

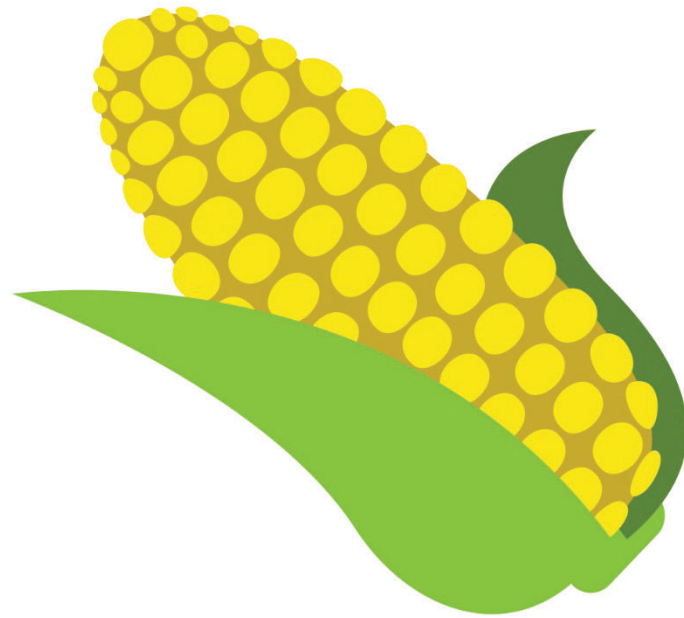


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America's Ethanol Supporters

Ethanol History and Production

What is Ethanol?

Clean burning biofuel
Produced from
agricultural products
such as corn kernels
Used in internal
combustion engines



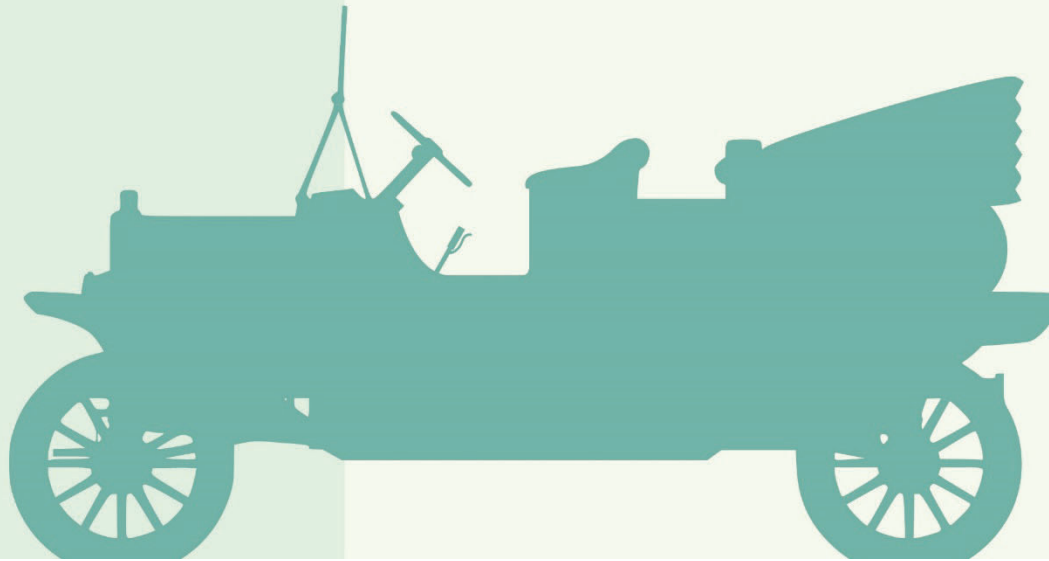
How is Ethanol Produced?

- Field corn processed into flour • [How is ethanol made?](#)
- Flour is mixed with recycled water, enzymes and yeast.
 - Enzymes breakdown break up corn starch into sugars
 - Yeast eat sugars and produce ethanol
- Ethanol is distilled from mixture
- Coproducts separated from mixture
- [Ethanol Process Graphic](#)

