

Etha•know•ledge (Etha-Knowl-edge) [etha-nol-ij]:

-noun

- 1.** acquaintance with hard-hitting facts about ethanol, plain truths, or principles, as from study or investigation; *His brain bubbled forth with Ethaknowledge.*

Getting to Ethaknow You.

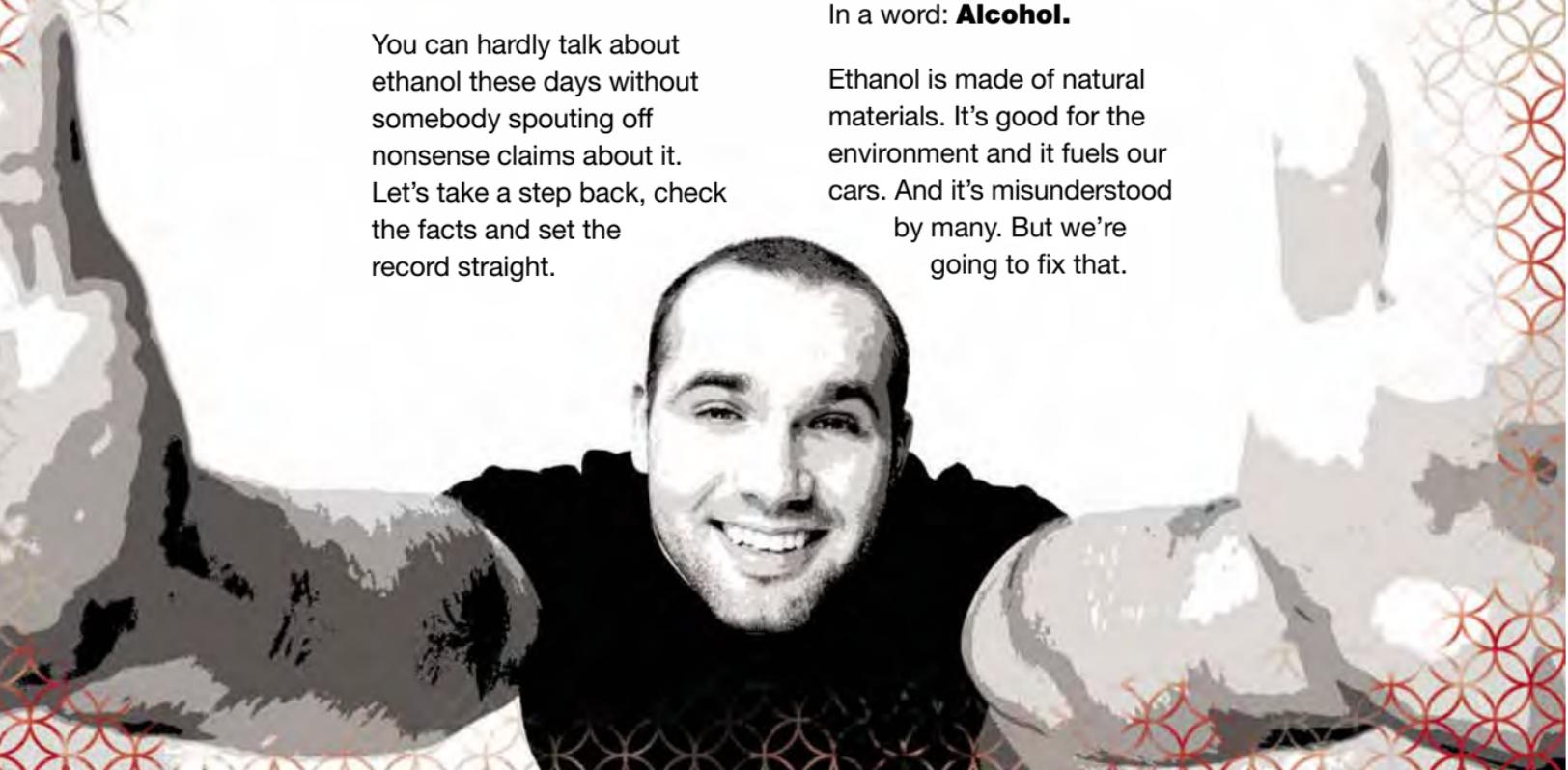
Okay, here's the situation.

You can hardly talk about ethanol these days without somebody spouting off nonsense claims about it. Let's take a step back, check the facts and set the record straight.

For starters, what is ethanol?

In a word: **Alcohol.**

Ethanol is made of natural materials. It's good for the environment and it fuels our cars. And it's misunderstood by many. But we're going to fix that.



Time to unleash our secret weapon
—**ethaknowledge.**

Ethaknowledge marks a new way of thinking about ethanol. It goes head to head with the biggest issues—food vs. fuel, the environment, the economy, government policy and a little extra.



Share your ethaknowledge. Visit www.ShareEthaknowledge.com



food **vs**

fuel

Food Fight.

The food vs fuel discussion plots ethanol as the culprit for rising food costs. But when you consider all of the variables that really impact food costs, it hardly seems fair.

Before you jump into the food fight with fists a flying, check the facts.

ETHANKNOWLEDGE ETHANKNOWLEDGE ETHANKNOWLEDGE
SORT OF
LIKE BRAIN FOOD,
JUST NOT AS
FISHY.

Them's
there are
Them's
there are
Them's
there are
food-fighting
words!
food-fighting
words!
food-fighting
words!

Let's get into it.

Statistics don't back the dire predictions of
myths that say we must choose between
fueling our rides and feeding our
families. We can do both—
and, wait...
WE ARE!

Can't we all just get along? **Share the ethaknowledge.**

The real facts on food costs

Surprise! Studies show that corn prices have little to do with rising food costs. Important food items like bread, eggs and milk prices correspond to fundamental supply and demand relationships in the world.

