

FOOD PRICES AND FERTILIZER MARKETS

Factors influencing variations in fertilizer market conditions

Concerns since 2008 about consumer food prices and the adequacy of global food supplies have stimulated interest in better understanding the role of fertilizers in agriculture and food production. This overview provides a short introduction to the factors that drive trends in fertilizer market conditions.

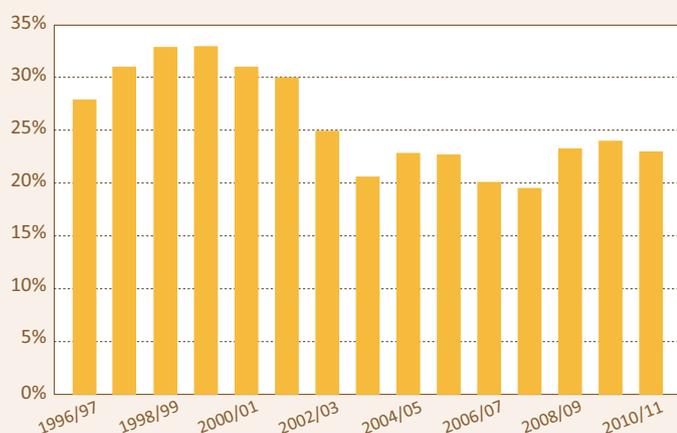
Fertilizer use is a basic component of sustainable agriculture

By its nature, agriculture is a high-risk economic sector. This is due, in particular, to its dependence on climatic conditions. Today agriculture faces additional challenges including population growth, changes in dietary habits, limitations on the expansion of cropping area, and climate change. When fertilizers are used together with on-farm sources, such as manures and crop residues, they provide the nutrients needed to grow productive, high-quality crops to meet world demand for food, feed, fibre and energy¹. In many countries, however, soils have been depleted of essential nutrients and crop yield growth rates are decreasing because of imbalanced fertilization or suboptimal application rates. In addition, higher consumption of animal protein, fruit and vegetables and surging biofuel production require greater productivity to help preserve fragile ecosystems from conversion to farming. Sustainable intensification, relying on better use of fertilizers and other nutrient sources, can maintain or improve soil fertility and increase yields while minimizing environmental impacts.

Income growth, biofuel production and low grain stocks push agricultural commodity prices upward

The underlying reason for increased fertilizer demand is income growth in developing countries, which results in better diets and changes in food preferences and, in turn, higher demand of agricultural products. IFA's analyses show that South and East Asia are anticipated to account for some two-thirds of the increase in fertilizer use during the next five years. Latin America is also seen as contributing significantly to this increase. Moreover, growing bioenergy demand is pushing demand for fertilizers upward. IFA estimates that as much as 3.6% of global fertilizer consumption is related to the production of biofuel crops.

Evolution of the world cereal stocks-to-use ratio

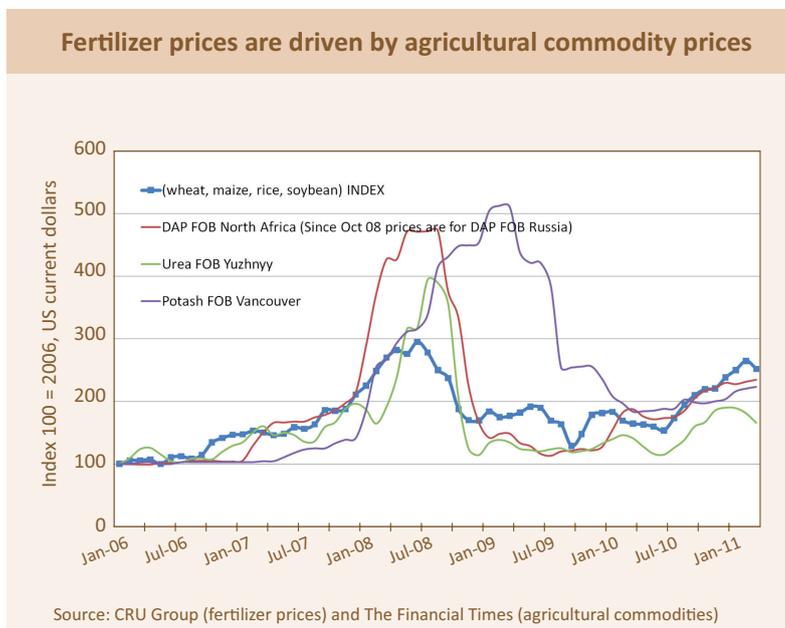


Source: FAO Crop Prospects and Food Situation, December 2010

Strong demand for livestock products and biofuels has put pressure on the grain market, resulting in a relatively low world cereal stock-to-use ratio² (see figure page 1). Because of the tightness of the grain market, the long-term trend of price decline has been reversed in 2007. In addition, prices are increasingly volatile, as they respond very quickly to any risk of short supply.

