In world feed grains markets there are risks that come in many shapes and sizes. This chapter will review the risks associated with the prices of feed grains for the consumer and producer and how these risks are managed. The use of futures, options, swaps, derivatives and cash commodities will all be examined to provide a thorough overview of risk management in the feed grains markets.

Today's risk management business was born out of necessity in Chicago in 1848. Feed grains produced in the Midwestern United States were subject to fluctuations in supply, demand, transportation, storage and price that created risks for both consumers and producers. Today, private and government buyers from around the world buy grain from the United States. The importers of feed grains need to be informed in order to overcome these same risks in the modern marketplace.

Grain importers need mechanisms that will help them discover the market price for a commodity when business decisions to buy and/or sell must be made. Once the market price is identified, they must find mechanisms to reduce the price risk between the time of the transaction and the actual delivery of the goods.

Here is an example of a feed grains importer who requires a mechanism to reduce price risks to operate his business:

A grain importer in Poland decides in July of 2004 that the grain importer will buy 100,000 bushels of U.S. corn for delivery the following March. Corn for March 2005 delivery is currently priced at $2.75 per bushel (a bushel of corn is equal to 56 lbs. A metric ton is equal to approximately 2204.7 lbs. Therefore, one metric ton equals approximately 39.368 bushels of corn.). The importer enters into a contract stipulating that after the grain importer purchases the grain in March, the grain importer will resell it in that month to a Polish dairy
farmer as part of a mixed feed at a price calculated to yield the importer $3.05 per bushel - $2.75 for the importer's grain costs plus 20 cents for the importer's processing costs and another 10 cents for the importer's profit. However, by the time the importer pays for the grain to arrive in March 2005, the market price has risen to $3.25 per bushel. The importer's total costs and profit have risen to $3.55 per bushel while the importer’s advance contract with the dairy farmer only nets the importer $3.05 per bushel. Without any additional risk management efforts, this importer would lose 50 cents per bushel because of the price fluctuation between the time the commitment was made and the delivery period.

To control this price risk, grain buyers in the United States and other countries can use several tools to minimize market exposure. Price risk can be reduced by any single or combination of physical Cash Trading, Exchange Traded Futures, Exchange Traded Options, Over the Counter Swaps and Derivatives.

CASH TRADE

A cash forward contract can be an effective method of risk management for many feed grains market participants. The purchase or sale of the physical commodity in the cash market for delivery at a specified later date is the most common form of cash trade. A cash forward contract is distinguished from the other tools discussed in this chapter in that:

1. A buyer's obligation to accept the agreed amount of a commodity at the agreed place and time cannot be automatically cancelled by making an offsetting futures contract sale. The nature of a cash trade is unique to each deal. In certain instances, the trade partner will be willing to create an offsetting contract, but the individual nature of the trade does not allow the flexibility of a futures contract.
2. Cash forward contracts are not standardized as to terms and specifications. Prices in such contracts are made without the auction-style price discovery that takes place on a futures exchange.
3. Cash forward contracts are not subject to the rules or regulations of futures exchanges. More often than not, they are subject to trade rules governing the cash market participants with self regulation and arbitration.
4. A cash forward contract involves a direct contractual relationship between two identified, specific parties. In a futures contract, the buyer does not contract directly with a specific seller or vice versa; instead, each party deals with an exchange clearinghouse.
Depending on the liquidity of trade, the governing rules of trade and the availability of quality trading partners, the cash grain trading markets may be used as risk management tools. More often than not, the cash grain trading markets are used by buyers and sellers of feed grains along with the futures and options markets of U.S. futures exchanges.

The first risk management tool grain producers and consumers may use to minimize risk is the Exchange Traded Futures contract. At futures exchanges such as the Chicago Board of Trade (CBOT), futures contracts are traded between market participants. A futures contract is an agreement to purchase or sell a commodity for delivery in the future at a price that is determined at initiation of the contract. This contract then obligates each party to fulfill its terms at the specified price by either the delivery of the standardized quantity and quality of the commodity, or by offset.

Because futures markets are standardized, sellers and buyers are able to exchange one contract for another and actually offset their obligation to deliver cash commodities (in the futures market, offset means taking a futures position opposite and equal to one's initial futures transaction. For example, buying a contract if previously one was sold).

A futures transaction, in exchange markets, serves several purposes. Because price is achieved through a continual auction between buyers and sellers, futures markets are the single most effective price discovery mechanism of the above tools. In addition to providing a discovery process for actual market values, the futures markets also perform economic functions. When commodity producers and end users reduce price risks by using a futures market, one of the results is that the cost of bearing the price risk is reduced or eliminated. This, in turn, reduces the costs of carrying inventory stocks or of contracting in advance with end users of grain products. A decline in inventory or contracting costs not only benefits merchants, processors and other business persons, it also benefits millions of food consumers by reducing the price of food products they buy.

Futures markets also help to perform the economic function of moderating wide swings between the extremes of surplus supplies (with coinciding low prices) and supply shortages (with coinciding high prices). The markets do this by keeping all participants in contact with the state of the supply and demand balance by way of price.
As shown, the overseas buyer of U.S. feed grains can make effective use of U.S. futures markets in the buyer’s procurement strategies. This is true whether the buyer purchases feed grains at the FOB price at the loading port, or at the CNF or CIF price at the destination port. In either case, the buyer can effectively reduce the buyer's price risk exposure; take advantage of seasonal and/or other market factors to lock in grain costs at the most advantageous time; make systematic buying plans; and make it possible, by locking in the forward cost of a basic feed grain such as corn, to establish forward prices for value-added products such as meat, eggs or corn milling products. Because trends in commodity futures markets have broad international impact, merchants and grain consumers outside the United States can use futures to protect themselves even in cases where they operate in protected markets that impede free market pricing.

The fact that futures markets in the United States can be important to grain users in other countries means that a wide range of groups outside the United States can benefit from familiarity with the markets. Futures markets are growing in most developing nation and even in several of the emerging economies. Firms that buy U.S. grains obviously have a direct and immediate interest in the market, but so do the people who buy grain from importers for food or feed. Others, such as academics, economists, distribution and retailing concerns, also have an interest in the futures markets as they need to make sound analyses of future trends in food supplies and prices in their own industries.

At futures exchanges across the globe, another form of risk management has developed over the last 25 years. The Exchange Traded Option on a futures contract is a unilateral contract which gives the buyer the right to buy or sell a specified quantity of a commodity at a specific price within a specified period of time, regardless of the market price of that commodity. Exchange traded options actively trade at the futures exchanges in the United States and abroad and they are an integral part of many feed grain risk management programs.

Unlike the underlying futures contracts upon which they are based, options are "rights" to purchase or sell futures contracts at certain pre-determined prices at which the underlying futures are delivered. These options have dates which correspond with the underlying futures contract but do not necessarily, nor usually, expire at the same time as the futures contracts. Options trade for prices referred to as
premiums, which represent the market's valuation of those "rights." Option buyers are acquiring the rights to demand (a call) or deliver (a put) the underlying future at a pre-determined specific price within a stipulated time period. Option sellers, or writers, are incurring an obligation to provide that designated future in exchange for a premium or price that they believe represents the risk of that option being exercised. The premium is the market price of the option.

The market price of an option, or premium, is determined by two components: the intrinsic value of the option and the time value of the option. The intrinsic value equals the amount (if any) by which an option is in-the-money. In-the-money is defined by the difference between the current price of the future underlying the option, for example, December corn, and the strike price agreed to in the option contract. Strike price is the value at which buyer and seller have agreed to exchange the offsetting obligations to buy or sell the underlying futures contract, in this case, December corn.

For example, a $3 strike price call would have an intrinsic value of $1 if the price of the underlying instrument were trading at $4. The owner of the call would exercise the option and obtain the underlying instrument at the $3 strike price and sell it for $4 in the futures market and pocket $1. Out-of-the-money options have no intrinsic value.