–Agricultural and Food Policy Center at Texas A&M

White noise

One allegation is that U.S. corn prices have driven up the price of tortilla flour in Mexico.

What the critics don't understand is that tortilla flour is made from **white corn, which is completely different than yellow corn** that constitutes more than **99%** of U.S. corn production and is utilized to make ethanol. White corn prices are determined by the supply and demand conditions for white corn, mostly within Mexico.

White Corn



Yellow Corn



**Very different
needs.
Very different
product use.**

A grazer's paradise

Ethanol production uses only the starch from the corn kernel, leaving the protein and nutrients for animal feed. There is no shortage of starch in the world. Every **56-pound bushel** of corn used in a dry-mill ethanol process **yields 18-pounds** of distillers grain, a high-protein livestock feed, with solubles (DDGS), representing about 32 percent of the nutrient value. DDGS will replace more than 1 billion bushels of corn for feed in 2008-2009.



Average distance food
travels to store shelf =
1,500 miles

Corn value in a truckload
{4,200 boxes} of Corn Flakes =
\$281.40*

Cost to get a truckload of
Corn Flakes to the store =
\$881.25*

**Based on August 2008 prices, with corn
at \$6.00/bushel and diesel at \$4.70/gallon.*

Source: Nebraska Corn Board

Fact: The farmer gets only a fraction of the food dollar.

While Farm Value represents 19% of the dollar, **only 16% of the 19% represents corn.** That adds up to roughly 3% of your food cost.



Source: USDA

Food for Thought.

So next time you hear somebody bring up the food vs fuel argument, you have some factual fire power on your side. Use it wisely. Get out there and share some ethaknowledge.

ShareEthaknowledge.com



environment

ENVIRONMENT



ENVIRONMENT

ment

Let's Get Environmental!

Fill your head with crystal clear thoughts of ethaknowledge.

It's taken the lifetime of our planet to produce the fossil fuels like oil. No wonder we have climate issues when we blow it all into the earth's atmosphere in **150 years.**

Ethanol works in harmony with the earth's natural carbon cycle. Crops grown to produce ethanol consume CO₂. The CO₂ released from the combustion of ethanol goes back into growing crops.

Let's clear the air with ethaknowledge.



Let's get into it.

You're not going to let them clog
your brain with dirty thoughts, right?

Clear your mind.

Learn the facts.

Share the
ethaknowledge.

CLEAN,
GREEN,
AND IT
POWERS
MACHINES.

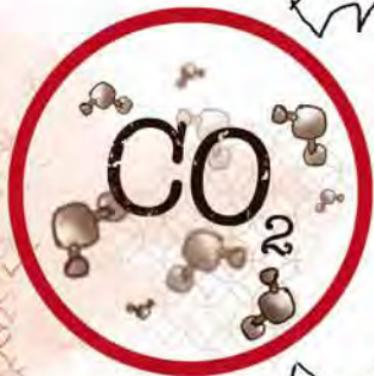
ETHAKNOWLEDGE

ETHANOL'S NATURAL CARBON CYCLE

Carbon dioxide is recycled
by plants as they grow.



Solar energy is absorbed by
corn and other biomass crops.



CARBON CYCLE AND SOLAR ENERGY CONVERSION



Biomass containing
carbon is processed
into ethanol.

Carbon dioxide is released
as ethanol burns.



Ethanol is blended with
gasoline to power
your vehicle.

Zap the environ-mental myths. **Share the ethaknowledge.**

The lay of the land

Claims that ethanol requires too much land seem logical. But when you consider how vast technological advances have helped farmers improve their yields, you can see how we can increase ethanol production even **with the same amount of land.**

Gag me with an oil can

Some want you to believe that ethanol is hard on the environment. In reality ethanol is actually improving in this respect, while oil just keeps getting worse. Think about this: while it takes 1.2 BTU of fossil energy to make 1 BTU of gasoline at the pump, it only takes half as much fossil fuel to create 1 BTU of ethanol. Why? Because it takes fossil fuel energy to drill for oil, but free solar energy to grow corn.

Tuck tail-pipe and run

You can scare away the emissions argument with one simple fact: Ethanol reduces tailpipe carbon monoxide emissions by as much as **30%**, toxics content by **13%** (mass) and **21%** (potency), and tailpipe fine particulate matter (PM) emissions by **50%**.

