



**IFA International Workshop on Enhanced-Efficiency Fertilizers
Frankfurt, Germany, 28-30 June 2005**

**POLICY ASPECTS RELATED TO THE USE OF
ENHANCED-EFFICIENCY FERTILIZERS:
AGRIUM'S PERSPECTIVE**

M. HASINOFF, D. BEEVER, C. RICKARD
Agrium, CANADA

Agrium
13131 Lake Frase Drive SE
Calgary, Alberta, T2J7E8 Canada
Email: mhasinof@agrium.com
Email: dbeever@agrium.com

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**“Policy aspects related to the use of enhanced-efficiency fertilizers:
Agrium’s perspective ”**

M. Hasinoff, D. Beever, C. Rickard
Agrium, Canada

Abstract

The fertilizer industry has always provided supporting services to our customers to increase the value of our products. These services came in the form of agronomic expertise and focused almost exclusively on how growers could derive the most economic efficiency from fertilizer. This was referred to and is marketed as the "value proposition". Today's value proposition must meet the demands of a variety of stakeholders. These stakeholders represent a broad cross section of society with very diverse interests and concerns.

The economic performance of our products is as important as ever given slim commodity margins and reduced farm income support in some regions of the world. Other competing demands on our industry come in the form of improved environmental performance and greater scrutiny placed on food safety and quality. Today's growers are forced to deliver many societal goals, which are not directly related to food production and our industry's role will be to help them deliver on these goals.

Beneficial Management Practices (BMPs) have been identified by industry as the delivery mechanism to satisfy many of the demands of these emerging policies. Defining and crafting these BMPs such that they deliver the desired economic, social and environmental performance is what we must strive to achieve. These BMPs will come in many fashions and combinations to maximize our performance. Improved technologies and enhanced efficiency fertilizers will play a key role in this suite of BMPs.

Introduction

In this paper we discuss how stakeholder concerns affect fertilizer use. Historically, agronomic and economic concerns of farm groups have driven the policy development of our industry. To support these concerns the industry invested heavily in agronomic research and extension. The knowledge derived from this research not only helped improve the economic return growers obtained from fertilizer but it also increased food production and reduced nutrient losses to the environment.

Today's concerns related to the impact of nutrients in the environment and food security are fueling an unprecedented wave of interest in nutrient use regulations in North America and Europe. Many of these regulations have been developed to address nutrient contributions from manure and municipal wastes. However, the fertilizer industry recognizes that its products can have negative impacts if not managed properly, and has developed management systems to minimize these impacts. Enhanced efficiency fertilizers will play a significant role in these management systems by helping to ensure fertilizer nutrients are applied at the right rate, time and place to achieve sustainability.

Stakeholder Views

The farming community has always committed to being stewards of the land while maintaining the economic viability of their farming operation. However, other stakeholders have recently raised concerns about the effectiveness of these efforts. The challenge and responsibility of our industry is to engage these stakeholders so we can meaningfully understand and address their concerns in a sustainable way.

Growers are committed to the preservation of the land and its productive capacity for a multitude of reasons. Through the development of BMPs farmers are continually enhancing their economic, social and environmental sustainability. However, growers are concerned that society is increasingly asking them to take on a disproportionate and unsustainable burden in their effort to address issues that often occur outside their farm gate. In many cases growers feel these decisions are driven by emotion. In a society that looks for quick answers, growers are concerned that they will be unfairly targeted and more importantly, meaningful improvements will not be made.

The public and non-governmental organizations (NGO's) have emerged to play an increasing role in defining what are acceptable practices for food production. Societal desires to preserve biodiversity, the rural landscape, recreational land, and the demand for affordable, nutritious, and safe food that is produced in an environmentally responsible fashion are all drivers from the various NGO groups. Ever increasing scrutiny of food and the development of alternative markets, such as the organic market, are examples of how these drivers are not only changing how food is produced but has changed the grocery store "product line".

Food processors, distributors, and retailers have responded to those that purchase their products and services. They face greater demands for accountability, be it through tracking and tracing systems or greater transparency in labeling. These demands impact the entire value chain and the value chain is being forced to demonstrate good stewardship, and the fertilizer industry is no exception.

These distinct and often competing views must be dealt with in an all-encompassing fashion. To operate in a silo unconcerned about the demands from different segments of the value chain and views of all stakeholders will result in policy developments that are detrimental to our core business.