That does not mean they have no market value. The second component of option premium or price is called time value. If there is time remaining in the life of an option, there is a chance that the price of the underlying instrument will rally (for a call) and bring that call into-the-money or more into-the-money. That chance has value.

For feed grains consumers and producers, the most common use of options is as price insurance. For example, suppose a corn mill in Taiwan has a fixed price contract to supply corn processing products to its customers, and therefore the mill is short corn. The mill's corn buyer believes the corn market may go down or is bearish but does not want to end up with margins squeezed or even negative. The Taiwanese corn buyer would like to wait for the anticipated drop in prices. Using options, the buyer purchases some insurance against higher prices while waiting for corn prices to drop. Assuming the July 2004 corn market is trading at $2.75, a call option to buy December corn at $2.90 might be priced at 10 cents. The buyer decides to buy this out-of-the-money call for an insurance policy that protects the buyer against prices above $2.90. The buyer's worst case price for corn will be $3.00 ($2.90 + .10). If the market drops below $2.65, the buyer will be better off than had the buyer simply purchased a futures contract, or hedged.
Options can be a multi-faceted risk management tool which can create opportunity and profit for feed grains buyers if used properly. An exchange traded option can minimize risk, while leaving open potential reward for risk managers in the feed grains market.

A new risk management tool available to the feed grains market participants is the Over the Counter or OTC Swap, Derivative and Trade Option market.

The Over the Counter market for swaps, derivatives and trade options has only recently been made available as a risk management tool for the feed grains markets. In the Futures Trade Practices Act of 1992, Congress ultimately gave the Commodity Futures Trading Commission (CFTC) broad exemptive authority to relieve swaps from the regulatory burdens of the Commodity Exchange Act (CEA). The CFTC has acted on this authority and exempted swap transactions for eligible swap participants. The language was made specifically broad enough to include many markets where swaps are not currently utilized, including agriculture. Prior to the CFTC relief, the prevailing legal opinion was that swaps were illegal under the CEA for agricultural markets.

A swap is a forward contract with the price typically fixed at inception against an underlying index or indices. Settlement can be agreed on the basis of the value of that index or those indices at any single point in the future, but is usually the basis of an average of values over a pre-determined period of time. A swap does not generally convey the right or obligation for physical delivery. Although swaps are not common to agriculture yet, they have come to dominate risk management in many other markets. The total nominal value in swaps of currency, equity and interest rate risk are many multiples of the size of the futures markets which underlie those instruments. With the recent authorization of agricultural swaps, this segment of feed grains risk management markets could soon grow to a significant size.

Swaps have several advantages over futures and cash contracts. The only limitation one has in creating a swap is imagination and the willingness of another party to accept the risk that is being bought or sold. It is the ultimate freestyle contract which may include customized terms, with individually tailored size and specifications. It may also hedge risks that are not currently covered by exchange or cash traded instruments.
An example of a swap would be a feed compounder that consumes 50,000 (corn equivalent) bushels per month and is looking for forward flat price coverage from the regional grain handler; however, due to the relative values of alternative feed grains (barley, sorghum), the feed compounder is unwilling to commit to corn which is currently the cheapest grain delivered to the feed compounder's plant. The feed compounder's counterpart at the regional grain handler may offer the feed compounder a swap which would establish a floating contract that would be cash settled to an index of the nearby CBOT corn future price over the next three months based upon an average of a month's settlement prices. A line of credit would be established between the two parties, which would serve as margin unless marked to market price moves exceed the line of credit.

At the end of the three months, the average settlement prices compared to the price fixed at inception would determine whether the feed compounder or the regional grain handler are owed money to settle the swap. At this time, the feed compounder could make the decision to purchase the lowest cost feed mix and not have any cash or futures commitments to unwind. Buying the full quantity of futures might require tying up a large amount of capital in margin money. Buying the cash corn would require reselling or trying to unwind the trade with the regional grain handler and dealing with the logistical problems created therein.

The principal value of swaps is their ability to hedge previously unhedgeable risks. The above example used the CBOT corn futures contract as its price index. Swaps may also use indices as obscure as published values in trade journals or broker's quotes for settlement. They are ultimately flexible and therefore useful in managing risk.

Not all parties are eligible to use swaps as a risk management tool in the feed grains markets. The following legal guidelines exist for participation in the swap market in the United States:

- Corporations or other entities with total assets exceeding $10 million or net worth exceeding $1 million who are entering into swap transaction in conjunction with the conduct of their business.
- Broker-Dealers
- Futures Commission Merchants
- Individuals with total assets exceeding $10 million.
- Employee benefit plans subject to ERISA with total assets exceeding $10 million.
Derivatives

Derivatives are called such because they derive their value from another instrument. A broad definition would include products traded on established futures exchanges, both futures and options, as well as the swap products above. In general use, the term derivative is distinguished from other forms of risk management first according to whether their primary use is for shifting market risk and, second, in that they incorporate characteristics of two or more of the other tools we have already discussed.

An option is defined as an exchange of rights between market participants. Swaps are defined as forward contracts without physical delivery. A derivative is an instrument that exhibits characteristics of both but does not fall into either category. A derivative is a financial instrument which can be traded on or off an exchange. The price of the derivative is directly dependent upon the value of one or more underlying instruments or an agreed upon pricing index. Derivatives involve the trading of obligations or rights based on the underlying product, but do not directly transfer property. They are used to hedge risk or to exchange a floating rate of return for a fixed rate of return.

Like swaps, derivatives have the customization that allows them to hedge risks that exist but are unhedgeable on established exchange traded futures, options or cash markets.

Many of the derivatives that are used in the commodity markets are simply combinations of all the above risk management tools. For example, a fixed price swap of corn risk FOB U.S. Gulf ports with an option component would be a derivative instrument combining the many risk management tools that are detailed in this chapter.

Trade Options

A Trade Option is a combination of the derivative market and the cash market. Rather than requiring delivery of the physical commodity as in forward contracts, a trade option would allow cash traders to utilize the rights involved in exchange traded options in the cash markets. A trade option is generally an OTC contract between commercial interests which would give the buyer the right to purchase or deliver grain against a set price and time period.

Hedger: A hedger is an individual who wants to remove or reduce the risk of unforeseen price movements in the future by using a technique that shifts price risk to others. A hedger is typically a
producer, processor, marketer, seller or buyer of the commodities the hedger trades on the futures exchanges. The hedger may be someone who wants to lock in the price the hedger will get at some future date for a product growing in the hedger's fields or stored in the warehouse, or the hedger may be someone who wants to lock in the price the hedger will have to pay at some future date for a commodity that will be used in the hedger's business. Thus, a farmer who is growing corn in July and wants to establish the price the farmer will get at harvest time in the fall could do so by selling a corn futures contract (and usually offsetting it by buying a contract before the delivery date). A cattle feeder who wants to establish in July the cost of corn needed to feed the cattle feeder's stock in December can do so by hedging - using the futures market in July to buy a futures contract and later offsetting it by selling a contract before the delivery date.

**Speculator:** A speculator buys or sells futures in anticipation of a profit when prices later go up (if the speculator buys) or down (if the speculator sells). A speculator is unlikely to be inclined to take or make delivery of the actual commodity because the speculator is not using the futures market in connection with the commercial use of the product. Speculators provide capital to the market with the hopes of achieving profits through the successful anticipation of price movements.

**Futures Commission Merchant (FCM):** An FCM is strictly defined as any individual, association, partnership, corporation or trust that solicits or accepts orders for the purchase or sale of any commodity for future delivery on or subject to the rules of any contract market and that accept payment from or extend credit to those whose orders are accepted. Loosely, an FCM is a commodity brokerage firm which is in the business of buying and selling futures either for its own account and/or for others, and which is a member of a futures exchange.

**Introducing Broker (IB):** Any person, other than a person registered as an "associated person" of a FCM, who is engaged in soliciting or in accepting orders for the purchase or sale of any commodity for future delivery on an exchange and does not accept any money, securities or property to margin, guarantee or secure any trades or contracts that result from those activities.