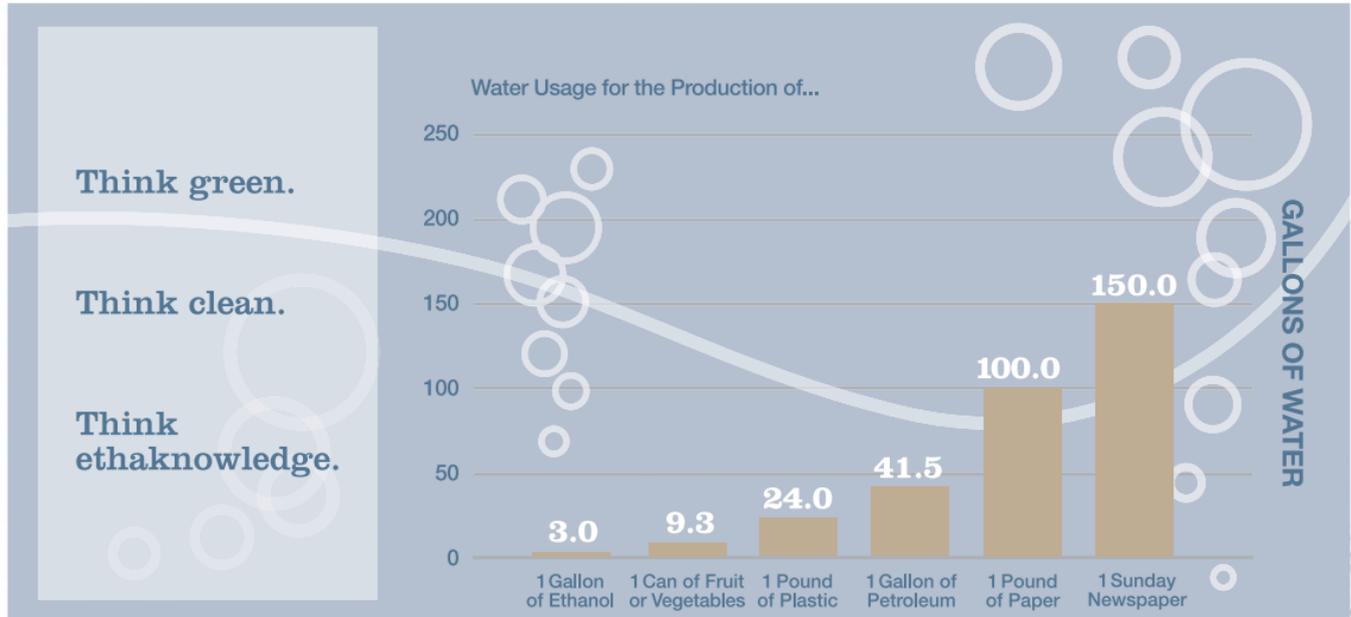
Waste power!

The majority of ethanol facilities use natural gas to power their plants. In an industry powered by innovation a better solution is always just around the corner as evidenced by plants now using waste products.

Nothing but net energy

Put an end to the energy argument with a slam dunk. Check this out: The U.S. Department of Agriculture has determined that for every 100 units of energy used to make ethanol, 167 units of energy are created in the form of ethanol.

Ethaknowledge Reduces Water on the Brain



Source: USGS, US EPA



Knowledge:

It's clean and renewable!

There you have it. Some serious smarts to help you understand ethanol's total impact on the environment, the true impact. Crystal clear? Good, now get out there and share the knowledge.

Go! Go! Go!

ShareEthaknowledge.com





perform

PERFORMANCE



PERFORMANCE

ance

High Performance Brains Trust Ethaknowledge!

Burning cleaner fuel won't stop you from burning rubber!

Ethanol enriched fuel powers cars, trucks, boats, lawnmowers, chain saws, weed whackers, you name it. In a word, ethanol 'performs'. Ethanol has fueled engines since 1908 from Henry Ford's Model T to the high revving engines of today's Indy Racing League.



Even Henry Ford designed his Model T Ford to run on gasoline or ethanol or a combination of both.



**If gearheads
trust ethaknowledge,
so can you!**



Take a ride with some high octane **FACTS OF FURY:**

Even horses love ethaknowledge

Let's talk about horsepower shall we? Ethanol's high octane rating of **113** actually increases the horsepower in a car allowing it to run better. It combusts at a lower temperature which keeps the engine cooler.

Ladies and gentlemen, start your brains

Ethanol is a high-octane, clean burning fuel enhancer. Consider this, 650-horsepower IndyCars® run safely and effectively on **100 percent** fuel-grade ethanol. The highest performance drivers in the world trust ethanol because the fuel performs, with reduced emissions as a bonus.



FACTS OF FURY {continued}:

Knowledge injection

Ethanol burns 100% and leaves zero residue. This allows it to perform without contributing to the formation of deposits that can harm fuel injectors. **A clean bill of truth:** Ethanol actually keeps fuel injectors cleaner, while improving performance.

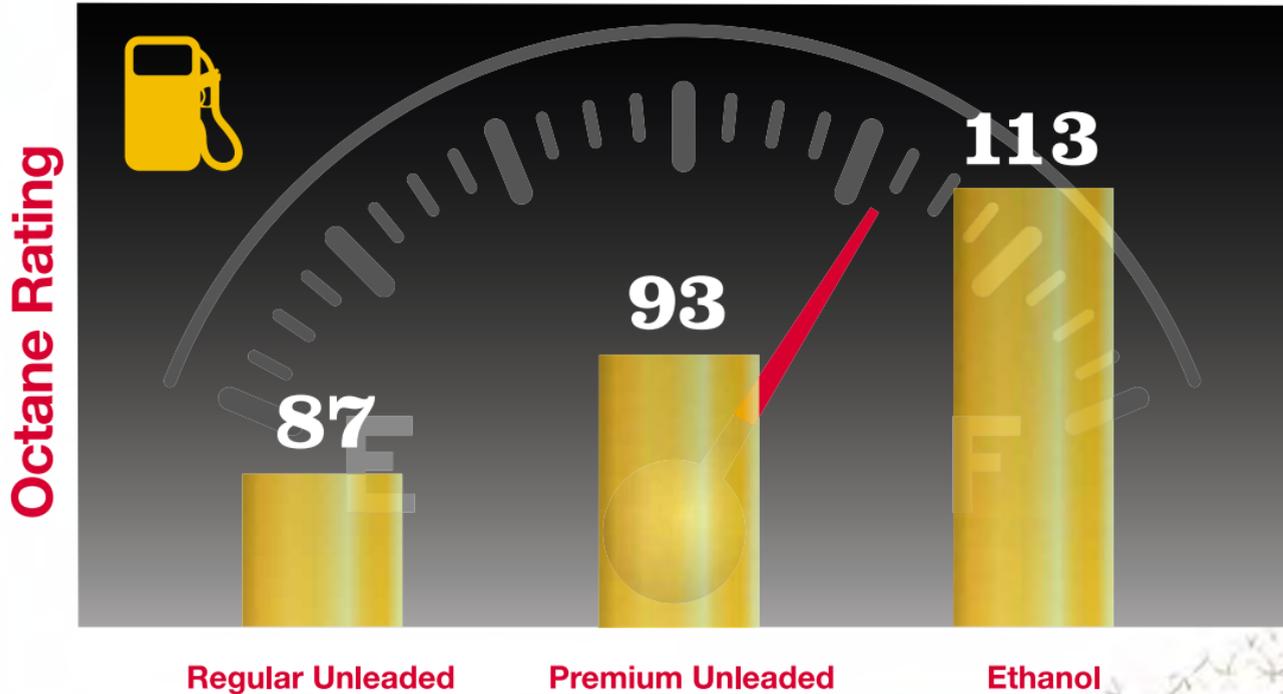
Ethanol out of gas? Hardly.

