



## Seasonal Prices for Feedstuffs Commonly Utilized in the Midsouth



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## Introduction

Agricultural commodities have seasonal price tendencies. The seasonal prices most often discussed among industry participants are with regard to grain crops, livestock, fruits and vegetables because of their prevalence and direct impact on food production. Feedstuff prices, which have a significant impact on food production — specifically meat production — also have a seasonal price pattern.

Livestock producers and feed manufacturing companies may have a number of questions associated with price seasonality such as:

- **Why is price seasonality of feedstuffs important?**
- **What causes feedstuff prices to be seasonal?**
- **What information is feedstuff price seasonality conveying, and how can it be used in the decision-making process for the operation?**

The answers to the aforementioned questions translate to seasonal prices for most commodities, but the answers may differ slightly by commodity and side of the transaction (buyer or seller) being evaluated. For example, livestock producers tend to be the end users of feedstuffs. Therefore, livestock producers purchase feed grains, byproducts or coproducts (corn gluten feed, soy hulls, soybean meal, etc.), or commodity blended feeds to meet livestock nutritional requirements (protein, energy, fiber, etc.) at the lowest price possible. On the other hand, feed manufacturers generally purchase raw feedstuffs in much larger quantities than livestock producers, and then blend them to make blended feeds with certain nutritional characteristics for resale to livestock producers. Therefore, profit maximizing feed manufacturers attempt to purchase “ingredients” to produce blended feeds with a given nutritional value at the lowest cost possible, while at the same time trying to market the blended feed at the highest price possible.

## Why is price seasonality of feedstuffs important?

Profits are the difference between revenues and costs ( $\text{Profit} = \text{Revenue} - \text{Cost}$ ), and cost management is a key component to maximizing profits. Dhuyvetter (2012) analyzed high-, medium- and low-profit cow-calf producers in Kansas and determined that 74 percent of the average difference in net returns between the high- and the low-profit producers was due to cost differences. Feed cost for the high-profit producers was 19 percent (nearly \$80 per head) lower than the low-profit producers. A reduction in production cost of \$80 per head could make the difference between a profitable and an unprofitable operation, a small or large profit, or a large or small loss in a bad year. Producers who manage costs will improve profitability (Prevatt, 1998; Stewart et al., 2010).

## What causes feedstuff prices to be seasonal?

Price seasonality is primarily driven by supply and demand. When the quantity of a commodity supplied is high, prices for the commodity are generally lower than when the quantity supplied is low. When the quantity demanded is high, prices for the commodity are generally higher than when quantity demanded is low. If there are conditions that alter supply and demand, then it is likely the price of the commodity will change. Factors shifting supply include changes in price of substitutes (Substitutes are feedstuffs with a similar nutrient makeup that can be substituted for one another in a ration, i.e. substituting cottonseed meal for soybean meal.), price of complements (Feedstuffs commonly fed together to produce a certain ration are complements, i.e. corn and soybean meal.), price of inputs, number of producers, expectations, and factors affecting productivity such as weather. Harvest or production months and extreme weather conditions are the two primary factors acting on the supply side. For example, corn is normally

harvested in the fall of the year resulting in a larger supply of corn in the fall months. Given average or trend corn yields, the corn price is lowest at harvest and will likely elevate into the spring as the supply is used. However, if drought or some other extreme weather condition stresses the corn and the total harvested amount of corn is smaller than expected, then prices tend to be highest immediately after harvest and taper off into the spring. On the demand side, factors such as a change in availability of feedstuffs, profitability of feed users, price of substitutes (other feedstuffs), or number of livestock can alter the demand for a certain feedstuff.

### What information is feedstuff price seasonality conveying, and how can it be used?

Feedstuff price seasonality provides the general tendencies for price changes throughout different times of the year. Any given agricultural commodity price will tend to increase at a certain time of any production year and similarly have price declines at other times of the year. Seasonality of prices is a great tool to understand general tendencies of certain agricultural products including feedstuffs, but it is not a hard and fast rule to determine prices at a certain time of year. Therefore, it cannot be said that the price of feedstuff A will always be higher at one point in the year relative to another point in the year. A prime example is feedstuff prices during the drought-plagued year of 2012. The magnitude of prices changed more than any “normal” year from spring 2012 to fall 2012, but prices followed the seasonal trend for the most part.

Feedstuff price seasonality primarily can be used to manage costs by both the livestock producer and the feed manufacturer. If a feedstuff is storable, then knowing when that feedstuff’s price is generally lowest can provide the opportunity to purchase or forward contract the feedstuff at a lower price

rather than on an as needed basis or on a hand-to-mouth basis. The use of price seasonality is a simplistic method of managing some price risk without using price risk management tools such as cross-hedging feedstuffs with commodities on the Chicago Mercantile Exchange.

Additionally, a feed manufacturer is at risk if it forward contracts to supply a commodity or mixed feed without fixing the price of the item or ingredients. Knowledge of the seasonality of feedstuffs can assist manufacturers in managing that price risk.