Ethanol History

ETHANOL IS NOT NEW

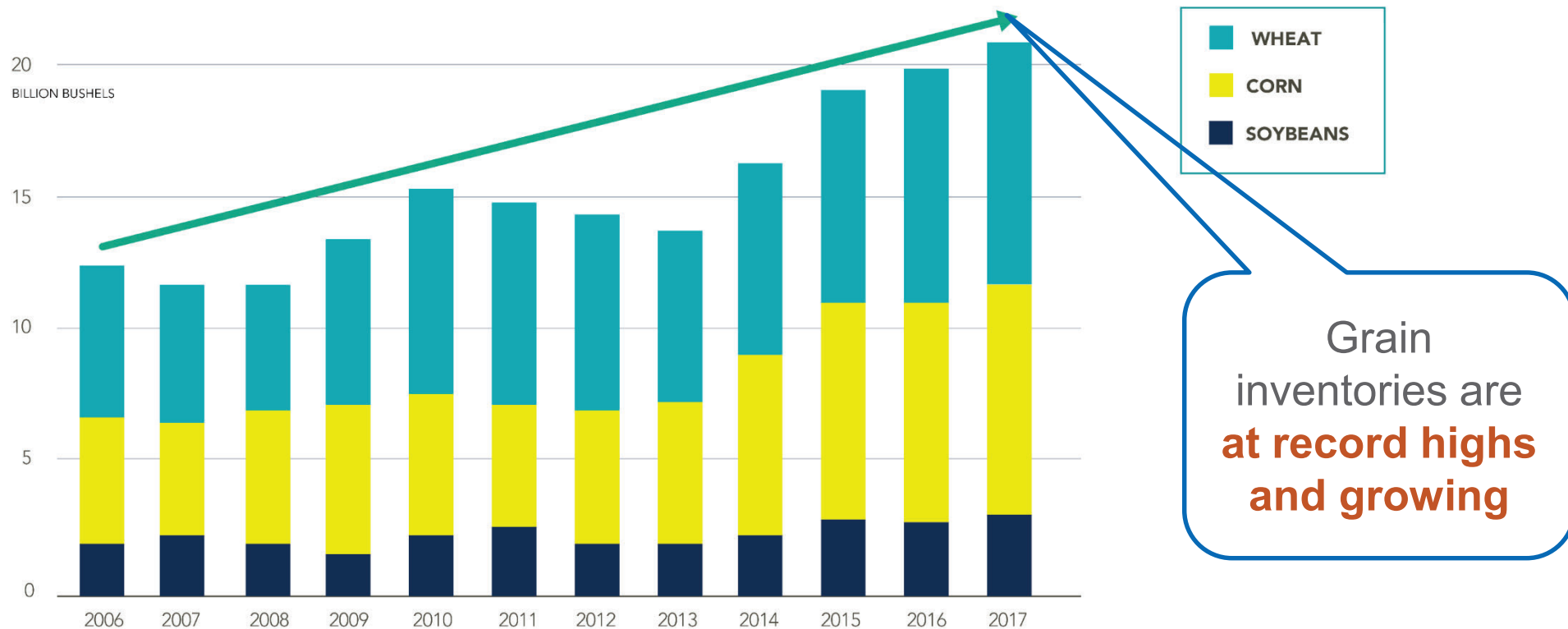
DURING THE 1930s, more than 2,000 service stations in the Midwest sold ethanol made from starch. Prohibition changed that by creating a gasoline monopoly.



