

Ethanol and the Chesapeake

Alternative Fuel Workshop:
Regional Ethanol Impacts

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Lynne Hoot, Executive Director
Maryland Grain Producers Association,
& Maryland Grain Producers Utilization Board

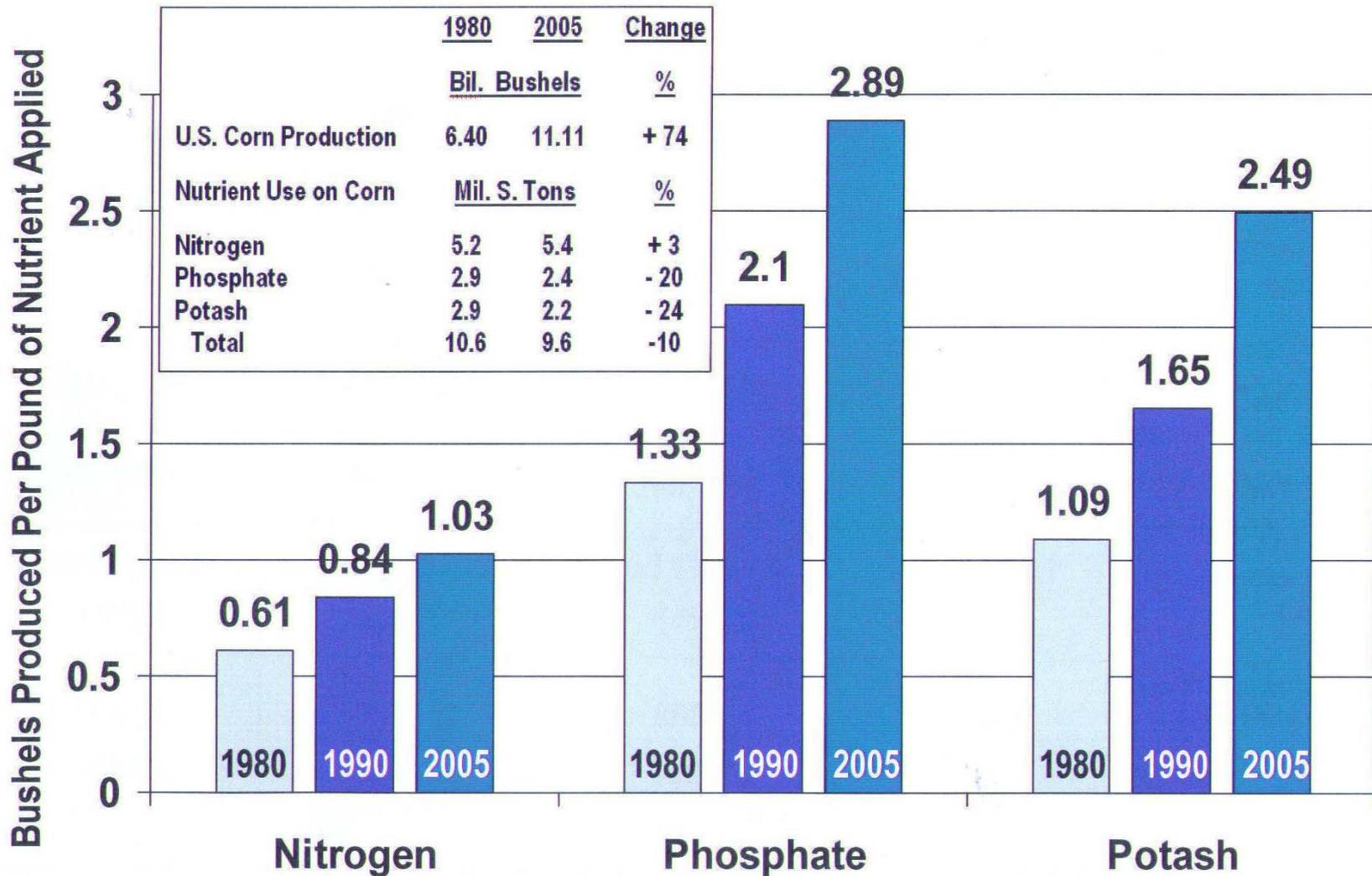
Ethanol Fuel

- What is Ethanol?
 - An Alcohol
 - 200° Proof (plus denaturant)
 - C_2H_5OH
 - 113 octane
- Each 23.8 gallons of ethanol replaces one barrel of oil
- Net energy gain of 67%
- One bushel of corn provides
 - 2.8 gallons of ethanol
 - 17 pounds of Protein-rich distillers grains
 - 17 pounds of carbon dioxide

Making Corn More Bay-Friendly

- Use no-till or reduced tillage methods
- Plant cereal grain winter cover crops as soon after fall harvest as possible
- Establish grassed waterways Split inorganic nitrogen applications
- Eliminate preplant inorganic nitrogen applications
- Use subsurface applications for all inorganic nutrients
- Incorporate organic wastes
- Delay tillage and spring burn-down of cover crops or weeds
- Manage soil P concentrations at minimum levels needed for optimum crop production
- Establish riparian buffer zones

