



# Fertilizer's Role

**TODAY, FERTILIZERS HELP PRODUCE UP TO 60 PERCENT OF ALL CROP YIELDS.** Macronutrient and micronutrient fertilizers play a vital role in soil fertility and sustainable crop production. The United Nations estimates that world population will climb from 7 billion to 9 billion by 2050, and increasing global prosperity means more demand for food. The world's farmers must produce more food, fuel and fiber and they will need fertilizers to do it. By striving to produce and deliver the highest quality, most innovative crop nutrition products, we help farmers rise to the challenge.

The Mosaic Company is one of the world's largest producers and marketers of concentrated phosphates and potash crop nutrients for the global agriculture industry. Farmers around the globe use our potash and phosphate products to help nourish their crops—and to optimize the food they can grow on every acre of farmland.

## Mine-to-Market Value

**G4-12** Mining, producing and delivering millions of tonnes of fertilizer each year to customers around the globe is complex. It requires teams of dedicated professionals working to make responsible decisions each day and at every step in the production and supply chains.

## MINING

We work to safely extract potash and phosphate ore from the Earth's extensive reserves.

## PHOSPHATE

## POTASH

## TRANSPORTATION

We move raw materials, phosphate, potash and finished crop nutrition products across the supply chain using pipelines, trains, trucks, river barges and ships.

## CUSTOMERS

We sell to retail customers and regional distributors, as well as large international growers.

## LAND RECLAMATION

We reclaim every acre of phosphate-mined land, creating high-quality habitats and wildlife corridors for fish, birds and other animals, and land suitable for agriculture and other diverse uses.