Ethanol Production Growth

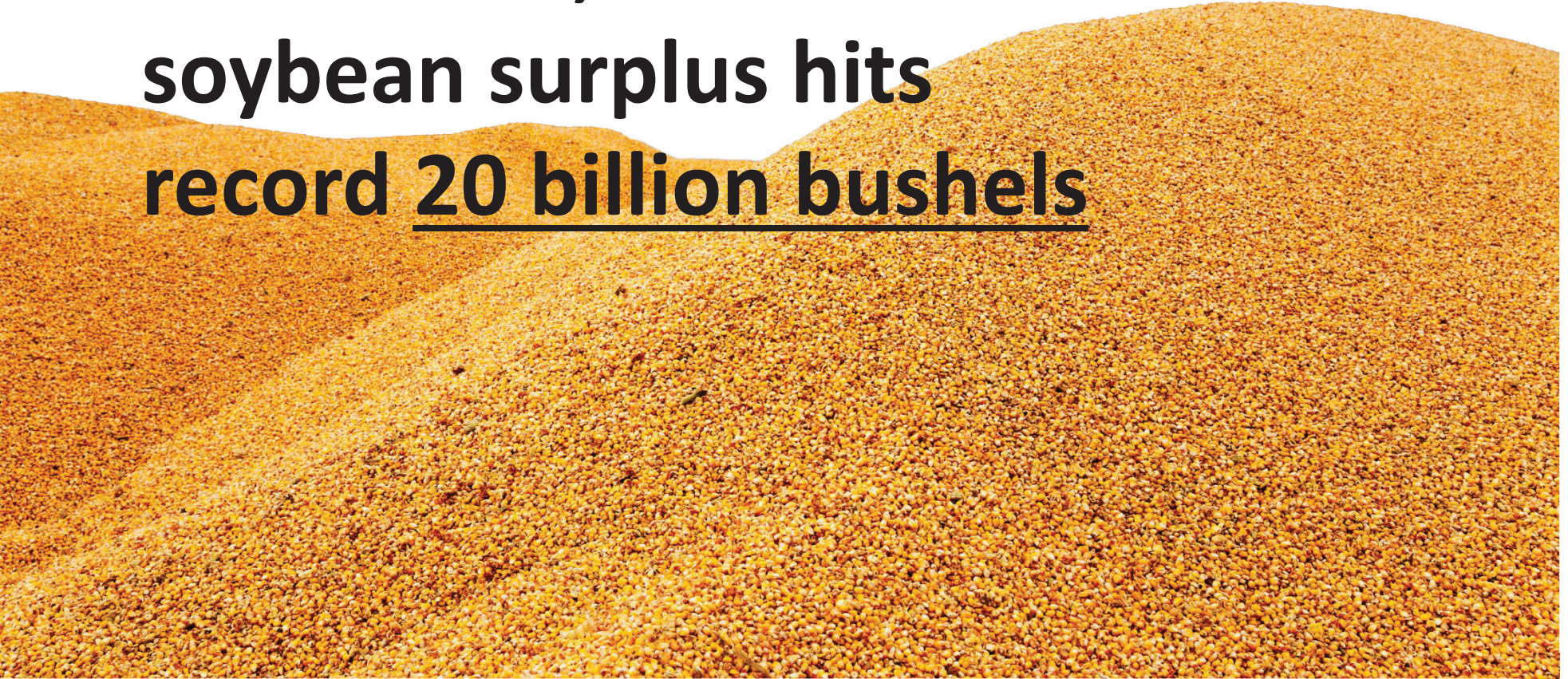


Ag Production Continues to Increase



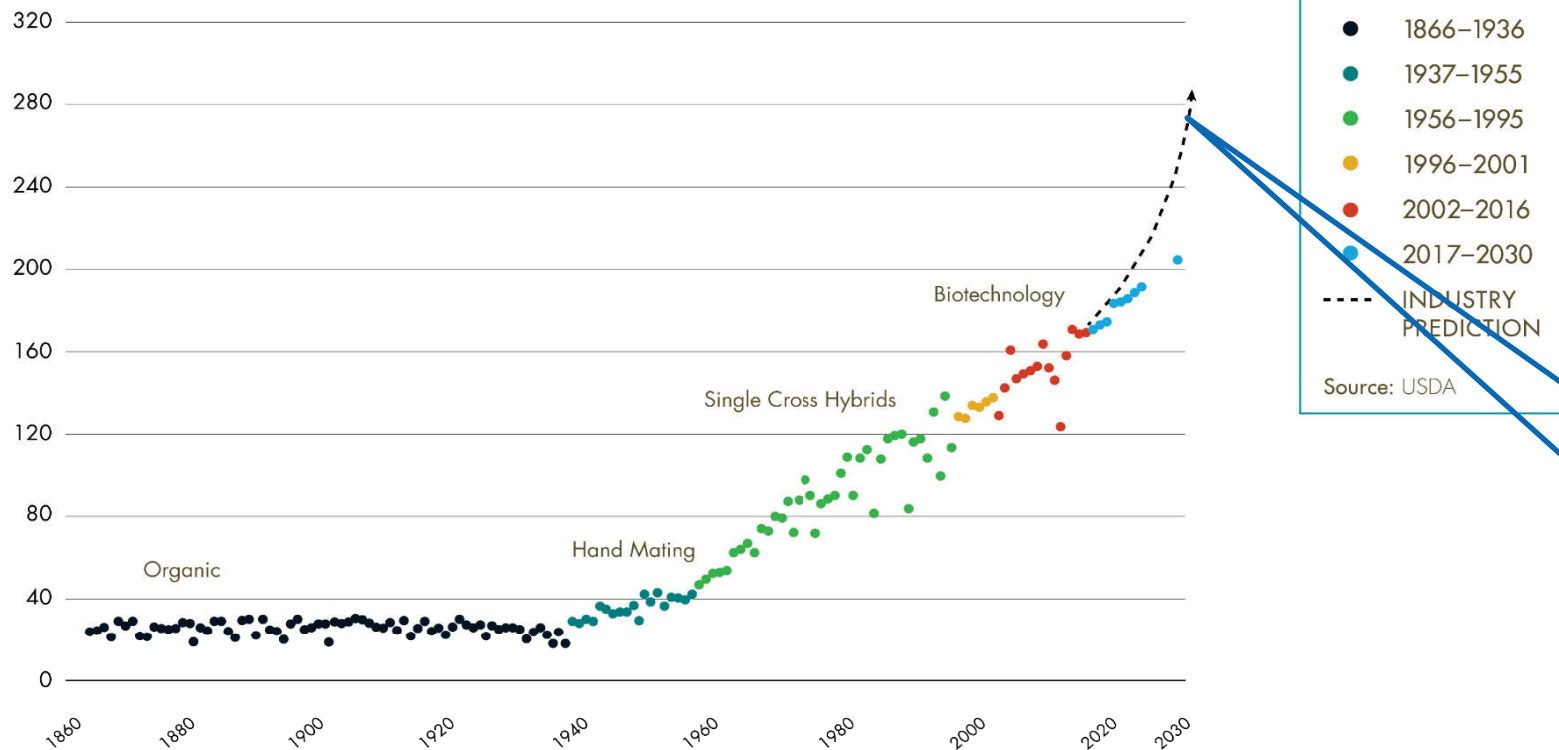
Grain Surplus

**World corn, wheat and
soybean surplus hits
