Recent OSU research shows that, historically, there has been a seasonal pattern to Oklahoma fertilizer prices. Purchasing a portion of fertilizer in mid-summer has consistently improved price and variability. Late fall has also been a good time to purchase UAN and DAP products. Spring has historically been the worst time to inventory fertilizer. Today’s fertilizer price environment calls for greater partnership between producers and fertilizer retailers. These results provide some strategies for timing purchases.

Fertilizer costs account for 40-50% of the variable production costs for most grain crops and up to 85% of variable expenses for some forage crops. Fertilizer prices have been increasing dramatically. At their peak, farm-level price of nitrogen formulations has increased 300-375% since 2002 and increased 95% since the spring of 2007. Phosphate products also peaked at over 400% of the 2002 levels with a 100% increase from 2007-2008. The month to month price volatility has also increased dramatically. In the past, the price variation within a marketing year was $15-$20/ton. Within year price changes for anhydrous ammonia fertilizer of $100/ton have occurred during the last two seasons and price levels for both nitrogen and phosphate products followed a roller coaster ride during the last 12 months changing over $500/ton.

Numerous factors have contributed to this price environment. The price of natural gas, which constitutes over 80% of the production cost of nitrogen fertilizers, has been rapidly escalated. U.S. natural gas prices are significantly higher than those of oil producing countries. This had led to the closure of 21 nitrogen fertilizer production facilities in the U.S. since 1999. U.S. farmers and agribusiness are now competing on a world market. In early 2008 demand from areas such as China, South America and Southeast Asia continued to put upward pressure on all forms of fertilizer products. These same markets were disproportionately impacted by falling commodity prices and credit limitations, leading to the rapid fall in prices. The cost of ocean freight, the strength of the U.S. dollar and the logistics of transporting fertilizer from ocean ports to demand points have all become important factors.

Cooperatives and other fertilizer dealers have traditionally purchased and warehoused fertilizer while absorbing the risk of price swings. Escalating fertilizer prices, coupled with high commodity prices have placed unprecedented demands on working capital. Lenders are increasingly wary of financing fertilizer inventory when the dealer has no purchase commitment from the producer and no risk protection from price swings. Fertilizer dealers across the U.S. are shifting to pre-purchase systems for fertilizer. In many areas of the corn belt over 85% of the fertilizer is pre-purchased and producers who do not book ahead face the risk of being unable to purchase product.
Cash Purchase Strategies

Today’s fertilizer environment raises the issue of whether there are optimal times to purchase fertilizer. Selling one third of your wheat in June, one third in September and one third in December has proven to be an effective wheat marketing system. Purchase strategies are important for a cooperative manager who is deciding when to fill a warehouse. They are also helpful for producers who are working with their cooperative or fertilizer dealer to pre-pay or pre-arrange fertilizer purchases.

The research was based on 15 years of Oklahoma prices for Urea, liquid (UAN) and diammonium phosphate (DAP). Strategies of purchasing 25%, 50% and 75% of annual usage in the summer were compared against a baseline yearly average price. The remaining purchases were assumed to occur during fall application and spring top dressing periods. The research also examined the best and worst weeks to purchase fertilizer.

The results indicated that purchasing a portion of urea needs in the summer decreased average price by 2 to 3%. Historically, the best week to purchase urea is the 2nd week of July. Systematically purchasing in that week decreased the average price by 5%. The worst time to purchase urea is the 2nd week of April. Mechanically purchasing at that time has historically increased the average price by 10% and increased the year-to-year variability (price risk) by 45%.

While liquid forms of fertilizer are more difficult to store and warehouse, the results for UAN are even more dramatic. Purchasing a portion of UAN needs in the summer decreased the average price by 4-6% while also decreasing the year-to-year variability by 10-28%. These results account for the cost of financing the fertilizer but do not reflect the ownership costs of tanks. While summer purchases have historically reduced price and price variability the single best historical time to purchase UAN has been 2nd week of November. Purchasing at that point reduced price by 7% and variability by 25%. Purchasing in late December reduces the year-to-year variability by 36% and average price by 4%. The worst time to purchase UAN is the last week of April. Purchasing at that time increases prices by 10% and variability by 45%. The difference from purchasing during the best historical week and the worst historical week is 17%.

Summer purchase of DAP reduces price by 3-4% and year-to-year variability by 30-52%. While summer is a good time to purchase DAP the single best week has been the first week of November. Purchasing at that time has historical reduced price by 3-4% and variability by 30-52%. The worst time to purchase DAP is the last week of March. Late March purchases have historically increased price by 5% and variability by 60%.