It is imperative that we are cognizant and engaged with all stakeholders to ensure policy develops such that the majority of societal needs can be met. To satisfy the demands of our stakeholders we must also be able to demonstrate our stewardship in a clear, simple, and transparent manner.

Policy Concerns

Government policy evolves to strike a balance between the competing interests of stakeholders. This balance is intended to address the many needs of a wide variety of constituents. This is illustrated in Canada's Agriculture Policy Framework (APF), where two of the three main themes are societal goals. While the most ambitious outcome often results in an equally unhappy medium for all stakeholders it is the reality of agriculture policy development today.

There are high demands and expectations for all those throughout the value chain for assurance of quality, performance and stewardship. These expectations are met through many existing systems such as the Hazard Analysis Critical Control Points (HACCP) or ISO 14001 or BMPs. While many of these proactive strategies have been employed in our industry for over a decade they have been more recently incorporated into the farm operation. Ever increasing scrutiny and demands at the farm level have had a profound impact on all those throughout the value chain.

Historically, we in the fertilizer industry have marketed our products based on agronomic performance. This will be a starting point in the future. The emerging policies demand that our products deliver environmental and social quality improvements over what is offered today. These enhancements will come in the form of improved management practices through our agronomic extension services or enhanced products such as controlled release fertilizers.

The evolving policy environment is demanding much more of our primary clients, the grower. They are and increasingly will be asked to deliver on many of society's social goals due to their unique relationship with nature. This societal burden demands more of growers and their crop input suppliers. If the grower is not reimbursed for the adoption of these policies, the associated practices will not be sustainable.

The parameters of crop nutrition will continue to be developed in broad multi-stakeholder forums. It is crucial that we are engaged to ensure that policies are based on sound science, are practical and strike a balance between environmental, social and economic sustainability.

We acknowledge policies will seek short-term gains and may not be inclusive of all nutrient sources for reasons of simplicity. This is politically astute in the short-term but will not deliver long-term results. To be effective, measures and policy must be linked to an actionable grower based management system.

Industry Approach

The fertilizer industry has worked extensively with growers to establish BMPs that increase crop yields and economic return. Although the environmental benefits of these practices were not the primary driver for their initial adoption they are significant. As the fertilizer industry engages other stakeholders who are primarily focused on environmental and social sustainability issues these benefits will play a larger role in the decision making process.

Many stakeholders do not recognize the environmental and social benefits of these practices today. This is not surprising given the industry's focus on working with researchers and farm customers. As a result, many stakeholders do not understand the level of science and management utilized by growers in managing nutrients on the farm.

As we move forward it is critical that our industry actively engage all stakeholders and their concerns. To accomplish this our industry must demonstrate how it is managing and continuously improving its environmental, social and economic performance. It is critical that this be accomplished in a manner that is transparent and easily understood. Given our past focus on researchers and farm customers we have been guilty of not communicating in a simplified and transparent manner.

To address these concerns the industry has developed the right rate, time and place approach to nutrient management as a key step in our journey to achieving sustainability (figure 1). The approach uses science based best management practices to ensure fertilizer nutrients are applied at the right rate, time and place. By improving performance in each of these areas we can optimize nutrient uptake by crops and soil, while minimizing losses to the environment.