record 20 billion bushels**



Corn Production

U.S. CORN YIELDS

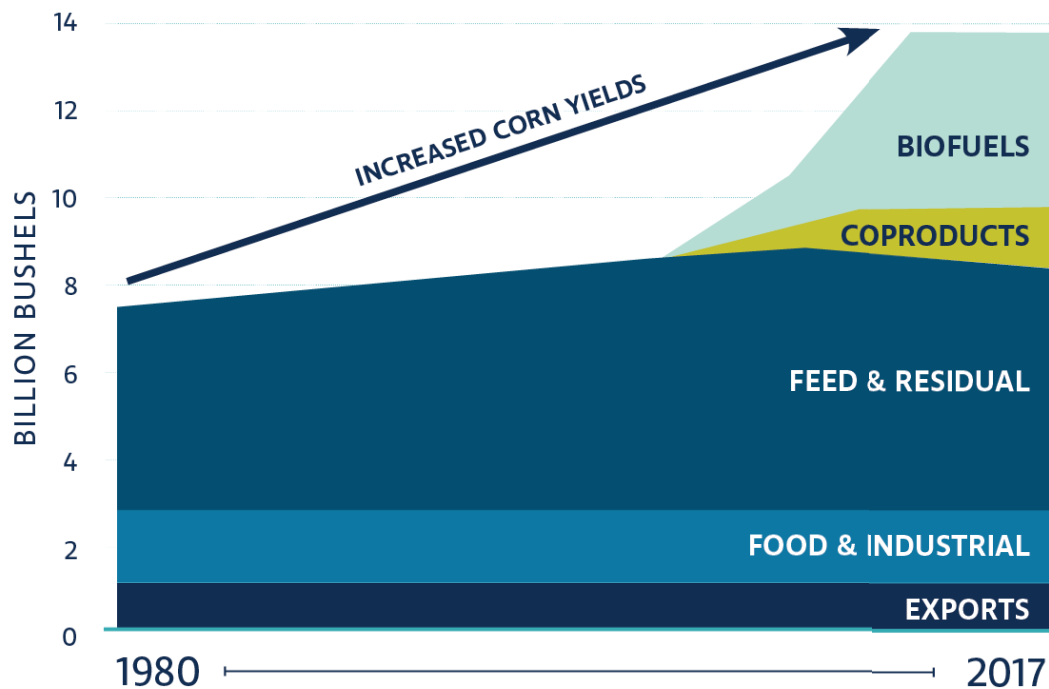


Corn yields continue to grow **rapidly**

Corn Processing

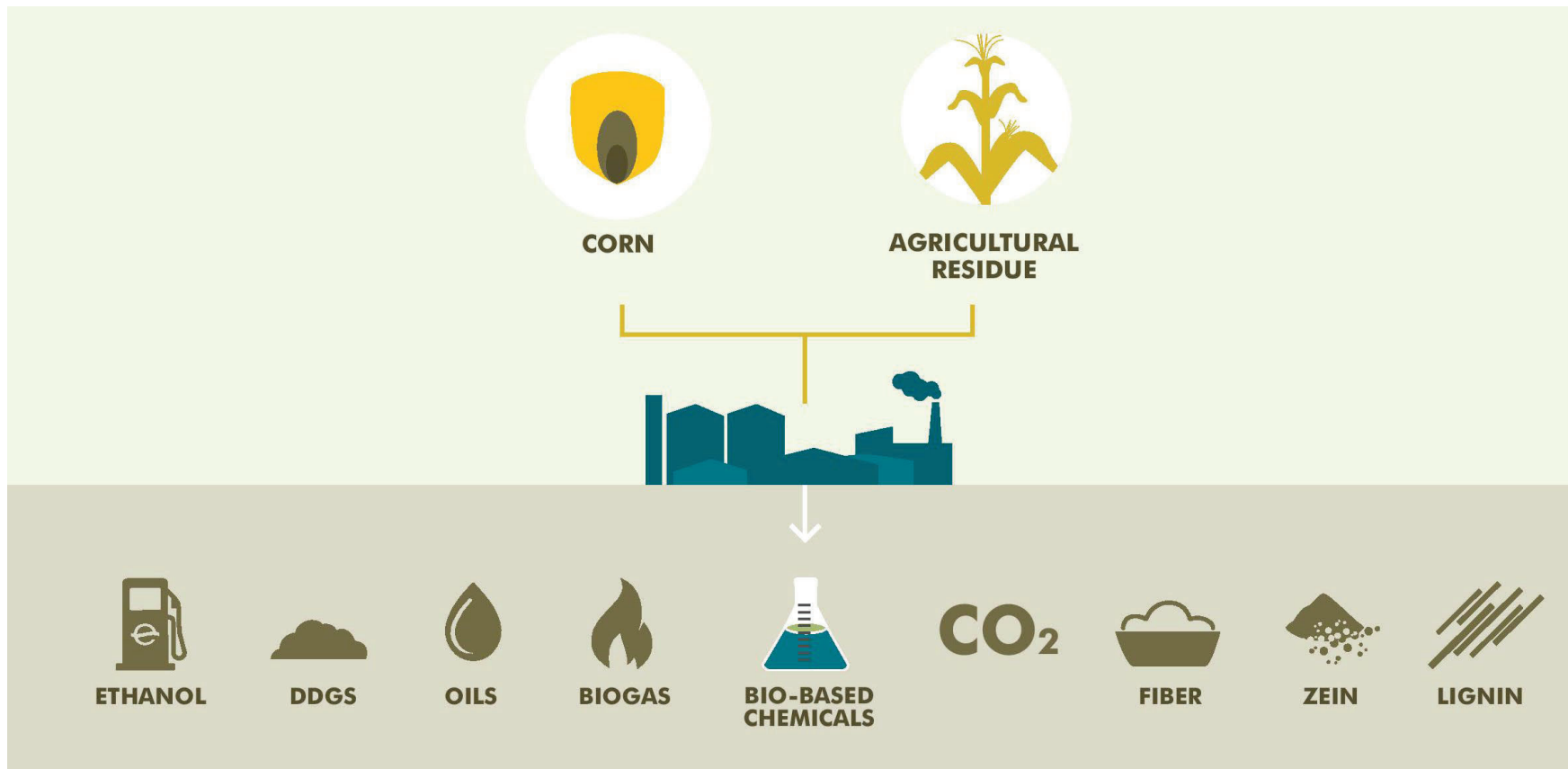
WHERE DOES U.S. CORN GO?

