

How Ethanol Feeds the World

America's ethanol biorefineries continue to play an important—and often overlooked—role in feeding the world.

Specifically, the industry provides an enormous supply of high-protein animal feed for livestock, poultry, and aquaculture production across the globe.

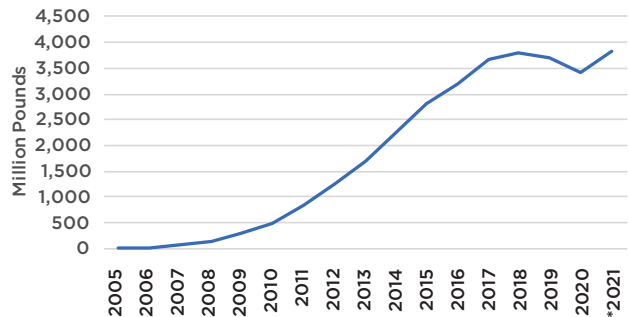
In 2021, U.S. ethanol producers generated 35.4 million metric tons (mmt) of distillers grains, gluten feed, and gluten meal. In addition, biorefineries extracted over 3.8 billion pounds of corn distillers oil, a \$2.1 billion market underpinning the production of biodiesel, renewable diesel, and poultry feed.

As dietary trends continue to evolve around the world, U.S. ethanol producers continue to embrace new technologies that further enhance the nutritive qualities of animal feed co-products. New processes that concentrate the protein content of distillers grains, improve amino acid profiles, and reduce excess fat content are transforming the industry and opening new market opportunities.

A Diversified Trade Portfolio

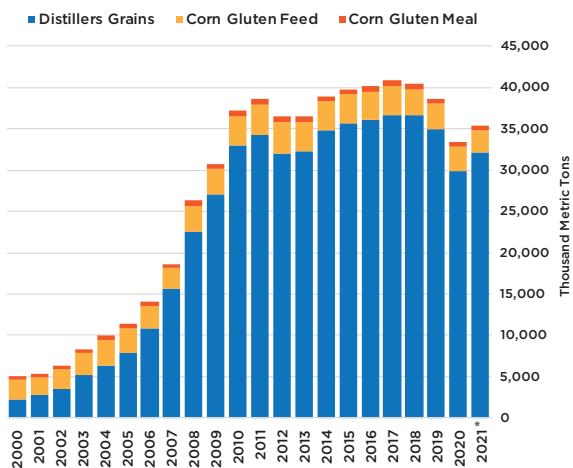
U.S. biorefineries satisfied growing domestic animal feed needs while also exporting about a third of distillers grains produced. In 2021, more than 50 countries purchased a cumulative 11.6 mmt of U.S. distillers grains. Half of these exports landed in Southeast and East Asia. Meanwhile about 20 percent of total U.S. distillers grains exports were shipped to Mexico, as the country extended its reign as our top customer for a fifth consecutive year.

CORN DISTILLERS OIL PRODUCTION



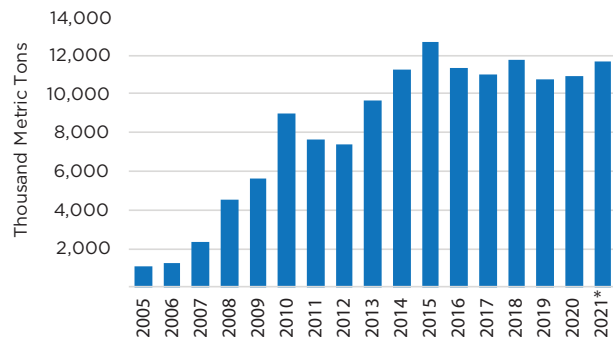
Sources: U.S. Dept. of Agriculture and RFA *Estimated

U.S. ETHANOL INDUSTRY CO-PRODUCT ANIMAL FEED OUTPUT



Source: RFA and U.S. Dept. of Agriculture.
Note: All co-products converted to 10 percent moisture basis
*Estimated

U.S. DISTILLERS GRAINS EXPORTS

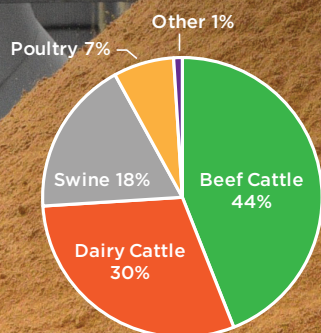


Sources: U.S. Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics *2021 estimated based on Jan.-Nov. 2021

TOP DESTINATIONS FOR U.S. DISTILLERS GRAINS EXPORTS IN 2021

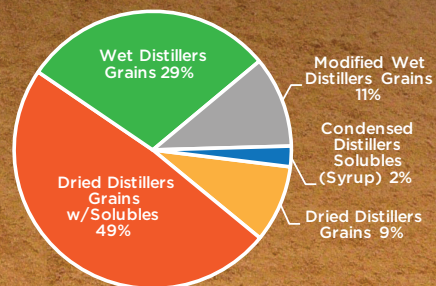


DISTILLERS GRAINS CONSUMPTION BY SPECIES



Source: U.S. Dept. of Agriculture

U.S. DISTILLERS GRAINS PRODUCTION BY TYPE: AS-IS BASIS



Source: U.S. Dept. of Agriculture