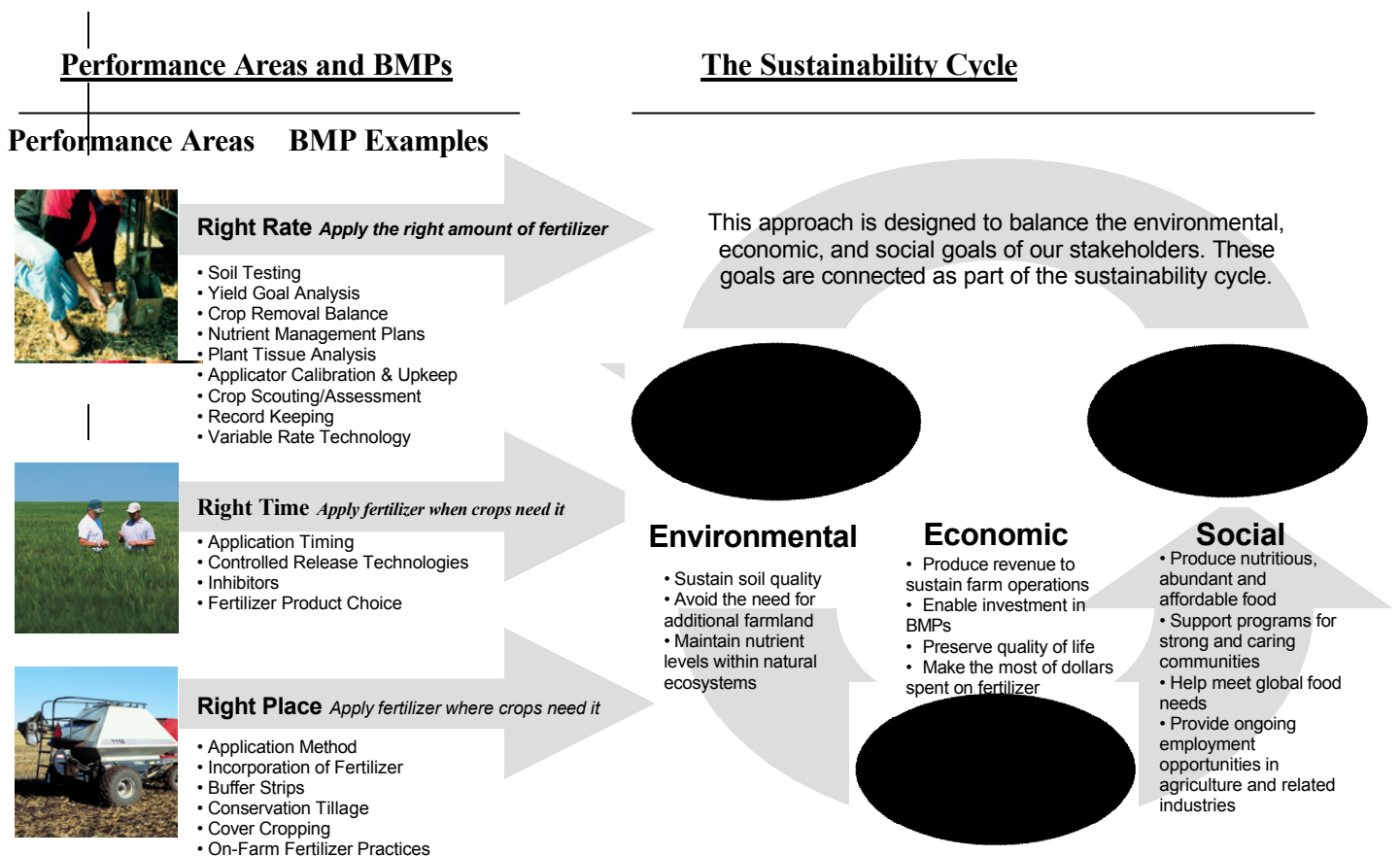
The approach recognizes that management practices must be customized to local environmental and management conditions if they are to be effective. To achieve this, growers work with researchers and Certified Crop Advisors (CCA) to tailor BMPs to their specific situation. This approach provides growers with a great deal of flexibility in achieving economic, social and environmental goals.

It is critical that all areas of sustainability be considered within the management system. Without this balance, true sustainability cannot be achieved. Growers who do not make a sufficient economic return cannot invest in management practices to further improve environmental performance. However, there is less conflict between sustainability goals than one might initially think. Practices that improve fertilizer nutrient uptake often reduce unit nutrient costs by increasing the nutrient use efficiency. By continuing to optimize these synergies we will achieve true sustainability.

To demonstrate performance it is important that we measure the adoption and impact of BMPs on all areas of sustainability. Adoption measures are currently being developed by the industry with stakeholders to identify areas where BMP adoption can improve. This information is critical to the industry's research and extension efforts.

Impact measures directly reflect how nutrients are impacting social, economic and environmental sustainability. However, these measures often integrate the impact of all nutrient sources (municipal waste, livestock, legume and fertilizers) making it difficult to develop management recommendations for improvement without additional research. The fertilizer industry is currently working with stakeholders to identify impact measures that consider source impacts and are actionable.

Figure 1: Right rate, time and place approach to nutrient management.



Fit for Enhanced Efficiency Fertilizers

Enhanced efficiency fertilizers have the potential to provide growers with a variety of new BMPs that can be used to apply nutrients at the right rate, time and place. The adoption of enhanced efficiency fertilizer BMPs will be determined by the value they provide to the grower and society. This value will come in the form of improved economic, social and environmental performance.