Top automakers are working to make more flex fuel automobiles—cars that can use higher blends of ethanol, such as **E20, E30 and E85.** Just another fact that shows ethanol is making a positive impact on the economy. And it's here to stay.

Fuel economics for aspiring ethaknowledge scholars

According to a mid-level blend study, **mid-range ethanol blends**—*fuel mixtures with more ethanol than E10 but less than E85*—can in some cases **provide better** fuel economy than regular gasoline.

With a **113 octane rating**, ethanol is the highest performance fuel on the market and keeps today's high-compression engines running smoothly.



Ethaknowledge: Fueling Your Intelligence.

Now you know that the argument that claims ethanol misses on performance actually sputtered out a long time ago.

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ethanol



freedom



FREEDOM FUEL

fuel

FREEDOM FUEL

Stars! Stripes! And Corn!

Ethanol offers **many benefits**, but reducing our dependence on foreign oil might top them all. Yet, as the ethanol industry grows and continues to challenge traditional energy sources, we need to work even harder to ensure that people understand the truth about ethanol.

Ethanol reduces dependence on foreign oil by producing domestic energy and securing America's energy independence. Pass it on.



Let's get into it.

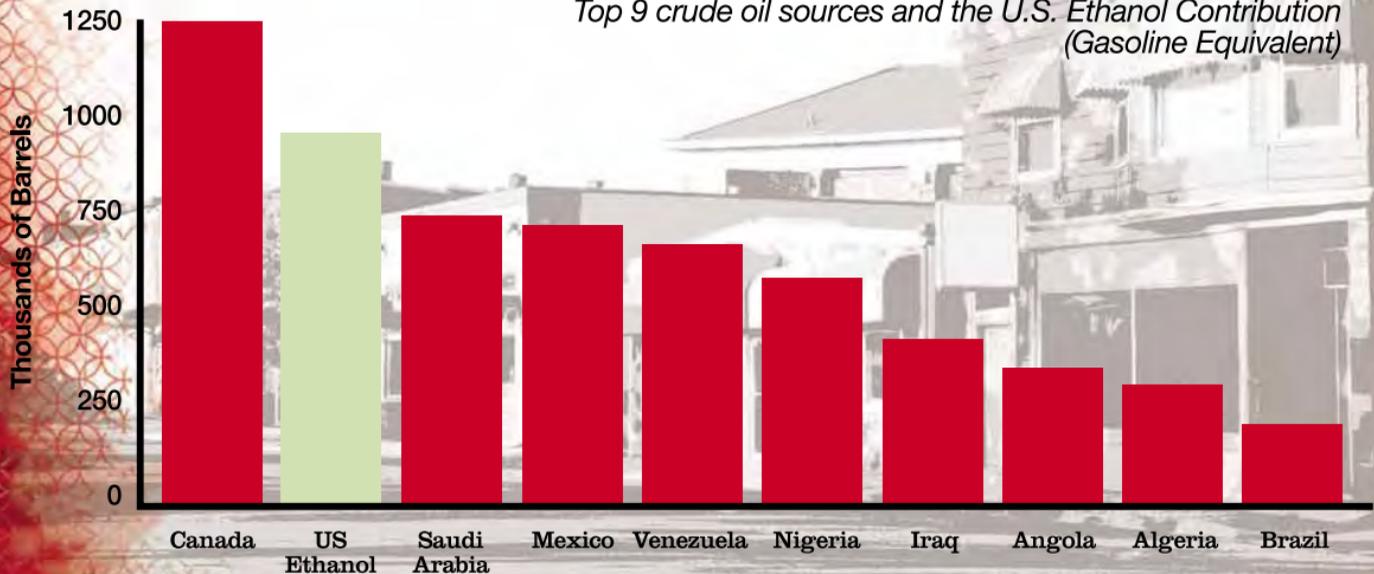
As we look to broaden our domestic energy resources, common misconceptions about ethanol production and use need to be cleared up. It's time to share the truth about ethanol's impact on energy independence, the rural economy and national security.

Ethanol! It's Practically its Own Country!

Next time you wonder about ethanol's impact consider this: If the U.S. ethanol industry were a foreign supplier of gasoline, only Canada would supply the U.S. with more gasoline than the U.S. ethanol industry. And soon the U.S. ethanol industry will out produce any foreign imports.

Fueling the United States

Top 9 crude oil sources and the U.S. Ethanol Contribution (Gasoline Equivalent)



Slash the myths with some hard hitting weapons of doom—**FACTS:**

Oil spills

Those who question whether or not ethanol impacts national security need to consider that two-thirds of the world's known oil reserves are located in the Middle East. The National Defense Council Foundation estimates the U.S. spends more than **\$137** billion per year on military operations securing the safe delivery of oil from the Persian Gulf.

400 billion club

Wondering what a dependence on foreign oil costs the United States these days?

