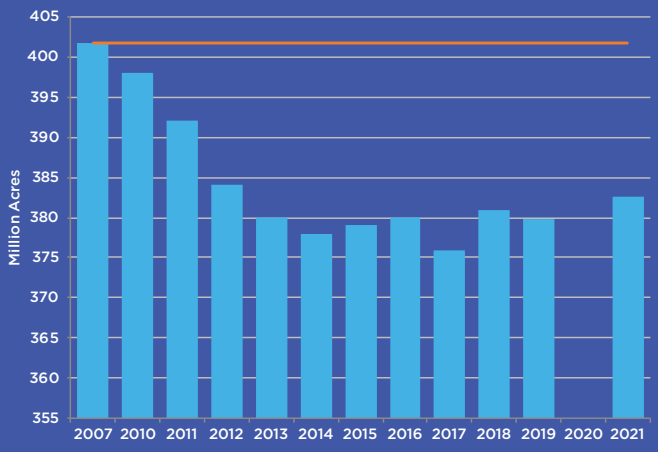
RFA
RENEWABLE FUELS ASSOCIATION

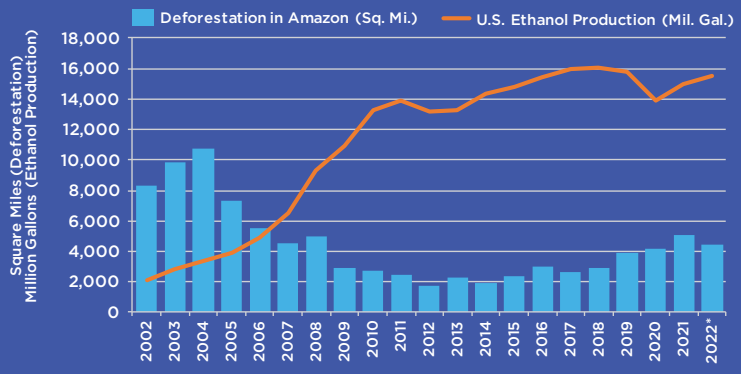
SETTING THE RECORD STRAIGHT

Because they threaten the status quo, renewable fuels like ethanol have been under attack for years. As much as these falsehoods have been disproven time and again, opponents continue their attempts to halt the ethanol industry's progress, and several myths, such as those tied to ethanol's emissions, have been treated elsewhere in this Outlook. A study on land use change, led by Tyler Lark from the University of Wisconsin, got a lot of media attention in 2022 and will no doubt resurface in 2023—despite being thoroughly debunked by researchers at Harvard, Tufts and Purdue universities, as well as Argonne National Laboratory and the U.S. Department of Agriculture. Here's a review of some key points that prove ill-informed biofuels critics are wrong and out-of-touch when it comes to ethanol's benefits.

U.S. EPA DETERMINATION OF AGRICULTURAL LAND USE VS. 2007 BASELINE



AMAZON DEFORESTATION RATES VS. U.S. ETHANOL PRODUCTION



Source: RFA using Brazil National Institute for Space Research & U.S. Energy Information Administration data
**Estimated*

ETHANOL HAS NOT CAUSED CROPLAND EXPANSION

Ethanol critics often assume that increased ethanol production can only be accomplished with a big increase in cropland, and that forestland and other natural habitat will be converted to corn acres. In reality, there has been little increase in corn acres planted during the "ethanol era," because farmers are growing so much more corn per acre. And additional corn acres haven't come from forest or grassland, they have come from "crop switching" (e.g., replacing wheat or cotton) or acres expiring from the federal Conservation Reserve Program. What's more, since the Renewable Fuel Standard was expanded in 2007, total U.S. cropland has actually trended lower, according to EPA.

Likewise over the years, ethanol has been falsely accused of causing another form of land use change—Amazon deforestation. But the data show reductions in deforestation during the "ethanol era."

ETHANOL DOES NOT RAISE FOOD PRICES

One of the longest running attacks on ethanol is also one of the most incorrect, as America's family farmers grow more than enough corn for all uses and field corn remains extremely inexpensive as a food ingredient. The total percentage, or "farm share," of every dollar spent on food has remained below 15 cents, meaning the value of raw agricultural ingredients in our grocery items account for just 15 percent of the retail price on average. In addition, as the ethanol industry has grown over the years, overall food inflation has decreased. Other factors, like oil prices, play a far more significant role in food prices. And let's not forget that ethanol biorefineries make both fuel and feed—returning one-third of every bushel processed to the animal feed market in the form of highly nutritious distillers grains.

2021 FOOD DOLLAR: MARKETING BILL (NOMINAL)

14.5¢ — **85.5¢**

The ***farm share*** is the portion of the food dollar that goes to farm establishments for the sales of raw food commodities.

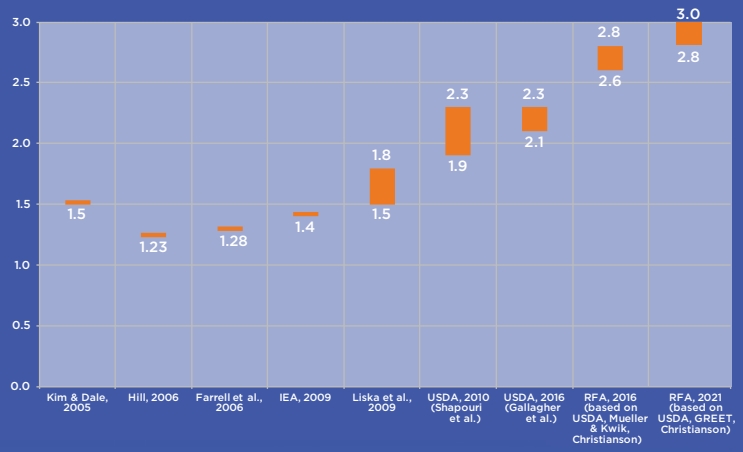
The ***marketing share*** is the portion of the food dollar that goes to food supply chain establishments for post-farm activities that transform raw food into finished food products.

Source: U.S. Dept. of Agriculture

ETHANOL'S ENERGY BALANCE IS UNEQUIVOCALLY POSITIVE

For every unit of energy invested into the production of ethanol, the fuel itself provides 2.6 to 2.8 units of energy to the user, on average. The top quartile of dry mill biorefineries are averaging an energy balance of 3.2 to 3.4, with some plants very likely achieving 4.0. As far back as 2007, experts from Michigan State University and the Department of Energy pointed out that ethanol's net energy balance is more favorable than that of gasoline or coal.

DRY MILL CORN ETHANOL AVERAGE ENERGY BALANCE RATIO ESTIMATES, 2005-2021



Source: RFA based on separate data sources listed in chart