Enhanced efficiency fertilizers will also provide indirect benefits through integration with existing BMPs. One potential example relates to the use of buffer strips. For example, currently a buffer strip of 50 meters is required around some sensitive waterways. With proper scientific support, buffer strips width could be reduced if a controlled release product was used on the adjoining field. Significant research will be needed to identify and evaluate these indirect benefits.

Government policy will play an important role in the adoption of enhanced fertilizers. At their most basic level, government policy will utilize incentives and regulations to achieve its objectives. Incentives could come in a multitude of forms. An example of a pure incentive that has emerged in some US states for Agrium's controlled release fertilizer (ESN) is acreage-based payments for controlled release nitrogen products that are used as part of the management program.

How government policy will evolve and be implemented to achieve intended objectives will be refined and improved upon as new technologies, like ESN, become commercially available. Our industry must be engaged in this process to ensure that this is done in a science based and practical fashion.

Stakeholder concerns about nutrients in the environment are much greater in areas that are more sensitive to nutrient impacts. In these areas, growers are required to implement nutrient plans that utilize a suite of BMPs to apply nutrients at the right rate, time and place. Enhanced fertilizers are beginning to play a significant role in these areas. As the amount of land classified as "environmentally sensitive" increases, grower demand for enhanced fertilizer and other BMPs will grow.

Today's use of enhanced efficiency fertilizers is limited in large part by product availability. As grower demand increases for products that deliver improved economic, social and environmental performance, manufacturing will keep pace with the demand. A value proposition, government incentives and increased farmer awareness are already creating a positive market for these new technologies.

Agrium's Approach

The grower is at the center of Agrium's decision-making process. It is imperative that the economic portion of the sustainability model improves with each new product and practice Agrium provides. Market acceptance of a crop nutrient product, including enhanced efficiency fertilizers, is and will primarily be driven by economic considerations at the farm level. To meet the corresponding societal goals requires investment. Agrium firmly believes growers must be profitable if we are to achieve true sustainability. Growers must be in a position to invest, with government, in the practices that meet societal demands. Agrium believes we can achieve a sustainable balance that satisfies the economic, social and environmental goals of all stakeholders.

Agrium will approach nutrient issues on several fronts. We believe in openly engaging stakeholders to better understand their concerns. We will then address these concerns by supporting the continued development and adoption of right rate, time and place BMPs. This will be accomplished by continuing our new products research and development effort in collaboration with Universities and Governments. As a result of this effort Agrium has developed a controlled release product (ESN) for agricultural crops that is effective and affordable. This product is sold to growers as a new BMP that can help them achieve their sustainability goals. We believe ESN will provide value to growers around the world as they look for ways in enhance their performance.

Agrium will also continue to develop conventional fertilizer BMPs to support growers in regions where enhanced fertilizers do not have the best fit. We believe one size does not fit all growers and we continually challenge our staff to help growers find the solution that best fits their soil, climatic and management situation.

Conclusion

Societal demands on our food system have extended beyond growers providing safe and cheap food. Society now demands nutritious, high quality, affordable food that is produced in an environmentally responsible manner while preserving the rural landscape and its recreational activities. The burden of these increased demands rests with our end customer, the growers, and we must help to equip them with the tools to meet societal goals.

The challenge we face as an industry is to meet the needs of all stakeholders without placing an unreasonable burden on the grower. However, sustainable partnerships can be achieved when the social, environmental, and economic needs of stakeholders are met in harmony.

Creating science based BMPs that practically address stakeholder concerns will provide the foundation for sustainable nutrient management. However, it is important to recognize that there is no "silver bullet". Growers will require a suite of BMPs to address stakeholder concerns in an effective way and enhanced efficiency fertilizers will undoubtedly play an increasingly important role.

References / Further Reading

- Agrium website on ESN use and results, <http://agrium.com/>
- Other related BMP and nutrient websites see:
 - o International Nitrogen Initiative, <http://initrogen.org/>
 - o Crop Nutrients Council, <http://www.cropnutrients.ca/>
 - o Canadian Fertilizer Institute, <http://cfi.ca/>
 - o The Potash and Phosphate Institute, <http://www.ppi-ppic.org/>