Over **\$460 billion dollars a year.*** With populations of China and India also competing for oil, you can see how a solid alternative could greatly benefit the U.S. population.

Brain boost

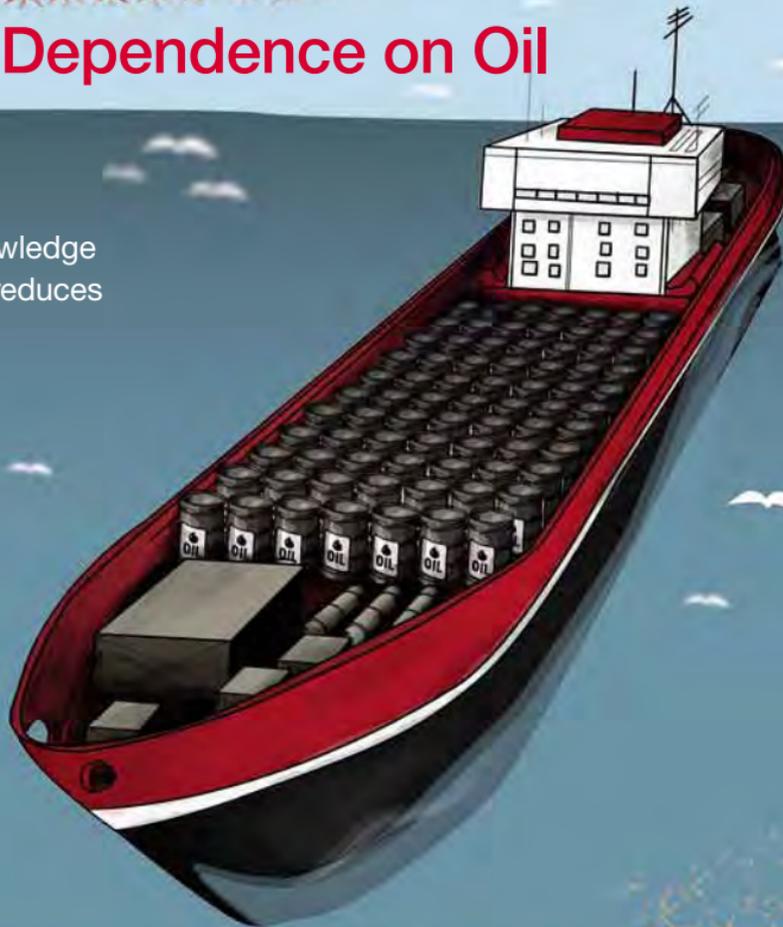
Here's another fact about ethanol's impact on the local economy: **Over the next six years alone, ethanol will displace 2 billion barrels of foreign oil, create 234,840 new jobs, and boost American household incomes by \$43 billion.**

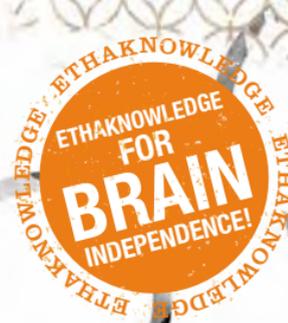
*Source: Energy Information Administration, based on 2008 U.S. consumption levels of 4.6 billion barrels of imported oil and the EIA's 2008 average price per barrel of \$99.55.

Ethanol Reduces Dependence on Oil

Still looking for that perfect ethaknowledge nugget that sums up HOW ethanol reduces our dependence on foreign oil?

By 2010, U.S. ethanol production could displace the equivalent of **661,000** barrels of imported crude oil per day—more than one large oil tanker per week.





Now you know the ethaknowledge. When it comes to boosting our national security and reducing our dependence on foreign oil, ethanol is the only available solution. **So that's that.**

Fuel the fight for energy independence with ethaknowledge.

Like Now!

ShareEthaknowledge.com 
ethanol



power



of policy

Four horizontal red bars are positioned below the word "of" in the main title.

Power to the Policy.

It makes a compelling story. Ethanol, the young revolutionary takes on the status quo of the established, highly incentivized oil industry. Only, it's not a story. It's reality.

You want to challenge the status quo? It takes strong public policy and visionary leadership.

The end.



**Let's get
into it.**

**Put some
ethaknowledge
in your
ethanoggin.**

Hold Up.

Before you make up your mind about the role of the Government and ethanol—**Think about it.** Do you really think that most oil companies would give ethanol the time of day if the government wasn't involved?

Truth is our policy. **Share the ethaknowledge.**

Renewable Fuel Standard

The Renewable Fuel Standard **{RFS}** is part of the Energy Independence and Security Act of 2007. It sets annual requirements for the amount of renewable fuels produced and used in motor vehicles.

Without the RFS, it is highly unlikely that biofuels would ever be much more than simply a blending agent, since oil companies would rather use their own product.