**Commodity Pool Operator:** Individuals or firms in businesses similar to investment trusts that solicit or accept funds, securities or property for the purpose of trading commodity futures contracts or commodity options.
Commodity Trading Advisor (CTA): Individuals or firms that issue analyses or reports concerning commodities in exchange for payment, including the advisability of trading in commodity futures or options.

Clearinghouse: Each U.S. commodity exchange has its own clearinghouse which matches each day's purchases and sales and keeps records of every transaction between exchange members. The clearinghouse stands between buyers and sellers and acts as the guarantor of each contract. Because of the way the clearinghouse system operates, futures buyers do not know who might be responsible for providing the commodity they have agreed to purchase, and sellers similarly do not know who might receive their commodity if they actually deliver it. This anonymity exists because the clearinghouse acts as the seller to each buyer and as the buyer to each seller. The clearinghouse also balances every customer's account at the end of each trading day. Membership in the clearinghouse is not limited to individual living persons as is exchange membership, but is also open to corporations and partnerships.

Hedging and Basis Trading

Hedging is used in the grain trade by people who want to remove or reduce the risk of unforeseen price movements in the future. This is done by shifting the price risk to speculators who are willing to take on a risk in hopes of making a profit. A hedger seeks to reduce risk in order to concentrate on making profits from the primary businesses of growing, processing, feeding or merchandising grain. Below are two brief illustrations of hedging:

The business person who wants protection against the possibility of being hurt by a rise in prices will buy a futures contract. Thus, this person takes what is called a long position in the futures market to counter the risk of what is called short position in the cash market (meaning the business person does not yet have the grain needed).

The business person who wants protection against the possibility of being hurt by a drop in prices will sell a futures contract. Thus, this person takes a short position in the futures market to counter the risk of a long position (meaning the business person already owns or is perhaps growing the commodity which will be sold later) in the cash market.

In each of these cases, the business person has reduced or eliminated risk largely because the cash and futures markets are usually influenced by the same basic factors. In the first example, the business person who bought a corn futures contract at $2.50 when the
cash price for delivery in the same month was $2.60 might find later that cash prices had risen to $2.85 and the grain would cost 25 cents more than expected. But the future contract price might well have risen from the original $2.50 to $2.75, so the business person's 25 cent profit on the offsetting sale of the future contract would offset the 25 cent loss in the cash market, and the price change risk would have been fully covered. In the second example, a producer who was hurt by a 25 cent drop in the cash market could offset it by an equal profit if the futures market declined 25 cents after the producer had sold a futures contract.

The simplified hedging examples above are only a first step for effective grain market risk management. Commercial producers and consumers are also dealing with the time and location value of grain that creates the concept called "basis."

Basis simply is the difference at any given time between the cash price for a commodity delivered at a particular place and time and the futures price for any given contract month of the same commodity. For example, if a merchant finds on July 1 that the merchant can buy corn in the cash market for $2.60 per bushel for November delivery while the December futures contract is selling at the same time for $2.50, the basis that July day would be plus 10 cents, or "10 over the December corn futures" for November delivery. When the cash price is below the futures price, the basis is said to be negative; when above the futures price, the basis is said to be positive. Like the futures price, the basis is competitively determined by those trading grain, and the cash price is simply the residual of the futures price plus or minus the basis level.

Basis is important to the hedger because the hedger is trying to establish or maintain the cash price by using the futures price. Therefore, the predictability of the difference between the cash and futures markets, the basis, is very important to the hedger. The basis is also important to the commodity speculator trying to profit by anticipating movements in futures prices which must eventually bear resemblance to cash prices. By knowing the basis, the speculator can relate cash prices to futures prices.

The price discovery aspect of the futures markets, acting as a clearing place for all market information and providing a real market value for the goods traded, relies on two key elements of the cash and basis equations. The first element is the need for the cash price at a delivery point designated by the futures markets and the price of an expiring futures contract to be reasonably close, differing by approximately the amount of the delivery costs associated with transferring
ownership. The second element is the need for a close correlation between market prices at designated futures market delivery points and prices at other places within the marketplace. Without this correlation, it would be difficult to effectively hedge commodities sold at non-designated delivery points. All of the above is the core of basis theory. The individual components of the basis for grain, or the factors that account for the difference between the cash and futures prices at any given time, include the following:

- Time factors, such as the cost of storing grain between its purchase on a local cash market and the expiration of a futures contract, or the cost of interest on money needed to finance carrying grain between the cash purchase and the futures month.
- Costs attributable to insurance or the risk of owning a commodity to which one has title.
- Location factors, meaning the cost of transporting the commodity from its existing site to the delivery point designated by a futures market.
- Quality factors, including differences between the grade, protein, moisture and foreign material content of the cash grain and the quality levels specified in a futures contract.
- Supply and demand conditions at the time and place where the basis is being determined.

Basis theory seeks to explain the vagaries of the differences between the cash and futures markets. It also helps to explain the basic and constant correlation of the two markets. Because the production and consumption of grain is characterized by seasonal production and continuous use, the market must perform its economic function of encouraging storage and usage during times of surplus and discouraging storage and usage during shortages. Absolute price, the price difference or "spread" between months of contracts at futures exchanges, combines with the cash differentials called basis to fulfill this economic function.

Because of this correlation, basis theory holds that for grain deliverable on futures markets, the cash basis at an enduser point could not go above a level equal to the applicable futures price plus the transportation and delivery costs. Once the basis exceeds this level, traders would be encouraged to move stocks from the future delivery area to the end user point. Conversely, theory holds that the cash basis level could not fall below a level at which grain could be brought profitably to the end user location and shipped to an exchange city to be delivered against the futures.
From an export standpoint, the important basis levels that foreign buyers may want to closely monitor are those at export vessel locations: the Great Lakes ports, U.S. Atlantic ports (often referred to as USNH or U.S. North of Hatteras), U.S. Gulf ports and U.S. Pacific ports (often referred to as PNW or Pacific Northwest).

Buyers in many areas around the world will be particularly interested in basis traded at New Orleans, La. (often referred to as NOLA). New Orleans accounts for more than 50 percent of U.S. grain exports because of its year-round, ice-free climate and its accessibility to producing regions via barge, rail and truck.

Basis is the key to understanding cash commodities trading and the key element to understanding the link between the actual physical commodities and the futures, options and derivative markets that seek to express the price of the underlying commodities.

**TRADING BASIS AND HEDGING CASH RISKS**

When a business person actually intends to buy a commodity in the future and wants to protect against unforeseen increases in the cash price before the business person's purchase is made, the business person will typically buy a futures contract, thus establishing a long position. The business person also is said to be engaged in a "buying hedge" or a "long hedge." Traders will say that such a buyer is "short the basis." Short the basis simply means that while the business person intends to buy the physical commodity in the future, the business person does not yet own it and the business person's profit or loss can be affected by what happens to the basis. Thus, the business person is short the basis.

A buyer will normally enter into a buying hedge transaction if the buyer believes that the quoted basis for a cash forward contract is likely to weaken and the buyer can cover his needs by buying futures contracts. The buyer will then look to make an offsetting sale of the buyer's futures contracts and buy the cash grain at a later date when the basis premium is lower.

If an individual intends to sell a commodity at a later date, this individual typically will consider selling futures contracts in an effort to protect oneself against unforeseen price declines before the individual actually makes one's cash sale. In these cases, the seller is described as having a "short hedge." At the same time, the seller will be described as being "long the basis" because the seller currently owns a physical stock of grain but the seller's eventual profit or loss after the sale will be determined partly by what happens to the basis.
until the time of the cash sale. A seller normally will enter a short hedge if the seller believes that the quoted basis for a cash forward contract is likely to strengthen and the seller can get a better net return by selling futures contracts. The seller will then look to make an offsetting purchase of the seller's futures contracts when the seller makes the seller's physical cash sale.

