Iowa Renewable Fuels Association

Powering Economies with Energy from Agriculture

Global Agribusiness Forum 2016

July 4, 2016

Ag Energy vs Petroleum

www.IowaRFA.org

240 Years Ago…

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July 4, 1776: Declaration of Independence

Key Principles

- Life
  - Liberty
    - Pursuit of Happiness

Ag Energy is Key to Ag Future

- Growing World Middle Class, but…

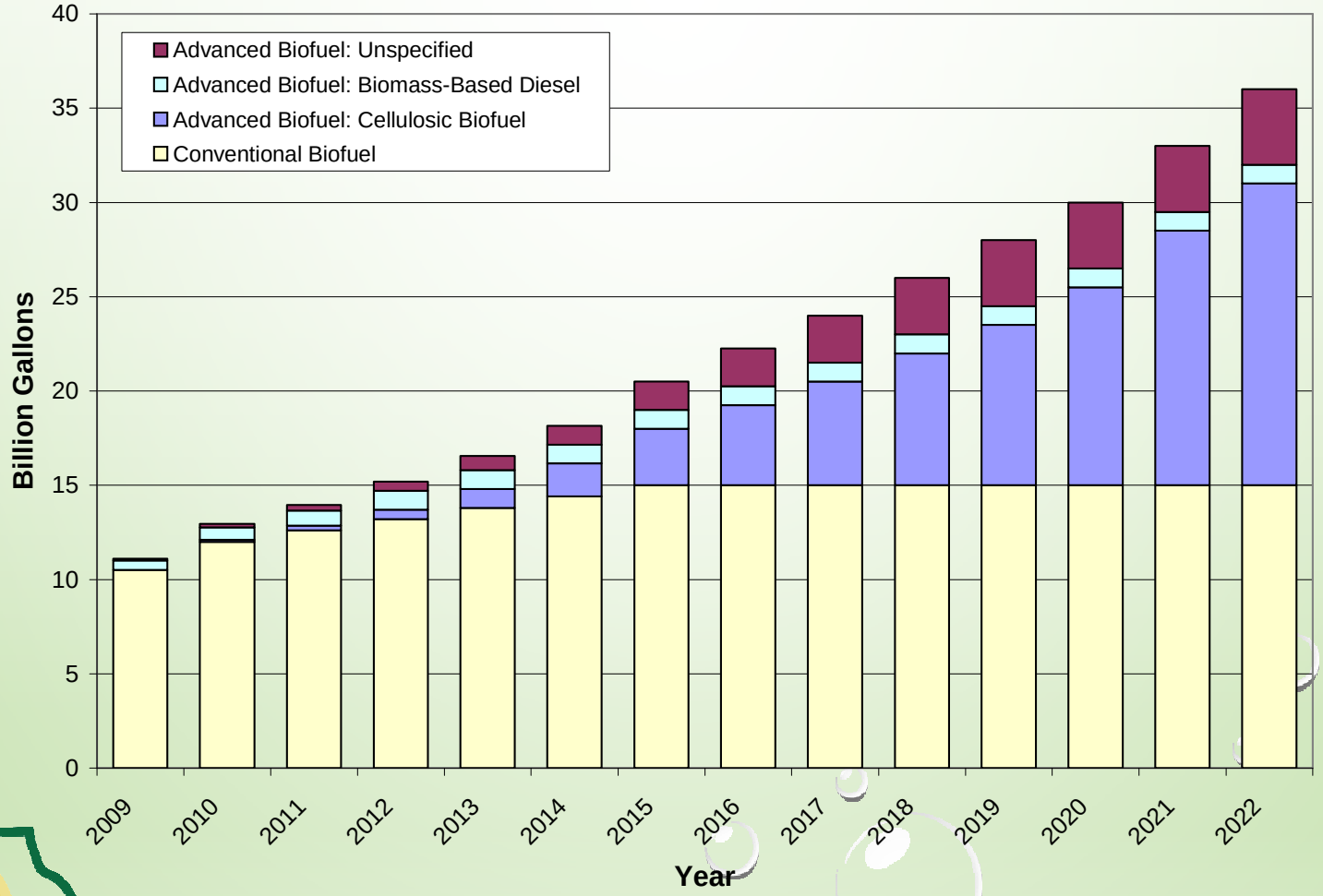
- Near record U.S. corn stocks
- Near record world coarse gains