## Feedstuff descriptions and seasonality figures

Feedstuffs fall into one of three primary categories. The first category — and probably the most common — is made up of energy feeds such as corn, oats and wheat. The second category is high energy feeds or byproducts such as corn gluten, distillers grain, soybean hulls, rice bran and wheat middlings. The third category includes whole soybean, soybean meal, cottonseed meal and whole cottonseed, all of which are considered protein feeds. High energy and protein byproduct feeds will be the focus of this publication. The following section will provide a 10-year seasonality graph for each feedstuff with monthly price variability being captured by lines representing one positive and one negative standard deviation from the average. The 100 percent line represents the annual average price. Any time the seasonal line falls below 100 percent, then the price is generally below the annual average that month, and likewise, if the seasonal line is above 100 percent then the price for that month is generally higher than the annual average price. The standard deviation lines represent where the prices have been 68 percent of the time (or about seven out of 10 years) based on historical data. The wider the standard deviation lines, the more variable prices

have been in a particular month. Conversely, the narrower the standard deviation lines, the less variable prices have been in a particular month. A chart with the five-year average monthly price and the last two years of monthly prices is presented to show price changes relative to previous years. Price data used in this analysis was collected from U.S. Department of Agriculture - Agricultural Marketing Service (2012).





## Corn Gluten Feed

Corn gluten feed is a byproduct of the wet-milling industry, which is part of the process of manufacturing cornstarch and corn syrup. CGF is considered to be an exceptional feedstuff for dairy and beef cattle and can be purchased in either a wet or dry form. It also can be used for poultry (replacement chicks, layer and breeder) and swine production. Handling and storage of either form is an integral part of using CGF as a feedstuff. Dry CGF usually comes in the form of flakes or pellets and can be stored in almost any structure. It is extremely important to keep CGF dry if it has already been dried, because it is acidic and could rust metal storage units (Schroeder, 2012). Wet CGF is best stored in a sealed structure. It can be stored a month or longer when temperatures are below 45 degrees, but it must be fed within seven to 10 days during warmer months to avoid spoilage. The dried form is easier to handle and storage time has little effect on the feed.

CGF is a medium-level protein feed. The price of the CGF typically declines from its peak price in January until corn harvest starts in August, when it typically reaches its lowest price. There is a 20 percent swing in price from January to August. Price volatility for CGF is generally lowest in August and increases in the winter months.

Table 1. Typical Analysis of Corn Gluten Feed

	Wet	Dry
Dry Matter	43.0%	90.0%
Crude Protein	9.0%	21.5%
Fat		3.0%
Crude Fiber		10.0%
Total Digestible Nutrients	88.0%	83.0%
Source: ADM.com		

## Corn Gluten Feed (Cont.)

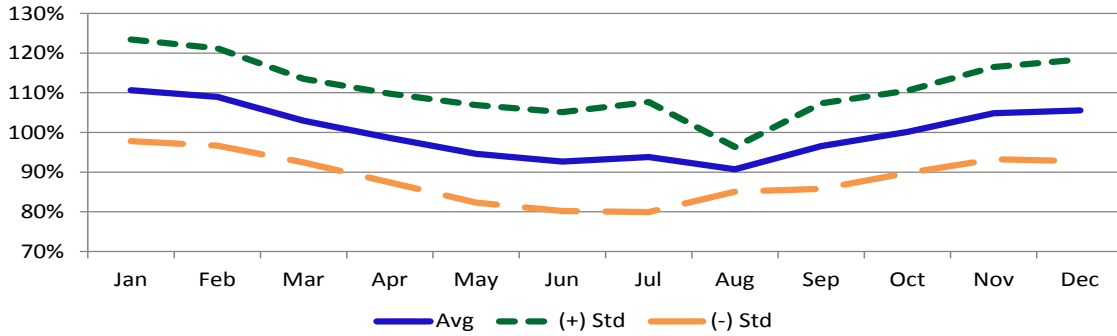


Figure 1. Corn gluten feed seasonal price index, St. Louis, 2003-2012.

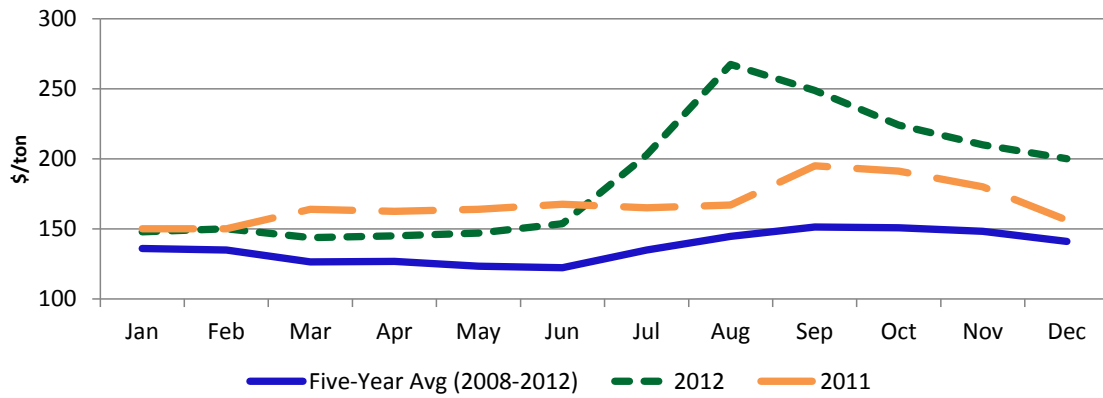


Figure 2. Price of corn gluten feed, St. Louis, 2011, 2012, and five-year average.