**FACT** We reuse and recycle water to decrease our companywide consumption and increase efficient use.

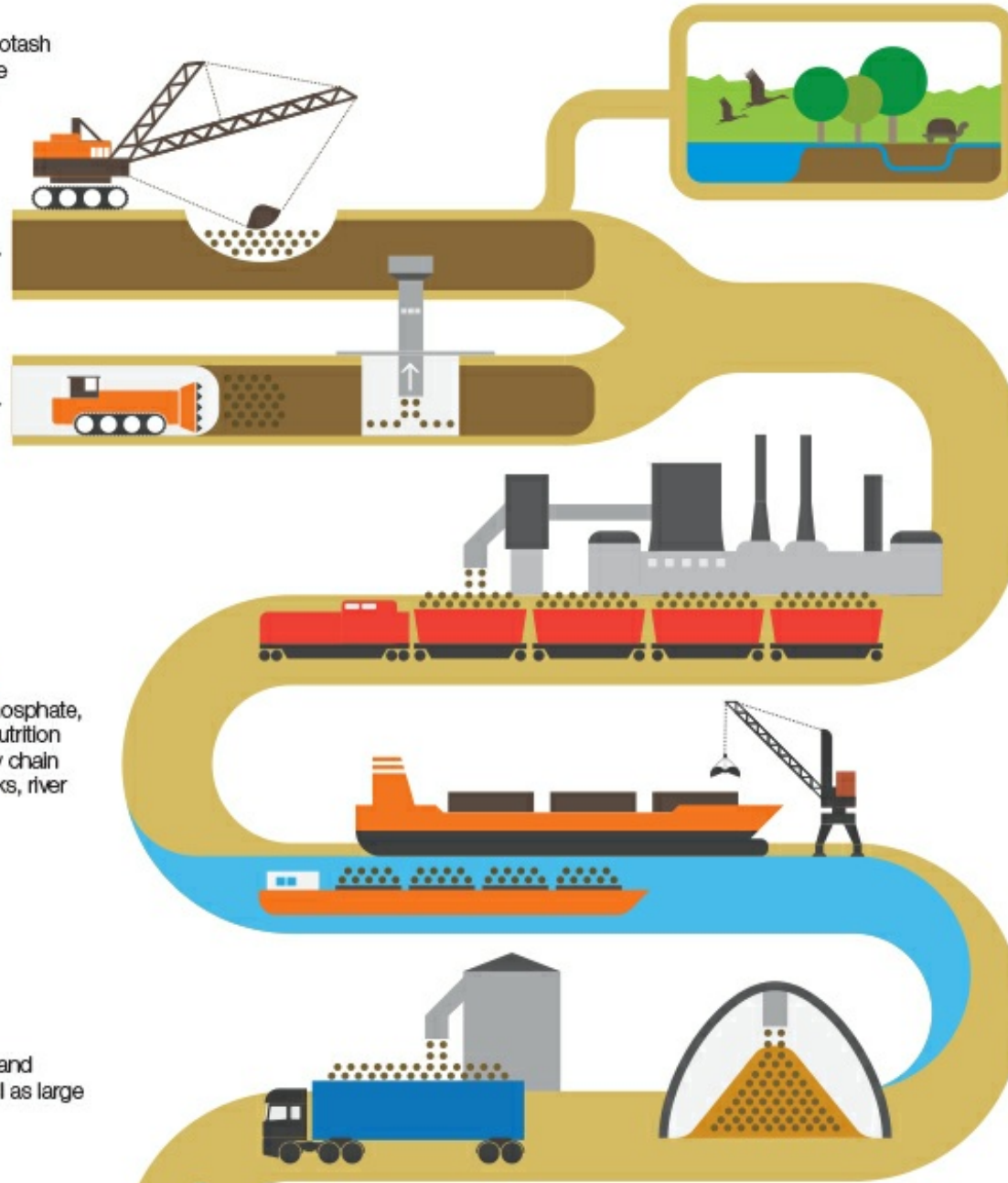
## MANUFACTURING

We refine, process, and blend phosphate and potash minerals to create crop nutrition products, then prepare goods for shipment.

**FACT** We produce renewable energy through cogeneration, the process of converting waste heat to energy, satisfying approximately 40% of our phosphate operations' annual electricity consumption.

## STORAGE & DISTRIBUTION

We have port terminals, warehouses and storage capacity in key geographies, with global distribution.



## FARMERS

We provide large and smallholder farmers with the vital crop nutrients and micronutrients they need to help grow healthy plants, achieve better yields and grow food, feed, fuel and fiber more sustainably.

**FACT** Our premium MicroEssentials® product increases corn yields an average of 7.2 bushels per acre vs. traditional fertilizer.



## CONSUMERS

Our crop nutrients play a key role in growing crop yields and providing people with the healthy, affordable food they need to thrive.


**FACT** We partner with Field to Market, the International Plant Nutrition Institute, The Nature Conservancy and other organizations on initiatives aimed at increasing agriculture productivity, sustainability and food security—while reducing environmental impacts and protecting natural resources.

## Our Products and Brands

**G4-4** Through our broad crop nutrition product offering, we are a supplier of phosphate- and potash-based crop nutrients and animal feed ingredients to customers in approximately 40 countries. Our quality nutrients play an important role in nourishing farmers' soil, growing healthy plants, and improving global food security.

We mine phosphate rock in Florida and process rock into finished phosphate products at facilities in Florida and Louisiana. We mine potash in Saskatchewan and New Mexico. We have other production, blending or distribution operations in Brazil, China, India and Paraguay, as well as strategic equity investments in a phosphate rock mine in the Bayovar region in Peru, and a joint venture to develop a phosphate rock mine and chemical complexes in the Kingdom of Saudi Arabia.





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## Phosphates

We are the largest integrated phosphate producer in the world and one of the largest producers and marketers of phosphate-based animal feed ingredients in the United States. We sell phosphate-based crop nutrients and animal feed ingredients throughout North America and internationally.

We account for approximately 14 percent of estimated global annual production and 75 percent of estimated North American annual production of concentrated phosphate nutrients.

## Potash

We are one of the four largest potash producers in the world. We sell potash throughout North America and internationally, principally as fertilizer, but also for use in industrial applications and, to a lesser degree, as animal feed ingredients. We account for approximately 12 percent of estimated annual global potash production and 39 percent of estimated North American annual potash production.

## International Distribution

Our International Distribution segment consists of sales offices, crop nutrient blending and bagging facilities, port terminals, and warehouses in Brazil, Paraguay, India and China. Our international distribution activities have the capability to supply a wide variety of crop nutrients to our customer base.

See our [website](#) for a full list of our phosphate, potash, premium crop nutrient and animal feed products.



