



# Stony Brook Development Center

# Biodiesel



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Sprague  
Energy  
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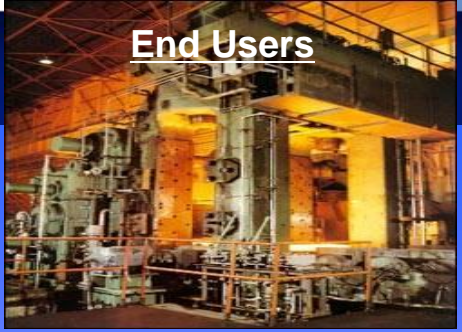
- Sprague has been focused on the needs of energy consumers and wholesalers for 140 years. Our vast network of facilities and global expertise have made us a leader in the procurement, handling and delivery of fuel, unique products and management programs and services.
- Corporate headquarters in Portsmouth, New Hampshire
- Locally on Long Island
- Employs 400 people
- Annually distributes/handles more than:
  - 2.5 billion gallons of petroleum products
  - 170 billion cubic feet of natural gas
  - 3 million tons of bulk materials
- Owns and operates 20 major oil terminals
- Throughputs and exchanges at over 50+ additional facilities

## Our Products and Services

### Resellers

### Materials Handling

#### End Users



Natural Gas

Fuel Oils

Coal

#### Home Heating Fuels



Motor Fuels



Clean fuels



Motor fuels

#### Risk Management



Bulk



Break Bulk










Lumber

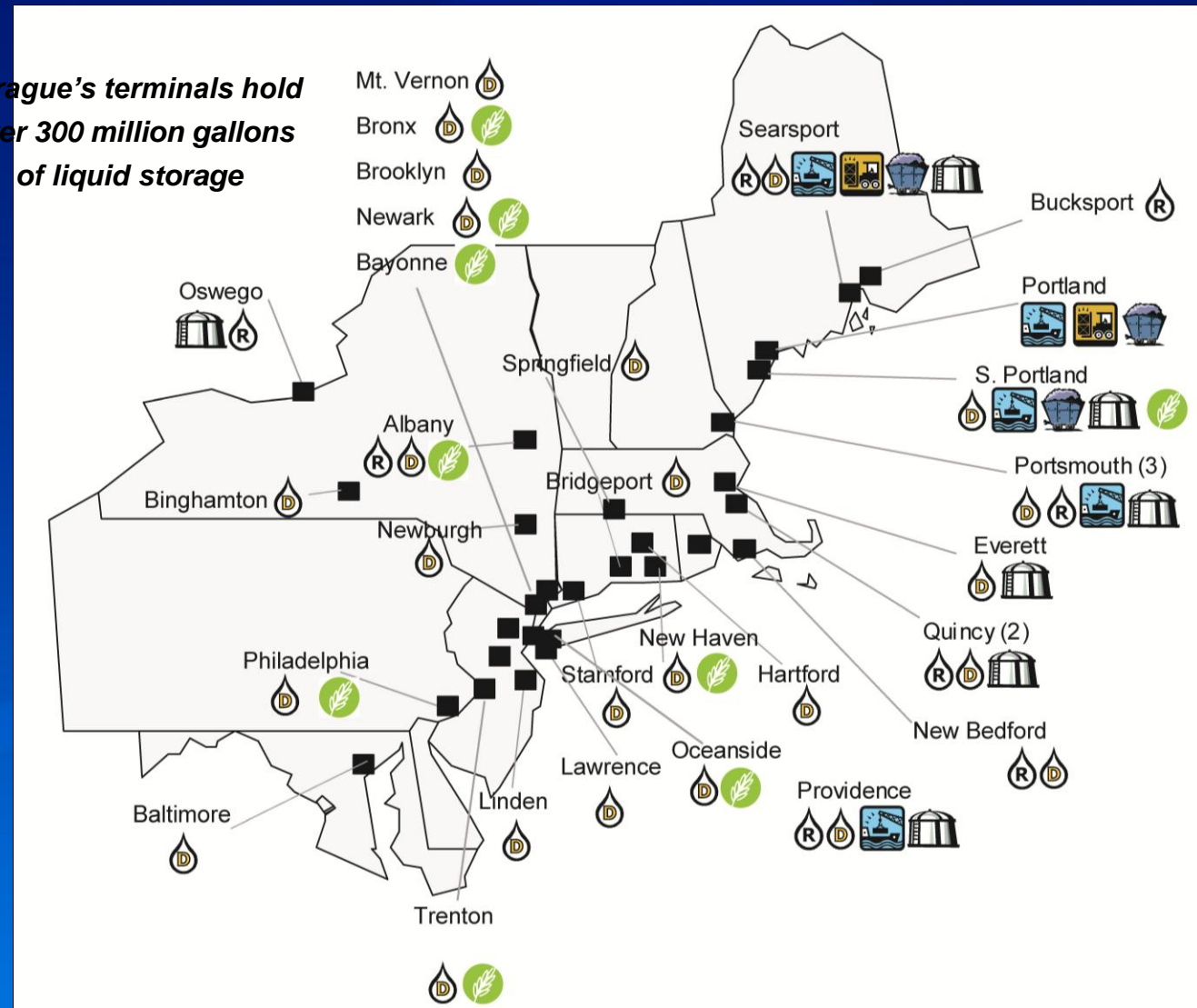


Liquid



-  Distillate
-  Residual
-  Bulk
-  Break Bulk
-  Liquid
-  Biofuel
-  Coal

*Sprague's terminals hold over 300 million gallons of liquid storage*





**Sprague**  
**Advantage**

Fuel Manager

- Fuel management to afford customers fuel management controls to manage fuel transactions; up-to-the-minute tank monitoring, and expeditious operational maintenance repairs

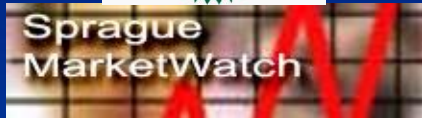


**Sprague**  
**Biodiesel/Bioheat**

- Fuel source derived from vegetable oils and/or animal fats. Domestic, environmentally sound and sustainable



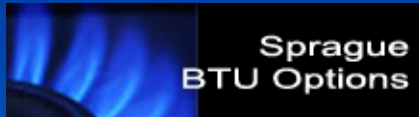
- Sprague Energy was the first petroleum distributor to earn biodiesel certification.



- Daily natural gas and oil commentaries help customers make informed energy decisions with the two MarketWatch reports.



- Sprague Real-Time is a web-based tool to allow certified customers access to their information on a real time basis.