## Dried Distillers Grain

Dried distillers grain is a byproduct of the ethanol industry and is utilized most often in the beef cattle and swine industries, but it also has some limited use in poultry production. More than 30 percent of the corn used for ethanol comes back to the livestock feed supply as DDG. The nutrient values of DDG can vary tremendously from one ethanol facility to another. Table 2 provides information about the general nutrient content analysis. It is advisable that purchasers of DDG test the feedstuff at least once a year from each facility purchased to know the nutrient value. Knowing the nutrient value of a feedstuff is a key to knowing the value and pricing. DDG can be stored up to a month in the summer, and the shelf life can triple during winter months, while wet distillers grain may start spoiling within seven days (Plain, 2006).

DDG sometimes can be a good alternative to corn grain depending on the pricing structure of the two products. Corn and DDG prices track very closely. Price volatility peaks in June, likely due to a weather premium built in the corn market depending on favorable or not so favorable weather. Price volatility for DDG is smallest during corn harvest. The price of DDG is generally about 10 percent below the annual average price in August and September and 2 to 8 percent above the annual average price from December through June.

Table 2. Typical Analysis of Dried Distillers Grain

Dry Matter	91.0%
Crude Protein	26.5%
Fat	8.4%
Crude Fiber	8.5%
Total Digestible Nutrients	82.0%
Source: ADM.com	

## Dried Distillers Grain (Cont.)

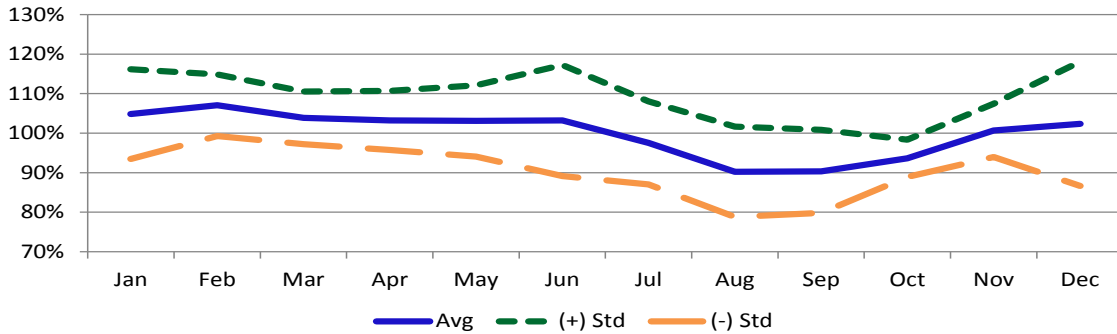


Figure 3. Dried distillers grain seasonal price index, St. Louis, 2006-2012.

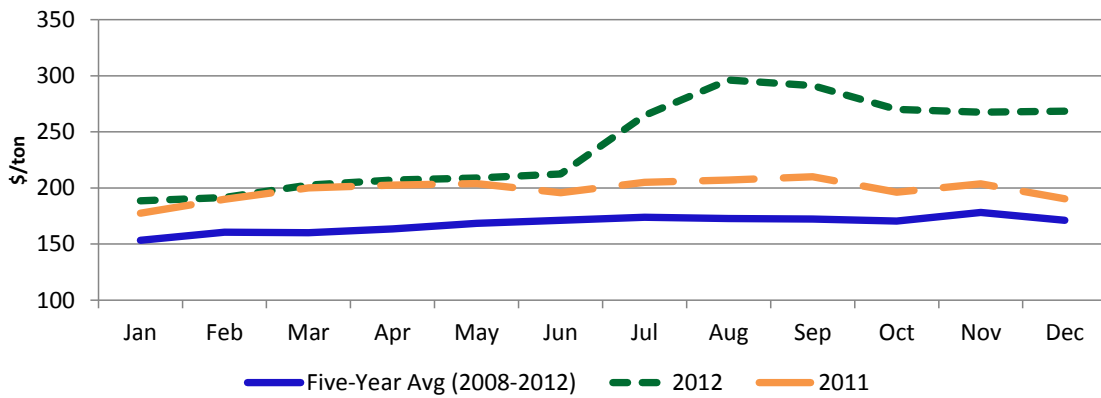


Figure 4. Price of dried distillers grain, St. Louis, 2011, 2012, and five-year average.

## Soybean Hulls

Soybean hulls are a byproduct of soybean processing for oil and meal. Soybean hulls are high in fiber and very useful to ruminant diets, but additional roughage may be necessary. Soybean hulls can be used to replace hay in a ruminant diet as well as corn due to the similarities in nutritional values. One potential concern with soybean hulls is the presence of an enzyme (urease) that can cause problems with rations containing urea, but a heat treatment can easily eliminate this concern (Boyle, 1999). Soybean hulls can be fed in whole, ground or pelleted form and are easily stored for extended periods of time. However, whole and ground hulls are extremely lightweight and tend to be blown away in windy storage areas. Steers fed 4 pounds of soybean hulls a day gained similarly to steers fed 4 pounds of corn and on grass (Boyle, 1999).

