Controlled Release Fertilizer

Harrell's — *Professional Fertilizer Solutions*

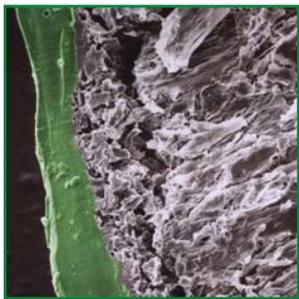## POLYON®

PROTECT THE ENVIRONMENT. THINK GREEN.

Research shows POLYON® controlled release fertilizers can keep more N in the root zone, minimize losses, maximize efficiency and help protect our environment.

THE POLYON LEGACY

POLYON, Agrium Advanced Technologies advanced polyurethane coating technology, was introduced nearly 20 years ago as a revolutionary controlled-release fertilizer. It was recognized and distinguished from others by its trademarked GREEN color and of course its Patented Performance. As a result, it soon earned the trust of turf and ornamental professionals all over the world for cost effective and dependable results, which is what makes it the #1 GREEN choice. Today, GREEN means as much to the environment as it does about performance and POLYON delivers both: trusted performance that MAXIMIZES results and MINIMIZES environmental impact.

Conventional N application methods apply much of the fertilizer in advance of plant needs. Nitrogen in the soil is subject to processes by which it can be lost to ground and surface water or to the atmosphere before the plant can absorb it. These losses reduce economic efficiency of the applied fertilizer and may pose an environmental risk.

A variety of fertilization practices can be implemented to reduce N losses and increase N efficiency. Most of these require additional operations that increase costs, are inconvenient, or come at a time when weather prevents timely nutrient application. POLYON technology allows the user to maintain flexibility in their fertility programs while minimizing N loss.

WHY IS GREEN BETTER FOR THE ENVIRONMENT?

POLYON controlled release fertilizers encapsulate Nitrogen within a patented polymer membrane that releases the N as soil warms. POLYON can be applied in advance of plant demand because cool soil temperatures of early spring slow N release. Less N is released to the soil from which it can be lost. As soils warm, plant growth and nutrient demand increase. Warmer temperatures also increase N release from POLYON to keep pace with plant needs.

Research shows POLYON maximizes N efficiency and environmental safety. The key is the patented reactive layer coating (RLC) technology. Unlike other polymer coated products, POLYON forms a bond with the urea during the coating process that ensures consistency in every particle. Other products create layers around the fertilizer that may crack or lead to premature release into the environment.

Numerous studies document maximum N efficiency and uptake with POLYON, implying greater environmental safety. Studies measuring leaching and volatilization (loss of N gases to the atmosphere) verify POLYON minimizes N loss compared with conventional N fertilizers.

A leaching study conducted on a 7 year old 'Tifgreen' bermudagrass USGA Spec green compared uncoated urea with POLYON polymer coated urea. Lysimeters were used to catch water flowing out of the rootzone. Fertilizer treatments were applied at a rate of 1 lb.N/1000 per month (May, June, July). Leachate was then collected and sampled for Nitrate-N content.

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Figure 1 shows that N loss from POLYON was significantly less than the N lost from urea. POLYON release was controlled under high levels of moisture evident with the spike in losses from the uncoated urea. Nitrate-N levels leached from POLYON remained below regulations (<10 ppm) set forth by the EPA's Safe Drinking Water Act for nitrates. Further, less N leached results in increased Nitrogen efficiency (Figure 2).
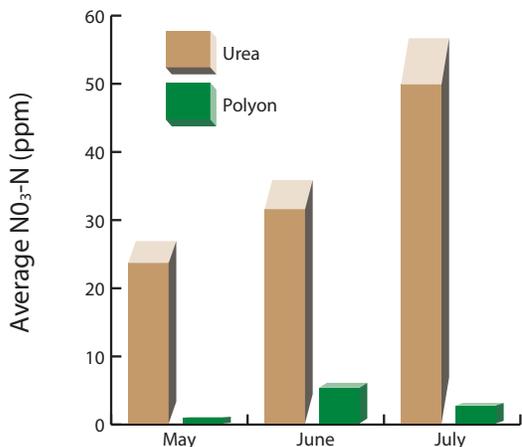
is another loss mechanism associated with N fertilizers and occurs when a fertilizer in a solid or liquid form converts to a gas and is unavailable for plant absorption. Ammonia (NH_3) is the gas that is formed through reactions at the soil surface following urea fertilizer applications. The losses associated with volatility affect the efficiency of the N fertilizer ultimately costing you money well spent. Early research indicates that following a granular application of urea to the soil surface, upwards of 30% of the Nitrogen can be lost to the atmosphere. POLYON encapsulates the highly soluble urea within a water insoluble, semi-permeable membrane which significantly reduces volatilization throughout the life of the product (Figure 3).

How can we help?

To make POLYON a part of your nitrogen program, contact your local Harrell's representative about customizing a program just for you with our exclusive POLYGRAPH prediction tool.

Figure 1. Average Nitrate - N in percolate for each monthly application.

Figure 3. Auburn University 2006. Ammonia volatilization study comparing POLYON to uncoated urea. Laboratory study conducted for 10 days.
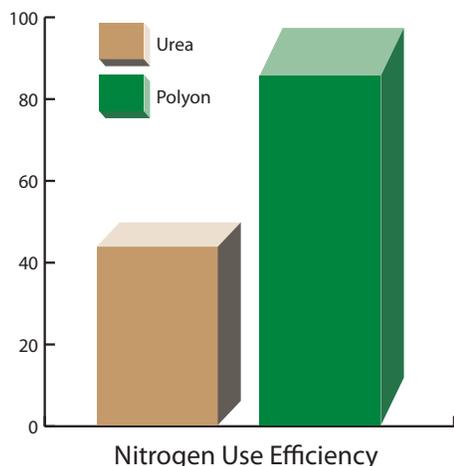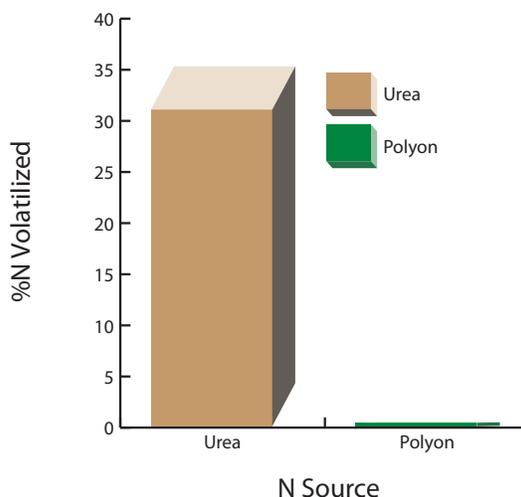

Figure 2. Data collected from the same leaching study indicates more Nitrogen was absorbed compared to leached with POLYON versus urea.

Increased urea costs have placed a greater emphasis on using 'Enhanced Efficiency' fertilizers. Reducing nutrient loss mechanisms associated with N fertilizer applications helps to increase nutrient utilization. Volatilization

POLYON FERTILIZERS: THE RESPONSIBLE CHOICE

If you want to protect your Nitrogen investment and you are concerned about the environmental impact of your current N management program, let us show you how POLYON can help you take control of this important plant nutrient. POLYON can keep more N in the root zone, reduce losses, improve efficiency, and help protect our environment.

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