HEDGING EXAMPLES

Example 1: A producer's hedge
A producer plans to sell 500,000 bushels (approximately 12,700 MT) of corn at harvest time. On July 1, the cash price is $3.00 per bushel and the December future is $3.25. The producer hedges by selling 100 December future contracts, thereby establishing a short hedge. When harvest arrives, the producer is ready to take two final steps: the producer will close out the producer's hedge by purchasing 100 futures contracts to offset the producer's earlier sale of futures, and the producer will sell the producer's physical grain in the cash market. At this point, the producer finds the cash price has declined to $2.50 and the December futures price has dropped to $2.75. Thus, the producer has secured the net of $3.00 per bushel that was available in July but has not made either a profit or a loss on the hedging operation itself. Here is how it worked: The producer lost 50 cents per bushel in the cash market when the producer made the producer's actual sale at $2.50 instead of the $3.00 that was available to the producer for October or November delivery back in July. However, that loss was offset by the profit of 50 cents per bushel on the producer's futures transaction as the producer closed out the producer's $3.25 futures sale with an offsetting $2.75 purchase.

The example is summarized in this chart:

<table>
<thead>
<tr>
<th>Time</th>
<th>Cash</th>
<th>Futures</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1</td>
<td>Cash price $3.00/bu for Oct. or Nov.</td>
<td>$3.25/bu farmer sells 500,000 bushels Dec.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Delivery</th>
<th>Futures Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvest</td>
<td>Cash price $2.50/bu (Oct-Nov)</td>
<td>$2.75/bu farmer buys 500,000 bushels Dec. Contracts</td>
</tr>
<tr>
<td></td>
<td>Loss: -$ .50/bu</td>
<td>Gain: + $.50/bu</td>
</tr>
</tbody>
</table>

The result of the above example can also be evaluated by another method: an analysis of changes in the basis. The basis on July 1 was -25 cents, meaning the cash price of $3.00 was 25 cents below the
$3.25 future which is referred to as 25 under December. When the hedge is completed at harvest, the basis is still 25 under because the cash price of $2.50 is 25 cents below the future price of $2.75. Since there is no net change in the basis, there is no gain or loss on the hedge.

This process is not totally risk-free. If the basis in the example had changed while the hedge was in effect, there would have been a net gain or loss on the hedge transaction.

In the above example, the producer used a short hedge by selling futures. Any short hedge will show a trading profit if the basis strengthens. If the basis moves from 25 under to only 15 under, such a change means that it has strengthened by 10 cents and the hedger reaps a 10 cent profit. Similarly the basis could weaken and cause a loss on the hedge transaction.

**Example 2: A corn merchant's hedge**

In March, a corn merchant plans to protect against a future price increase on corn the merchant will need later in the year.

<table>
<thead>
<tr>
<th>Date</th>
<th>Cash</th>
<th>Futures</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 5</td>
<td>$2.00</td>
<td>$2.21</td>
<td>-$.21</td>
</tr>
<tr>
<td>April 2</td>
<td>$1.92</td>
<td>$2.11</td>
<td>-$.19</td>
</tr>
<tr>
<td>May 7</td>
<td>$2.04</td>
<td>$2.30</td>
<td>-$.26</td>
</tr>
<tr>
<td>June 3</td>
<td>$1.99</td>
<td>$2.05</td>
<td>-$.06</td>
</tr>
</tbody>
</table>

Assuming that this corn merchant hedges one contract for 5,000 bushels of corn on March 5 by going short the basis, this means that the corn merchant will buy a futures contract (establishing a long hedge) on March 5. The corn merchant will simultaneously sell an equal amount of cash grain. What will be the result if the hedge is closed out by an offsetting futures sale and a purchase of cash grain on June 3?

To answer the question is another chart:

<table>
<thead>
<tr>
<th>Date</th>
<th>Cash</th>
<th>Futures</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 5</td>
<td>$2.00 (sells cash)</td>
<td>$2.21 (buys corn)</td>
</tr>
<tr>
<td>June 3</td>
<td>$1.99 (buys cash)</td>
<td>$2.05 (sells corn)</td>
</tr>
</tbody>
</table>

In this example, the merchant has gained 1 cent per bushel on the cash transactions, but has lost 16 cents on the futures transactions. Thus, the net result of the hedge is a loss of 15 cents per bushel or an overall loss of $750, which is calculated on the basis of 15 cents multiplied by the contract size of 5,000 bushels. As noted earlier, a
long hedger profits when the basis weakens and loses when the basis strengthens. In this example, the basis went from -21 cents on March 5 to -6 cents on June 3. The basis strengthened and the hedger lost.

This example also raises the question grain merchants must consider: "What is the net price the merchant paid for the corn?" To get this answer, evaluate the change in the basis. The basis strengthened by 15 cents between March 5 and June 3. Since the merchant was "short the basis," the merchant lost money. The merchant actually paid $2.15 per bushel for the merchant's corn: $1.99 for the actual cash grain plus the merchant's 16 cent loss on the hedge, or a total of $2.15.

Example 3: A foreign exchange hedge
An importer who has foreign exchange risks may also use the exchange traded futures or OTC swap market to reduce foreign exchange risks.

For example, a Japanese grain firm plans to buy one billion Japanese yen worth of grain from the United States in three months, but the firm anticipates that the U.S. dollar will strengthen during the coming three months. The yen is currently selling for .9500 and the three month futures are priced at .9501. The Japanese grain firm properly hedges against a possible strengthening of the dollar by selling three-month futures and then offsets (closes the hedge) when the yen cash or spot market is at .9360 and the yen futures are selling at .9350. What is the resulting profit or loss? (A futures quote in yen assumes an extra two zeroes: a quote of .9355 really means .009355 yen per dollar.)

<table>
<thead>
<tr>
<th>Cash(spot)</th>
<th>Futures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm owns Yen</td>
<td>.9500</td>
</tr>
<tr>
<td>Firm sells Yen</td>
<td>.9360</td>
</tr>
</tbody>
</table>

The Japanese grain firm loses .0140 on the cash transaction but gains .0151 on the futures. The net gain or basis difference results in a .000011 profit or $11,000. The use of futures to lock in currency risk avoided a potentially volatile move of .0140 or $140,000.

Example 4: Hedging as a tool of operations
Hedging can be used to meet the operating needs of a substantial livestock feed manufacturer in an overseas location. This example will look at a hypothetical firm in South Korea named Solar Feeds which supplies livestock and poultry feeds to Korean poultry producers and cattle feeders.
The purchasing manager of Solar Feeds has decided to offer its customers the right to forward contract their feed requirements at prices that will be fixed in individual negotiations. The company hopes that this option will expand market share and encourage livestock producers to lock in their feed costs for the coming year by Nov. 1. As the strategy proceeds, the following orders are made by Solar Feeds' customers for the spring delivery season:

<table>
<thead>
<tr>
<th>Month</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>100,000 MT</td>
</tr>
<tr>
<td>April</td>
<td>100,000 MT</td>
</tr>
<tr>
<td>May</td>
<td>100,000 MT</td>
</tr>
<tr>
<td>June</td>
<td>50,000 MT</td>
</tr>
<tr>
<td></td>
<td>350,000 MT</td>
</tr>
</tbody>
</table>

In trying to manage the risks involved in such a large delivery program, Solar Feeds must consider all the risk management tools outlined in the previous part of this chapter. With 60 percent of their livestock feeds comprised of feed grains components, Solar Feeds must make some decisions regarding the risk around this shipping schedule.

