



## U.S. Corn Exports—The Rest of the Story

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September 29, 2011

*farmdoc daily* (1):162

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Recommended citation format: Irwin, S. and D. Good. "U.S. Corn Exports—The Rest of the Story." *farmdoc daily* (1):162, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 29, 2011.

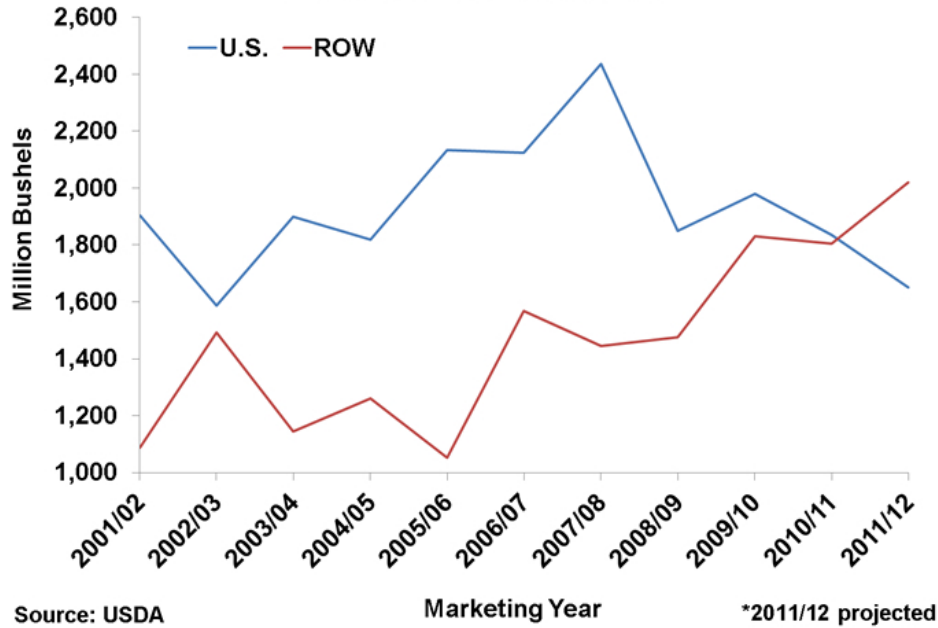
Permalink: <http://farmdocdaily.illinois.edu/2011/09/us-corn-exportsthe-rest-of-the-1.html>

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Exports of unprocessed (whole) corn from the U.S. vary substantially from year to year, ranging from 1.588 billion bushels to 2.437 billion bushels over the past 10 years, but generally have been trending lower since 2007-08. Annual exports from all other origins are also variable, but have been increasing since 2008-09 (Figure 1). For the 2011-12 marketing year, the USDA projects U.S. corn exports at a 9-year low of 1.65 billion bushels and exports from all other origins at a record large 2.02 billion bushels. If the forecasts are correct, this will be the first year since the early 1970s that U.S. exports were smaller than those from all other origins.

The exports of unprocessed corn, however, do not reflect the entire corn export picture for the U.S. since corn is also exported indirectly in various processed products. Exports of these products have increased substantially over the past 10 years. These products include ethanol, distillers dried grains (DDGs), meat, dairy products, and various food products. Here, we estimate the annual quantity of corn exported in processed form in these products over the past 10 years (Table 1).

**Figure 1. U.S. and Rest of World Exports of Unprocessed Corn, 2001/02-2011/12 Marketing Years\***



The quantity of corn exported in the form of ethanol is estimated based on (1) the USDA estimate of the quantity of corn processed for ethanol and co-product production, (2) the assumption that just over two-thirds of a bushel of corn processed is consumed for ethanol production, and (3) the percentage of total ethanol production that is exported. The quantity of corn exported in the form of DDGs is estimated based on the quantity of DDGs exported and the assumption that approximately 17.75 pounds of DDGs are produced for each bushel of corn processed for ethanol production. That is, slightly less than one-third bushel of corn processed for ethanol remains as distillers grain.

**Table 1. Unprocessed and Processed U.S. Corn Exports, 2001/02 - 2010/11 Marketing Years**

Marketing Year	Unprocessed Exports			Processed Exports						Overall Total	Overall Value
	Exports	Ethanol	DDG	Beef	Pork	Poultry	Dairy	Food	Total		
2001/02	1,905	12	34	132	126	307	35	102	747	2,652	\$ 5,224
2002/03	1,588	15	29	128	129	271	39	162	772	2,360	\$ 5,475
2003/04	1,900	13	30	62	155	276	53	166	754	2,654	\$ 6,422
2004/05	1,818	15	40	40	212	331	61	204	903	2,721	\$ 5,605
2005/06	2,134	12	50	62	237	309	69	257	996	3,130	\$ 6,260
2006/07	2,125	29	81	76	227	309	68	278	1,067	3,192	\$ 9,704
2007/08	2,437	43	173	108	355	373	81	160	1,293	3,730	\$ 15,667
2008/09	1,849	24	215	104	304	363	65	117	1,192	3,041	\$ 12,347
2009/10	1,980	70	337	118	333	346	90	159	1,453	3,433	\$ 12,188
2010/11	1,835	209	320	147	365	361	92	167	1,662	3,497	\$ 18,182

