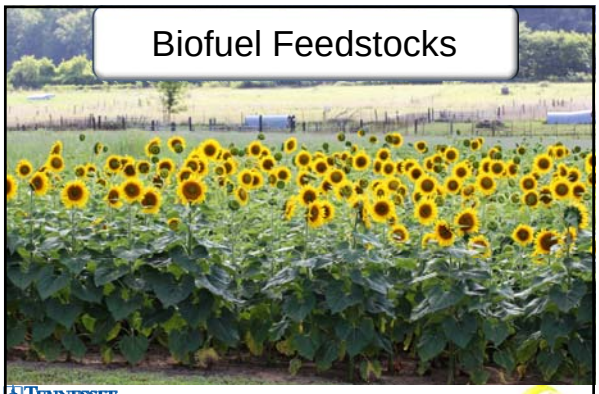
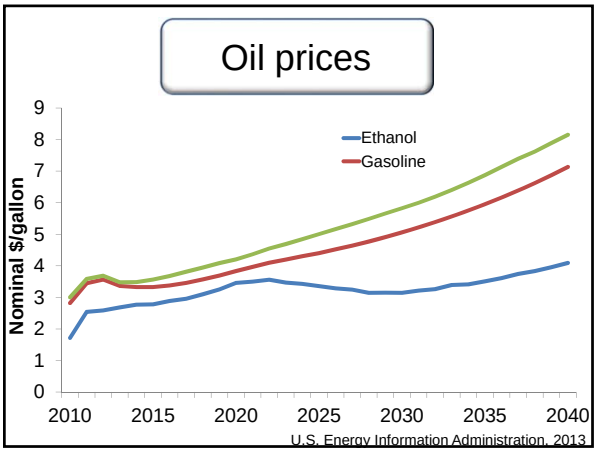
Biofuel Feedstocks



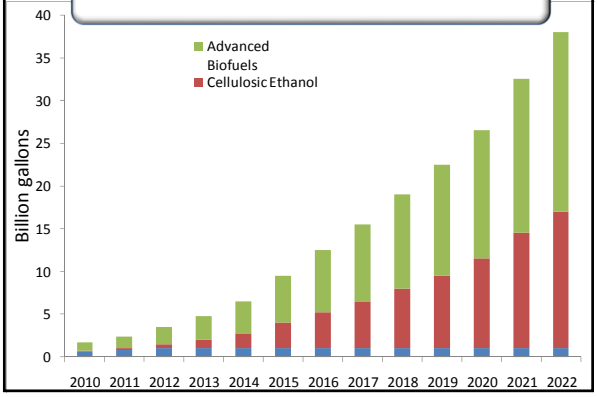
Tennessee State University College of Agriculture, Human and Natural Sciences
Dr. Jason de Koff
Associate Professor – Agronomy and Soils
Biofuel Education

