

Report Out: Oils Utilization – 2030 *Target*

Co-Chairs:

Dr. Tom Binder, ADM

Dr. Todd Werpy, PNNL

Facilitator - Michael Manella, BCS
Incorporated

Scribe - Harriet Foster, BCS Incorporated

Participants:

Beth Calabotta - Monsanto Company

David Hester - Huntsman

David Jones - Live Fuels

Jim Martin - United Soybean Board

Erin O'Driscoll - Dow Chemical

Chris Penet - Danisco Genencor

May Wu - Argonne National Laboratory

30x30 Workshop |

A Scenario for Supplying 30% of 2004
Motor Gasoline with Biofuels by 2030

Biomass

Oils Utilization: Role of Oils in 2030

- Conventional bio-oil sources (Corn, Soy, Canola, and Animal fats) could contribute 7 to 15 billion gallons* volume by 2030:
 - » Corn - 1.4 to 2.8 billion gallons
 - » Soy - 3.2 to 6 billion gallons
 - » Canola - 1.5 billion gallons
 - » Animal fats - 1 to 4 billion gallons

*Biodiesel and/or green diesel

Oils Utilization: Role of Oils in 2030

- Additionally, carbohydrate co-products from conventional bio-oil sources could contribute 5 billion gallons of ethanol and other carbohydrate fuels.

30x30 Workshop

Oils Utilization: Role of Oils in 2030

- Other oils which may enter or increase their market share by 2030:
 - » Cottonseed, sunflower, peanut, safflower - 2006
 - » Algae - extensive development required
 - » Jatropha and other new oilseed crops - extensive development and infrastructure required at all stages
 - » Tall oils from wood production -
- These other bio-oils could contribute 100 million gallons by 2030

30x30 Workshop

Oils Utilization: Barriers

- 2012 barriers
 - » Plant oils
 - ♦ Too much oil seed meal
 - ♦ Too little oil & starch
 - » Animal fats
 - ♦ Animal fats high in saturates, harder to convert
 - ♦ Collection, infrastructure, contaminant elimination for waste greases
 - ♦ Sulfur from hair in animal fats costly to remove
 - » **Infrastructure**
 - » Low priority placed on biodiesel in biofuel goals
 - » Capturing value from glycerol and soap stock co-products
- **2030 considerations**
 - » **Land availability**
 - » **Sustaining high yields while containing pests**
 - » **Nitrogen cost & availability (canola and corn crops)**

30x30 Workshop

Oils Utilization: Research & Development Needs

- 2012 R&D Needs:
 - » Develop and demonstrate meal fractionation technologies
 - » Develop corn oil fractionation in dry mills
 - » New chemical transformation technologies
 - » Improve cellulose digestability in animals
 - » Research glycerine utilization
 - » Research hydrocracking technologies

30x30 Workshop

Oils Utilization: Research & Development Needs

- **Additional 2030 R&D Needs:**
 - » Develop high-oil perennial crop for growth on marginal lands
 - » Genetic engineering for fungus, pest, and disease-resistant crops
 - » Develop herbicides, pesticides, and fungicides
 - » Develop efficient Nitrogen uses
 - » Process intensification for green diesel
- **2020 Technical Targets**
 - » Demonstrate doubling of rate of historical yield gain for conventional crops
 - » Demonstrate uses for sugars, proteins, glycerols, soap stock, hulls, and lecithin, with new markets to absorb increasing supply
 - » Develop markets for oil-extracted DDGs
 - » Demonstrate first intensified green diesel process
 - » Increased oil level in conventional bio-oil sources (demonstrate economics)

30x30 Workshop

Oils Utilization: Policy

- **2012 policy priorities**
 - » Extend subsidies beyond biofuels
 - » Develop mandate for biodiesel
 - » Provide incentives for infrastructure throughout value chain
 - » Provide loan guarantee programs to farmers to mitigate investment risk for new oilseed market development
 - » Loan guarantees for germ fractionation of corn oil in dry mills
 - » Provide incentives to improve fuel efficiency, including raised CAFE standards and increased use of diesel engines
- **2030 policy priorities**
 - » **Implement policies for the production and use of biofuels and bioproducts to ensure a domestic supply of fuels and chemicals to meet U.S. strategic needs**

30x30 Workshop

Oils Utilization: Federal Role

Federal Role

- » Support research for utilization of protein, glycerine and soap stocks
- » Develop interagency protein platform for replacement of petrochemicals
- » ID infrastructure needs and common elements across crops
- » Reduce export barriers to increase the supply of animal fats
- » Support streamlined permitting for biodiesel production facilities
- » **Assess the role of the oilseeds pathway and biomass in ensuring a domestic supply of fuels and chemicals to meet U.S. strategic needs (in both public and private markets)**
- » Continued support of land grant universities

30x30 Workshop

Oils Utilization: Synergies and Conflicts

- Develop agriculture worldwide to meet both food and fuel production and distribution needs.

30x30 Workshop