## HIGHLIGHT

MINIMIZING FOOD WASTE THROUGH INNOVATIVE COMMUNITY INVESTMENTS

More than 49 million people in the United States—and 3.3 million people in Florida alone—are food insecure. Mosaic pursues partnerships that lessen that insecurity. By making food security a

priority across our company, we are fostering progress and hope throughout the communities in which we operate.

Roughly 400 pounds of food are wasted annually per American. Mosaic partners with Feeding Florida to support Farmers Feeding Florida, a program that enables Florida agricultural producers, packers and distributors to collect and distribute nutritious but cosmetically imperfect produce to food banks that would otherwise go to waste. In 2016, our funding of the program and the organization's supply chain analysis helped source over 14 million pounds of produce for distribution to food insecure individuals.

## **Innovation**

At Mosaic, we foster innovation and encourage ideas that make us better. From product R&D and crop trials to cogenerated electricity and unique land reclamation efforts, we are constantly striving to be better at meeting our customers' needs, lower our costs, and operate more sustainably.

Mosaic views innovation through a broad lens. It's more than big, disruptive ideas—it's also small improvements that save time, or improve processes, or minimize costs. We discuss those achievements throughout this report.

## **Product and Process Innovation**

Today, during challenging times for agriculture and broader commodities markets, we know that innovation will play a big role in our future success. That's why innovation is a critical element of Mosaic's new strategy,

and is one of four new guiding principles.

We seek to deliver product technology that optimizes yields while helping farmers care for the environment.

- Our fertilizer and feed products are designed to efficiently and sustainably increase agricultural production.
- Commercial retailers are able to gain a differentiating edge in a competitive market by selling Mosaic's innovative premium products, while growers who use them are able to achieve efficiency, yield gains and greater profit potential.



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## 2016 Innovation Progress

Mosaic's premium product MicroEssentials<sup>®</sup> is the leading premium fertilizer brand in the world. It ensures uniform nutrient distribution, increased nutrient uptake, and season-long sulfur availability across a variety of crops and soil conditions. In 2016, we completed an expansion project that will enable us to increase our efforts to further expand MicroEssentials production capacity to 3.5 million tonnes by 2017. The conversion of two plants also provides us with more flexibility in the global fertilizer market.

We continue the expansion of potash capacity, with the addition of K3 shafts at our Esterhazy mine that are expected to add approximately 0.9 million tonnes to our potash operational capacity. The project is on track to start producing ore in 2017. Once complete, we expect that K3 will be one of the largest, most competitive potash mines in the world.

Our phosphates concentrates facilities use molten sulfur to produce sulfuric acid, which is used in the phosphoric acid manufacturing process. Sulfur is an important raw material that has often been subject to volatile pricing and availability. We have constructed a sulfur melter that heats prilled sulfur to liquid form. The melter, which will have the capacity to melt approximately one million long tons of sulfur annually, will allow Mosaic to leverage economic benefits within the global sulfur marketplace.





# Materials Stewardship Programs

**G4-DMA: IN DECEMBER 2013, MOSAIC'S BELLE PLAINE FACILITY RECEIVED PRODUCT STEWARDSHIP EXCELLENCE CERTIFICATION FROM THE INTERNATIONAL FERTILIZER ASSOCIATION'S (IFA) PROTECT & SUSTAIN PRODUCT STEWARDSHIP INITIATIVE.** This certification covers the product life cycle including: management systems, product development and planning, sourcing and contracting, manufacturing techniques, and supply chain to the customer.


Communications are directed up and down the value chain, such as supplier certification requirements as part of sourcing and procurement of inputs, (material) safety data sheets (M/SDS), labels, registrations,

quality/traceability information, training and educational materials.

Mosaic's research and development processes include internal and external research and science-based data generation to advance product advocacy and customer results.

Finally, process improvements include an Environmental Health and Safety Management System that is aligned to ISO 14001/OHSAS 18001 and ANSI-10, enterprise mechanical integrity programs and contractor accountability programs.

We believe Mosaic's products are among the most responsibly sourced in the world, and we are committed to the sustainable manufacturing of our products. For example, in 2015, Mosaic developed improved raw material sourcing guidance for sulfuric acid and zinc to prevent contamination of our products with trace metals.