The options available to Solar Feeds in the cash and futures market on Nov. 1 are as follows:

<table>
<thead>
<tr>
<th>Corn Price on Nov.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basis FOB to Cash CNF</td>
</tr>
<tr>
<td>U.S. Export Korea</td>
</tr>
<tr>
<td>Month Futures + Basis + Freight = CNF Port</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Futures</td>
<td>$104/MT</td>
<td>$106/MT</td>
<td>$106/MT</td>
<td>$107/MT</td>
<td>$107/MT</td>
</tr>
<tr>
<td>Basis</td>
<td>$4/MT</td>
<td>$6/MT</td>
<td>$8/MT</td>
<td>$10/MT</td>
<td>$10/MT</td>
</tr>
<tr>
<td>Freight</td>
<td>$25/MT</td>
<td>$25/MT</td>
<td>$25/MT</td>
<td>$25/MT</td>
<td>$25/MT</td>
</tr>
<tr>
<td>Port</td>
<td>$133/MT</td>
<td>$137/MT</td>
<td>$139/MT</td>
<td>$142/MT</td>
<td>$142/MT</td>
</tr>
</tbody>
</table>

For simplicity, these examples assume 1 MT of grain to be equal to 40 bushels, although it is actually closer to 39.368 bushels. The symbols CH, CK and CN stand for corn futures contracts, with the letter C representing the symbol for corn and the second letter representing the symbol for the contract maturity months of March (H), May (K) and July (N). A more complete explanation of futures contract symbols will be found later in this chapter.
The futures prices above are conversions of the $2.60/bushel, $2.65/bushel and $2.675/bushel prices for the March, May and July futures, respectively. The April and May shipments are priced off the May future as the June shipment is priced off the July future.

It is assumed that the freight rate remains constant from the U.S. export port to South Korea for 30,000 MT vessels at $25/MT.

In the example, the estimate of forward contracts for mixed feeds sold by Solar Feeds is a total of 350,000 MT for delivery from March through June. Also, Solar Feeds uses corn for 60 percent of its livestock feeds. Thus, the firm's corn commitment is 60,000 MT per month in March, April and May, and 30,000 MT in June.

Solar Feeds decides that the quoted basis premium (offer) for the purchase of cash corn for future delivery (a cash forward contract) is likely to decline. On the basis of that decision, the firm believes that it can cover its corn needs by buying futures. Thus, Solar Feeds buys futures contracts and delays the purchase of physical stocks in the cash markets until the basis premium is lower. In this example, Solar Feeds is using a long or buying hedge strategy which means that it is going short the basis by purchasing futures contracts.

Acting on its decision to use a buying hedge, Solar Feeds buys the following futures contracts on Nov. 1 at the following prices:

March - The firm buys 480 March corn contracts at $2.60 per bushel to cover its 60,000 MT corn commitment. (The 60,000 MT commitment equals 2.4 million bushels. Since each contract covers 5,000 bushels, 480 contracts will be needed to match the 2.4 million bushel commitment.)

April and May - The firm buys 960 May corn contracts at $2.65 per bushel to cover its commitment to make feed sales during April and May. (Solar Feeds needs 60,000 MT in April and a further 60,000 MT in May. Since there is no April futures contract for corn, the firm must buy 960 May contracts instead of purchasing 480 contracts in each of the two months.)

June – Solar Feeds buys 240 July corn contracts at $2.675 per bushel. The firm needs only 240 contracts to cover 30,000 MT of corn for June. Since there is no June contract for corn, the hedgers must cover the June need by buying 240 July contracts.

The net result of this activity is that by purchasing corn futures contracts - 480 March, 960 May, 240 July – Solar Feeds has
effectively acted at the beginning of November to hedge its forward energy feed ingredient commitments which amount to 210,000 MT of corn. By the end of the following January, the firm decides to end its hedge and acquire the physical corn it will need in the coming months. Therefore, Solar Feeds decides on Feb. 1 to buy cash corn and sell futures contracts. When this decision is made, the market prices Solar Feeds confronted the previous November have changed. As of Feb. 1, the market prices look like this:

Corn Price on February 1

<table>
<thead>
<tr>
<th>Month</th>
<th>Futures</th>
<th>Basis FOB to Cash CNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Export Korea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>$107/MT</td>
<td>$2/MT $25/MT $134/MT</td>
</tr>
<tr>
<td>April</td>
<td>$109/MT</td>
<td>$4/MT $25/MT $138/MT</td>
</tr>
<tr>
<td>May</td>
<td>$109/MT</td>
<td>$6/MT $25/MT $140/MT</td>
</tr>
<tr>
<td>June</td>
<td>$110/MT</td>
<td>$6/MT $25/MT $141/MT</td>
</tr>
<tr>
<td>July</td>
<td>$110/MT</td>
<td></td>
</tr>
</tbody>
</table>

As seen below, the net results of the hedging strategy between Nov. 1 and Feb. 1 gave Solar Feeds a less risky approach to the feed grains import markets and even earned a hedging profit due to basis gains during these three months.

<table>
<thead>
<tr>
<th>Month</th>
<th>Cash</th>
<th>Futures</th>
<th>Net</th>
<th>Shipment Size</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar</td>
<td>$1.00/mt</td>
<td>$3/MT</td>
<td>$2/MT</td>
<td>60,000MT</td>
<td>$120,000</td>
</tr>
<tr>
<td>Apr</td>
<td>$1.00/mt</td>
<td>$3/MT</td>
<td>$2/MT</td>
<td>60,000MT</td>
<td>$120,000</td>
</tr>
<tr>
<td>May</td>
<td>$1.00/mt</td>
<td>$3/MT</td>
<td>$2/MT</td>
<td>60,000MT</td>
<td>$120,000</td>
</tr>
<tr>
<td>June</td>
<td>$1.00/mt</td>
<td>$3/MT</td>
<td>$4/MT</td>
<td>30,000MT</td>
<td>$120,000</td>
</tr>
</tbody>
</table>

So the net profit as seen above with Cash, Futures and Shipment Size of the shipments taken into consideration on Solar Feeds's strategy was $480,000. It is very important to note that the figures used in explaining the trading strategy of Solar Feeds show that there was a change in the basis during the period covered by this example. Moreover, the gain the firm generated by using a long hedge (buying the futures against cash sales) was the direct result of the basis change. Following is a look at the basis changes that took place:
Basis

<table>
<thead>
<tr>
<th>Month</th>
<th>NOV 1</th>
<th>FEB 1</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>March</td>
<td>$4/MT</td>
<td>$2/MT</td>
<td>-$2</td>
</tr>
<tr>
<td>April</td>
<td>$6/MT</td>
<td>$4/MT</td>
<td>-$2</td>
</tr>
<tr>
<td>May</td>
<td>$8/MT</td>
<td>$6/MT</td>
<td>-$2</td>
</tr>
<tr>
<td>June</td>
<td>$10/MT</td>
<td>$6/MT</td>
<td>-$4</td>
</tr>
</tbody>
</table>

(Note: In this example of trading by Solar Feeds, we based calculations on the assumption that freight charges from a U.S. export port to South Korea would be $25 per MT throughout the time period covered by the example. To simplify the example, a fixed freight rate was used instead of the shifting rates that would most likely be encountered in real trading. For the same reason, marine insurance, stowing and trimming, fumigation, separations, interests and other costs associated with a particular transaction and shipment were omitted. Freight is a significant cost component in grain procurement and is covered in depth in Chapter 5.)

One point to remember with the Solar Feeds example and the others is how prices and price changes show how the market can work but which do not necessarily indicate how the market actually will work at any given time. In the actual world, the same kind of price trends, changes and results could happen as it did in the Solar Feeds example, but not typically.

The Solar Feeds example used the cash and exchange traded futures market to achieve a reduction in risk and a trading profit from the hedging process. Using the other instruments of risk management, a feed grains user may be able to achieve very similar or even superior results limiting risk depending on the market environment. Exchange traded options, over the counter swaps and derivatives and trade options all could be applied in the Solar Feeds example with differing risk profiles.

The market situation is necessarily typical. The price trends used in the example show a basis that appears high in October when the approach of the harvest season often can narrow the basis, and it appears lower in February when it might be falling under different conditions.
Any combination of cash and futures prices like those chosen for the Solar Feeds scenario must be based on a particular combination of supply and demand situations. The example, as given, shows good results from Nov. 1 to Feb. 1. However, in a "real world" situation like this, there could be a temporary interim appearance of large losses in the futures position. Volatile markets could mean that, for a time, a hedger would be facing expensive margin calls (addressed later in this chapter). The example shows a significant amount of profits generated by the futures component of the hedge. The same profit scenario could be realized in a case where gains are solely attributed to a weakening of the basis. Remember, the long hedger would still profit with a weaker basis, but the hedger would face immediate losses in the form of margin calls for the long futures position.