Biofuels have been driving agriculture for nearly two decades and are the best pathway to create new demand.



Source: USDA

Ethanol and Coproduct Production



Presentation Review

Mark or highlight three key points

List two ideas or concepts related to previous knowledge

List questions you have about this topic.

Keep notes organized and available for use throughout the course.

References

Berven, D., (2018). [POET presentation]. *Biofuels past, present and future*. Sioux Falls, SD.

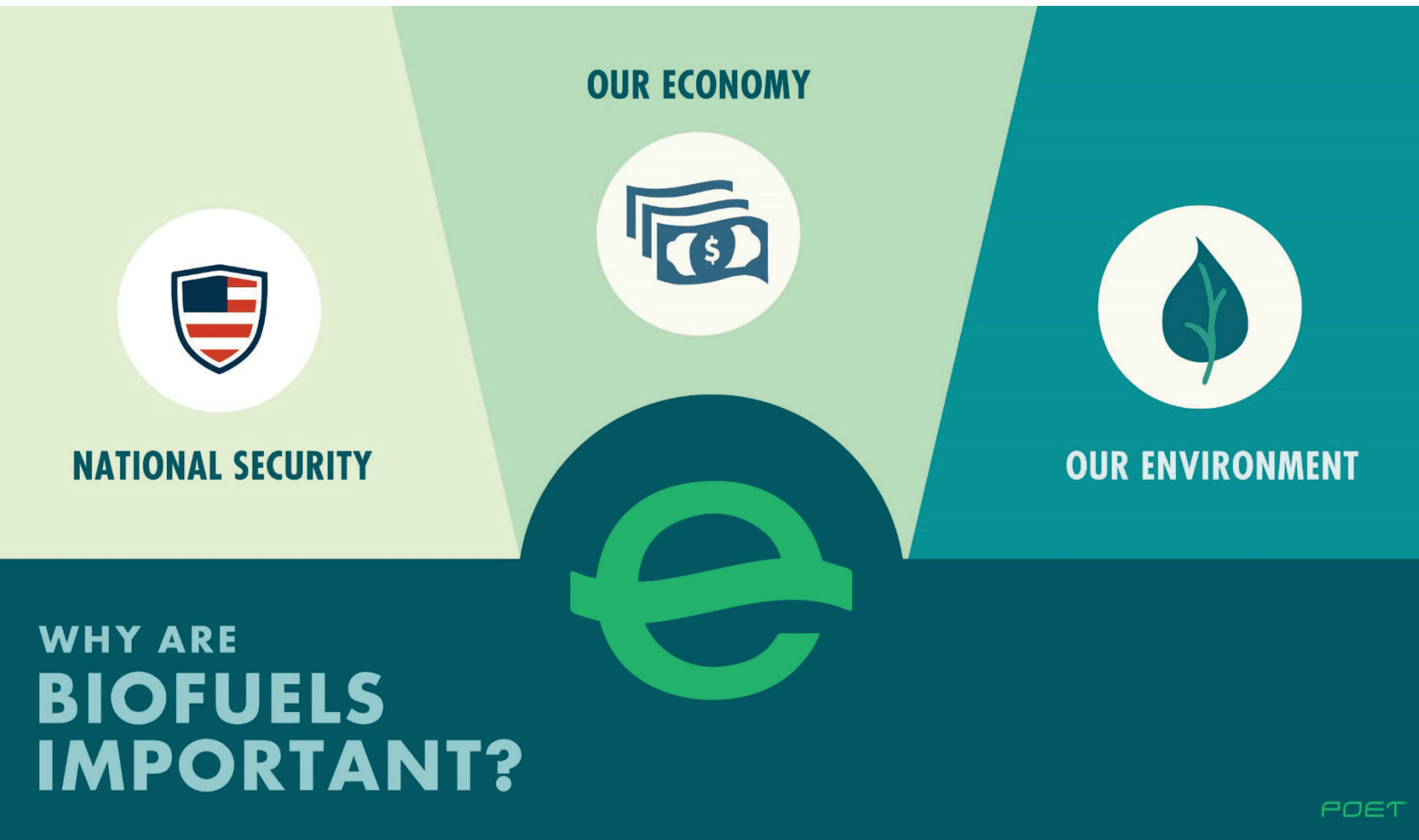
POET. (2018). *Products and solutions*. Retrieved from <https://poet.com/products>