Corn Nutrient Use

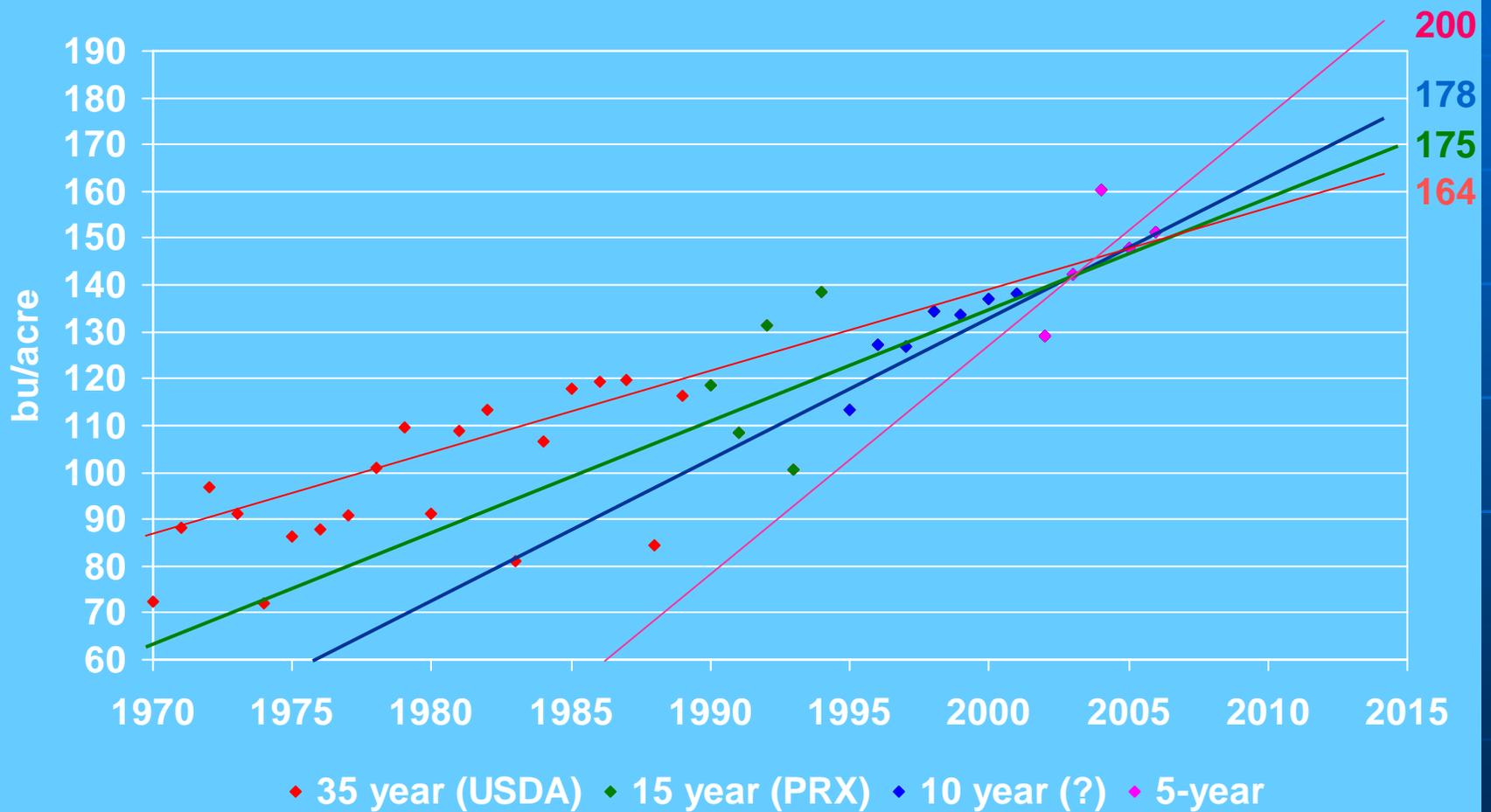


Source: USDA/Fertilizer Institute

New Corn Traits

- Drought Tolerance
- Nitrogen Utilization
- Pest Control
- Yield Enhancement
- Ethanol Specific Traits
 - In-Seed Enzyme
 - Fermentation Enhancement
 - DDG Feed Enhancement

Corn for Fuel - Food vs Fuel



(Yield History and Trend)

New Production Efficiencies

- Corn Yield per acre continues to increase
- The fertilizer industry is producing nutrients more efficiently
- Energy used to produce a bushel of corn declines – no-till use expanding
- Ethanol yield per bushel increases
- Ethanol plants become more energy efficient – 50% less than 3 years old

Projected Corn to Ethanol Yield 15 bgy by 2015

Crop Year 2015-2016	Harvested Acres (mil acres)	Yield (bu/acre)	Total Production (mil bu)	Ethanol Use(mil bu)	Ethanol Conversion (gal/bu)	Ethanol Production (mil gal)
Hi Case	78	193	15,054	5,954	3.0	17,862
Med Case	78	187	14,586	5,486	2.9	15,909
Low Case	74	178	13,528	4,428	2.9	12,841