Soybean hulls are commonly used to replace hay. Therefore, the price of soybean hulls increases in late fall and stay elevated through late winter. They can be as much as 11 percent higher than the annual average during the winter months. When grass is available, the demand for soybean hulls declines depressing prices close to 14 percent below the annual average. Late spring or early summer would be a favorable time to purchase soybean hulls to be stored for winter feeding. Utilizing soybean hulls as a winter feed source has the potential to greatly reduce hay costs if strategically purchased.

Table 3. Typical Analysis of Soybean Hulls

Dry Matter	89.0%
Crude Protein	10.0%
Fat	1.0%
Crude Fiber	36.5%
Total Digestible Nutrients	71.0%
Source: ADM.com	

## Soybean Hulls (Cont.)

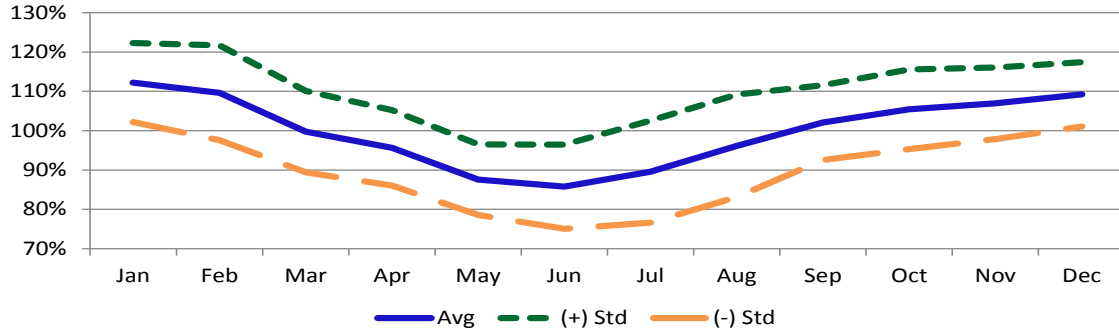


Figure 5. Soybean hulls seasonal price index, Memphis, 2003-2012.

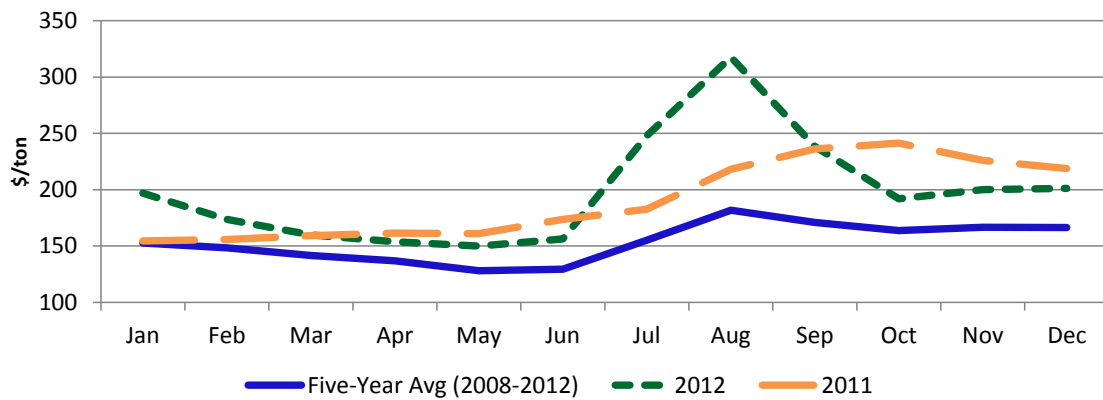


Figure 6. Price of soybean hulls, Memphis, 2011, 2012 and five-year average.

## Rice Bran

Rice bran is a byproduct of milling rice and consists of the bran layer and the germ with occasional pieces of the hull or broken rice grains. Rice bran is readily available in Arkansas and is found in many cattle rations. It has a powderlike texture and is generally blended with other feedstuffs. Its high fat content also presents problems during warm weather. Rice bran is becoming more prevalent in deer and other species supplements, which has resulted in price increases and reduced availability. The high fat content in rice bran also needs to be considered when feeding. Beef cattle diets are generally balanced around 6 percent fat on a dry matter basis which means full-fat rice bran should be limited to no more than one-third of the diet (Gadberry, 2011).

Rice bran seasonality is very prominent. Prices during the winter, which can be high-demand months, are as much as 22 percent higher than the annual average price. Prices in May and June, when demand is low and just a few months prior to harvest, can be as much as 20 percent below the annual average price.

