

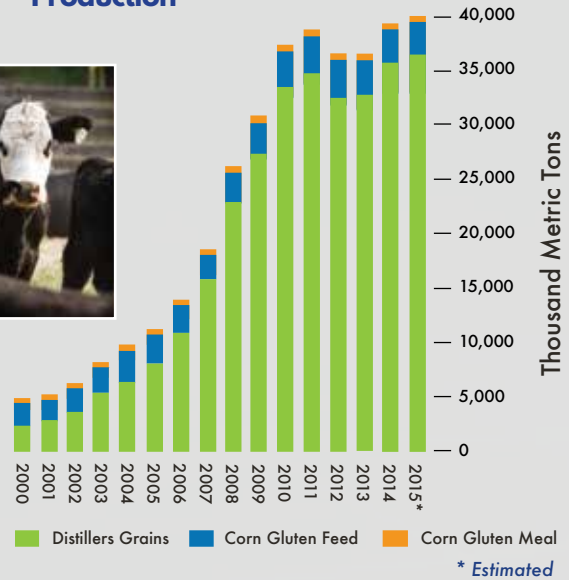
# 2015 CO-PRODUCT OUTPUT AND EXPORTS FEED PRODUCTION SURGES

The U.S. ethanol industry makes an enormous contribution to the global animal feed supply. One-third of every bushel of grain that enters the ethanol process is enhanced and returned to the feed market, most often in the form of distillers grains (DDGS), corn gluten feed and corn gluten meal. Only the starch portion of the grain is made into ethanol; the remaining protein, fat, and fiber pass through the process. These nutrient-dense co-products are fed to beef cattle, dairy cows, swine, poultry, and fish in nations around the world.



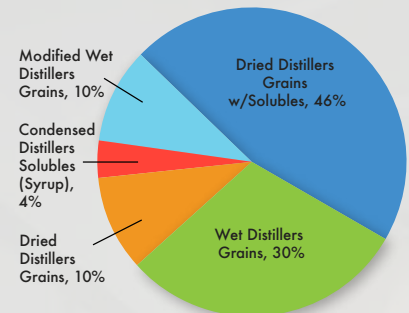
In 2015, the industry produced an estimated 40 million metric tons (mmt) of feed, making the renewable fuels sector one of the largest animal feed processing segments in the United States. Over the past decade, the ethanol industry has also emerged as a major producer of corn distillers oil (CDO), which is used as an animal feed ingredient or feedstock for biodiesel production. In 2015, approximately 85% of dry mills were extracting oil, and it is estimated that more than 2.7 billion pounds of CDO were produced.

## U.S. Ethanol Industry Animal Feed Production



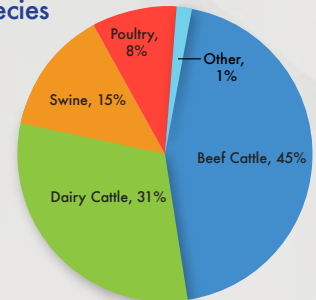
Source: RFA analysis of U.S. Dept. of Agriculture data  
Note: All distillers grains converted to 10% moisture basis.