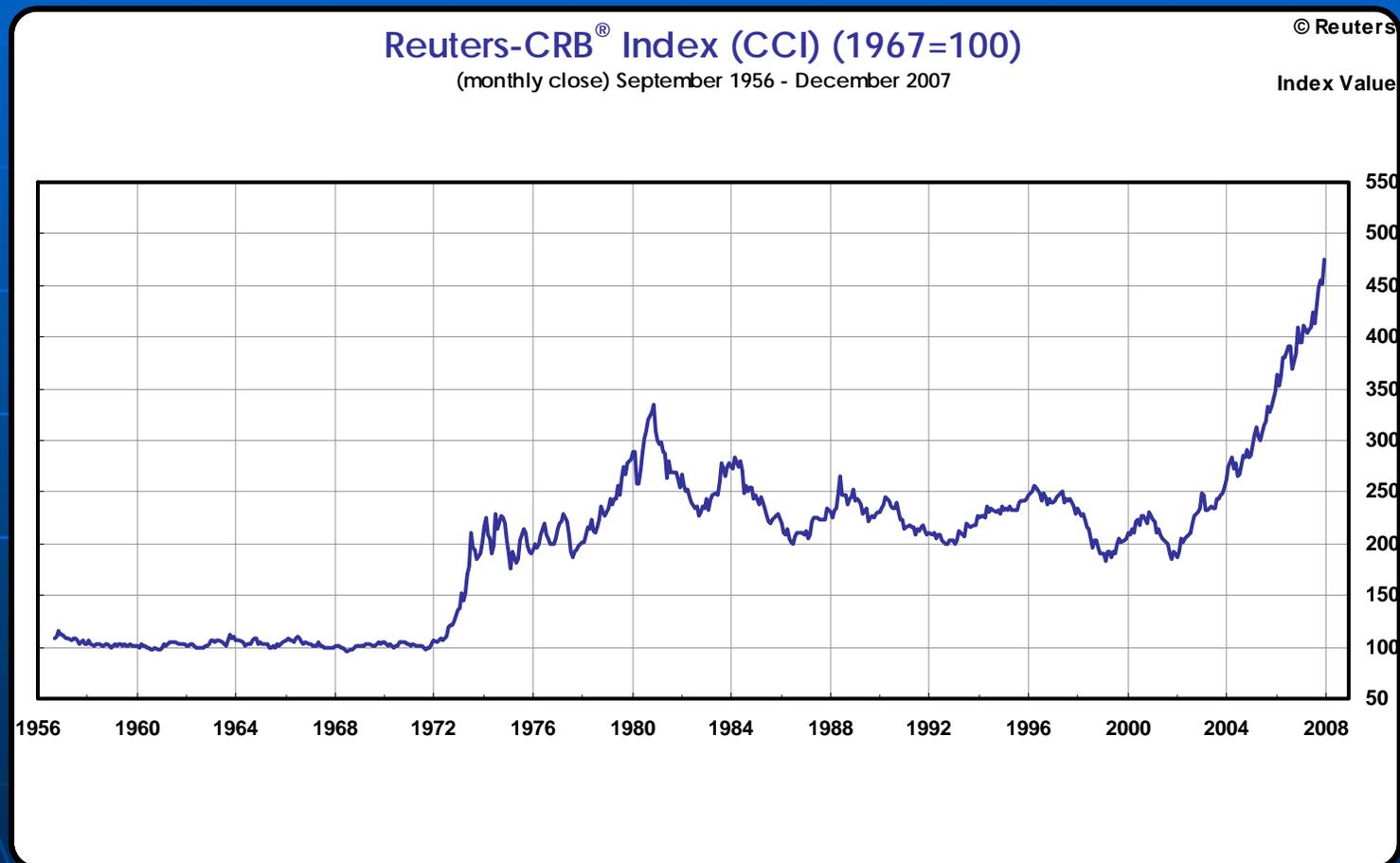
Is Report Correct - Will Corn Ethanol Destroy the Bay?

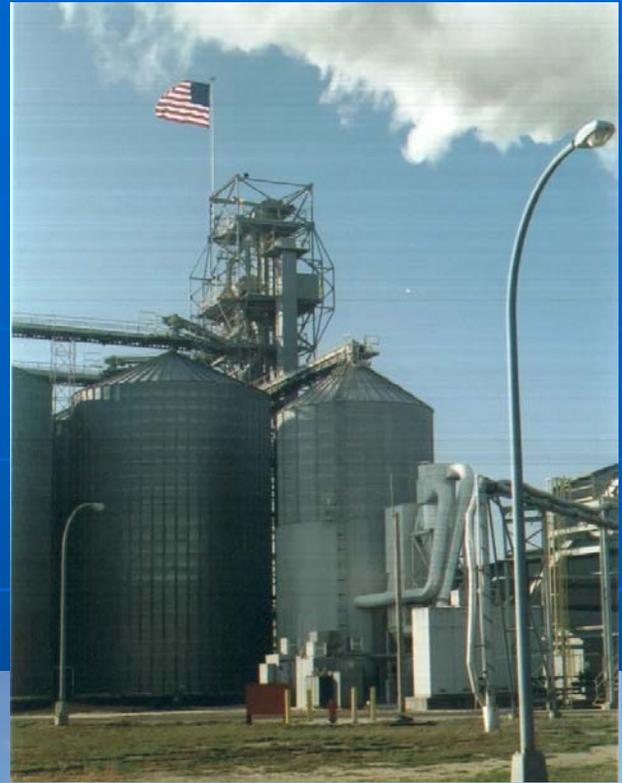
- Why don't we have a corn-based ethanol plant?
- Will we be getting some soon?
- What other options are feasible?
- Can ethanol help the Bay?
- Are biofuels decreasing the availability of feed for livestock?