All of this means that if our hypothetical South Korean firm is going to hedge against the risks of price changes, it will have to accept a second risk - the risk of changes in the basis. Before taking that necessary second risk, executives of the firm will have to be convinced in November, when their buying program begins, that the cash basis will weaken by February. Such a conviction must be founded on an expert study of the market and also on the firm's ability to ride out interim margin calls if they occur. As far as the underlying risk of price changes is concerned, this is reduced by the hedging operations use of futures contracts.

**RISK REDUCTION TECHNIQUES**

In addition to hedging and trading the basis values in the cash market, there are many other forms of using the tools described above to limit or enhance risk in the feed grains markets. Two examples of risk reduction techniques are the study and trade of spreads and directional positions. Without understanding the flow of prices and real value of any given futures month, risk management is virtually impossible. One must attempt to at least stay abreast of inputs to the overall direction of the market and of individual spreads within the market to truly reduce risk.

Conventional long or short hedges carried out by buying or selling commodity futures contracts, swaps or options are not the only tools available to the grain industry for reducing price risks. There is also the technique called a "spread." Spreads refer to the price difference between grain markets, or between a given market's delivery periods or futures months, or between commodities.
Inter-delivery spreads: One way to spread a market in futures is to simultaneously buy a futures contract representing one delivery period and sell one of the same commodities representing another delivery period. A spreader in this instance would be making an estimate on the relative value of the futures' delivery periods. Inter-delivery spreads are used throughout the agribusiness community for several different reasons, but their main attraction is the way they can help reduce price risks.

Commodity-price spreads: This type of spread is most often used by soybean crushers who process soybeans into meal and oil products. The operation involves either selling or buying a given contract month on soybeans and the simultaneous buying or selling in the same month of contracts on soybean products, namely soybean meal and soybean oil.

Inter-commodity spreads in cash markets: These can be used at times because some commodities can be substituted for one another, and the more readily the substitutions can be made, the closer the price relationship or correlation of the commodities. For example, corn and sorghum can both be used as animal feed ingredients. Sorghum is normally priced below corn. If the corn-sorghum price gap widens because of an increase in corn prices or a decline in sorghum prices, a trader will anticipate that feeders may increase their usage of the relatively cheaper sorghum and may decrease their usage of the relatively expensive corn. This reaction by the feed industry would result in an increase in the price of sorghum and a decrease in the price of corn. A trader then could buy sorghum in the cash market and simultaneously sell corn futures because the trader expects a narrowing spread between the two commodities.

As in the case of inter-delivery spreads, the trader using an inter-commodity spread is concerned with the changing price gap between two commodities, not their absolute values. The trader sometimes may decide that the spread appears abnormal and the trader expects that it will return to a normal level. Or the trader may feel that while the current spread is normal, it is likely to become abnormal. If the trader can correctly predict whether the difference will widen or narrow, the trader will make money by trading spreads.

Inter-market cash grain spreads: These are based on the fact that some commodities are traded on more than one market. Where prices for a commodity vary between markets, the variations are usually due to differences in transportation costs and/or to the fact that different grades of the commodity are deliverable. A trader will make an inter-market spread when the trader believes that the price differences
between two markets look abnormal. For example, if the price of corn in one market is excessively high when compared to the price on another market considering the logistical and quality differences, a trader will sell corn on the expensive market and buy on the relatively cheaper market. The trader will profit if the market returns to normal and narrows.

**Directional trading**: Often directional trading is viewed as the realm of speculators trying to predict market direction and purchasing or selling futures contracts in order to profit from the changes. Opportunities exist in the markets to predict price movement for several reasons. Because feed grains markets are relatively free, prices fluctuate with changes in supply and demand. The reason for trends in price changes is that when changes in supply and demand appear on the economic horizon, the market for those goods begins to move from price X to price Y in order to either decrease demand or increase supply or vice versa. If the market is efficient, and the change in supply or demand real, the reward for recognizing that trend will be money made taking the risk as the markets move.

Being aware of these price changes and their causes is a key element to risk management in the feed grains markets.

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**Market Analysis**

There are two common methods of analyzing commodity market conditions: fundamental analysis and technical analysis. Business persons whose operations are affected by what happens in the grain production and marketing system should understand both methods.

**FUNDAMENTAL ANALYSIS**

Fundamental analysis is a basic method of seeking answers to questions about what is happening in commodity markets. Fundamental analysis is really a study of basic, underlying factors which will affect the supply and demand of a commodity.

Since both supply and demand for agricultural commodities are relatively inelastic in the short run, prices of these commodities tend to be volatile. If an analyst can project probable future shifts in supply and demand and compare them with past shifts, the analyst can begin to project prices and price trends. Government agencies in the United States and other countries forecast worldwide supply and demand, but the analysis of the flow of grain across the globe is performed by many parties, both private and public, and both informed and uninformed. Price changes in the market reflect the expectations of these many different market participants rather than
hard facts which are usually not available until months after actual supply and demand development.

A fundamental analyst will look at a wide range of supply and demand factors that determine the price outlook for any individual commodity. Some of these include weather conditions, harvest estimates, commodity stocks, user demand, supply of related or substitutable commodities and transportation conditions for commodities. Other factors may include a wide range of political and economic developments, such as government policies and support programs, interest and currency exchange rates, and the world political situation and its potential impact on trade decisions.

The fundamental analyst typically uses raw data collected from the global news and market reports and runs econometric models and statistical comparisons to evaluate the objective state of the supply and demand of a commodity. Although this analysis, if thorough enough and conducted with correct data, can lead to profitable market insights, fundamental analysis can be a dangerous tool if used incorrectly.

Some faults cited by traders and economists in the use of fundamental analysis are as follows:

- Drawing hard fast trading rules from fundamental analysis and forgetting the imperfect nature of any information.
- Allowing expected conclusions to lead to the evidence, i.e., confusing or misdirecting the analysis with market beliefs.
- Viewing fundamentals in a vacuum, without regard to technical analysis or risk management.
- Using out-dated information or using information not available to the rest of the market which, therefore, has no immediate impact.
- Ignoring seasonal considerations.
- Forgetting that commodity markets can exceed costs of production or go significantly below the cost of production for extended periods of time.
- Ignoring the state of the futures markets or the fundamentals of money flow.

In sum, fundamental analysis is an effective tool in managing risks in commodities trading. By definition, it is the study of all factors affecting the forces of supply and demand on a commodity.
TECHNICAL ANALYSIS

Technical analysis is a method of seeking to predict future price movements on the basis of past movements. It is an approach to forecasting commodity prices which examines patterns of price change, rates of change and changes in volume of trading and open interest, without regard to underlying fundamental factors. Many academic experts have questioned the value of technical analysis. However, since the charts of past price movements used by technical analysts also are used by most traders to predict price movements in futures markets, any risk manager in the commodity markets must be prepared to understand both technical and fundamental analysis. Such an understanding is needed to give the trader a full appreciation of all forces shaping the decisions of major participants in the futures markets.

Because commodities are an integral part of our economy, and because they have offered volatile price movements in the past, many speculators are involved in the markets that did not exist just 10 years ago. Commodity Pool Operators and their trading advisors, Commodity Trading Advisors (both described earlier in this chapter), have added increased importance to the area of technical analysis and its interpretation of price direction. Money flows with the direction of price for many technical traders and money flows with price momentum. The single hope of a speculator is to capture movement and, therefore, money in the analysis and trading of markets. Technical analysis is an effective tool when used with fundamental analysis to manage feed grains risk along with other commodity price risk.

Several examples of basic technical analysis are included in the next few pages. Some are chart patterns and others include measurements of trend and direction which allow traders to visualize changes in market behavior.