- The BTU Options program is designed to leverage the cost gaps between natural gas and oil to lower total cost of energy.



- Premium product designed to help maintain and preserve diesel engine systems year round



- Premium product designed to help maintain and boost heating systems



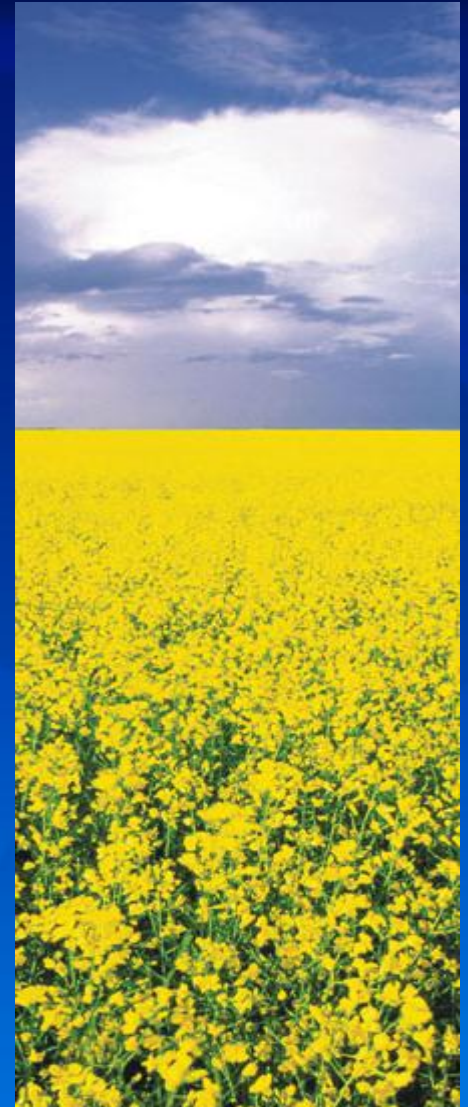
- Specialty price protection program designed to allow customers to match real demand to financial instruments.



# The National Biodiesel Board

- Represents the biodiesel industry as the coordinating body for research and development in the United States.
- Founded in 1992 by state soybean commodity groups.
- Today NBB's membership is state, national, and international feedstock and feedstock processor organizations, biodiesel suppliers, fuel marketers and distributors, and technology providers.

[www.biodiesel.org](http://www.biodiesel.org)





Biodiesel, n. -- a fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils, animal fats, or recycled cooking oil, designated B100, and meeting the requirements of ASTM D 6751.

**Official IRS and EPA definition – goes to fuel quality.**



- Biodiesel can be used in any concentration with petroleum-based diesel fuel in existing diesel engines or heating systems with little or no modification. Biodiesel is NOT ethanol!
- Biodiesel is **not** raw vegetable oil!
  - Biodiesel **must** be produced by a chemical process that removes glycerin from the oil.



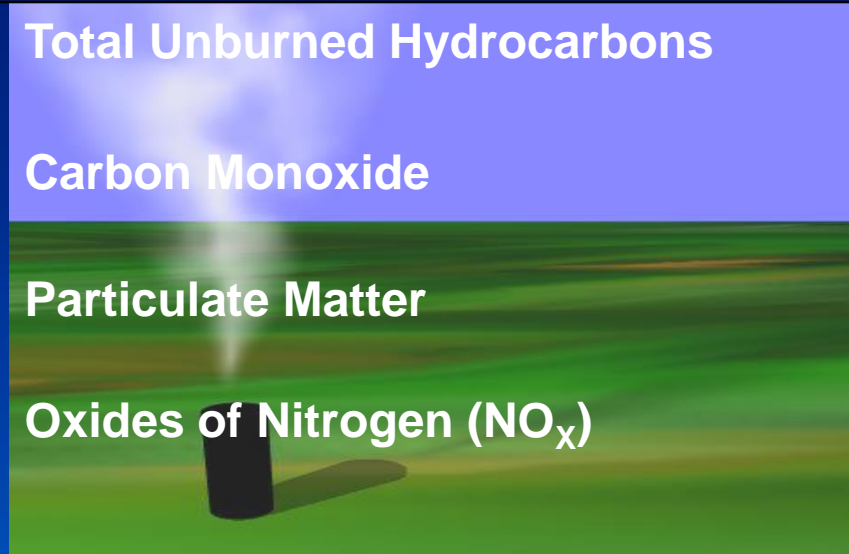




## Biodiesel Attributes

- **Blends with petrodiesel in any percentage**
  - Once it is blended it does not separate back out
- **Higher Cetane**
  - Over 50 vs. average petrodiesel around 44
  - Smoother, more complete burn
- **High Flash Point Makes it Safer**
- **Virtually Zero Sulfur**
  - Meets ULSD limits of 15 ppm or less
- **Zero Aromatics Reduces Toxicity**
- **Superior Lubricity with ULSD and Reduces Black Smoke (Particulates)**