Table 4. Typical Analysis of Rice Bran

Dry Matter	90.0%
Crude Protein	13.0%
Fat	13.0%
Crude Fiber	13.0%
Total Digestible Nutrients	68.0%
Source: Ingredients101.com	

## Rice Bran (Cont.)

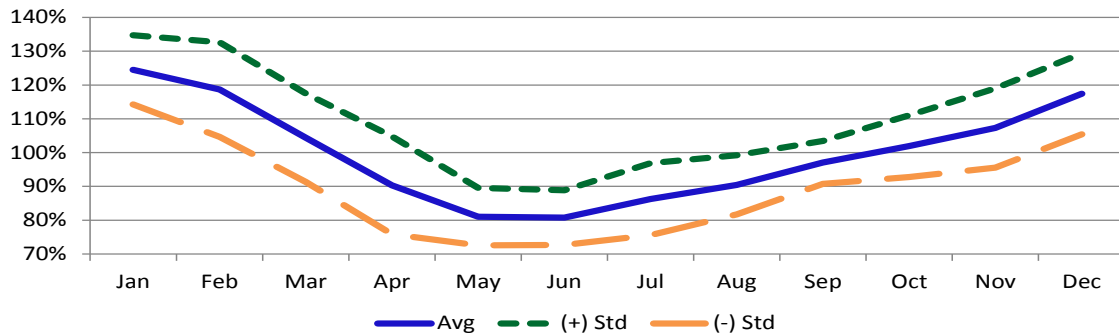


Figure 7. Rice bran seasonal price index, Arkansas, 2003-2012.

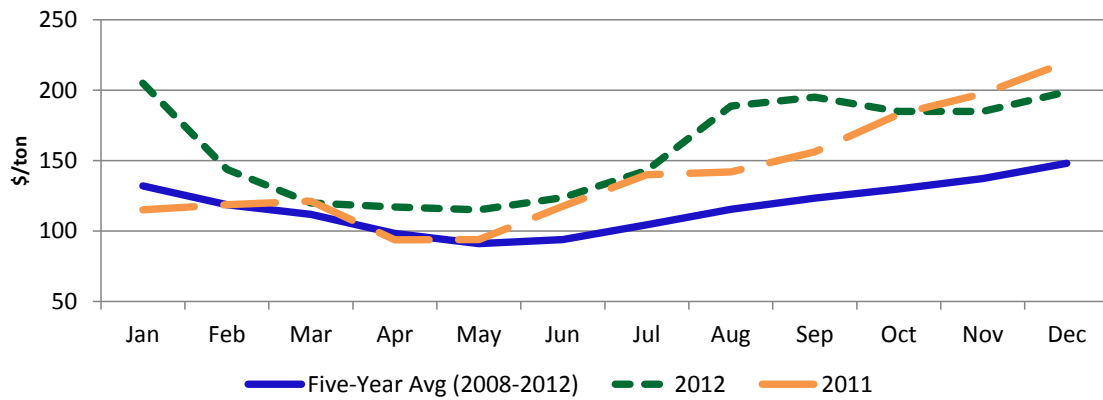


Figure 8. Price of rice bran, Arkansas, 2011, 2012 and five-year average.



## Wheat Midds

Wheat midds, also known as middlings or wheat mill run, are a byproduct of milling wheat for flour and usually consist of screenings, bran, germ and flour remnants. Both the swine and cattle industries use wheat midds extensively, especially when corn prices escalate. Wheat midds are generally marketed in a pelleted form or a meal form. The meal form is more difficult to store and transport than the pelleted form which can be stored in most grain systems. The meal form is also dustier than the pelleted form and can be irritating to some livestock and decrease palatability (Gadberry, 2011). Wheat midds may be a good replacement for some cattle-growing rations, but an additional fiber source may be warranted when feeding large quantities of wheat midds.

Wheat midds, again very similar to soybean hulls, have a seasonally lower price in the months when grass is actively growing which also partially coincides with most of the wheat harvest and can be as much as 10 percent below the annual average price. The price of wheat midds strengthens during winter months when it is in higher demand and being used to replace some hay needs which can result in the price being as much as 12 percent higher than the annual average price.

Table 5. Typical Analysis of Wheat Midds

Dry Matter	89.0%
Crude Protein	14.5%
Fat	4.2%
Crude Fiber	8.5%
Total Digestible Nutrients	83.0%
Source: ADM.com	

## Wheat Midds (Cont.)

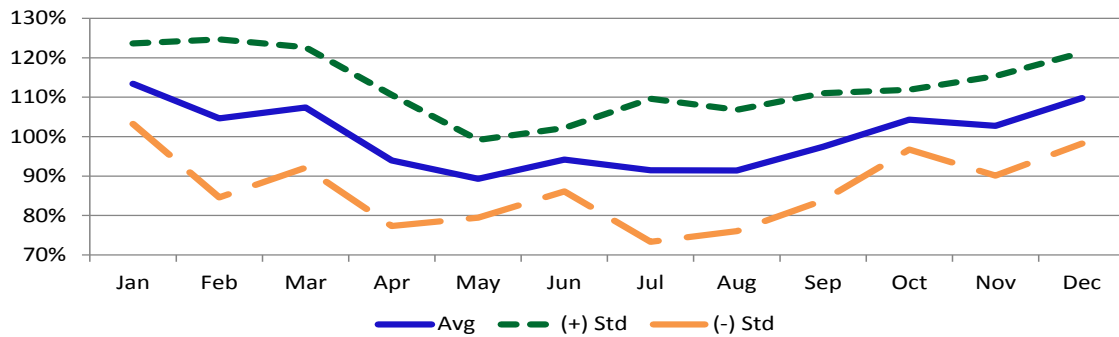


Figure 9. Wheat midds seasonal price index, Memphis, 2003-2012.

