate metrics for success
 - State of technology and progress made in achieving success metrics.
- Full proceedings reports are available at www.energy.gov/eere/bioenergy/algal-biofuels-strategy-workshop



Stakeholder Feedback



- The Algae Program captured a significant number of comments and observations from stakeholders during the two events.
- Common priority areas:
 - Partnerships/integrating disciplines
 - Improving data standardization and access
 - Ensuring sustainability
 - Increasing biomass yield/CO₂ use
 - Strain development/GMOs
 - Enabling bio-products
 - Interagency communication/collaboration



Facilitating Partnerships

Need: More opportunities to partner, especially between academia and industry.

Response:

- DOE recognizes that research and development benefits from both academia and industry knowledge, and so future funding opportunities will encourage partnering to accomplish strategic goals.
- DOE plans to continue to hold workshop events in the future to provide networking and feedback opportunities

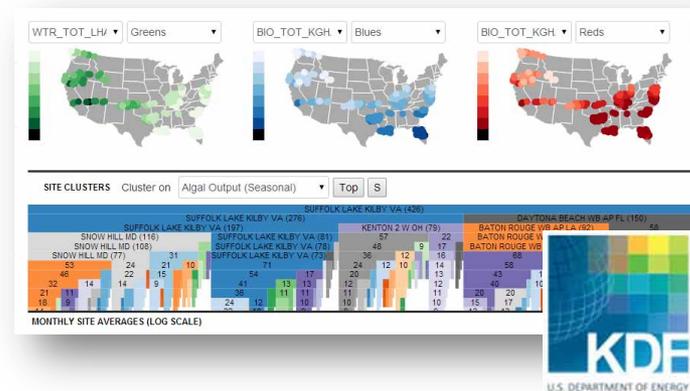


Data Standardization and Access

Need: Easier ways to share data and information

Response:

- Improving Algae Bioenergy Knowledge Discovery Framework
 - Biomass Assessment Tool will be added to the KDF, at www.bioenergykdf.net
- ATP3 cultivation data sharing
 - Unified cultivation trial data will be public this fall on www.OpenEI.com
- NREL lab standards publication
 - Standardized laboratory procedures, methodologies, and nomenclature available online at www.nrel.gov/biomass/microalgal_procedures.html, “Standard Procedures for Microalgal Biofuels Analysis”

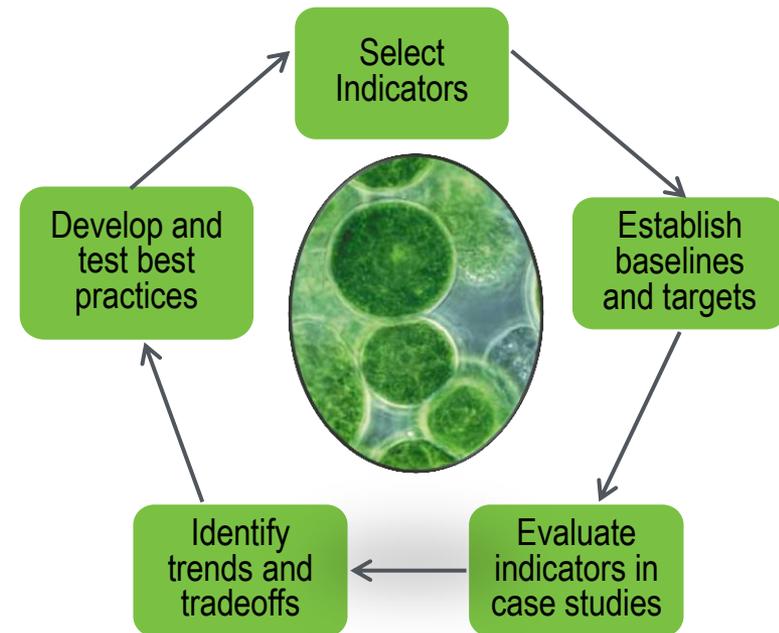


Ensuring Sustainability

Need: Algal biofuel production systems must be developed sustainably, taking into account GHG emissions and resource use.

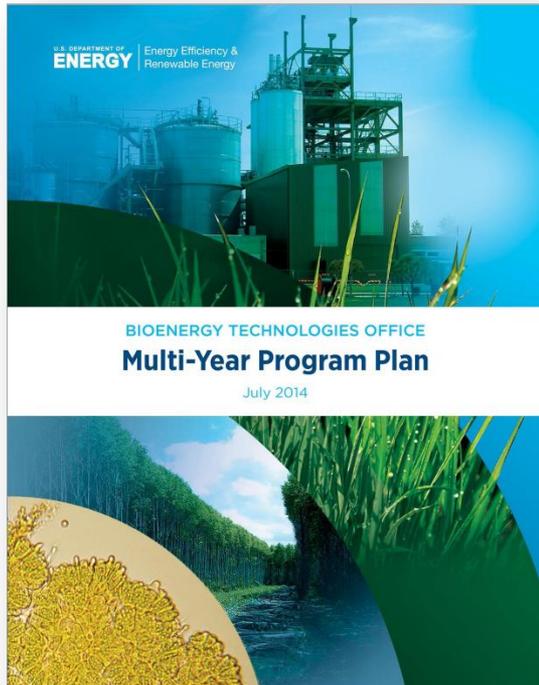
Response:

- The projects under the FY12 Advancements in Sustainable Algae Production funding will be releasing publications on their successes in nutrient and water recycle.
- ORNL is providing the program with a series of sustainability indicators to help guide project work



Increasing Biomass Yield

Need: Improving biomass yields still a barrier



Response:

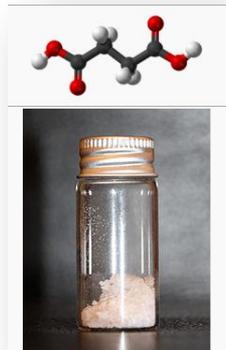
- The Algae Program targets in the BETO Multiyear Program Plan are structured around yield metrics, as this is the primary driver to reduce the finished fuel price and achieve the Office goal of \$3/gge.
- Improved strains are still needed. The issues around GMOs need to be addressed.

Developing Bio-products

Need: Government must recognize that developing bio-products as a way to build infrastructure to enable biofuels is critical and timely.

Response:

- Bio-products are being incorporated into the program.
- BETO is hoping to host a bio-products focused workshop sometime in the fall.
- The panel discussion today will focus on coproducts.



Algae Bio-products include specialty chemical such as succinic acid, as well as animal and aquaculture feed



Interagency Communication/Collaboration

Need: Coordination on high-impact regulatory guidance including the deployment of genetically engineered strains; use of flue gas CO₂; fuel production and certification; and the Renewable Fuel Standard.

Response:

- The interagency Biomass R&D Board Algae Working Group is collaborating this year on a policy white paper.
- DOE is participating in the interagency Bioeconomy workshops, the public workshop will be held here tomorrow, July 31.

Participating Agencies



Introductions

Moderator:

- **Roxanne Dempsey**- Technology Manager, Bioenergy Technologies Office, U.S. Department of Energy



Speakers:

- **Jose A. Olivares**- Bioscience Division Lead, Los Alamos National Laboratory; Executive Director, National Alliance for Advanced Biofuels and Bioproducts
- **John McGowen**- Director of Operations, ATP3, Arizona State University
- **Kimberly Ogden**- Professor, University of Arizona; Engineering Technical Lead, National Alliance for Advanced Biofuels and Bioproducts
- **Martin Sabarsky**- Chief Executive Officer, Cellana