Oil prices

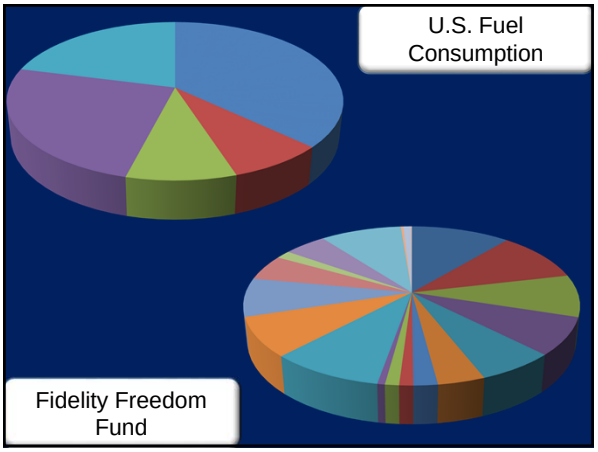


U.S. Energy Information Administration, 2013

Renewable Fuels Standard



U.S. Fuel Consumption

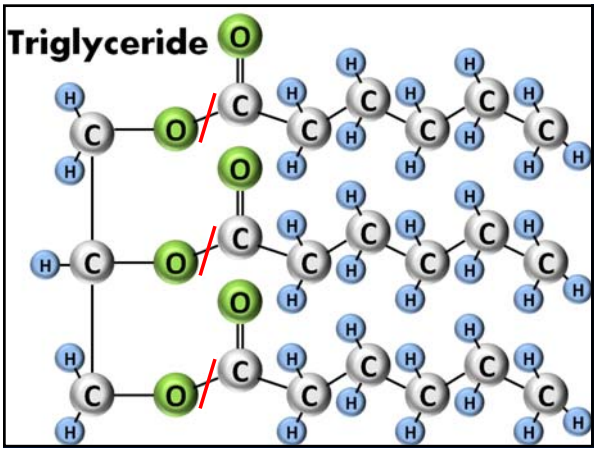


Fidelity Freedom Fund

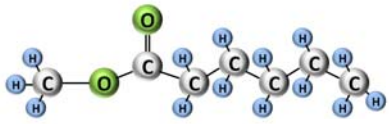
Biofuel production

- Biochemical conversion
- Thermochemical conversion

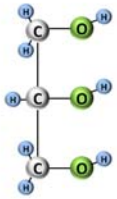
Triglyceride



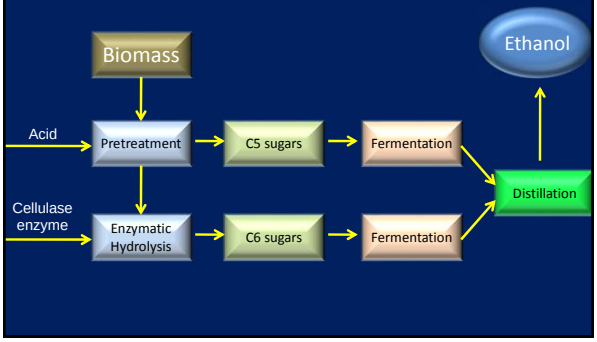
Biodiesel



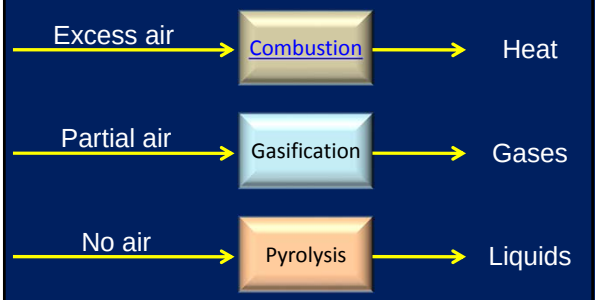
Glycerol



Cellulosic Ethanol Conversion



Thermochemical Conversion



Fuel Comparisons

	Nationwide average ($/gallon)	Advantage	Disadvantage
Gasoline (regular)	$2.42	Availability	Foreign production, pollutants
Diesel	$3.06		
CNG	$2.09	Domestic production, lower pollutants	Availability, efficiency
Ethanol (E85)	$2.13		
Propane	$2.92		
Biodiesel (B20)	$2.92		
Biodiesel (~B100)	$3.77		

Energy Information Administration, April 2015

Fuel Comparisons

Fuel	Fossil energy ratio
Cellulosic Ethanol	5.3
Corn Ethanol	1.4
Biodiesel	3.2
Gasoline	0.8

Cellulosic Ethanol Feedstocks

- Crop residues
- Herbaceous perennials
- Sorghum
- Woody crops

Crop Residues

Herbaceous Perennials

Mitchell, 2011	Switchgrass	Native Polyculture	Miscanthus	Alfalfa	Sugar Cane
Native	+	+	-	-	-
Yield Potential	+	+(-)	++	+	++
N fertilizer	-	-	++	+	-
Rapid Establishment	+	+	-	+	-
Producer Experience	+	+	-	++	++
Field Scale	+	+		++	++
Ecosystem Services	++	+	+	+	+
Alternate Use	+	+	-	++	+
Multiple Conversion Forms	-	-	-	-	++

Sorghum

Woody Crops

Further information

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