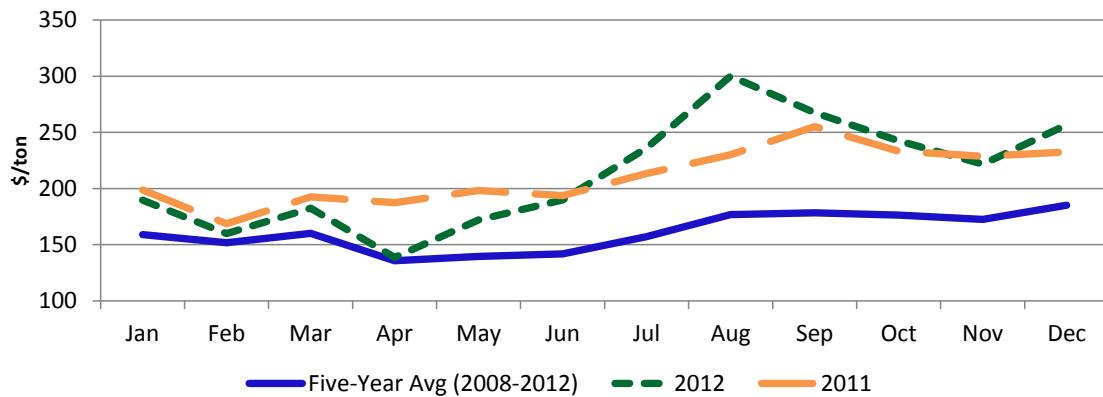


Figure 10. Price of wheat midds, Memphis, 2011, 2012 and five-year average.

## Cottonseed Meal

Cottonseed meal is a byproduct of whole cottonseed with high protein content. Cottonseed meal is most commonly used in cattle rations in cotton producing states in the southern U.S. It is also used for catfish feed production. Cottonseed meal is a protein supplement most commonly blended with other feedstuffs to balance rations, but it can be used in a hot mix with salt and offered free choice. It has the nutritional characteristics to replace soybean meal in feed rations and is the second most abundant plant protein feed available in the U.S. following soybean meal. It has traditionally been less expensive than soybean meal and is an asset for southern producers.

Cottonseed meal prices tend to have less price fluctuation throughout the year when compared to other feedstuffs. The price of cottonseed meal ranges from about 6 percent below the annual average price in April and May to about 5 percent above the annual average price in late summer and parts of winter. There may be opportunities to utilize seasonality of prices, but not as high of a return as the high-energy feedstuffs.

Table 6. Typical Analysis of Cottonseed Meal

Dry Matter	90.0%
Crude Protein	41.5%
Fat	1.5%
Crude Fiber	11.0%
Total Digestible Nutrients	70.0%
Source: ADM.com	

## Cottonseed Meal (Cont.)

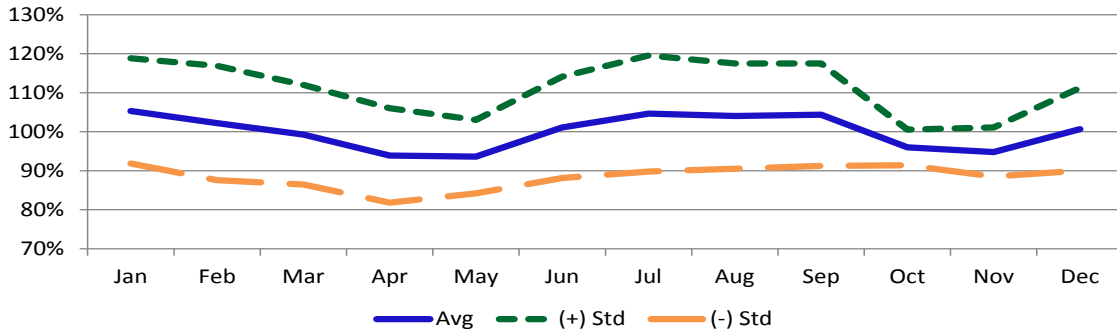


Figure 11. Cottonseed meal seasonal price index, Memphis, 2003-2012.