**Head and Shoulders Formation**: This formation, as illustrated in the example at right, portrays a rising market that has peaked, reversed its direction and is declining.

**Inverted Head and Shoulders Formation**: The same pattern only appearing at the bottom of a price move and forecasting a reversal in price trend. Technical analysts believe that this pattern signals a change in trend and the beginning of an up move.

**Support Area or Trend Lines**: A support line or area is the point below which prices have not dropped during recent past declines. A
support line indicates that there is an "auction" of sorts occurring and buyers are following the price up while sellers are raising their selling ideas or running out of supply. When prices approach an area of support or a trend line, traders may take this as a signal that it is a good time to buy because markets may rebound to levels above the trend line. However, once broken, the auction process may be over and technical analysts may interpret this as a bearish signal for traders. Prices may then fall because the imbalance has changed and traders who are long will try to liquidate their positions. When the market breaks downward through a support area, technical analysts say it has exited a trading range and is trying to find price stability at a new lower level. At right is a graph showing a support area and trend line.

This graph illustrates a basic chart formation depicting the area or line below which futures prices have not dropped during recent times. Prices are being bid up along this support line as buyers are willing to chase price up and sellers take advantage of higher prices or are running out of the commodity.

MOVING AVERAGES

A moving average is literally an average of some number of recent days trade in a commodity futures market. Traders use the moving average of prices to observe the direction of price movement and reversals of price movement. This is easily the most common form of technical analysis and the foundation for a school of technical analysis called trend following. Below is an example of a price chart with several short, intermediate and longer term moving averages.

When listing futures contracts prices and options prices, quote vendors use ticker symbols, or shortened codes representing the futures or options markets, along with the traded prices in code. Often that code consists of one or two letters to indicate a specific contract, and then a letter to indicate which month the futures contract represents, and finally a number to indicate the year of the futures contract. Other codes do not use numbers but rather an additional letter of the alphabet to represent futures contracts of the same month but differing years.

The following is a list of futures contract specifications and a list of symbols for expiration months:
### Futures or Options Delivery Months:

<table>
<thead>
<tr>
<th>Current Year</th>
<th>Month</th>
<th>Next Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>JANUARY</td>
<td>A</td>
</tr>
<tr>
<td>G</td>
<td>FEBRUARY</td>
<td>B</td>
</tr>
<tr>
<td>H</td>
<td>MARCH</td>
<td>C</td>
</tr>
<tr>
<td>J</td>
<td>APRIL</td>
<td>D</td>
</tr>
<tr>
<td>K</td>
<td>MAY</td>
<td>E</td>
</tr>
<tr>
<td>M</td>
<td>JUNE</td>
<td>I</td>
</tr>
<tr>
<td>N</td>
<td>JULY</td>
<td>L</td>
</tr>
<tr>
<td>Q</td>
<td>AUGUST</td>
<td>O</td>
</tr>
<tr>
<td>U</td>
<td>SEPTEMBER</td>
<td>P</td>
</tr>
<tr>
<td>V</td>
<td>OCTOBER</td>
<td>R</td>
</tr>
<tr>
<td>X</td>
<td>NOVEMBER</td>
<td>S</td>
</tr>
<tr>
<td>Z</td>
<td>DECEMBER</td>
<td>T</td>
</tr>
</tbody>
</table>

Options on the futures traded at all of the exchanges are listed using the same symbols and month codes, along with specific codes representing the strike price and whether it is a call or a put.

### Chicago Board of Trade Agricultural Futures:

<table>
<thead>
<tr>
<th>Contract/Symbol</th>
<th>Contract</th>
<th>Size</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn/C</td>
<td>5,000</td>
<td>Bushels</td>
<td>H,K,N,U,Z</td>
</tr>
<tr>
<td>Soybean/S</td>
<td>5,000</td>
<td>Bushels</td>
<td>F,H,K,N,Q,U,X</td>
</tr>
<tr>
<td>Wheat/W</td>
<td>5,000</td>
<td>Bushels</td>
<td>H,K,N,U,Z</td>
</tr>
<tr>
<td>Soybean Oil/BO</td>
<td>60,000</td>
<td>Pounds</td>
<td>F,H,K,N,Q,U,V,Z</td>
</tr>
<tr>
<td>Soybean Meal/SM</td>
<td>100</td>
<td>Tons</td>
<td>F,H,K,N,Q,U,V,Z</td>
</tr>
<tr>
<td>Oat Futures/O</td>
<td>5,000</td>
<td>Bushels</td>
<td>H,K,N,U,Z</td>
</tr>
</tbody>
</table>

### Chicago Mercantile Exchange Agricultural Futures:

<table>
<thead>
<tr>
<th>Contract/Symbol</th>
<th>Contract</th>
<th>Size</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeder Cattle/FC</td>
<td>50,000</td>
<td>Pounds</td>
<td>F,H,J,K,Q,U,V,X</td>
</tr>
<tr>
<td>Live Cattle/LC</td>
<td>40,000</td>
<td>Pounds</td>
<td>G,J,M,Q,V,Z</td>
</tr>
<tr>
<td>Pork Bellies/PB</td>
<td>40,000</td>
<td>Pounds</td>
<td>G,H,K,N,Q</td>
</tr>
<tr>
<td>Lean Hogs/LH</td>
<td>40,000</td>
<td>Pounds</td>
<td>G,J,M,N,Q,V,Z</td>
</tr>
</tbody>
</table>

(1 pound = .4534 kilograms)
Other U.S. Agricultural Futures:

- Cotton - New York Cotton Exchange /CT
- Orange Juice – NYCE/JO
- Coffee - Coffee Sugar and Cocoa Exchange/KC
- Cocoa - CSCE/CC
- Wheat - Minneapolis Board of Trade/MW
- Wheat - Kansas City Board of Trade/KW
- Sugar – CSCE/SB

Although there are agricultural futures contracts traded outside U.S. exchanges, the Malaysian palm oil market and the European soft futures markets (i.e., coffee, cocoa and sugar), the non-U.S. agricultural futures markets are relatively illiquid and under traded.

Non-Exchange Traded Agricultural Markets: To trade off-exchange in the cash markets or OTC swap or derivative markets, participants must meet the many credit and customer requirements that individual banks and trading firms impose on their clients, along with the CFTC required limits on the minimum size of participants in the OTC markets. If a feed grains market participant believes that it meets these requirements, the easiest way to contact participants in the non-exchange traded markets is via trade contacts in the cash markets or via brokers within the cash or futures markets.

FUTURES MARKET ORDERS

When a trader wants to buy or sell futures, the trader gives an order to the commodity futures trading representative who handles the trader's account. The orders must be written and entered without any ambiguity as to price or quantity to ensure that they are properly handled on the trading floor. The representative executes the order and administers the account. Orders to buy or sell can take varying forms depending on the needs of the individual buyer or seller. The following types of orders are used in the execution of futures trading:

Market Order: The most common order that a futures buyer or seller uses is the market order. In a market order, the customer states the number of contracts of a given delivery month the customer wishes to buy or sell and the customer does not specify the price. The customer wants the trade made immediately at the best available price. An order may specify "buy 10 July corn futures contracts at the market." This directs the trading representative on the futures market floor to buy 10 July corn contracts at the lowest price being offered at the time that the order enters the trading pit. "Sell five December corn futures at the market" is a directive to sell five December corn futures
at the highest bid available at the time the order is entered into the trading pit.

**Limit Order:** A limit order has a price limit at which it must be executed. When a customer gives the customer's broker a limit order, the customer sets the maximum price that the customer is willing to pay when purchasing, or a minimum price that the customer is willing to accept when selling. "Buy 20 December corn contracts at $2.50" means to purchase at $2.50 or lower. The advantage of a limit order is that the customer knows the worst price the customer will receive if the customer's order is executed. The disadvantage of a limit order is that the customer's order might not be filled.