What triggered the Midwest Ethanol Reasons for Success?

- Large volume of corn
- Historically low price of corn
- Cheap “industrial” land
- Lots of potential investors
- Economies of scale
- Political Support
 - Support for “greenfield” ethanol plants
 - State incentives

Changes in Commodity Prices

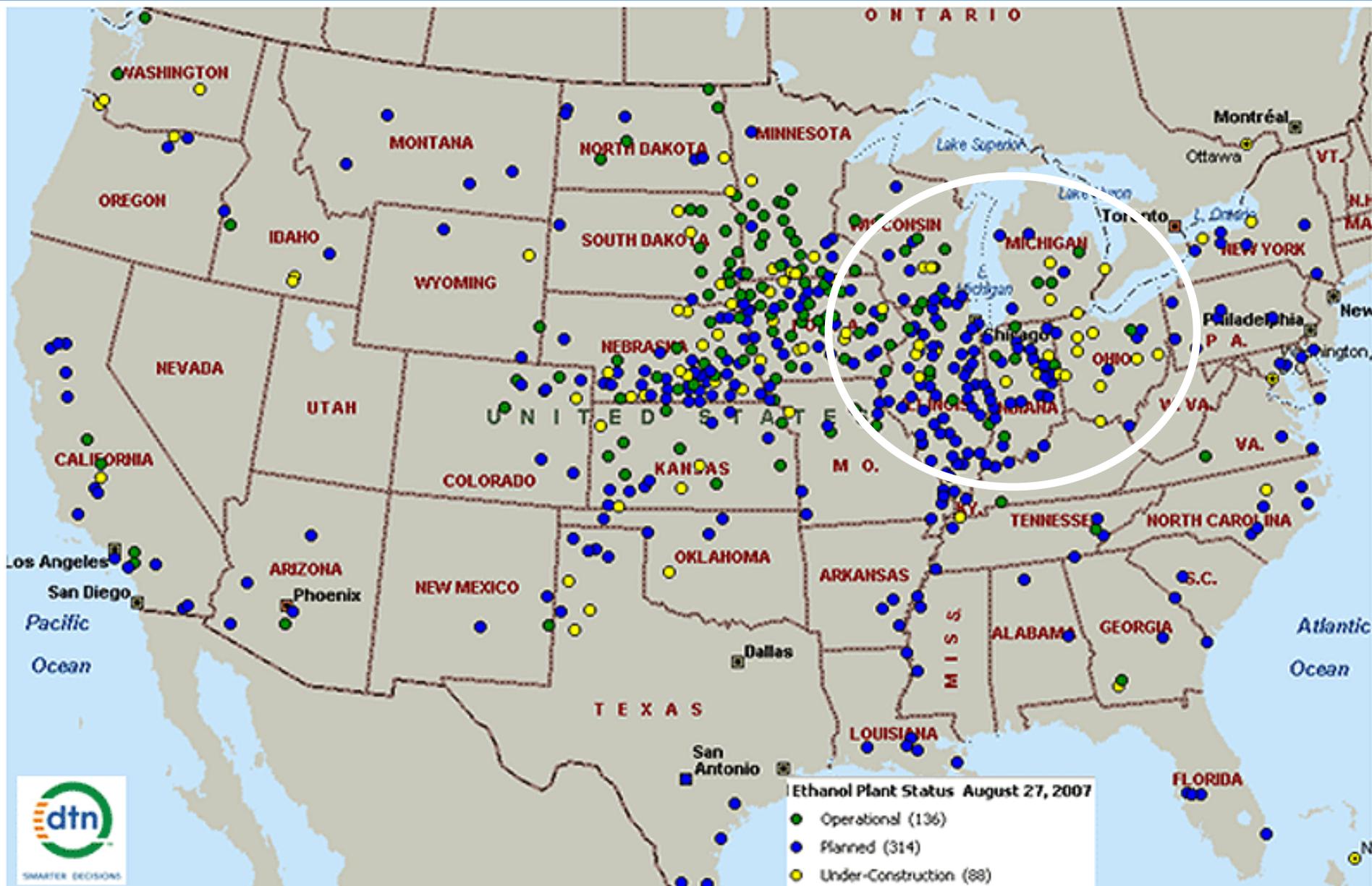




Maryland Corn Ethanol Challenges

- Corn Deficit
- High price of corn
- Expensive land
- Limited number of farmer investors
- Limited political support
- Limited state incentives
- NIMBY opposition (not in my backyard)
- High energy costs
- Poultry industry is backbone for agriculture

Ethanol Capacity



How Much Corn is Actually in Our Grocery Items?

AN EXAMPLE:

- One bushel of corn = 56 pounds = 896 ounces
- At \$2/bushel, one oz. of corn is valued at \$.0022.
- At \$2/bushel, a 14 oz. box of corn flakes contains 2.2 cents worth of corn.
- At \$6/bushel, one oz. of corn is valued at \$.0066.
- At \$6/bushel, a 14 oz. box of corn flakes contains 6.6 cents worth of corn.

In the case of corn flakes, a \$4 per bushel increase in corn price means a theoretical difference of about 4.4 cents at the consumer level.



*Assumes 10 oz. milled corn in 14 oz. box of corn flakes

Ethanol and the Bay

- Farmers have been working with SCD's for 60 years
- Nutrient Management Laws in Mid-Atlantic Region
- Notill use in Maryland is very high
- Cover Crop program oversold
- Adding hulless barley into the rotation can provide additional feedstock for ethanol
- Need for profit – alternatives in Mid-Atlantic are development
- Stover is not for sale!
- Strong support for poultry industry
- New slow release nitrogen fertilizers being tried on farms
- Farmers prefer market driven prices VS government subsidies
- Farmers have a strong stewardship ethic
- Need to make renewable fuels work for farmer and environment