**We encourage the  
adoption of the 4Rs of  
nutrient stewardship:  
Right source, Right rate,  
Right time and Right  
place**

We are similarly committed to responsible use of our products. Crop nutrients must be applied sustainably to mitigate potentially negative environmental impacts stemming from improper use. Among industry organizations to which we belong and the farmers who use our products, we encourage the adoption of the 4Rs of nutrient stewardship: Right source, Right rate, Right time and Right place.

## Product Responsibility

**G4-PR3** One hundred percent of Mosaic's products are subject to labeling requirements. We comply with safety, environmental, labeling and registration required by country and local governments where we sell and distribute fertilizer, animal feed and industrial products. Where United States standards are more stringent, we follow those more rigorous standards on the products that we produce both in the United States and for export.

Mosaic provides the required country, state and local product documentation for all shipments. This includes detailed labels, data specification sheets and a safety data sheet (SDS) for all products. These documents provide information about proper product handling, safety precautions and guaranteed analysis. Situations requiring disposal are also addressed in the SDS. For product undergoing vessel transport, the SDS includes certification that the discharge of cargo hold rinsate is not harmful to the marine environment.

As it relates to safe use of our products, Mosaic promotes customer education following the 4R Nutrient Stewardship framework of the Right nutrient source, applied at the Right rate, at the Right time and at the Right place. Our agronomists share this message worldwide.

# HIGHLIGHT

## RICE STEWARDSHIP PARTNERSHIP ADDRESSES FOOD SECURITY AND NUTRIENT STEWARDSHIP

Rice is the world's most widely consumed grain, sustaining approximately half of the world's population. Rice lands—including the nearly 3 million acres in the United States—are critical to food security and wetland habitats and species, like waterfowl. Wetlands preserve local and downstream water quality by capturing crop nutrients and sediment that might otherwise enter rivers and lakes.

Helping farmers strengthen their nutrient stewardship practices while conserving natural habitats benefits everyone. To that end, Mosaic partners with Ducks Unlimited and USA Rice through the Rice Stewardship Project. Our funding promotes on-farm best practices, like the 4Rs, that improve nutrient stewardship, conserve wetlands and wildlife habitat, and help farmers stay productive and profitable.

**G4-PR4** Mosaic has automated systems to manage, track and monitor incidents related to noncompliance with regulations and voluntary codes concerning product and service information and labeling. We are committed to quality and responsible labeling. We investigate all questions or claims about the labeling or guaranteed analysis of our products and work with the customer and/or appropriate agency to resolve any claims that arise. In 2016, none of these issues resulted in fines or penalties that met a significance threshold of \$100,000.

# Reducing the Environmental Impacts of Our Products and Services

**G4-EN28** Mosaic products, predominantly fertilizer and animal feed ingredients, are used in agricultural operations.

To the extent possible, bulk transport is used to minimize the need for extensive packaging throughout the supply chain. Mosaic supports and helps promote The Fertilizer Institute's (TFI) Bulk Blend Workshops and Manual, which eliminates the need for packaging of major raw materials or the final product. In 2016, approximately 75 percent of the sales volumes (tonnes) from our business were sold in bulk.

**More than 1,400 total plots of research were established in 2016: 453 small-plot trials and 950 demonstration plots across the globe**



**G4-EN27** Mosaic has a dedicated agronomy team that conducts field trials to evaluate the performance of our products and promote and support [4R Nutrient Stewardship](#). In 2016, we conducted 453 small-plot trials in Argentina, Brazil, Chile, China, Canada, Europe, India, Northern Latin America (Mexico to Peru) and the United States. These trials were conducted by highly regarded private researchers and universities that follow rigorous scientific standards. In addition, more than 950 demonstration plots were conducted in the same countries via collaborations with customers and growers. In total, more than 1,400 plots of research were established in 2016.

## Educational Tools

Mosaic supports an educational initiative to help the industry understand fertilizer best management practices as a way of reducing the impact of fertilizers on the environment.