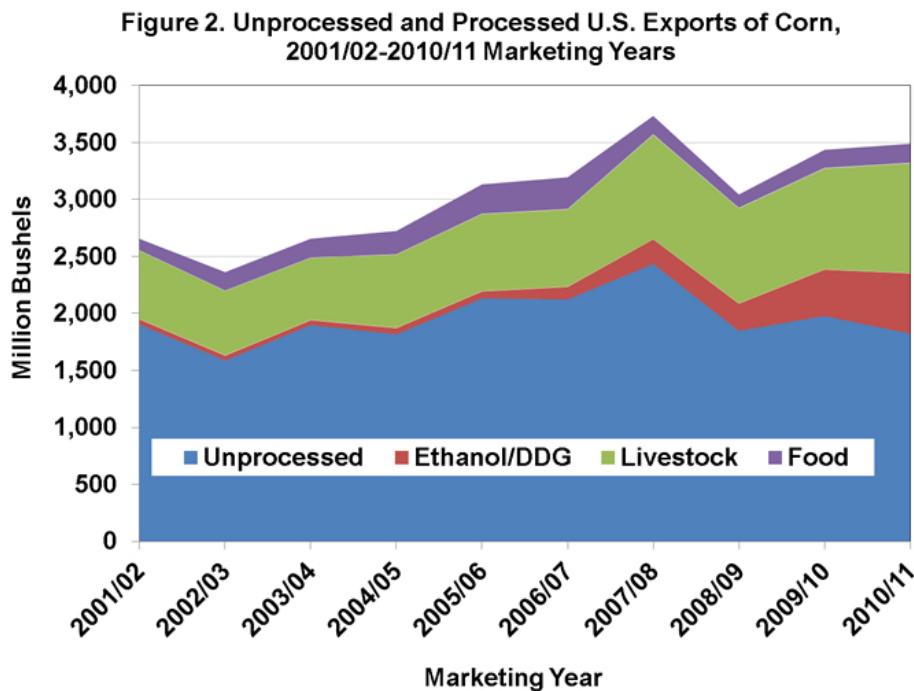
Note: All variables reported in million bushels except value, which is reported in million \$.

Estimating corn exported in the form of meat and dairy products is not as straight-forward. The USDA provides estimates of exports of beef, pork, poultry, and dairy products so that exports as a percentage of production can be calculated for each species. The challenge is to estimate the quantity of corn and DDGs that are fed to each species. One approach would be to identify a typical feed ration for each species and calculate the total quantity of corn and DDGs fed to each. The difficulty is that typical rations are not easy to identify and rations have changed over time. Instead, we take advantage of the USDA's estimate of Grain Consuming Animal Units (GCAUs) by species. Corn feeding for each species is estimated using the USDA's estimate of total corn fed during the year and the percentage of total GCAUs represented by that species. The estimate of corn exported through that species is based on the percentage of production that is exported. The same process is used for the corn-equivalent of DDG feeding, except that the total of DDG feeding has to be estimated first. That total is calculated as estimated DDG production minus exports.

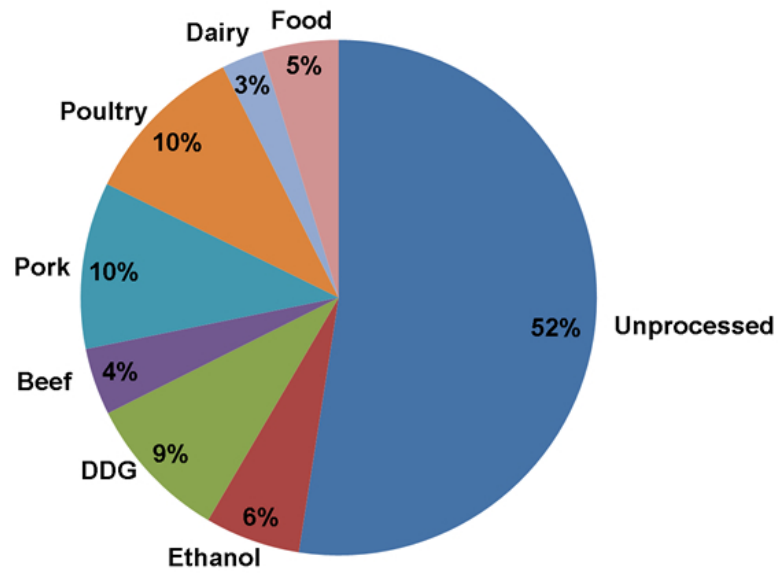
The quantity of corn exported as food products is estimated by the USDA and those estimates are used here. These food product exports include a variety of food ingredients, including starches, glucose, and fructose.

As shown in Table 1, while unprocessed (whole) corn exports have declined in recent years, corn exports in processed form have skyrocketed in several categories. Particularly notable are ethanol, DDG, and pork exports, which increased about 18, 10, and 3 times, respectively, over the last decade. In total, estimated exports of corn in processed form have increased from about 750 million bushels in the 2001-02 corn marketing year to 1.66 billion bushels during the 2010-11 marketing year. While exports of unprocessed corn have declined by 25 percent from the peak of 2007-08, estimated total corn exports have declined only 6 percent and represented 28 percent of U.S. corn production last year. Because the average corn price received by farmers has increased since 2006-07, the estimated farm value of total corn exports has increased sharply, from about \$5.2 billion in 2001-02 to about \$18.2 billion in 2010-11.

The rising importance of corn exports in processed versus unprocessed form is vividly illustrated in Figure 2. This chart also shows that despite the recent and spectacular increases in ethanol and DDG exports, livestock products as a group remain the largest processed form of corn exports. Figure 3 shows that corn exports in the form of pork, poultry, and DDGs represented about 30 percent of total exports, while exports of unprocessed corn in 2010-11 accounted for only 52 percent of the total.



**Figure 3. Percentage Distribution of Unprocessed and Processed U.S. Corn Exports for the 2010/11 Marketing Year**



The important take-away message is that the U.S. corn market remains highly export intensive, but the form is changing rapidly.