

GREEN INDUSTRY SHOWCASE

Latest fertilizer technology allows for 180-day residual

POLY-S technology is O.M. Scott & Sons' newest breakthrough in controlled release fertilizer production.

POLY-S uses a two-tier coating process that produces highly efficient and cost-effective controlled release fertilizer products.

The core of each particle consists of a high quality nutrient substrate. The first layer is a coating of sulfur that covers the core and acts as the first stage in regulating nutrient release. The second layer consists of a proprietary polymer that further protects the nutrients and, in combination with the sulfur layer, determines the release rate.

Why polymers?—Polymers are compounds made of very large molecules. The POLY-S polymer was developed for its properties as a film to control water penetration into the fertilizer particle. Nutrient release is controlled by diffusion.

"We were looking for a polymer that regulates and controls the movement of water across that barrier," explains Dr. Dean Mosdell, manager of product development for Scotts' research and development department.

"By using both sulfur and polymer,

there is low coating cost and we have excellent control of the nutrient release mechanism—or 'diffusion control process,'" says Mosdell.

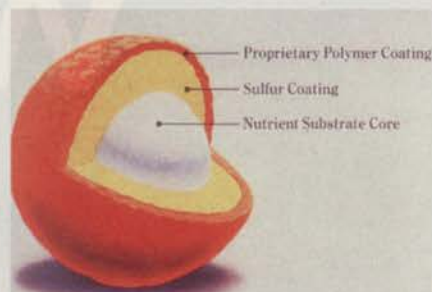
"Water has to diffuse across that barrier so the soluble fertilizer can be released. We can control the release rate by increasing the polymer coating. We can get residuals up to 180 days, and we feel we can get very good agronomic efficiency."

POLY-S technology was the invention of the Advance Technology Group at Scotts, directed by research scientist Harvey M. Goertz.

By molecular composition and particle coating weight, the release rate can be programmed anywhere from two to six months, depending on the application.

Traditional sulfur-coated fertilizers are relatively inexpensive to produce. However, nutrient release is not totally controllable, and lock-off (incomplete N release) is prevalent. In addition, many sulfur-coated ureas are coated with wax to prevent sulfur breakage.

According to O.M. Scott, POLY-S combines the best qualities of sulfur- and polymer-coated fertilizers. The primary coat of



The POLY-S coatings control the rate of nutrient release.

sulfur is wrapped around the fertilizer/nutrient particle, creating limited access for water penetration.

Being a low-cost material, sulfur is very economically effective.

"By combining the sulfur and polymer, we find we're getting excellent value for the end user," says Mosdell.

"Sulfur is an inexpensive coating material, and the process of applying it to urea is very simple. However, sulfur-coated ureas have a number of disadvantages.

"If we put on too little sulfur, we get a very rapid release of the fertilizer," explains Mosdell. "If we put on too much sulfur, we get 'lock-off,' or inefficient release of urea from sulfur coating."

POLY-S fertilizers offer excellent control of nutrient release, varied residual and no lock-off. The release is affected by coating weights of the sulfur and polymer, the polymer composition, and the proprietary coating techniques.

Other advantages of POLY-S are:

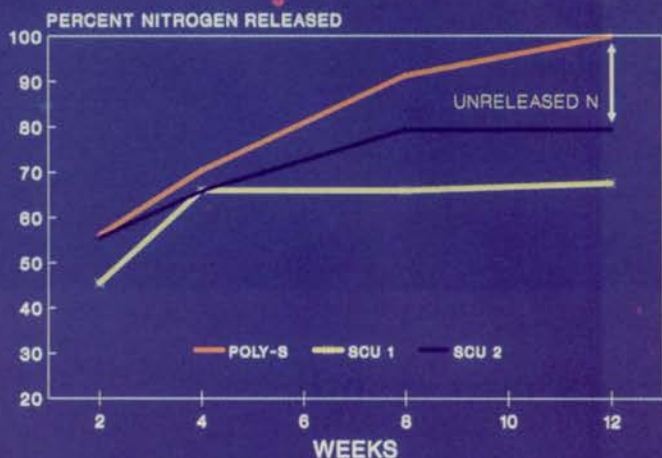
- abrasion resistance; no dust;
- increased slow-release claim, resistance to environmental stress;
- uniform nutrient release, adjustable release rates, reduced surge growth; and
- decreased temperature sensitivity;

Scott reports that the effectiveness of the POLY-S coating process requires less total coating than is normally needed with sulfur-coated urea products, providing higher nitrogen analysis.

Environmentally, with POLY-S there is minimal potential for leaching, run-off and volatilization, according to Scott. The efficiency of release results in a significant reduction in clippings associated with surge growth, thereby addressing concerns about waste disposal and landfill use.

Circle No. 191 on Reader Inquiry Card

NITROGEN EFFICIENCY



B3-91-123-1 - BASED ON RECOVERY FERTILIZER PARTICLES APPLIED TO TURF

Nitrogen release efficiency graph, as reported by O.M. Scott & Sons, shows POLY-S to be effective after 12 weeks.