- Farmers continue to out-produce the market
- USDA: Farm Income Plunged 38% in 2015

U.S. Renewable Fuels

- **Ethanol** -- 216 plants, 15.7 billion gal/yr
  - Produced 14.8 billion gallons in 2015
  - 13.9 billion gallons consumed domestically (9.9%)
  - Over 800 million gallons in exports
- **Biodiesel** – 166 plants, 2.75 billion gal/yr
  - Produced 1.47 billion gallons in 2015
  - 2.1 billion gallons consumed domestically
  - Imported 670 million gallons

U.S. Renewable Fuel Standard



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Corn: Cost vs Price per bushel

National Corn Statistics:
Average Cost of Production vs. Average Price Per Bushel

Year[1]	Cost per Acre[2]	Yield[3]	Production Cost per Bushel (calculated)	Average Price per Bushel[3]	Below Cost Differential (calculated)	
2015	$676.66	168.4	$4.02	$3.65	($0.37)	*
2014	$689.80	171.0	$4.03	$3.70	($0.33)	RFS Paused
2013	$676.45	158.1	$4.28	$4.46	$0.18	
2012	$653.57	123.4	$5.30	$6.89	$1.59	
2011	$613.46	147.2	$4.17	$6.22	$2.05	
2010	$550.20	152.8	$3.60	$5.18	$1.58	RFS
2009	$550.70	164.7	$3.34	$3.55	$0.21	
2008	$529.38	153.9	$3.44	$4.06	$0.62	
2007	$443.97	150.7	$2.95	$4.20	$1.25	
2006	$409.74	149.1	$2.75	$3.04	$0.29	
2005	$386.88	147.9	$2.62	$2.00	($0.62)	
2004	$377.50	160.3	$2.35	$2.06	($0.29)	
2003	$354.41	142.2	$2.49	$2.42	($0.07)	
2002	$334.31	129.3	$2.59	$2.32	($0.27)	
2001	$348.53	138.2	$2.52	$1.97	($0.55)	
2000	$378.32	136.9	$2.76	$1.85	($0.91)	
1999	$364.73	133.8	$2.73	$1.82	($0.91)	
1998	$362.86	134.4	$2.70	$1.94	($0.76)	
1997	$363.73	126.7	$2.87	$2.43	($0.44)	
1996	$353.94	127.1	$2.78	$2.71	($0.07)	
1995	$333.42	113.5	$2.94	$3.24	$0.30	
1994	$321.47	138.6	$2.32	$2.26	($0.06)	
1993	$287.10	100.7	$2.85	$2.50	($0.35)	
1992	$302.33	131.5	$2.30	$2.07	($0.23)	
1991	$292.55	108.6	$2.69	$2.37	($0.32)	
1990	$292.52	118.5	$2.47	$2.28	($0.19)	
1989	$284.89	116.3	$2.45	$2.36	($0.09)	
1988	$262.57	84.6	$3.10	$2.54	($0.56)	
1987	$244.57	119.8	$2.04	$1.94	($0.10)	
1986	$243.12	119.4	$2.04	$1.50	($0.54)	
1985	$277.01	118.0	$2.35	$2.23	($0.12)	
1984	$289.02	106.7	$2.71	$2.63	($0.08)	
1983	$258.45	81.1	$3.19	$3.21	$0.02	
1982	$270.86	113.2	$2.39	$2.55	$0.16	
1981	$278.60	108.9	$2.56	$2.50	($0.06)	

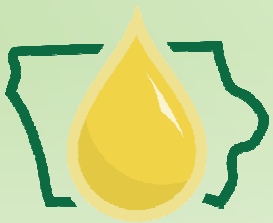
Footnotes * first 5 months of marketing year

1 Corn Marketing Year

2 USDA Economic Research Service:
http://www.ers.usda.gov/data-products/commodity-costs-and-returns.aspx

3 USDA National Agricultural Statistics Service:
http://quickstats.nass.usda.gov/

What will the next year bring?