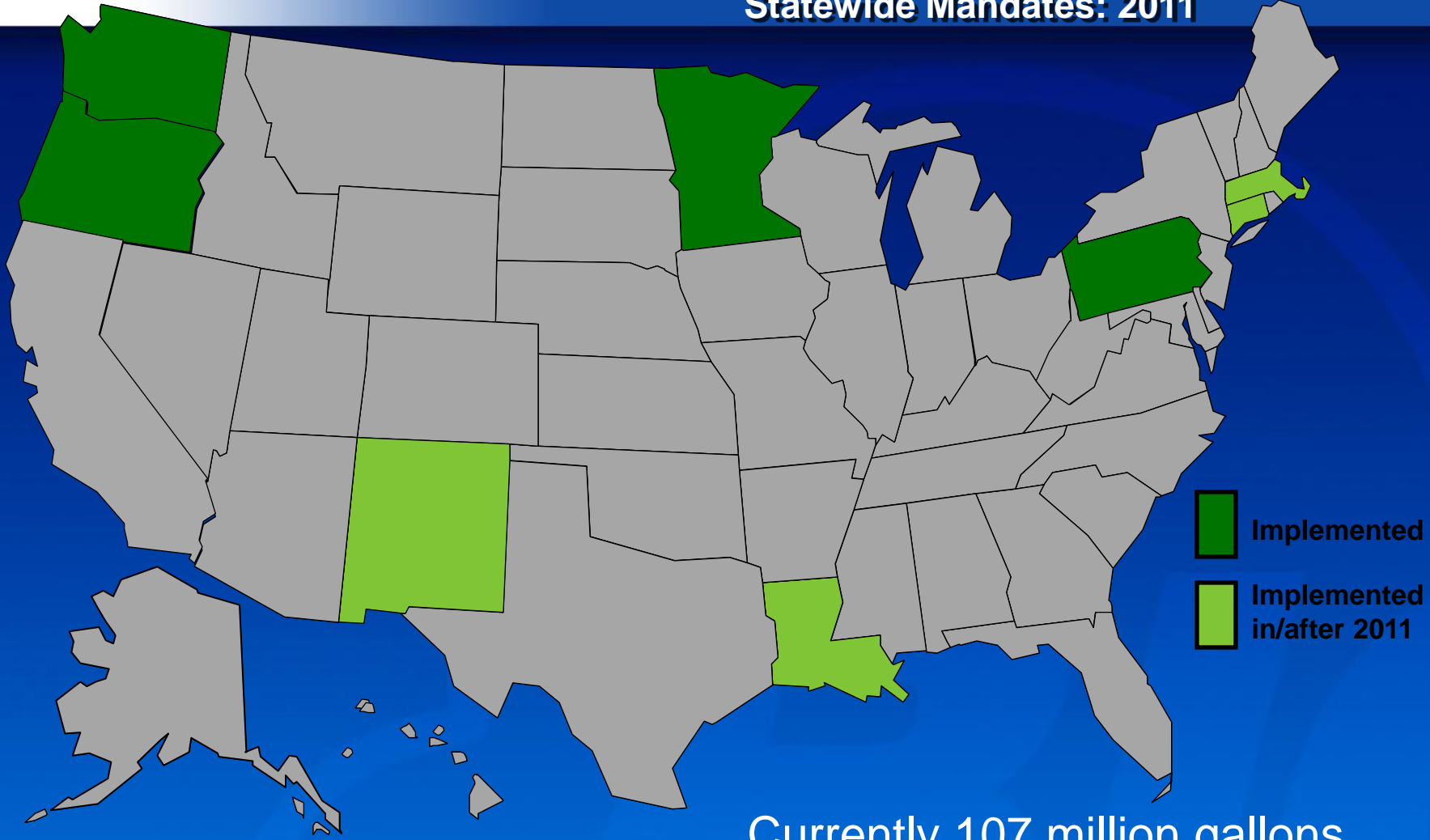
Emission Type	B20	B2
Total Unburned Hydrocarbons	-20%	-2.2%
Carbon Monoxide	-12%	-1.3%
Particulate Matter	-12%	-1.3%
Oxides of Nitrogen (NO <sub>x</sub> )	+/-2%	+/-0.2%

A 3D illustration of a black smokestack on a green field, emitting a plume of white smoke that rises into a blue sky. The smokestack is positioned on the left side of the table, and the smoke plume extends upwards, partially overlapping the table's header and the first row.

**MSHA (US Department of Labor – Mining Safety and Health Administration)** recognizes biodiesel as the least expensive means for reducing underground worker exposure to DPM – *this is a direct worker health issue*