## Distillers Grains Feed Production by Type



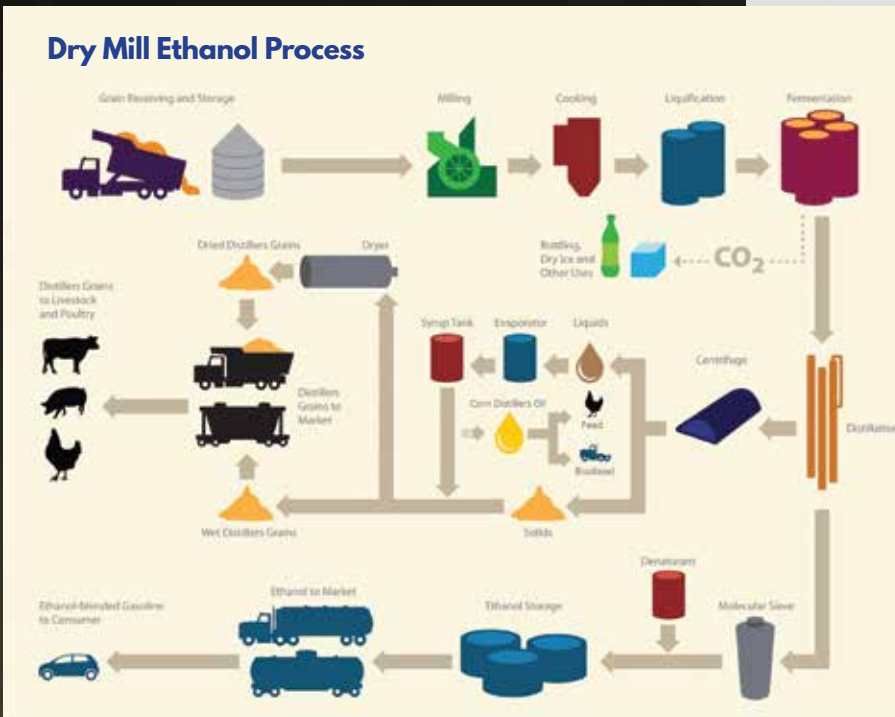
Source: U.S. Dept. of Agriculture

## Distillers Grains Consumption by Species



Source: Distillers Grains Marketing Companies

## Dry Mill Ethanol Process

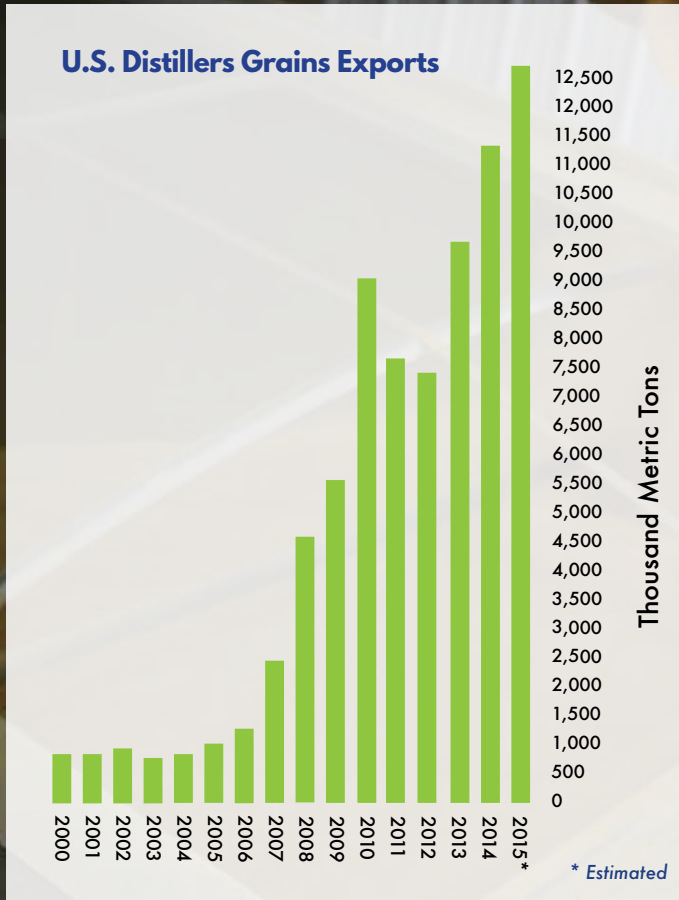


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## FEEDING THE WORLD

Ethanol producers exported roughly 12.6 mmt of distillers grains (DDGS) in 2015, a new record and 11% higher than 2014. Global demand has been climbing since 2012, expanding by a whopping 3 mmt over the past two years alone. In fact, exports accounted for roughly one-third of total DDGS demand in 2015.

China—the largest customer of U.S. distillers grains over the past five years—was the cornerstone of international market expansion in 2015, receiving over half of all U.S. shipments. Thus, it is imperative that free and open trade with China is maintained, and U.S. producers must fight any potential discriminatory trade barriers. Meanwhile, the rest of the world has also embraced the benefits of DDGS, with increasing volumes consumed outside U.S. borders. Mexico was the second-leading market for distillers grains exports, followed by Viet Nam, South Korea, Canada and Thailand.



Sources: U.S. Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics