WHAT IN THE WORLD? A GLOBAL FERTILIZER PERSPECTIVE

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OVERVIEW

High fertilizer prices are causing many farmers to ask: "Can I afford to fertilize?" However, high crop prices also bring the question: "Can I afford not to fertilize?" Answers to these questions are complex and need to take into consideration both economics and associated risks. The outlook for fertilizer prices is that high prices will likely continue into the future. Current high prices are related to a global demand for more food, a more diverse diet for a growing world population, an era of higher energy prices, rising transportation costs, a fluctuating value of the U.S. dollar, and an increased demand for biofuel crops. Crop nutrients are a world market commodity and therefore subject to global economic forces, market volatility, and risk uncertainty.

Growing a crop always carries an element of risk- some related to growing season conditions and some risk related to market conditions. With today's prices, the initial investment in a crop is greater than ever before and so is the risk. Like any investment, increasing risk can provide the potential for higher returns- especially with the recent strong prices for hay and grain commodities. High grain prices are forecast to continue since the world's grain reserve is at one the lowest points in the last 35 years and global grain consumption has exceeded production in 8 of the last 9 years.

Farmers cannot afford to use nutrients inefficiently. They must use all the available tools and information to manage fertilizers properly, minimize risk, and maximize potential returns. The risk of applying too little fertilizer and producing a sub-optimal crop and not capitalizing on high hay prices…or the risk of applying too much fertilizer and incurring unnecessary costs must both be considered.

Nitrogen: Almost all N fertilizer is derived initially from anhydrous ammonia (NH_3), which is made by reacting atmospheric N_2 with H_2 from natural gas. The cost of natural gas accounts for 70 to 90% of the production costs of ammonia. As energy prices skyrocket, the price of ammonia must rise as producers compete with other industries for the gas supply. High gas prices have caused many U.S. ammonia producers to cease production. All N fertilizer in California is currently imported from overseas or from other states. The U.S. relies on imports for more than half of its annual fertilizer N requirement.

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Phosphate: Production of phosphate fertilizer begins with mining rock phosphate. The U.S. is a major producer and exporter of phosphate fertilizer. Severe restrictions have been placed on phosphate mine expansion in Idaho and Florida, so the ability to respond to market demand has been limited. Significantly higher prices for major inputs, such as ammonia and sulfur, have caused the prices of major P fertilizers (like MAP and DAP) to also increase.

Potash: Potassium fertilizers primarily come from mining ore from deep in the earth. Although there is some potash production in New Mexico and Utah, most of the potassium fertilizer comes from Canada. Canada is the world's largest producer and exporter of potash. A growing recognition of the need for potash and the importance of balanced crop nutrition have driven potash demand to record levels in the world.

Factors Influencing the Global Fertilizer Situation: Increased global demand for fertilizer has been a significant factor on the increased prices of fertilizer. From 2001 to 2006, the world demand for nitrogen increased by 11%, phosphate demand grew by 13% and potash demand rose by 17%. This increase in demand is close to the total annual nutrient use in the United States. China, India, and Brazil are the largest contributors to this growth in fertilizer demand. As people seek for an increased supply of nutritious food, more nutrients are required to replenish the soil.

Transportation: A number of factors, including energy costs, global demand, and weather events, all combine to increase transportation costs. The rates for ocean freight is up significantly. Port congestion in parts of the world also tie up vessels and lengthen shipping times. The cost of transporting fertilizer by rail has also increased significantly due to energy costs, security concerns, and liability requirements. Barge shipping rates have also increased significantly due to energy and security requirements. Trucking rates have been driven up by the price of fuel. Since all California fertilizer is imported and transported considerable distance, freight costs are significant.

Biofuel: Fertilization of biofuel crops currently accounts for only a small fraction global nutrient use. However, U.S. farmers have responded to higher prices and government energy policy by growing more corn. Domestic ethanol production now consumes over 25% of the total corn crop and this has been legislated to increase to 35% in coming years. Corn is the largest consumer of fertilizer in the U.S. Increased corn acreage is likely in order to meet the expanding need of the biofuel industry, the animal feed industry, and world export markets.

Currency Exchange Rates: The exchange rate determines how one country's currency is converted to another, allowing international trade. This exchange rate changes daily and the future is not possible to predict. However, the weak dollar in the past few years has increased the price of imported commodities. Since the U.S. imports over half of its N and 90% of its potash, foreign producers must raise the price in U.S. dollars to account for the lower value of the dollar. For example, in the last few years the U.S. dollar fell in value by more than 30% compared to some currencies. Therefore a fertilizer priced previously at $500/ton will now cost $714 to keep the same value for the producer.

Nutrient Alternatives? As the price of fertilizer rises, farmers look at alternatives to provide nutrients for their high-yielding crops. When locally available, many growers are seeking manure from nearby animal producers to supplement their nutrient plans. Animal manure can provide an excellent source of nutrients crops. However, do not immediately assume that manure is a better choice than commercial fertilizer. Remember too that most of the nutrients present in manure originated from fertilized crops, since animals do not produce any nutrients during digestion.

From an economic point of view, the decision to utilize manure should consider:

- The value of the nutrients that would otherwise be purchased (and fertilizer application costs). Do not give "value" to nutrients that are not needed. For example, if supplemental copper is not required, do not count the value of copper in the manure.
- The value of second-year nutrients following the initial application (mostly due to N mineralization)
- Indirect costs or benefits of added manure (such as field compaction, plant damage due to traffic, changes in weed control or tillage, additional organic matter)
- Transportation and application costs, analytical costs, etc

When fertilizer prices are high, farmers can be tempted to shave expenses by using products that claim to greatly reduce or eliminate the need for traditional crop nutrition. Examine these materials with a degree of skepticism. Remember that high-yielding alfalfa removes large amounts of nutrients from the field in each cutting. On average, alfalfa removes 50 lb N/ton, 13 lb P_2O_5/ton, and 60 lb K_2O/ton. The basics of plant growth remain constant, regardless of the nutrient source. The basic building blocks of productivity must be in place to achieve high yields.

Many factors are involved in producing a high-quality alfalfa crop. Although some factors (like rainfall and temperature) cannot be controlled, many other critical components of the production system can be carefully managed. High yields require maintenance of an adequate nutrient supply to meet the needs of the rapidly growing crop. As the demand for high-quality and high-yielding hay increases, closer examination of the role of proper plant nutrition is needed to remain profitable.

An essential component of profitable alfalfa production is achieving high yields. Lower costs of production (per ton), improved efficiency, and maximum profits are usually obtained when near maximum yields are grown. Plant nutrients remain an essential component of a successful alfalfa production plan.

An informative overview of the world fertilizer trends and outlook is provided by the Food and Agricultural Organization of the United Nations, available at: ftp://ftp.fao.org/agl/agll/docs/cwfto11.pdf