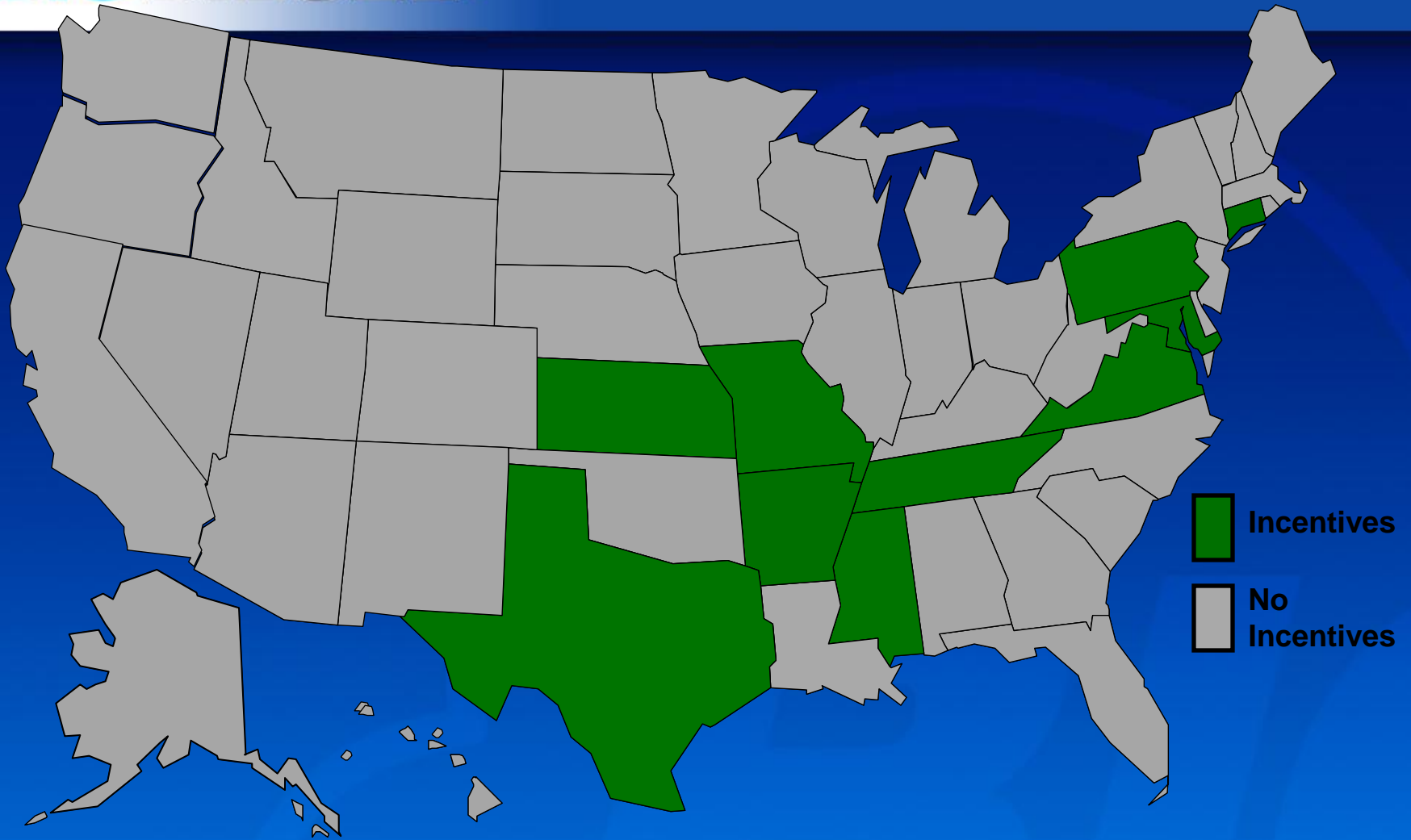


## Statewide Mandates: 2011

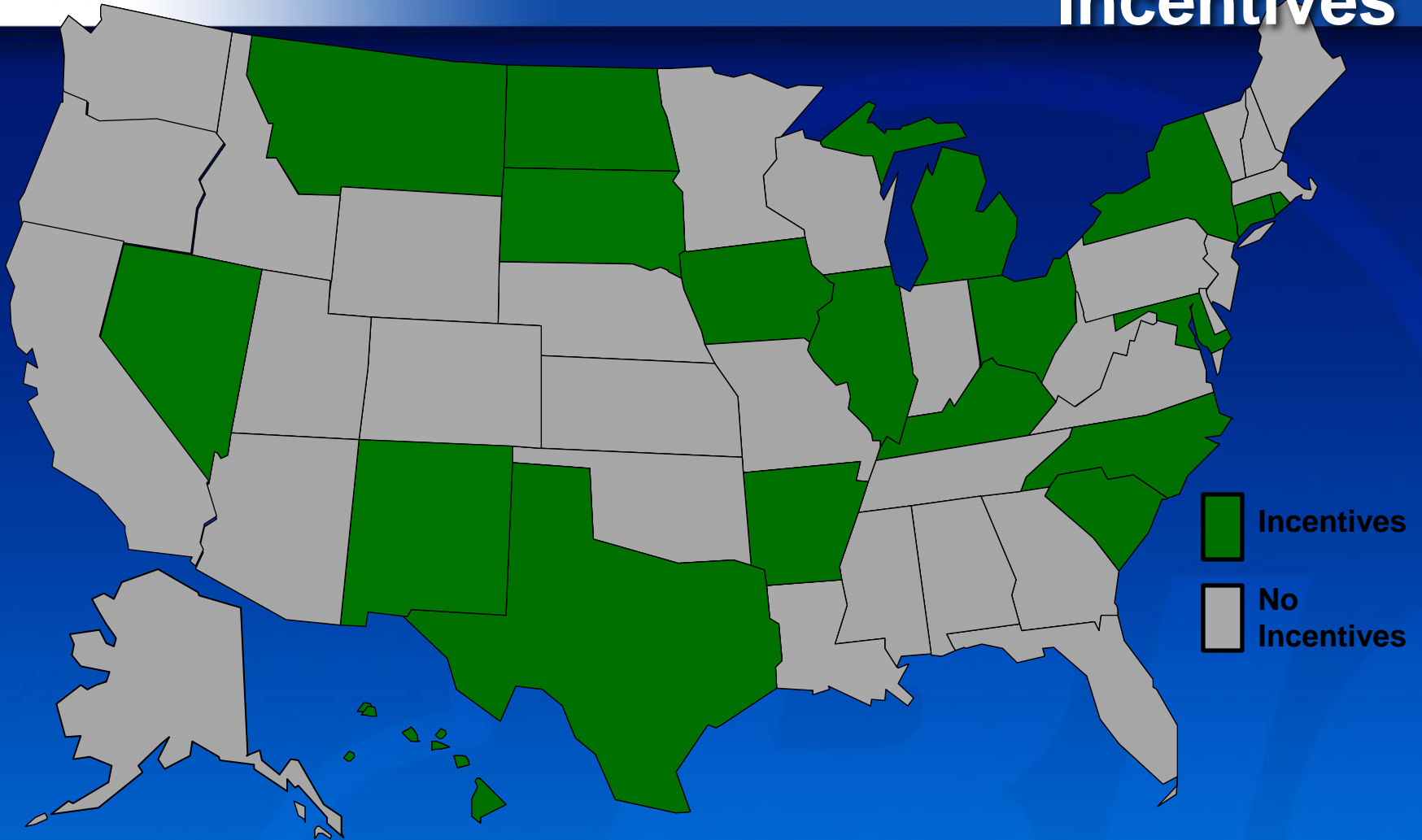


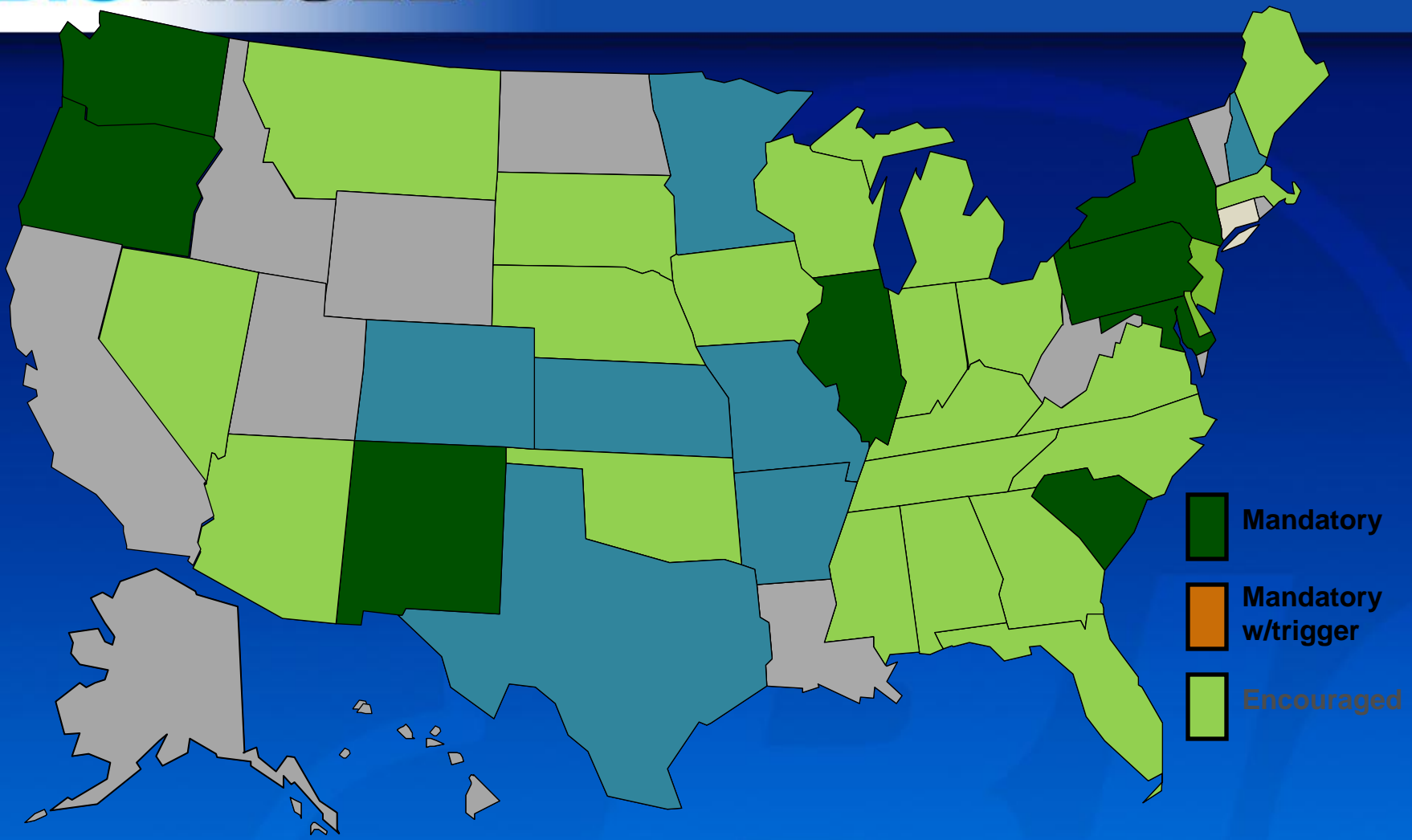
Currently 107 million gallons





# Existing Consumption Incentives









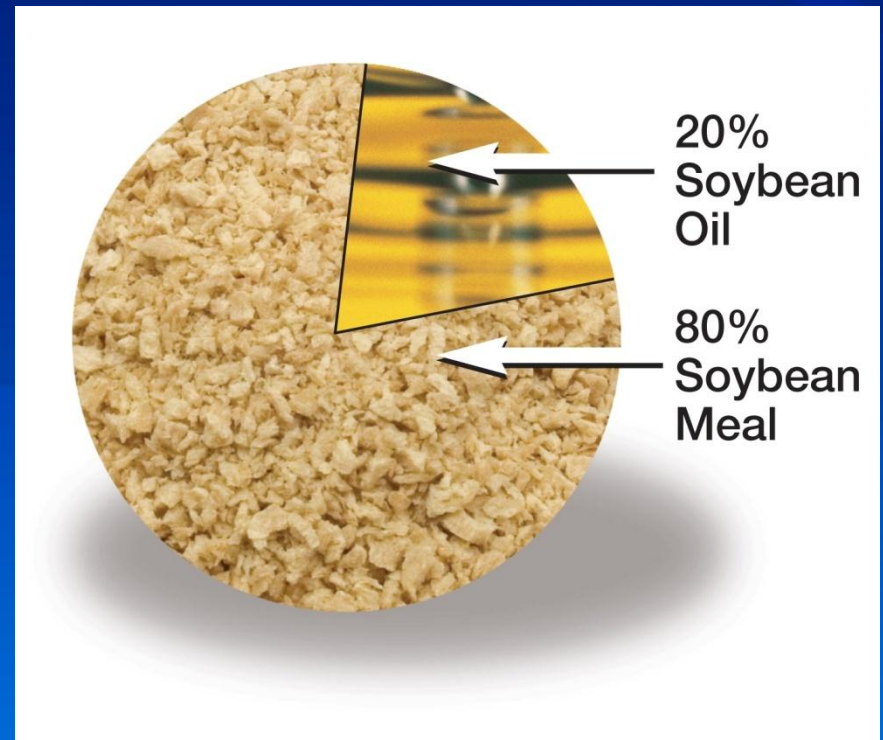
# Biodiesel Enhances Food Security

- The World Bank recently reversed claims that biofuels triggered food prices increases.
- Producing food and energy side-by-side boosts countries' food and energy security while reducing poverty, according to a new FAO report.
- Increasing value of farm products makes the business of growing food more stable.



# Co-products of Food Production

- Protein meal for livestock feed is the primary driver for soybean production
- Better utilization of the oil co-product can reduce the price of the protein meal.