Chew on some knowledge

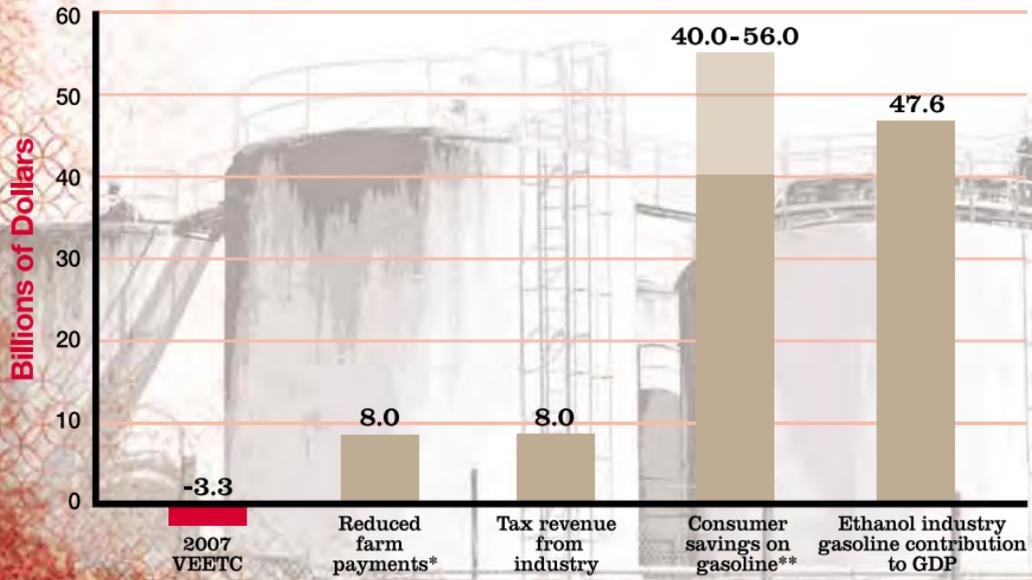
Think about it. We don't tax chewing gum like we tax chewing tobacco. Really, does it make sense to tax clean domestically produced ethanol the same as a fossil fuel like gasoline?

Ethaknowledge: Let's talk about the blender's credit.

VEETC is your BFF

Volumetric Ethanol Excise Tax Credit **{VEETC}**, commonly referred to as the blender's credit, provides oil companies with an economic incentive to blend ethanol with gasoline. So it's not a subsidy, but a tax credit to incentivize blends. And it leads to significant benefits for you, the taxpayer, including reduced support payments from the Farm Bill and lower gas prices.

Government Support



VEETC and you.

Let's break down the tax break. VEETC provides oil companies with an incentive to blend ethanol with gasoline. This spurs industry growth and provides excellent return to U.S. taxpayers.

Source: LECG, Contribution of the Ethanol Industry to the Economy of the United States, 2007. *Congressional Research Service-Farm Commodity programs cost \$16.9 billion in 2006 and \$8 billion in 2007. **Iowa State University-Based on 29 to 40 cents per gallon.

In 2007 the blender's credit prevented approximately \$3.3 million in receipts to the federal treasury. In the same year, the ethanol industry contributed **\$47.6 billion** to the Nation's GDP, created more than **200,000 jobs** and generated an estimated **\$4.6 billion** in tax revenue for the federal government (Source: LECG).

Dollars and cents

The blender's credit totals **45¢** per gallon on pure ethanol.

Money spill

Just a reminder that the oil and gas industry will receive **\$29 billion in tax breaks**, subsidies and other handouts between 2008 and 2013. That's roughly equivalent to the blender's credit during the exact time frame, despite the fact that oil is well established and has been around for more than a century.

Tariff Talk.

While the blender's credit encourages blenders to use domestic ethanol, a secondary tariff on ethanol imports ensures that the tax credit doesn't go toward ethanol produced in other countries, such as Brazil.

Some want to eliminate the secondary tariff on ethanol imports. What they don't understand is that subsidizing foreign ethanol would jeopardize the domestic ethanol industry, putting us right back where we started with a fierce dependence on foreign oil. **Lifting the tariff will displace domestic ethanol, not foreign oil. That's heavy.**

Locked and Loaded.

It's heady stuff and this is just a snap shot. But still, this should arm you with enough understanding to get out there and blow some minds with your newly found ethaknowledge.

ethaknowledge!
ethaknowledge!
ethaknowledge!
ethaknowledge!

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ethanol



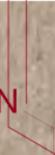
future

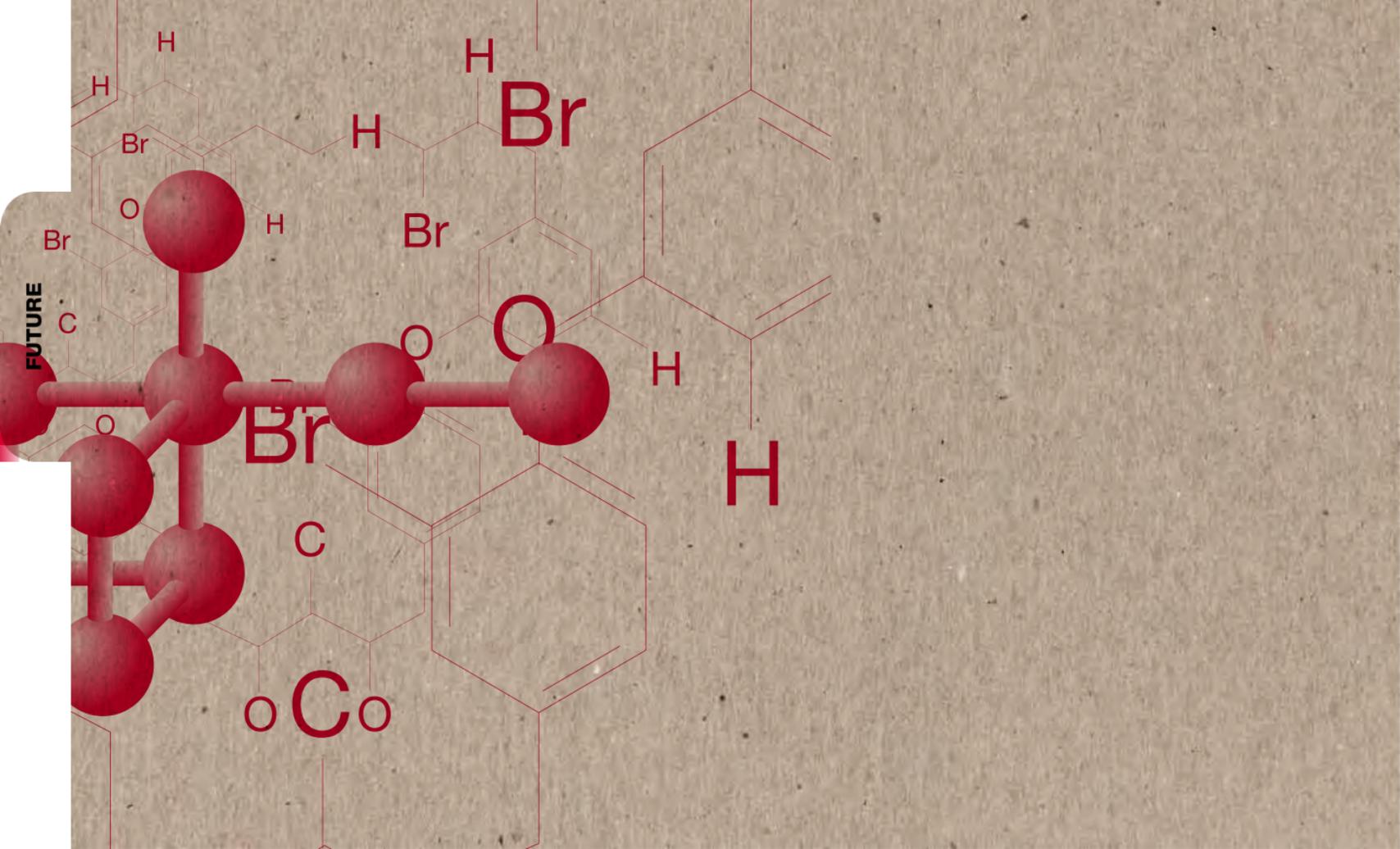
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Future Fuel!