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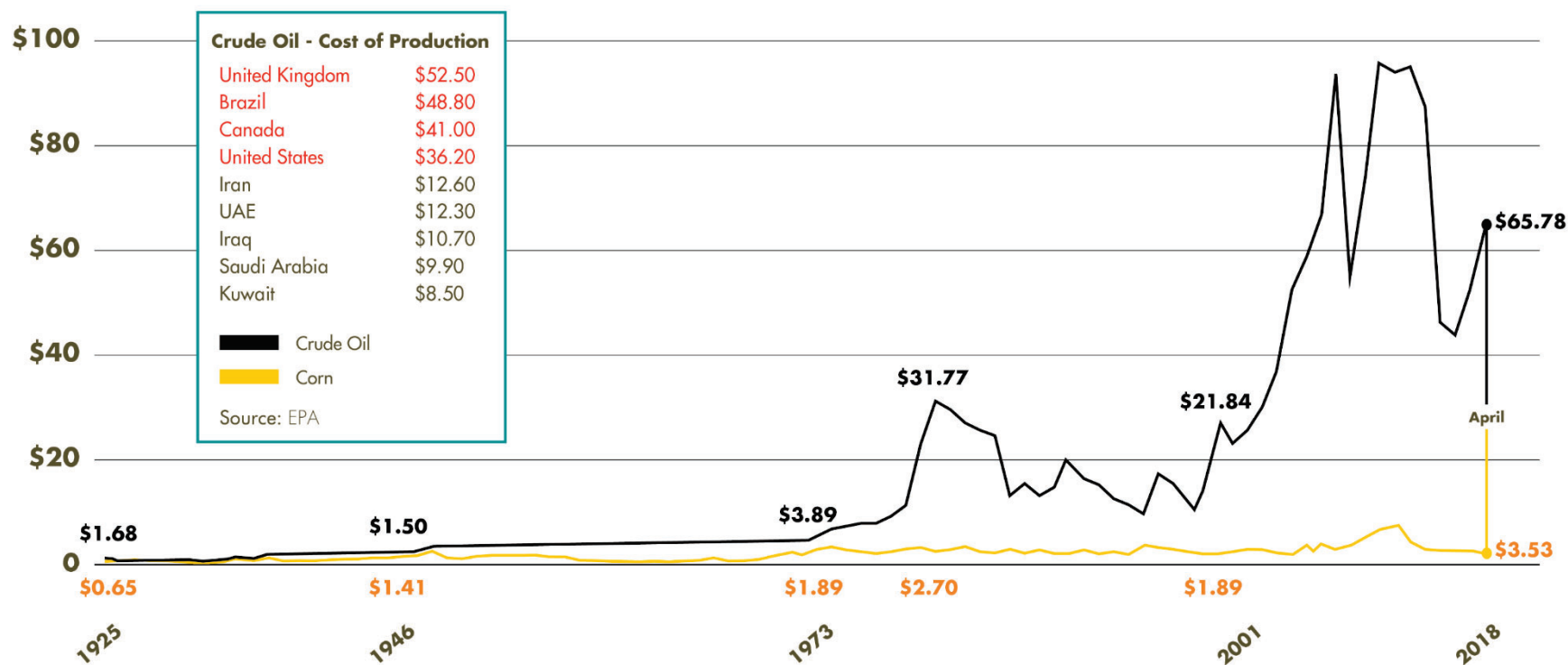
Ethanol Importance and Policy

Importance of Biofuels



Economic

CRUDE VS CORN VALUES IN NOMINAL DOLLARS



Economic

Consumer Savings

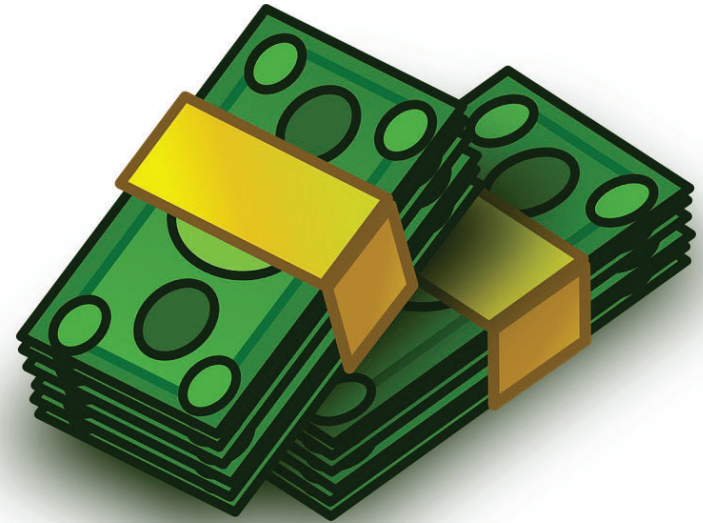
Ethanol replaces some of the most expensive chemicals in the gasoline pool

Ethanol does not have to be less expensive than wholesale gasoline



Economic Impact

- \$184.5 Billion of Economic Output
- \$14.5 Billion in Taxes
- \$46.2 Billion in Wages
- 360,000 Jobs