Agricultural commodity prices drive fertilizer use

Investing in crop inputs, including fertilizers, to increase yields and improve crop quality carries some risks, in that farmers generally buy fertilizers on credit and repay the debt only when their harvests have been sold. Therefore, the price they expect to receive for their output influences their decision to invest in fertilizers during the pre-planting season. Studies have shown that the prices of agricultural commodities have more influence on farmers' decisions to invest in fertilizers than fertilizer prices³. For this reason, rising market prices for agricultural commodities tend to pull fertilizer demand upward. **In 2007 and again in 2010, the prices of major cereal crops started to rise before those of fertilizers (see figure).** Similarly, crop prices started to decline before fertilizer prices during the second half of 2008.



Fertilizer prices are established on a contract or spot basis

When fertilizers are sold on a contract basis, the price is fixed for a certain period, e.g. three months, six months or even a year. Suppliers and buyers negotiate and eventually agree a price acceptable to both sides. A significant portion of fertilizers (as well as raw materials and intermediates for fertilizer production) are sold on this basis. A substantial amount is also sold on a spot basis – effectively, one-off sales with suppliers and buyers negotiating a price for each individual sale. Spot prices may vary from week to week, influenced by both short-term and longer-term supply/demand factors. There is considerable transparency in fertilizer pricing, and several independent specialist publications provide detailed reports on market and price developments. Sometimes suppliers and buyers agree contracts in which the price will be determined by reference to published prices.

Further down the supply chain, regional and local dealers base their price to farmers on the prices they pay producers, importers and traders. Dealers need to cover not only the costs of the fertilizers they buy, but also their overhead and other costs (including those of storing fertilizers over several months so they will be available when needed by farmers). Transport costs are an important part of the final price paid by the farmer – the costs of moving fertilizers from countries where they are produced to those where they are used and the costs of local distribution, that is, getting products to storage and distribution points and then to farmers.

Source: *Barrie Bain, Fertecon Ltd*

The fertilizer industry is investing in new capacity to meet growing fertilizer demand

The increasing tightness of fertilizer supply that affected global markets between 2007 and mid-2008 has prompted massive new investments in the fertilizer sector⁴. A portion of these investments concerned refurbishing installed capacity, but the bulk has been for the construction of large, modern and efficient units. The industry has spent close to US\$40 billion on new capacity for all three major nutrients since 2008. IFA estimates that another US\$80 billion will be invested between 2011 and 2015. These investments will allow the industry to provide key inputs for sustainable agricultural intensification and improved food security.

Between 2010 and 2015, some 55 new urea units, 20 potash expansion projects and 40 processed phosphates facilities are planned for completion worldwide. World urea capacity expanded by 15 per cent between 2008 and 2011. It will expand by another 21 per cent between 2011 and 2015. The overall increment of some 64 Mt of new urea capacity is twice the addition to capacity between 2000 and 2008. Global potash capacity, which has risen by 5 Mt since 2008, is projected to increase by another 19 Mt between 2011 and 2015. Global DAP capacity is projected to reach 58 Mt in 2015, reflecting an increase of 40 per cent over 2008 and 15 per cent over 2011.

In the short term, urea, potash and DAP capacities will be adequate to meet projected growth in demand. The utilization rates of installed capacity have not reached the peaks of 2007-2008, suggesting that there is sufficient spare capacity to buffer variations in demand. However, temporary shortfalls in supply and delays in commissioning new large-capacity projects may impact prevailing market conditions.

Energy prices continue to impact fertilizer costs

The energy and mineral sectors have recently experienced price tensions similar to those experienced in the commodities markets. To a great extent, the production costs of most fertilizers are influenced by energy costs, particularly with regard to use of natural gas. Significant upward fluctuations in energy prices would impact the manufacturing costs of nitrogen fertilizers and increase shipping costs. In the nitrogen sector, the main energy requirement consists of the fuel and feedstock needed in ammonia manufacturing, with natural gas prices representing more than 70 per cent of ammonia and urea production costs.

