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Emerging Markets

Untapped markets and new innovations offer an exciting future for the fertilizer and supplement industry but more investment in research and development is required to adapt to the emerging opportunities.

In addition to traditional products, the industry needs innovative products that suit the varying requirements of consumers and new environmental concerns, says a report prepared by the George Morris Centre for the Canadian Fertilizer Products Forum.



Brazil represents an opportunity for Canada to increase exports of fertilizer and supplement products for sugarcane and corn crops. Indonesia and Malaysia are expected to expand the use of palm oils in biodiesel production, which will require increased fertilizer use, especially potash.”

The industry should be aware of the requirements of new markets while continuing to serve its established customers in Canada and around the world. Government can assist with investment, innovation, research and development, effective regulation, intellectual property rights protection, and export programs, the report recommends.

The international demand for fertilizer will grow steadily during the next five years with sales of traditional nitrogen, potassium and phosphorus products increasing by 2.6% per year, with the demand for micronutrients projected to rise by 4% to 5% a year. The growth will be driven by increased production of biofuels, food and nutrition security, environmental concerns and organic production, the report explains.

Biofuels is helping boost grain prices, which has farmers expanding production. While significant acreage increases in U.S. corn are unlikely for the next few years, Brazil represents an opportunity for





Canada to increase exports of fertilizer and supplement products for sugarcane and corn crops. Indonesia and Malaysia are expected to expand the use of palm oils in biodiesel production, which will require increased fertilizer use, especially potash.

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Fertilizers and supplements are also needed in many developing countries where soil suffers nutrient deficiencies that hinder food production. African governments are committed to increasing fertilizer use, but face challenges in distributing it to the farmers. In Asia, requirements for nitrogen, potash and micronutrients will continue to grow. Sulphur is also emerging as an important nutrient, particularly in India.

Research and development is needed to meet these demands as well as anticipating new opportunities. “Entry into new markets is challenging and extensive market research is required for product introduction,” the report points out.

The industry also has to deal with a rising demand for enhanced efficiency fertilizers (EEFs) that make better use of nutrients with less impact on the environment. In North America, there are increasing opportunities for EEFs, organic fertilizers and supplements and green products to meet environmental regulations. Organic agriculture and soil remediation requires compost, organic fertilizers and potentially biosolids in order to restore organic matter.

Slow or controlled release fertilizers have been available for some time within specialized markets where their higher cost was justified by the high value crops. In recent years, however, technological advances have produced EEFs that are cost-effective and feasible for use on major agricultural crops giving them significant environmental benefits and application cost advantages.

EEFs improve the safe delivery of nutrients to the soil without crop burning. As well, the products allow for a reduction in labour required for nutrient application and improve the yield and quality of the crop. The fertilizers were created in light of government and environment group pressure for less leaching of nutrients into groundwater and waterways. They will also help users deal with higher energy prices which affect fertilizer production.

The industry needs to make the case for EEFs by collecting and making public data on their performance and how they deliver environmental and economic benefits desired from the marketplace, the report says. This includes dealing with concerns about the consistency of claims by the industry regarding nutrient availability or timing of nutrient release. The variability in performance has caused consumer confusion as to what they can and should be using.

Among the new techniques the industry may be able to take advantage of is nanotechnology which involves the development and manipulation of atoms and molecules. Although nanotechnology is already in the marketplace in canola oil, anti-bacterial medical dressings, and stain-resistant fabrics, there are few nanotechnology applications in the agri-food industry.

Further development of nanotechnologies within agricultural production is expected to lead to plants that use inputs, including fertilizers and supplements, more efficiently. Scientists are working on nanotechnologies that make fertilizer delivery systems which respond to environmental changes as well as nanotechnologies that create plant health monitoring systems. These technologies will increase the precision and efficiencies within agricultural production. Nanotechnology has the potential for engineering a new industrial, and consequently, agricultural, revolution.

Much better known is plant biotechnology. It could play a big role in the fertilizer and supplement industry because as yields increase, the nutrients required for plant development can also change. For example, technologies that have led to increased disease and pest resistance allow for greater nutrient uptake, thus increasing the need for fertilizer. There are a number of biotechnology innovations in the developmental pipeline that are expected to influence the fertilizer industry.

Developments of plants and their symbiotic relationships with micro-organisms are also occurring within the biotechnology field and could have differing impacts on the fertilizer and supplement industries. There is a possibility that many of these technologies will have a temporary dampening effect on the industry, or that the development of some traits are so far in the future that it is not reasonable to consider them a threat.

One such innovation, already in use in Western Canada and on some Northern US soils, is a phosphorus-solubilizing fungus which stimulates phosphorus uptake.

Some microorganism-plant symbiosis developments are still in the early research stages, such as sulphur-oxidizing bacteria. Many people wish to see higher analysis sulphur fertilizers, however, elemental sulphur is not readily useable by plants. To solve this, researchers have isolated a sulphur-oxidizing





bacterium which oxidizes elemental sulphur thus making it available to plants. Commercialization of this bacterium will positively impact the consumption of sulphur fertilizers.

Overall, it is expected that new technologies will create large opportunities for the fertilizer and supplement industries. For example, one area of interest is sustained/tailored plant nutrition. Fertilizer and supplement products that are able to sense the nutrient needs of the crop are a potential development. In this case, the products would supply nutrients only when the plants needed it. There is also a focus on determining plant needs and matching fertilizers and supplements appropriately.

Precision farming techniques include more exact application of fertilizers. Improvements in information technology will enhance the ability of farmers to record inputs and yields.

At the manufacturing level, there are laboratory experiments with different techniques for creating ammonia to reduce environmental impacts and reduce reliance on hydrocarbon sources such as natural gas.

Within the inoculant industry, products have evolved substantially over the past ten years. For example, the industry is seeing new platform technologies such as micro encapsulation of micro-organisms. As well, there is new emulsion technology for foliar/spray application of inoculant products. Finally, novel packaging is helping to improve the shelf-life of biological products.

In the midst of all these possibilities, fertilizer and supplement companies have to decide which options hold the most promise. There are certainly many choices and a lot of potential.

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