- When considering impacts of renewable energy – consider that they are replacing fossil fuels

Will we grow 300,000 more acres of corn in the Bay region? NO

How much more Corn?

A

B



Soybeans (\$175)

High \$9.40

Marked \$9.14

Low \$6.20



Corn (\$275)

High \$4.30

Marked \$3.53

Low \$2.80



Wheat (\$180)

High \$8.05

Low \$4.20

Ethanol May Save the Bay

- Farm incomes increase as a result of increased demand for grain because of ethanol
- Farmers spend more money on conservation practices as net income rises
- Less ag land is sold to development
- Water supplies are no longer at risk from MTBE contamination
- Air quality improves as tail pipe emissions have less toxics with increased use of ethanol
- We reduce our dependence on foreign oil and our trade deficit declines so the US has more money to support conservation efforts

Alternative Ethanol Crops

- All starch based grains
 - Corn, wheat, sorghum, barley, rye, oats
- Cellulose
 - Switch grass
 - Corn Stover
 - Grain fiber/hulls
 - Straw
 - Algae
 - Willow, poplar & other fast growing trees
 - Waste wood
 - Municipal waste

Renewable Energy from Farms

Through emerging technology, farmers, livestock producers and woodland owners can:

- Produce biomass and turn plant residues, processing byproducts, green waste, and animal wastes into value-added energy feedstocks and biobased products;
- Dramatically increase the production of liquid transportation fuels ; and
- Generate electricity by harnessing wind and solar energy and capturing and converting biogas emissions.

Questions?

Lynne Hoot, Executive Director,
Maryland Grain Producers Association &
Maryland Grain Producers Utilization Board

LynneHoot@aol.com
410-956-5771 (phone)
410-956-0161 (fax)

- www.marylandgrain.com
- www.ethanolrfa.com
- www.epicinfo.org