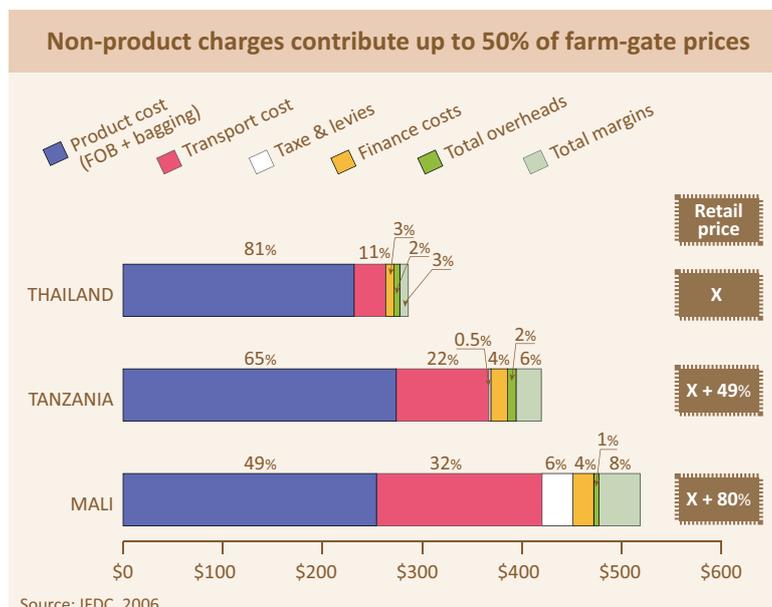
Export measures impact available supply

Only a few countries have continued to maintain export measures for fertilizers and raw materials since 2008. In 2011, China's export tariffs on DAP and urea were being maintained, but the periods of high tariffs have been extended compared to previous years. These measures may impact available supply in international markets, in view of China's contribution of 26 per cent and 20 per cent of global DAP and urea trade, respectively, in 2010.

Farm-gate prices are influenced by many factors

The delivery price farmers pay for fertilizers depends on a number of factors. Many of them (e.g. inland transport costs, taxes, administrative costs and mark-ups by intermediaries) are not directly related to fertilizers.

The graph illustrates some of the difficulties faced by African farmers, especially those in landlocked countries like Mali. Numerous transaction costs make fertilizers more expensive in Africa – where soil fertility is declining at alarming rates – than anywhere else in the world. Consequently, few farmers can afford to replenish the nutrients removed from their fields by each crop or lost to erosion. This is a major reason for stagnating agricultural productivity in Africa.



Conclusion

Recent volatility in agricultural and fertilizer prices reflects a combination of long- and short-term factors.

Long-term factors include:

- Income growth and dietary changes in emerging economies;
- Competing objectives for agriculture, in addition to food and feed production (e.g. production of fibre, biofuel feedstock and biochemicals);
- Global grain market conditions (i.e. low cereal stocks); and
- Regular increases in energy prices.

Short-term factors include:

- Economic weakness in many countries following the downturn;
- Export restriction measures; and
- Extreme weather conditions and natural disasters in many regions.

Notes:

¹ Plants require large quantities of nitrogen (N), phosphorus (P), potassium (K) and, to a lesser extent, sulphur (S), calcium (Ca) and magnesium (Mg). Another 8 to 10 micronutrients are also necessary, depending on the specific crop. Every harvest removes nutrients from the soil. By replenishing these nutrients, fertilizers help safeguard or improve soil fertility and make it possible to continue producing large harvests.

² The stocks-to-use ratio is a measure of supply and demand interrelationships of commodities. The stocks-to-use ratio indicates the level of carryover stock for any given commodity as a percentage of the total demand or use. This ratio can then be used to indicate whether current and projected stock levels are critical or plentiful. The ratio can also be used to indicate how many days of supply is available to the world marketplace under current usage patterns. (e.g. a 20 per cent stocks to use ratio for wheat indicates that there are 75 days supply of wheat in reserve).

³ F. Bel, G.D. d'Aubigny, A. Lacroix and A. Mollard (2004). Fertiliser taxation and regulation on nonpoint water pollution: A critical analysis based on European experiences. *International Journal of Water*, Vol. 2, No. 4, pp. 247-266; J. Poulisse (2007). Increased fertilizer use opportunities and challenges for food security in Sub-Saharan Africa. Paper presented at the 13th Arab Fertilizers Association (AFA) International Fertilizer Forum, 6-8 February 2007, Sharm El-Sheikh, Egypt.

⁴ Heffer, P.; Prud'homme, M. (2010) Short-Term Fertilizer Outlook 2010-2011, IFA. www.fertilizer.org/ifa/HomePage/FERTILIZERS-THE-INDUSTRY/Market-outlooks.html.

Feeding the Earth represents a series of issue briefs produced by the International Fertilizer Industry Association to provide current information on the role of fertilizers in sustainable agriculture and food production.