[CropNutrition.com](#) is a resource for retailers, growers and media members seeking to better understand soil science, grow healthier crops, and increase productivity and yield—sustainably. Retailers and growers benefit from Mosaic sharing information that will allow them to think progressively about crop fertility.

## Industry Initiatives

4R Nutrient Stewardship (4Rs) is about doing everything “right” in applying fertilizer and effectively reducing agriculture’s potential for negative externalities. 4R Nutrient Stewardship encompasses science-based fertilizer best management practices to achieve specific cropping system goals, including environmental protection. To achieve those goals, the 4Rs framework promotes a focus on the Right nutrient source, at the Right rate, at the Right time, and in the Right place. Please see [4R Nutrient Stewardship](#) for more information.

## Partnerships

Mosaic established and continues to fund the [Mosaic Fertiliser Technology and Research Centre](#) at the

University of Adelaide, Australia. The centre focuses on soil chemistry and fertilizer technology, and uses the latest technology to develop innovative fertilizer formulations to improve nutrient use efficiency.

Mosaic also has a long-term partnership with a globally recognized plant nutrition expert at Sabanci University in Turkey, whose research focus is balanced crop nutrition and nutrient interactions conducted through greenhouse experiments.



## Evaluating Our Performance

**DRIVEN BY OUR MISSION TO HELP THE WORLD GROW THE FOOD IT NEEDS, MOSAIC HELPS IMPROVE CROP YIELDS THROUGH THE SCIENCE-BASED AND EFFICIENT USE OF CROP**

**NUTRIENTS.** Our continual focus on developing and testing new products, such as our premium product line, ensures we can help meet the unique needs of growers in every part of the world. We currently have 12 potential products or product variations in various stages of development.

Using more than 1,400 research plots around the world, we evaluate agronomic practices, test crop nutrition performance, and develop recommendations to mitigate potentially negative environmental impact stemming from improper use. Please see [G4-EN27](#) for more information.

**G4-DMA, G4-PR5** At Mosaic, customer satisfaction and loyalty are paramount to sustaining and growing our world-class organization. On an annual basis, we measure satisfaction levels among our customer base throughout our global operations. This feedback system also allows us to monitor recent performance, identify which performance factors are likely to have the biggest impact on customer loyalty, and look for potential trends impacting our business relationships.

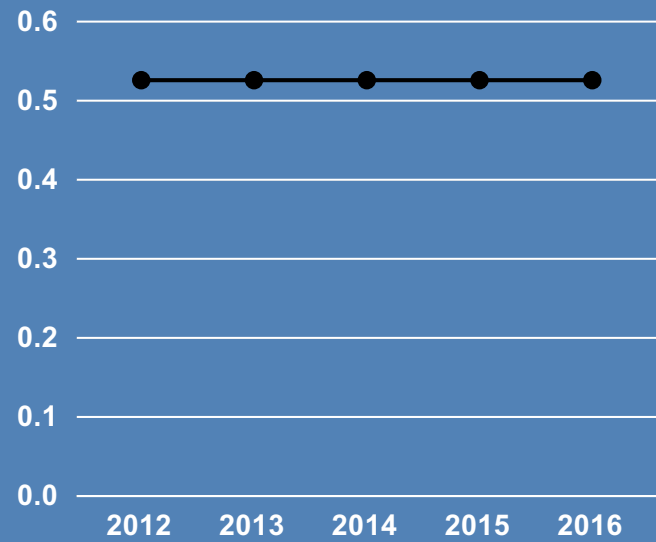
In 2016, Mosaic earned a score of 7.8 on a scale of zero to 10. This score is described as “Quite Satisfied.”

Our key customer loyalty metric—Net Promoter Score (NPS)—is a standard index across a variety of industries around the world. We use this metric to benchmark our results against others’, allowing us to identify and target opportunities for improvement. Year over year, we work to improve our performance by providing quality products and ensuring on-time delivery and logistical support. In 2016, Mosaic earned an NPS score of 47 percent.

**MOSAIC GLOBAL NET  
PROMOTER SCORE**  
WEIGHTED AVERAGE

0.7





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**NOTE:** Net Promoter Score indicates customer loyalty and 0.50 is considered the threshold for excellent companies.



BACK TO  
TOP