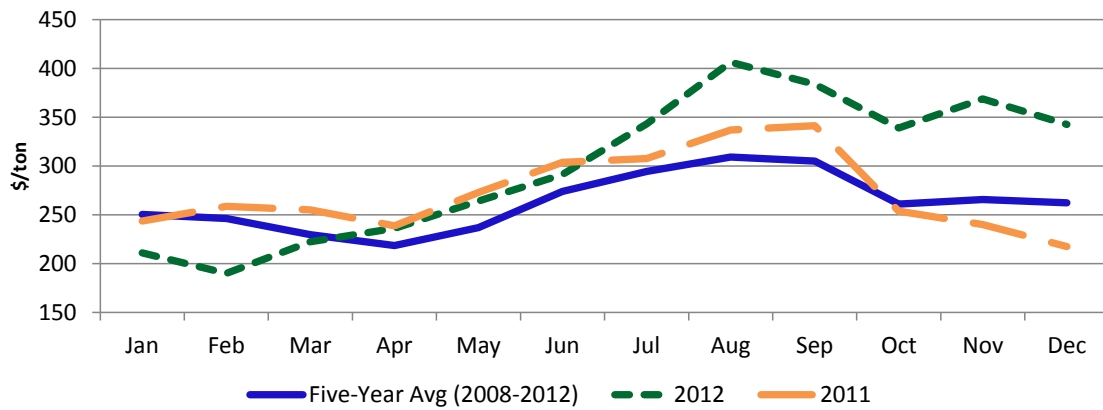


Figure 12. Price of cottonseed meal, Memphis, 2011, 2012 and five-year average.

## Whole Cottonseed

Whole cottonseed is an anomaly to feedstuffs due to the fact it is high in protein, fat, fiber and energy. The dairy industry extensively uses whole cottonseed because it tends to increase the butterfat content of milk. Whole cottonseed can be fed as it is from the gin, or it can be pelleted and then fed. Some cattle producers use whole cottonseed to stretch the forage supply. Cottonseed contains gossypol, which is harmful to monogastrics such as poultry and swine. It also can be harmful to young ruminants. Whole cottonseed needs to be cleaned and dried and then stored in a dry area with ventilation to prevent heating and moisture buildup. Whole cottonseed is a good feedstuff, but the quantity fed needs to be limited to prevent gossypol toxicity (Ely and Guthrie, 2012).

Whole cottonseed prices are commonly highest in late spring and summer and are seasonally about 12 percent higher than the annual average price from June through August. Prices for whole cottonseed tends to be lowest in late fall and winter where they may be as much as 11 percent lower than the annual average price.

Table 7. Typical Analysis of Whole Cottonseed

Dry Matter	91.0%
Crude Protein	20.7%
Fat	18.4%
Crude Fiber	22.0%
Total Digestible Nutrients	91.0%
Source: ADM.com	

## Whole Cottonseed (Cont.)

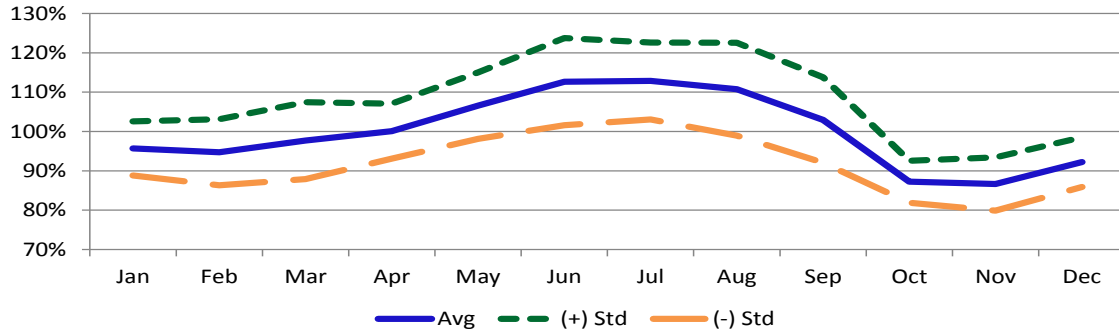


Figure 13. Whole cottonseed seasonal price index, Memphis, 2003-2012.

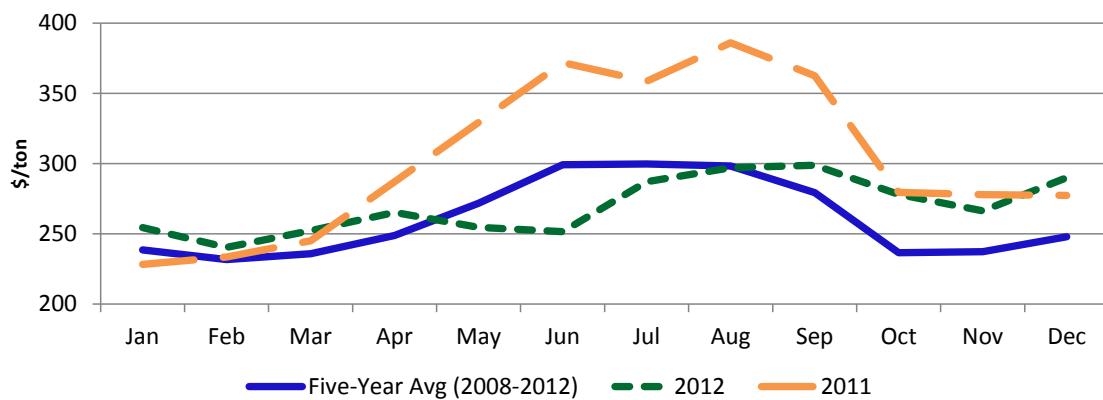


Figure 14. Price of whole cottonseed, Memphis, 2011, 2012 and five-year average.