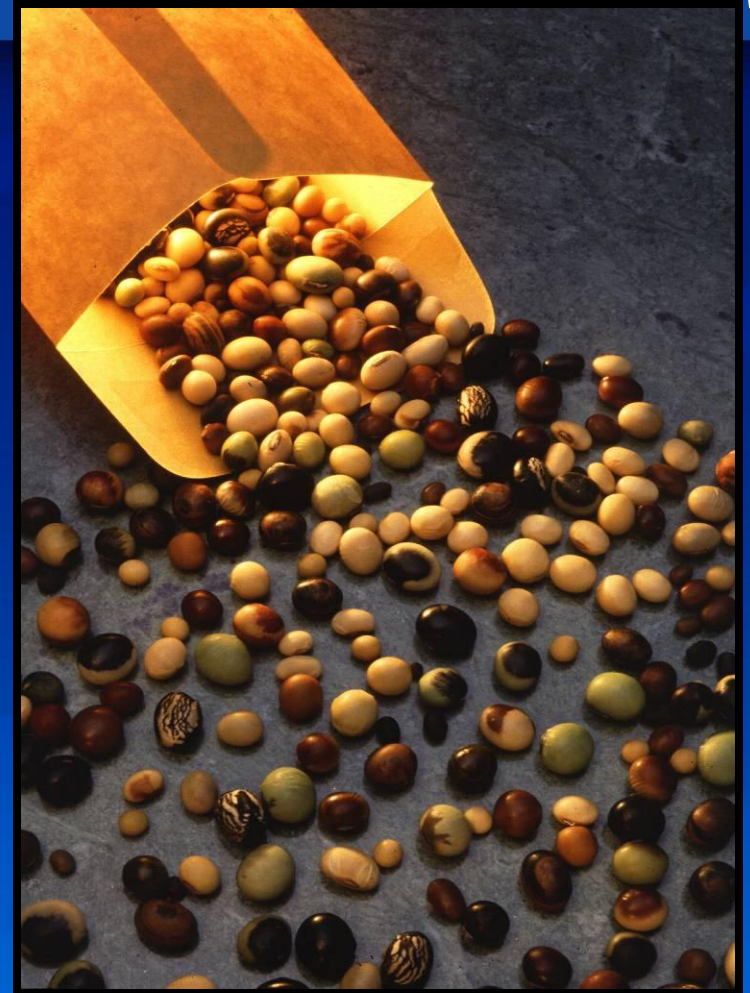


# Food Supply Security

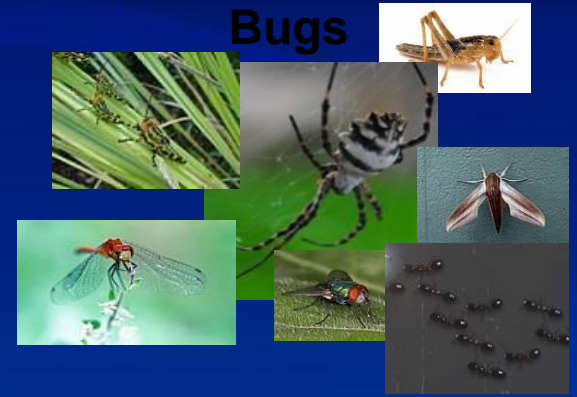
- In 2008, 360 million gallons of biodiesel from soybeans co-produced enough soybean meal for the equivalent of 110 billion rations of protein for the hungry.



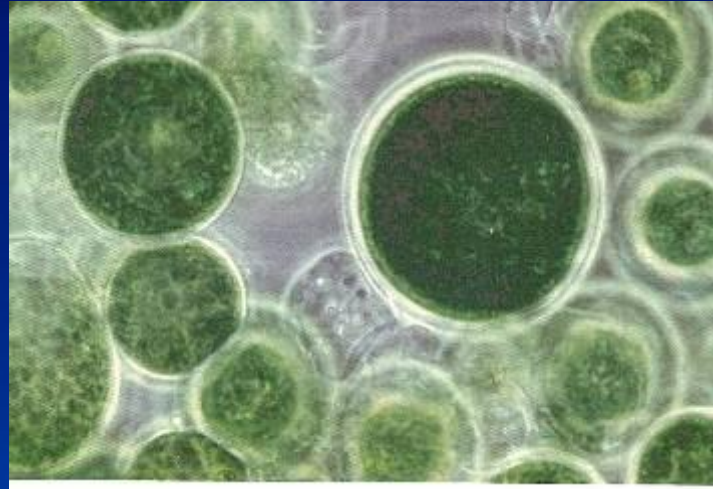
- Soybean
- Rapeseed
- Canola
- Sunflower
- Safflower
- Flax
- Cottonseed
- Palm
- Hemp
- Mustard
- Peanut
- Jatropha
- Coconut
- Radish
- Pennycress
- Tung Oil
- Used cooking oil
- Trap grease
- Tallow
- Corn oil from ethanol production