World According to Oil vs Ag

World Oil Influence



World Agriculture Influence



Renewable Fuel Standard

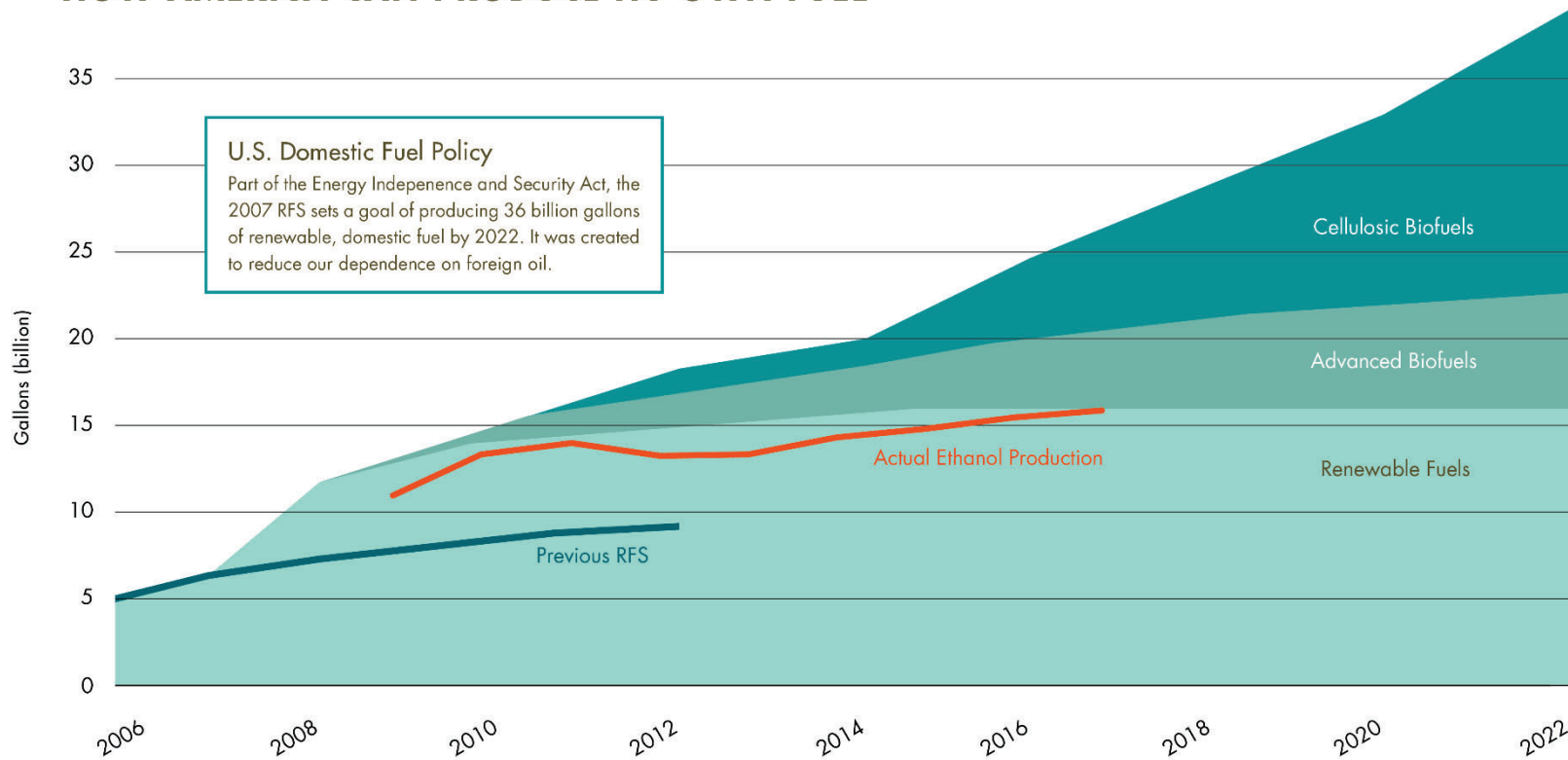
- Decrease Oil Imports
- Increase Air Quality
- Decrease Gas Prices

Renewable Fuel Standard

RENEWABLE FUEL STANDARD

HOW AMERICA CAN PRODUCE ITS OWN FUEL

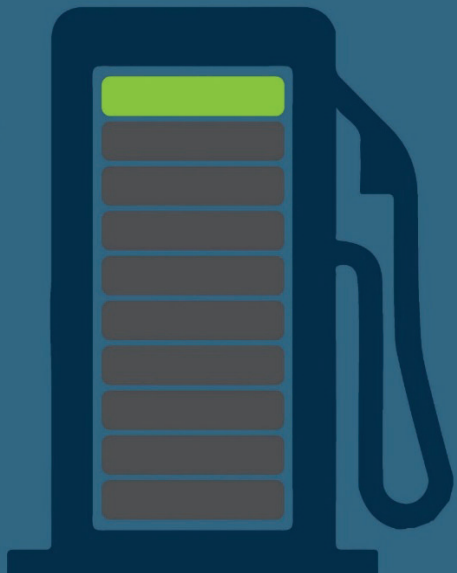
Source: EPA



Ethanol Blends

THE CURRENT
FUEL STANDARD

E10



POET

RECOGNIZED
FUEL OPTIONS

E15

E85



Myths and Facts

MYTH

**THE ETHANOL INDUSTRY
IS HEAVILY SUBSIDIZED**



FACT

**THE CORN ETHANOL
INDUSTRY DOES NOT
RECEIVE FEDERAL
SUBSIDIES OR TAX
CREDITS (UNLIKE THE
OIL INDUSTRY).**

Myths and Facts

MYTH

**ETHANOL INCREASES
PRICES AT THE PUMP**



FACT

**ETHANOL HAS
SIGNIFICANTLY
REDUCED THE
PRICE OF FUEL.**

Ethanol wholesale prices
have been lower than
gasoline for over 3 years.