## Soybean Meal

Soybean meal is the product remaining after the majority of the oil is extracted from the soybean. Soybean meal is very high in protein and is the most commonly used protein supplement in livestock feeds across the U.S. It is commonly used in beef, dairy, swine and poultry rations. Many animal scientists have studied other feedstuffs to attempt to replace soybean meal in feed rations, but no major breakthrough has occurred. Cottonseed meal and other feedstuffs can be blended resulting in similar nutritional characteristics as soybean meal and thus displace some soybean meal use.

Soybean meal is one of the most steadily priced feedstuffs throughout the year. This is primarily due to the fairly constant demand. The price of soybean meal generally peaks about 8 percent above the annual average price in June and July when soybean supply is decreasing. Soybean meal price then reaches its seasonal low close to 8 percent below the annual average in the fall after soybean harvest is near conclusion.

Table 8. Typical Analysis of Soybean Meal

Dry Matter	88.0%
Crude Protein	47.5%
Fat	1.0%
Crude Fiber	3.5%
Total Digestible Nutrients	78.0%
Source: ADM.com	

## Soybean Meal (Cont.)

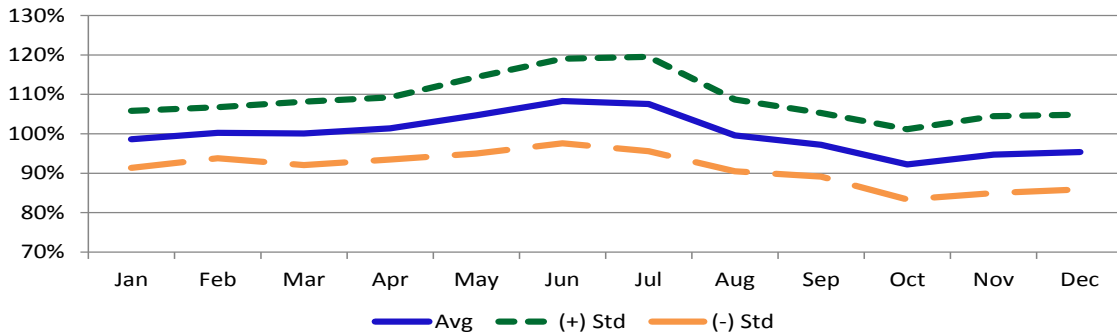


Figure 15. Soybean meal seasonal price index, Memphis, 2003-2012.

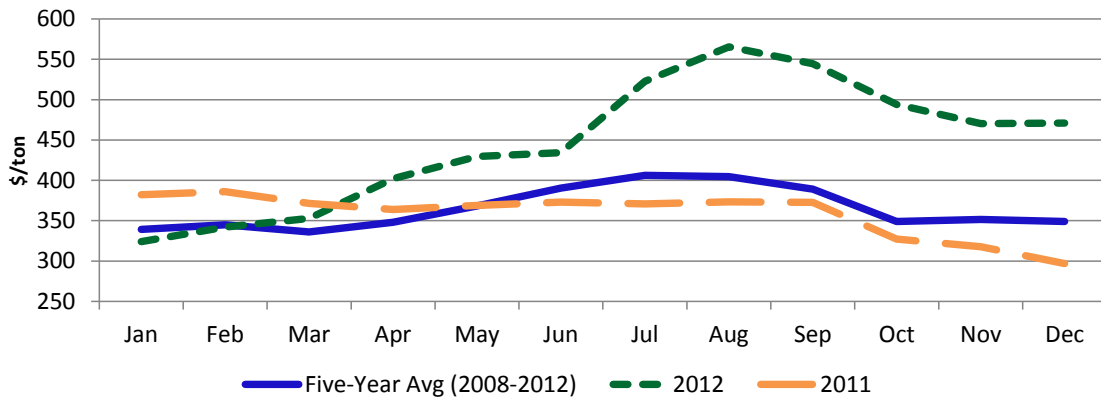


Figure 16. Price of soybean meal, Memphis, 2011, 2012 and five-year average.



## Summary

Information related to price seasonality of agricultural products can aid the decision-making process of livestock producers and feed manufacturers whose objective is to maximize profits. Price seasonality information can be utilized to manage revenue and cost. For instance, if price seasonality information of a commodity is related to an output, such as a cattle producer selling calves, then that information can be used to evaluate potential revenue. Likewise, if price seasonality information is being used to evaluate inputs, such as a livestock producer or feed manufacturer purchasing feedstuffs, then the information can be used to manage costs. The use of feedstuff price seasonality can guide the evaluation of input price risk and potentially reduce costs incurred to an operation.

Price seasonality information alone will not provide all the information necessary to make a fully informed decision. However, it is a component that can greatly benefit the decision-making process. Price seasonality of feedstuffs, at a minimum, provides the general tendency for price movements throughout the year. However, price seasonality can be used to time feedstuff purchases to manage cost. It is imperative that price seasonality be used in conjunction with other available information to aid the decision-making process.

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