Algae



Jatropha

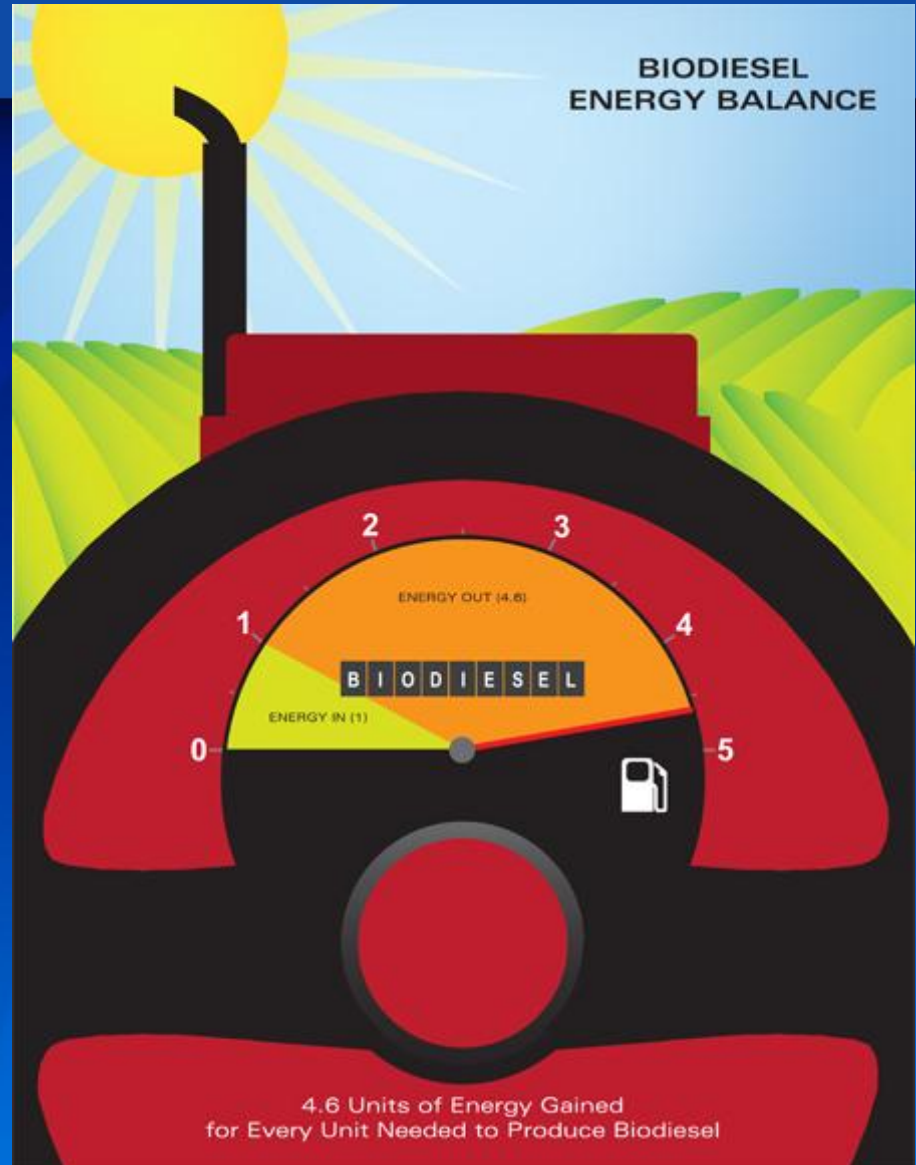


Low Ricin Castor



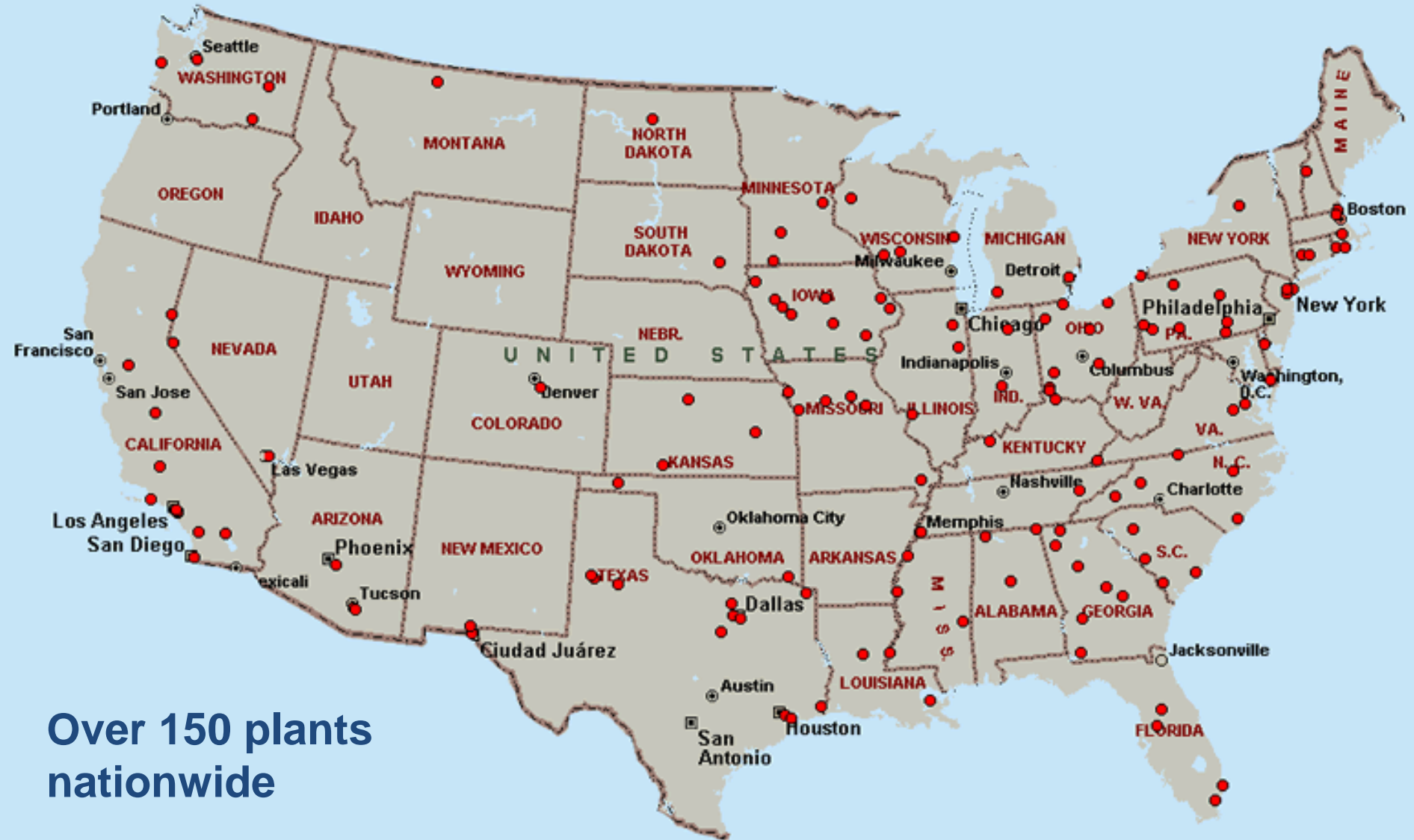
Brassica Juncea

- 3.2:1 in 1998
- Grew to 4.56 due to improved farming
- Will reach 5.44 by 2015





An "Advanced Biofuel" Available Today



Over 150 plants  
nationwide



- Airports
- Construction
- Schools
- Businesses
- Underground Mining
- State, City, County, and Federal Government
- Pro Sports
- Colleges/Universities
- Utilities



**B2-B100**



<http://www.biodiesel.org/resources/users/>

# #1 Priority of Fleet Managers, Operators, Users = Fuel Quality

- 2) Biodiesel and Engine Warranties
- 3) Performance in Cold Weather
- 4) Filter Plugging (e.g., High Blends, Bad Biodiesel)
- 5) Lubricity with ULSD





## OEMs Supporting At Least B20





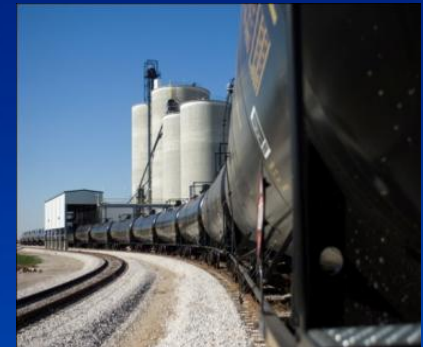
ASTM Specifications exist for:

- B5 and lower
- B6 to B20
- B100 (ASTM D 6751-09)

**Performance  
-based  
Standards**

Industry-wide Fuel Quality Program BQ-9000  
([www.bq-9000.org](http://www.bq-9000.org))

- Insures for “supply-chain management”  
(from feedstock through fuel use)





# **BIODIESEL** BQ-9000

A voluntary quality system certification program for the North American biodiesel industry

Applies internationally accepted quality management principles

Incorporates fuel specifications

Uses a series of audits to verify adherence to the company's own quality management system

[www.bq-9000.org](http://www.bq-9000.org)



[Home](#)**MAIN MENU...**

- [Home](#)
- [Program Description](#)
- [Documents & Forms](#)
- [Program Costs](#)
- [Registration Process](#)
- [Companies](#)
  - [Certified Marketers](#)
  - [Accredited Producers](#)
  - [Consulting Companies](#)
- [NBAC](#)
- [Contact Us](#)

**HOW TO GET STARTED ...**

1. [Review Program Descriptions](#)
2. [Review Registration Process](#)
3. [Documents/Forms](#)

**HOME...**

The National Biodiesel Accreditation Program is a cooperative and voluntary program for the accreditation of producers and marketers of biodiesel fuel called BQ-9000. The program is a unique combination of the ASTM standard for biodiesel, ASTM D 6751, and a quality systems program that includes storage, sampling, testing, blending, shipping, distribution, and fuel management practices.

BQ-9000 is open to any biodiesel manufacturer, marketer or distributor of biodiesel and biodiesel blends in the United States and Canada.

