SOY-BASED FERTILIZER

Summary

The novel product has major advantages over the current petroleum-based fertilizers: 1) relatively constant time-release fertilizer, 2) fertilizer sequestration, reducing adverse effects of runoff, and 3) beneficial effects on soil organisms. In more detail, because the time release is controlled by a bulk erosion process and not a surface effect, it is only affected by the surface area of the fertilizer pellet and not by a coating that erodes away, resulting in a spike of fertilizer release near the end of its product life (often seen with coated fertilizers). The geometry of a cylindrical pellet will be used so that during bulk erosion the surface area remains relatively constant. In addition, the product has an inherent nitrogen sequestration effect. This will allow the fertilizer to have longer lasting effects and it will reduce the adverse environmental effects of runoff.

Soy Utilization

It is envisioned that the proposed product can capture a conservative estimate of 1% of the current U.S. lawn fertilizer market, resulting in an industry need of approximately 0.6 million tons of the proposed product. Assuming the final product contains 25-50% soy flour, this corresponds to between 0.15 and 0.3 million tons of soy flour. Assuming 39 pounds of soy flour can be produced from a bushel of soybeans, this represents an additional annual need of 7.7 to 15.3 million bushels of soybeans. This obviously will have a large impact on the soybean industry with creating an additional demand of approximately 0.3 billion bushels per year.

Performance

The fertilizers developed by Iowa State University are fully biobased and perform as well or better than their petrochemical counterparts. Studies with plants and lawns show healthy plants with optimum levels of nitrogen. In addition, many of the ISU fertilizers cause nearly zero nitrogen runoff. The fact that these novel fertilizers are costs competitive with current fertilizers positions them well for commercialization.