Myths and Facts

MYTH

**ETHANOL PRODUCTION
CONSUMES 40% OF
OUR CORN**



FACT

**BECAUSE THE
ETHANOL INDUSTRY
PRODUCES FEED AS A
CO-PRODUCT, THE EFFECT IS
17.5% OF THE CORN CROP.**

A recent World Bank study showed that high fuel prices are the cause of food price increases, not biofuel production.

Myths and Facts

MYTH

**HIGHER ETHANOL
BLENDS DAMAGE
AUTO ENGINES**



FACT

**ETHANOL IS A
HIGH-OCTANE,
CLEAN-BURNING FUEL.**

EPA conducted the most exhaustive fuel test ever with E15, and it is approved for 2001 and newer vehicles. Over 95% of gasoline gallons already contain ethanol today.

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Cellulosic Ethanol

What is Cellulosic Ethanol?

Cellulose is the world's most abundant compound

- Provides cellular structure for trees, grass and all things organic

The industry began research on the cellulosic production process over 15 years ago

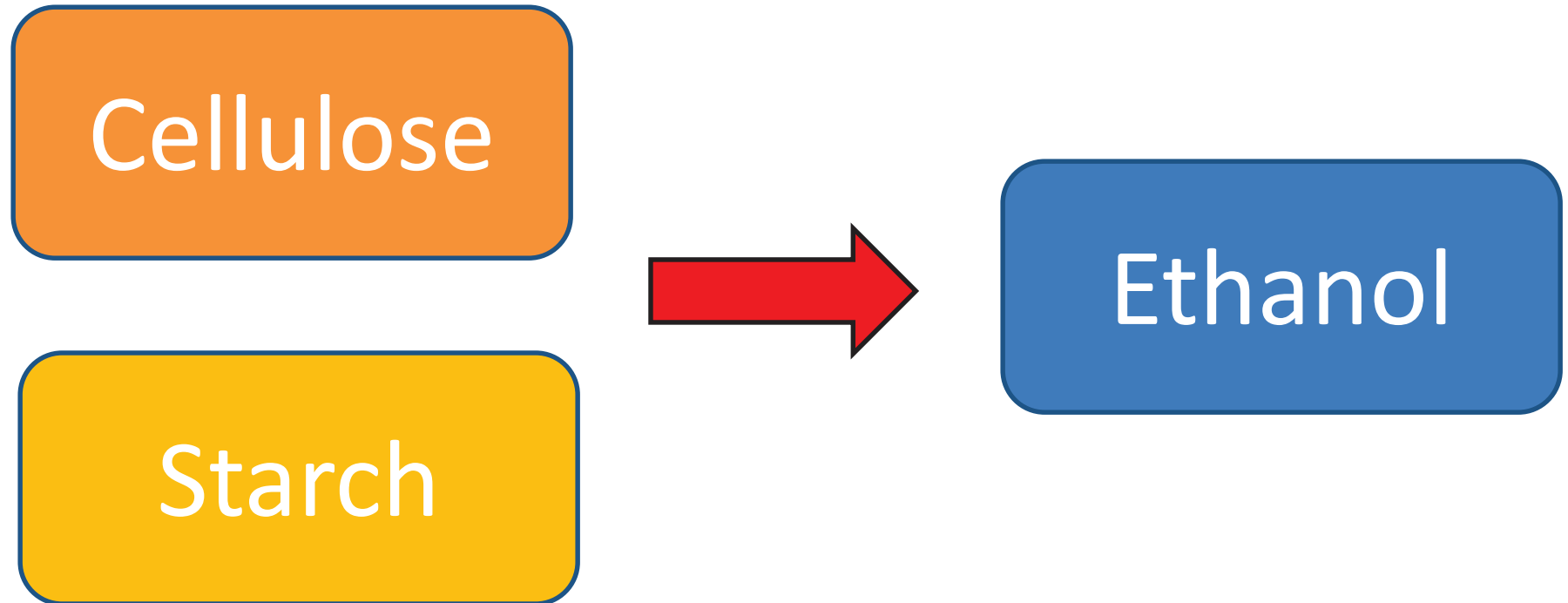
Ethanol is a molecule; regardless of the feedstock, the ethanol is identical

While not all countries can produce oil, All countries do possess some form of cellulose

Making energy from waste economically is a win-win for the planet

Integrated Production Model

The Future of Ethanol



Biomass Stored Onsite

Biomass: A New Opportunity



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