About the National Biodiesel Accreditation Commission:

- Commissioners represent wide scale of interested parties
- Nominated by the NBB President, and approved by the NBB Board of Directors
- Although committee of NBB, NBAC has full authority for design and implementation of BQ-9000
- Developed BQ-9000 as it stands today
- Responsible for on-going improvements to BQ-9000

**TWO CATEGORIES OF CONFIDENCE...**

BQ-9000 helps companies improve their fuel testing and greatly reduce any chance of producing or distributing inadequate fuel. To receive accreditation, companies must pass a rigorous review and inspection of their quality control processes by an independent auditor. This ensures that quality control is fully implemented.

**ACCREDITED PRODUCER**

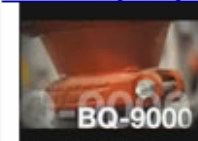
This category is for companies that produce biodiesel fuel to the ASTM

**EVENT CALENDAR...**

- [BQ-9000 Training](#) - Aug 2-3, 2007
- [BQ-9000 Training](#) - August 16, Boston MA
- [BQ-9000 Training](#) - October 18, Las Vegas NV

**ITEMS OF INTEREST...**

- [BQ-9000 Testimony](#) **NEW!**
  - [BQ-9000 Seminar Registration Form](#)
  - [Documents & Forms](#)
- Section now contains all the forms you need.

**ONLINE VIDEOS...****[Biodiesel Quality Video](#)**

[Windows Media Player Required](#)

**CONTACT US...**

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Jefferson City, MO 65110  
573.635.3893  
[info@bq-9000.org](mailto:info@bq-9000.org)





SAMPLE

SAMPLE

SAMPLE



# Oceanside Rack Injection System





## Case Study: NYC Dept. of Sanitation

- Uses biodiesel blends (B5 to B20) in 4,000 vehicles
- Garbage trucks pull double duty for snow removal

*DSNY requires BQ-9000.  
Sprague First designated  
NBB BQ-9000 Certified  
Marketer*

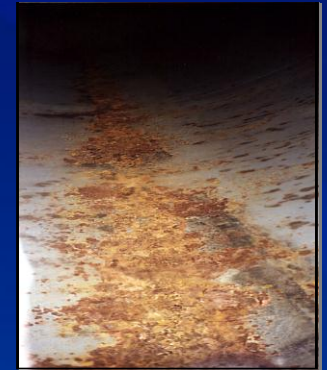


# Does This Processing Meet Your Needs?





- Biodiesel and biodiesel blends will form high sediment levels when in contact with brass, bronze, copper, lead, tin and zinc
- Biodiesel is **compatible** with stainless steel, aluminum, fluorinated polyethylene, fluorinated polypropylene, Teflon and most fiberglass
- Teflon, Viton, fluorinated plastics, and Nylon are compatible with B100





# Sustainable Industry Growth

- Blend economics (i.e. petroleum prices)
- Feedstock availability
- Maintaining federal legislation
- Sound scientific approach to national and global issues
- Consumer confidence



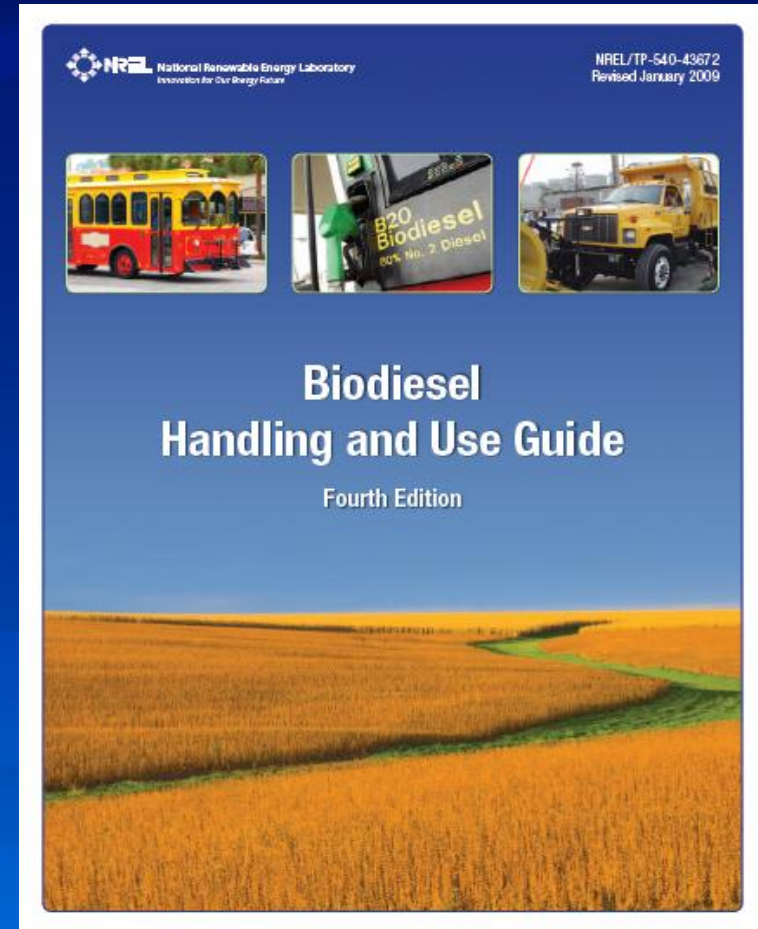
*Brassica Juncea*



# Biodiesel Handling and Use Guide

<http://www.nrel.gov/vehiclesandfuels/pdfs/43672.pdf>

Also on  
[www.biodiesel.org](http://www.biodiesel.org)



- Renewable-Sustainable-Low Carbon Fuel
- Right product at right time
- Demand today and future
- Demonstrated and proven
- Wide acceptance by OEM
- Technology
- Transparent product for multiple uses
- Grants, loans, tax incentive/credits > Federal, State, Local
- Financial investment interest through traditional financial/institutional firms, VC, and private funding

- Federal, State, LOCAL Regulations
- Financial security
- Overall Business Plan
- Engineering experience
- Technology choice
- Production capacity > off-take agreements
- Feedstock options
- Raw material options/availability
- Evolving product specifications
- Supply and demand forecast
- Sprague decision



- Federal and State: motor fuel distributor license
- Consistent Product Supply
- Consistent Product QUALITY
- Financial Stability
- Create sales in competitive market
- Forge critical supplier relationships
- Ability to absorb and hedge fluctuating volatile commodity pricing
- Sales potential/ability
- Accounts Receivable management
- Customer retention in competitive industry

- Feedstock collector: recycled cooking oil/trap grease/other waste streams
- Feedstock broker aggregator
- Broker: feedstock/processed product

Local-Regional-National-Worldwide



# Contact Information

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