The ethanol industry continues to **IMPROVE**. Here's some more ethaknowledge to add to your collection.

It all starts with corn. As ethanol producers look to the future, developing new and ecologically sound direction toward energy independence—you don't need a flux capacitor to understand that corn production is becoming more and more important.

**That's
good news!**



Source: Argonne National Laboratory: Ethanol Plant Survey (2007) Analysis

We corn! Therefore, we can!

New technologies have already helped to improve productivity, but you ain't seen nothin' yet.

Ethanol Plants Today vs. 2001

6.4%

yield
increase

21.8%

energy use
reduction

26.6%

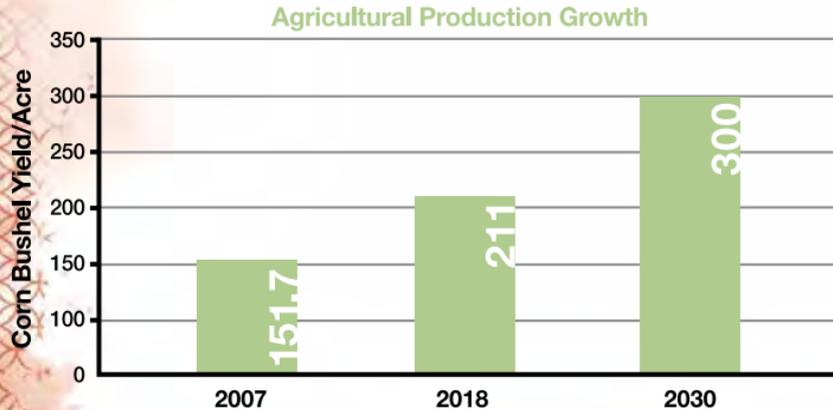
less
water used

Question: What does ethanol do for corn producers?

Answer: It makes them want to do the happy dance.

Poised to carry agriculture forward, ethanol will open the market to new opportunities. Improving yields will help grow grain-based ethanol production by leaps and bounds without impacting food supplies and without using more land.

For the first time in decades the price of grain is above the world's cost of production. This will now allow farmers all over the world to invest in modern agriculture technologies to profitably grow crops for food and fuel.

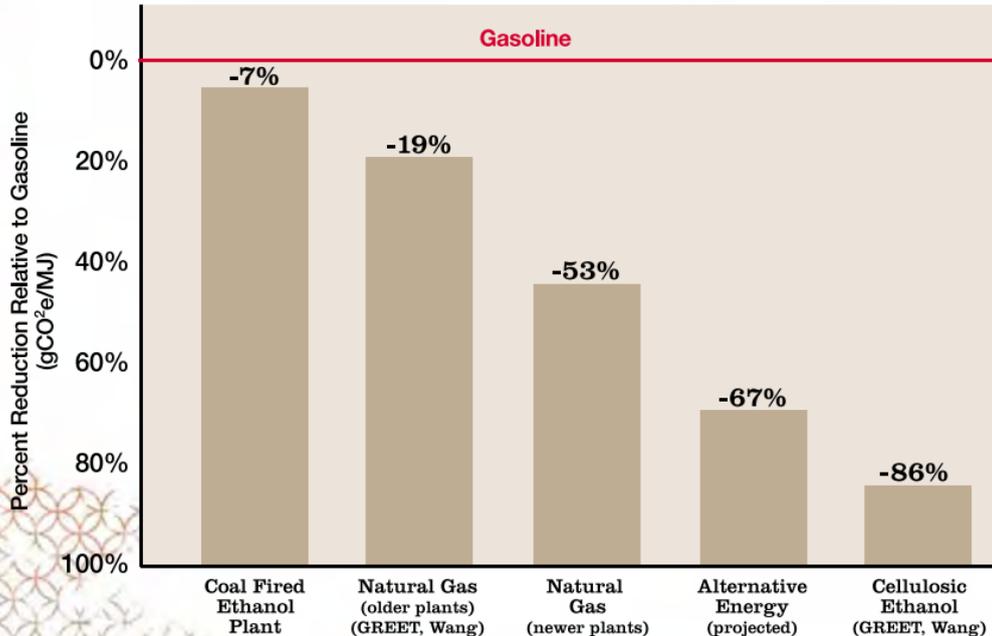


Huge opportunity in agriculture leads to huge investments improving technology. Here's a fast fact: DuPont predicts corn yields will increase 40% by 2018. Monsanto forecasts 300 bushels per acre by 2030. That's crazy corn.