**Stop Order:** A stop order is really a delayed market order which cannot be activated for trading until some specified development occurs. Stop orders are usually used to liquidate previously entered transactions. For example, "buy 10 December corn contracts at $3.00 stop" means to buy at any price (a market order) AFTER another trade occurs at $3.00 or higher. Buy-stop orders are always pegged to prices above the current market. "Sell 10 corn contracts at $2.80 stop" means to sell at any price (a market order) but not UNTIL another trade occurs at $2.80 or lower. Sell-stop orders are always below the market.

A stop order is activated, triggered or elected once the indicated price is reached. Stop orders can also be activated even if there is no actual trade at the stop price. A buy-stop order is triggered by a bid at the stop order price - a sell-stop order by an offer at the stop order price. Stop orders are also called "contingent orders" because they depend on the occurrence of a specified price change.

Stop orders also can be used to establish positions or enter the market. Stop orders are often used as defensive devices to protect profits and restrict losses.

**Good-Til-Cancelled Order:** A good-til-cancelled order is open until it is either cancelled or executed. It is also called an open order.

These are just some of the more common orders used by market participants. Others exist and it is usually up to the individual futures commission merchant and exchange as to what kinds of orders are accepted.
MARGINS

All futures buyers or sellers must post deposits called margins with the brokers handling their accounts. These deposits are not the same as margins in stock markets where the deposits act as down payments on stocks. Instead, futures margins act as performance bonds to help guarantee the buyer or seller will meet the buyer's or seller's obligations - both deposit margin funds.

When a trader buys or sells a futures contract, the trader must post an initial margin with the precise amount set by the rules of the exchange on which the trade is made. Later, the trader will be subject to what are called maintenance margin requirements which will be lower than the initial requirement.

If the value of a customer's account goes below the initial requirement, the customer will not be obligated immediately to deposit additional margin. But if the value of the account falls below the level tied to the maintenance requirement, the customer will get a "margin call," meaning the customer will be called upon to deposit additional funds with the customer's broker to bring the customer's margin back up to the initial requirement level. For example, suppose the initial margin on a trade is $1,000 and the maintenance margin set by the rules of a particular exchange for that trade is $800. Then suppose the value of the futures contract held by the trader falls to a level that is only high enough to provide $810 worth of margin guarantee. Nothing happens because the trader has not fallen through the maintenance margin level. But if the contract value declines further and is only high enough to provide $790 worth of margin guarantee, the customer will get a margin call for $210 - enough to bring the customer back to the initial $1,000 margin level.

Margin requirements for spread trades are below those for hedgers and speculators because price movements between two futures contracts usually are less volatile than fluctuations in other forms of trading. Margins serve to act as performance bonds for all trading at U.S. futures exchanges. They are managed by clearing firms and commission merchants and their customers to facilitate trade and manage the credit risk inherent in all futures trading.

FUTURES ACCOUNTS AND TRADING PROCEDURES

Before a commodity futures trading firm opens an account for a customer, the firm needs to obtain the following from a customer:
A signed risk-disclosure statement is necessary for every customer, whether the customer is a hedger or a speculator. By signing the statement, the customer acknowledges that trading in futures entails the risk of the customer's entire investment and more.

- Information including employment, financial status and bank credit references.

- A signed customer's agreement in which the customer agrees that the customer will abide by the rules of the futures exchanges and be responsible for margin calls. This agreement provides that a customer's account can be closed out if the customer fails to respond to a call for additional margin deposits.

- A copy of the charter and bylaws of any corporation or investment company seeking to set up a commodity trading account, and proof that the corporation or company is legally entitled to engage in futures trading.

Individuals and firms entering the futures markets to hedge their risks on grain imported from the United States - or for any other reason - should also note the following facts about the handling of commodity futures trading accounts:

Erroneous reports about the execution of a futures contract order do not nullify the trade, and the customer must accept what actually happened if the trade was in accordance with the terms of the customer's order. However, if a floor broker makes a trade outside a limit price set in advance by the customer, the floor broker is personally responsible for the difference. For example, if a customer ordered a corn contract sold at not less than $2.75 and the broker sold it for $2.73, the broker would be liable for the 2 cent difference.

A customer should commit to futures trading only as much money as the customer is willing to risk or able to lose.

At the discretion of the commodity futures brokerage firm handling a customer's account, a customer may trade during a day without a margin for each separate transaction, provided that the net position resulting from the day's trading is fully margined. The brokerage firm will retain the right to ask for more margin money during the day.

**DAILY LIMITS ON PRICE MOVEMENT**

The commodity futures exchanges set limits on the amount by which any commodity future can rise or fall in one day. These limits are set to help maintain the ability of the markets to provide effective price
discovery and risk-transfer functions. The basic price-change limits include 20 cents per bushel daily for corn, 30 cents for wheat and 50 cents for soybeans. These limits can be changed when exchanges determine that the changes are needed. In fact, the Chicago Board of Trade's current policy is to increase the limit for a three-day period if the basic limit is reached in a single day.

DELIVERING COMMODITIES UNDER FUTURE CONTRACTS

Typically less than 3 percent of all futures contracts are executed by actually making or taking grain deliveries according to the Chicago Board of Trade. However, the option of making an actual delivery at the end of any contract period must be preserved to maintain the economic relationship between cash and futures prices. That relationship is maintained by the fact that during the delivery period, the cash and futures prices should become virtually identical for a specific commodity at a specific delivery point. This process is called convergence and ensures that the futures reflects the value of the underlying commodity. When the actual physical deliveries are made to close out futures contracts, traders must comply with a number of rules including:

- The buyer must make full payment to the seller before 1300 hours on the date of the delivery.

- The price the buyer pays when the buyer accepts delivery under a grain futures contract is the settlement price on the day before the day that the buyer takes delivery. This is the futures contract price adjusted by allowance for superior or inferior grades. The profit or loss is settled with the buyer via the clearinghouse or broker. Delivery of a specific grade may be at a premium or at a discount from the contract grade.

- Each delivery notice is followed by issuance of a delivery document - a warehouse receipt, shipping certificate or bills of lading.

- On delivery of a commodity, the seller has the right to choose the place and time of delivery from options available under exchange contract rules.
Established U.S. futures exchanges include the following:

- Chicago Board of Trade (CBOT), founded 1848.
- Chicago Mercantile Exchange (CME), founded 1874.
- International Monetary Market (IMM), established 1972. The IMM is a division of the CME.
- Commodity Exchange (COMEX) in New York, founded 1868.
- Kansas City Board of Trade, founded 1856.
- Mid-America Commodity Exchange in Chicago, founded 1868.
- Minneapolis Grain Exchange, founded 1881.
- New York Cotton Exchange, founded 1870.
- New York Mercantile Exchange, founded 1872.

Each exchange specializes in its own contracts. All of the exchanges are constantly developing new risk management tools which compete for trading business with the other exchanges and the off-exchange markets.

All of the above exchanges are regulated under a system that provides several layers of protection for persons who use the markets. The integrity of trade on the exchanges is supported by the clearing corporations that stand behind all transactions. The exchanges are also constantly monitoring their own activity through self regulation. Market firms, their performance and employees are all monitored by the commodity futures exchange, and also by an industry group, the National Futures Association. Another layer of protection is provided under U.S. law by a regulatory agency of the U.S. government, the Commodity Futures Trading Commission (CFTC). All exchanges have written rules regarding conduct of members, membership, trading practices, position limits and price movements. These rules vary among exchanges and are also developing constantly as innovation continues in the marketplace. Those who wish to trade on any exchange should consult that exchange's constitution and rules for specific details.
For further information on the futures markets, contact:

**National Futures Association, NFA**  
200 West Madison Street  
Suite 1600  
Chicago, IL 60606 U.S.A.  
Phone: 1-800-621-3570  
Phone: (312) 781-1410  
FAX: (312) 781-1410

**Commodities Futures Trading Commission (CFTC)**  
Three Lafayette Centre  
1155 21st Street, NW  
Washington, D.C. 20581 U.S.A.  
Phone: (202) 418-5000  
FAX: (202) 418-5521  
Email: opa@cftc.gov