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Future of the RFS

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Future for Renewable Fuels

- WE need exports/new markets
- Oil is the opponent. Sure we can compete, but we should not tear down each other.
- Global Community must stand by biofuel commitments – whether for carbon or jobs.

Global Demand

http://globalrfa.org/biofuels-map/

Country	Current Mandate Ethanol	Current Mandate Biodiesel	Target Ethanol
Angola	10.0%	0.0%	0.0%
Argentina	5.0%	10.0%	0.0%
Australia	5.0%	2.0%	10.0%
Brazil	27.0%	5.0%	27.0%
Canada	5.0%	2.0%	0.0%
Chile	5.0%	0.0%	0.0%
China	10.0%	0.0%	10.0%
Columbia	8.0%	0.0%	10.0%
Costa Rica	7.0%	20.0%	0.0%
Ethiopia	5.0%	0.0%	0.0%
European Union	6.0%	6.0%	10.0%
Ecuador	0.0%	5.0%	10.0%
Fiji	0.0%	0.0%	10.0%
India	5.0%	0.0%	20.0%
Indonesia	3.0%	10.0%	0.0%
Jamaica	10.0%	0.0%	0.0%
Kenya	10.0%	0.0%	0.0%
Malawi	10.0%	0.0%	0.0%
Malaysia	0.0%	5.0%	0.0%
Mexico	2.0%	0.0%	2.0%
Mozambique	10.0%	0.0%	0.0%
Nigeria	0.0%	0.0%	10.0%
Panama	2.0%	0.0%	10.0%
Paraguay	25.0%	1.0%	27.5%
Peru	7.8%	2.0%	5.0%
Philippines	10.0%	5.0%	0.0%
South Africa	10.0%	0.0%	0.0%
South Korea	0.0%	2.5%	0.0%
Sudan	5.0%	0.0%	0.0%
Taiwan	0.0%	1.0%	3.0%
Thailand	0.0%	5.0%	0.0%
Uruguay	0.0%	2.0%	5.0%
Vietnam	5.0%	0.0%	10.0%
Zambia	0.0%	0.0%	10.0%
Zimbabwe	10.0%	0.0%	15.0%

Ethanol a World Product

Country (in 0,000s of gallons)	2014	2015
Canada	340,923	248,293
Brazil	117,158	116,363
Philippines	67,653	71,528
China	3,407	70,126
Korea, South	35,972	59,571
India	41,517	46,967
Netherlands	24,022	33,993
Mexico	30,433	33,704
Oman	-	32,803
Peru	15,092	27,505
United Arab Emirates	68,346	25,922
Tunisia	20,974	25,879
Jamaica	17,095	12,937
Singapore	11,564	9,016
Nigeria	16,889	6,749
Total	**811,046**	**821,356**

US Ethanol Exports

- 2015 US Ethanol Exports = 3,163 million liters
  - Canada = 943 million liters
  - Brazil = 440 million liters
  - Philippines = 271 million liters
  - China = 267 million liters
  - South Korea = 226 million liters
  - India = 178 million liters
  - All Others = 838 million liters
- 2016 US Ethanol Exports (thru April) = up 10%
  - China has already imported 416 million liters