*Source: The Global Potential on Bioenergy on Abandoned Agriculture Lands, Stanford University.

Up, Up Ethanol! Down, Down Greenhouse Gas!

Ethanol Greenhouse Gas Reduction Over Gasoline
Life Cycle Analysis



*Source: BESS version 2008.3.0, Liska and Cassman, 2009 GREET, Wang et al, 2007.

As grain based ethanol production improves, it uses less fossil fuels. In fact, a recent study by the University of Nebraska showed that modern ethanol plants reduce greenhouse gases by more than 50%. Combine that with cellulosic ethanol production and ag advances, and the U.S. can start bidding fossil fuels goodbye.

Ethaknowledge

Nugget: *Alternative oil sources such as tar sands and oil shale require even more fossil fuels.*

Corn! Liberty! The Pursuit of Cellulose!

This is where it gets good, ultra good, as future focused biorefiners look to new opportunities: **cellulosic ethanol, an exciting, specialized form of ethanol derived from the cellulose building blocks that comprise the bulk of all organic plant materials.**

Until recently, the difficulty of breaking cellulose into its core components limited its commercial viability. Today, aggressive efforts will soon make large-scale cellulosic ethanol production a reality.



**Nature
+
Science
=**

**HUGE
things for
our future.**

**How huge
exactly?**

**Try 5
billion
gallons
of ethanol
from corn
cobs alone!**

Sweet on Cellulose!

If you're going to make cellulosic ethanol, you better have some serious cellulose. That comes from feedstock.

Common cellulosic feedstocks include corn stover, corn cobs, wheat straw, switchgrass and residues from woody trees or paper production.



Ultimately, through creativity and innovation ethanol producers are helping turn cellulosic ethanol production from dream to reality.

The Power of Ethanol is in Effect.

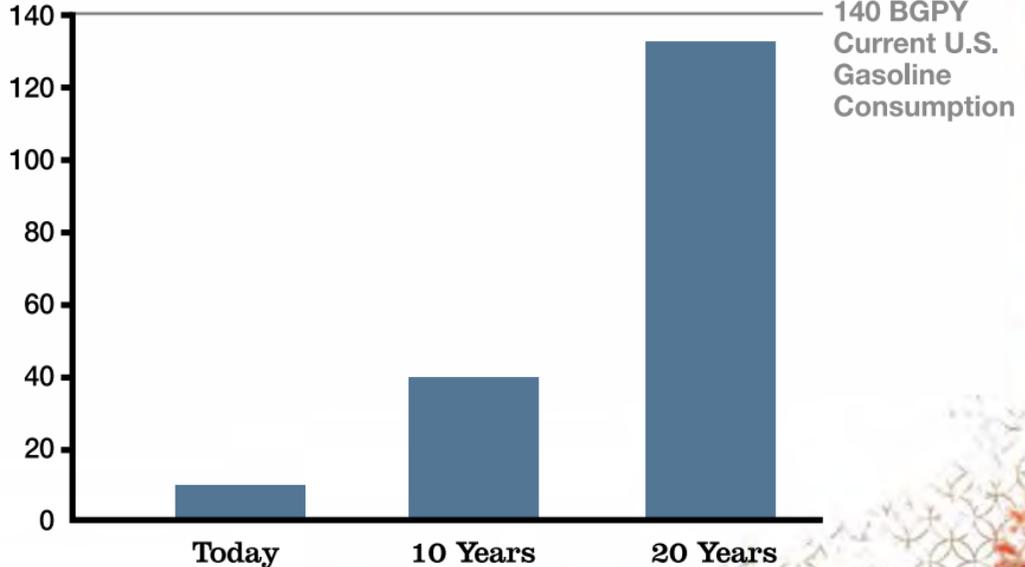
The positive impact of ethanol starts on the farm and ripples across continents. Already giving a boost to rural economies, ethanol's positive impact will soon do the same on a global level as world agriculture begins to realize its **full potential**.

Some day soon ethanol could replace over 90% of our nation's gasoline usage. Pass it on.

Tremendous increases in corn yields and over one billion tons of cellulosic biomass in the United States mean great potential. With a little resolve, we the people could almost replace our need for fossil fuels for automotive transportation with a homegrown, environmentally friendly, renewable fuel.*

*Source: USDA/DOE

U.S. Ethanol Production Potential Growth



Smarter Than a Speeding Bullet.

Now you know what to expect from ethanol in the future. Now you also know what to spring on your friends who try to steal ethanol's thunder with the same old arguments.

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Put That in Your Back Pocket!

Actually, this booklet might not fit in your back pocket.
A purse, yes. A man purse, probably. A back pocket, not sure.
But when you think about it symbolically, ethaknowledge
most definitely fits in your back pocket.

Keep it close to your brain. And whenever you
hear somebody talking mythic smack about ethanol
—share the ethaknowledge.



For Sources and More Information,
go to ShareEthaknowledge.com.



Share your ethaknowledge. Visit www.ShareEthaknowledge.com





As believers in renewable energy and environmental stewardship,
Growth Energy uses recycled paper and vegetable oil-based ink.



growth energy
America's Ethanol Producers

WEB: GrowthEnergy.org

WEB: ShareEthaknowledge.com



ethanol