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Weekly Outlook: Why Is Anticipating Feed and Residual Use of Corn So Difficult?

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The timeliness of U.S. corn consumption data varies by category of use. The USDA provides weekly data on the amount of corn inspected for export with a lag of only four days. The U.S. Energy Information Administration provides weekly estimates of ethanol production (with corn as the predominant feedstock) with a lag of only five days. Data relative to the consumption of corn for other domestic processing uses is not readily available, but the rate of use is so consistent that consumption is not difficult to anticipate.

In contrast, information relative to the consumption of corn as livestock feed is not available on a timely basis since no Census or USDA survey data are collected in this category. Instead, the USDA's quarterly estimate of corn stocks provides the basis for estimating feed and residual use of corn in the quarter prior to the reference date for the stocks estimate. Feed and residual use is calculated as total use during the quarter minus the estimates of use in the other categories. The calculation of feed and residual use during the first quarter of the marketing year is used to forecast use for the rest of the marketing year and that forecast is updated with each subsequent quarterly stocks estimate. The process of anticipating the magnitude of feed and residual use to be revealed by the stocks estimate and the projection of marketing year use based on the revealed rate of use is "messy" for several reasons.

First, the residual component of feed and residual use appears to vary considerably from year to year. This is illustrated by the variation in the magnitude of feed and residual use per unit of livestock production. The USDA estimates the number of grain consuming animal units for each corn marketing year. That estimate is based on an estimate of the number of animals fed by species, weighted by the amount of grain required per animal in each species. In the previous six years, the estimate of grain consuming animal units has ranged from 91.6 million to 95.5 million and the magnitude of feed and residual use of corn per animal unit has ranged from 47.1 to 61.9 bushels. Some of the variation in feed and residual use of corn per grain consuming animal unit is explained by the variation in the magnitude of feed and residual use of other grains, particularly wheat. Still, the magnitude of feed and residual use of all grains per grain consuming animal unit has varied by 20 percent over the past six years. The USDA acknowledges this variation and attributes much of the variation to crop size, with larger residual use associated with large crops and vice versa. The large variation illustrates the difficulty of anticipating quarterly feed and residual use of corn based on estimates of the number of livestock fed during the

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quarter.

A second reason for the difficulty in anticipating the magnitude of quarterly feed and residual use of corn is that apparent use during any particular quarter has varied substantially more in recent years. This variation has been most notable in the first and last quarters of the marketing year when estimated use is influenced by the amount of "new crop" corn that is harvested before September 1. However, there has also been considerable variation in the estimates of use in the second and third quarters of the marketing year. From the 2006-07 marketing year through the 2012-13 marketing year, the estimate of feed and residual use varied by more than 500 million bushels for each quarter of the year. In contrast, the range in the seven marketing years from 1999-00 through 2005-06 did not exceed 275 million bushels for any quarter.

A third factor that makes anticipating and projecting quarterly feed and residual use of corn difficult is the shift in the quarterly pattern of consumption in that category since the 2006-07 marketing year. With minimal variation, the quarterly distribution of marketing year feed and residual use was very consistent from 1990-91 through 2005-06. Use was largest in the first quarter (as a percentage of the marketing year total) and smallest in the fourth quarter, but that distribution did not vary much from year to year. Since then, there has been substantially more variation in the quarterly distribution of use and a general shift to a larger percentage of consumption in the first quarter and a smaller percentage in the fourth quarter of the year.

The increased difficulty in anticipating the magnitude of quarterly feed and residual use of corn makes it difficult for the market to anticipate the USDA's quarterly corn stocks estimates. That difficulty is compounded for the December 1 report since that estimate also includes any change in the production estimate not anticipated by the market. As a result, the USDA's quarterly stocks estimates have provided some surprises in recent years, resulting in sharp price reactions. Some of that price reaction may indicate that the market has not recognized the changing pattern and increased variation in quarterly feed and residual use and is over-reacting to perceived surprises. The next opportunity for a surprise will be with the estimate of December 1, 2013 corn stocks to be released in the second week of January.