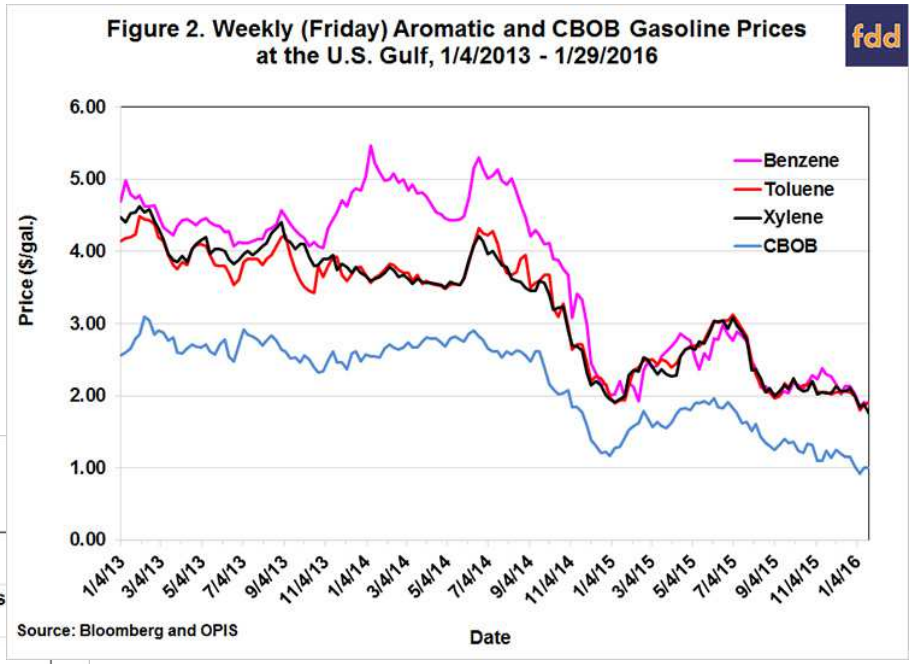
How do WE build exports?

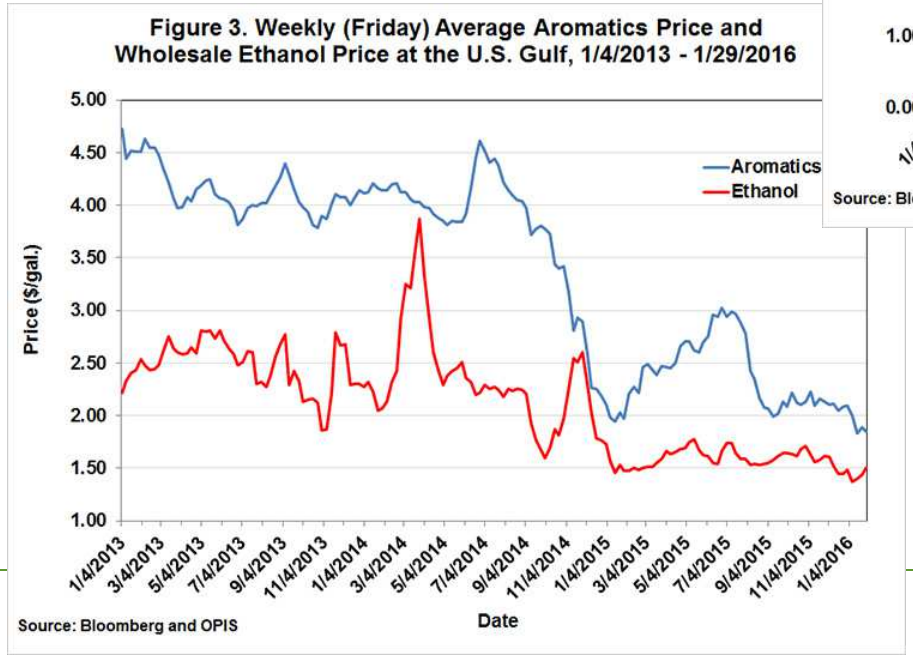
- Important to National policy goals
  - Rural Development
  - Air quality/water pollution
  - Reduce oil imports/balance of trade/$$$
- Good for oil companies/blenders
  - Economics. Economics. Economics

World's Cheapest Source of Octane

Gasoline Blending

- Blending is a very sophisticated science and mathematical balancing a myriad technical issues based upon technical specifications
  - Aromatics
  - Reid Vapor Pressure (RVP_
  - Octane
  - Etc……
- Blending components for octane
  - Benzene
  - Toluene
  - Xylene
  - Reformate
  - Ethanol





What are key markets?

- Areas with growing middle class and carbon/environmental concerns
  - China
  - India
  - Japan
  - Mexico
- Countries must decide: Build market demand or protect nonexistent market


HAPPY
4TH
OF JULY

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