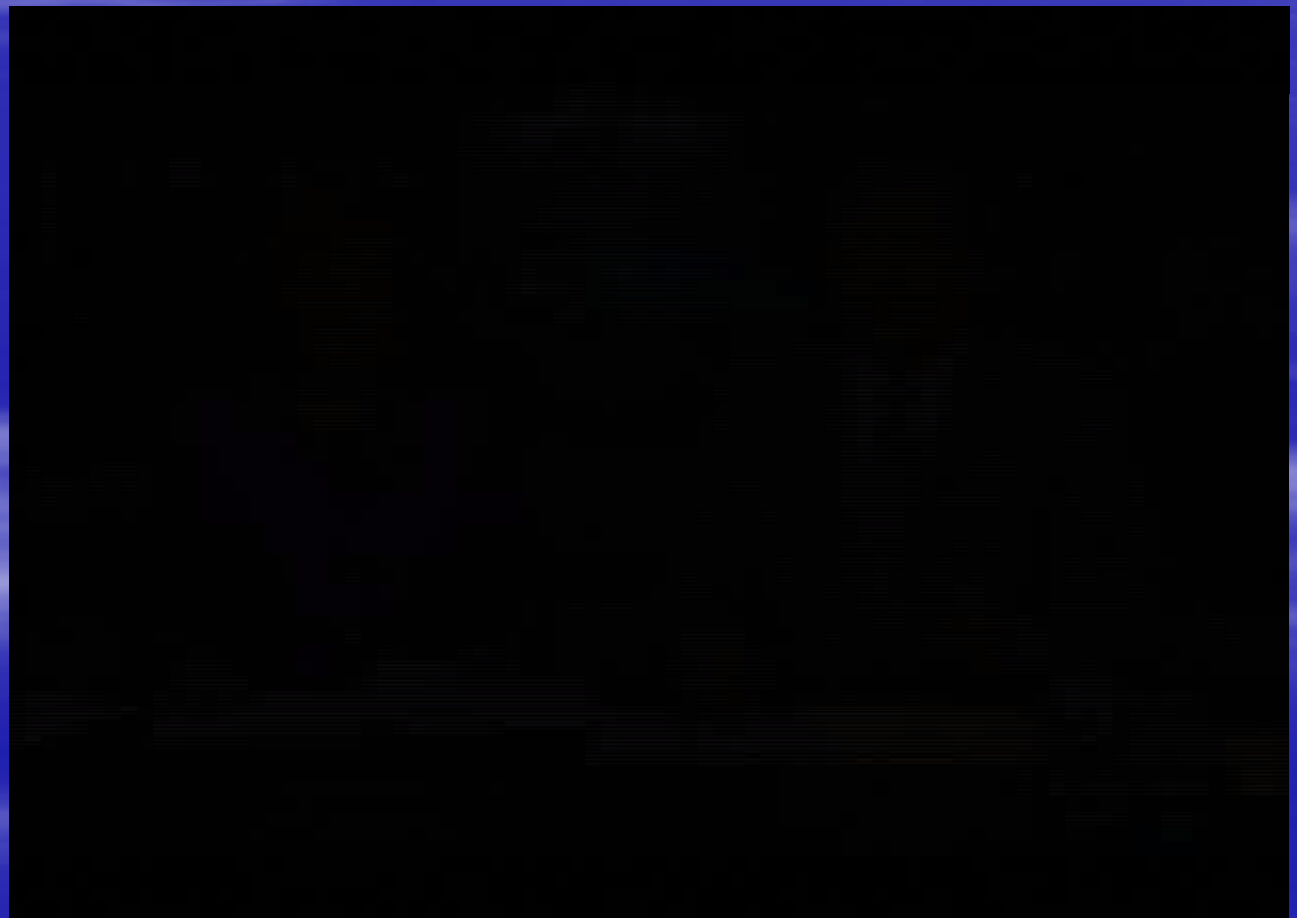
Freeways to Fuel

UDOT

Utah State University extension



Some Facts

- Estimated 10 Million Acres in Roadside Lands *(based on 25% of some 4 million miles of roadway nationally)*
- UDOT uses over 1 million gallons of diesel fuel/year
- UDOT has over 5,000 miles of highways = @100,000 acres of right-of-way
- Mowing and weed control costs are $1.7 Million/year (FY 2006 Costs) = over $300/mile
- Currently many of these areas have non-biofuel producing plants such as wheat grass to control dust and erosion.

Biodiesel Production Potential along UDOT Rights of Way

- UDOT Lands could potentially produce over 300 gallons/mile of Biodiesel
  - Assumptions:
    - 100 Foot Wide Growing Region per Mile
    - Use agronomic Methods and Equipment
    - 60% Dry Land Yields
  - This solves maintenance and pest cost problems
  - Decreases traditional petroleum fuel usage
  - Could this also be used for G2 fuel production

Research Focus

- Will conditions permit crops to grow along freeway shoulders?
- Will cropping these areas cause envt. problems?
- Which crop and cultural practices will produce the most economical yield?
- What would this process do to the ecology of plant populations along freeways?

Research Considerations

- Safety
- Structural Integrity
- Establishment and Harvesting
- Economics
- Wildlife Impacts
- Roadside Ecology
- Environmental Impacts
- Water Quality
- Grower Concerns

Examples of UDOT fleet vehicles that would utilize F2F biodiesel

Potential Benefits/Advantages

- This method of fuel production:
  - Does not affect food supply
  - Decreases emissions
  - Increases aesthetics
  - Decreases costs of maintenance
  - Aids in educating the public about cleaner burning renewable fuels

Results for 2007 - 2008

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Summary Table 2007 Yield Data in lbs/acre				
	UBC	KAYS	MM240	TREM
SP Canola	394	90	0	2
RR SP Canola	485	190	0	8
Sp Safflower	706	0	5	0

Looking Forward

- Roadside Simulation Laboratory
- FreeWays to Fuel National Alliance
- Greenhouse studies
- Biomass to Liquid (G2) Platforms
- Alternative locations

RSL Research Focus

Compaction Relief + Seeding Pass ≈ CultiPlanting

FreeWays to Fuel Alliance

- National Research Alliance
  - Top Tier Universities
    - WSU, Iowa State, Auburn, Michigan State University, Montana State, North Carolina State University, SUNY
  - Corporate
    - New Holland – tractor donation
    - Aerway Ag – aerator donation
  - Organizational
    - USDA
    - DOD
    - 25X25

Greenhouse Study Design

- Experiments with constant compaction
  - Depth
  - Crack
  - Depth and crack

Other Crops

- Are we looking at the right ones?
- Investigation of Other Crops
  - Dwarf Sunflower
  - Fall/Winter Safflower
  - Camelina
  - Gumweed
  - Annual Flax
  - Mustard

Biomass to Liquid (G2)

- Biomass to Liquids
  - Thermal Platforms to transform biomass into liquid fuels

Other Possible Locations

- Estimated 10 Million Acres in Roadside Lands *(based on 25% of some 4 million miles of roadway nationally)*
- Other locations
  - Military installations
  - Airports
  - Brownfields
  - Railroads
  - Power companies
  - Tribal Lands
  - Landfills