

SLOW RELEASE FERTILIZERS

INTRODUCTION

- Fertilizers coated in a substance that enables a slow release time
- Eliminates need for constant fertilization
- Higher efficiency rate than soluble fertilizers
- Five common categories:
 - Plastic coated
 - Slowly soluble coating
 - Urea aldehydes
 - Sulfur coated
 - Chelated micronutrients
- Each category services specific crop needs

PLASTIC COATED

- Spheres coated with plastic that contains water soluble fertilizer
- Spheres are generally 3 mm in diameter
- Thickness of coating determines release time
- Mixed into substrate before planting or surface applied once plants are potted
- Water penetrates the coating and enters the sphere
- Pressure builds up, causing cracks to

form from which fertilizer passes into the substrate

- Be sure not to steam pasteurize the substrate with the fertilizer added
- Examples:
 - Osmocote
 - o Many formulas available
 - o Lasts from 3-4 or 14-16 months
 - Nutricote
 - o Wide range of release lengths
 - o Many formulas available

SLOWLY SOLUBLE COATED

- Fertilizers with a limited solubility
- Most common type: MagAmp
- MagAmp:
 - 7-40-6 formulation
 - Source of nitrogen, phosphate, and potassium
 - 3-4 or 8-10 month release times
 - Beware of low iron, manganese, copper, and zinc levels caused by high phosphate level
 - Ammonium toxicity may also be a problem with a low pH

UREA ALDEHYDES

- Most common type: urea formaldehyde

- High nitrogen fertilizer
- Release rates start high, and die off slowly for 3 years
- Fertilizer relies on microorganisms to break it down for plant use

SULFUR COATED

- Many fertilizer types coated separately with sulfur and a sealant, then mixed together
- Many formulas available
- Release time is generally 3-4 months
- Fertilizer is released by microorganisms

CHELATED MICRONUTRIENTS

- Substance that tightly holds together iron, manganese, zinc, and copper
- Slowly released over a long period of time
- Used to correct micronutrient problems

REFERENCES

- Kothes, J.S., R.W. Judd Jr., J.J. Maisano, G.F. Griffin, J.W. Bartok Jr., and R.A. Ashley. 1980. Nutrition of greenhouse crops. Coop. Ext. Ser. of the Northeast States, NE 220.
- Nelson, P.V. 1998. *Greenhouse operation and management*. 5th ed., Prentice Hall, Upper Saddle River, NJ.

Reviewed by:

Dr. Yin-Tung Wang
Research and Development
Matsui Nursery
Salinas, CA

Dr. Mike Orzolek
Professor of Horticulture
Penn State University

Dr. Frank Flora
National Program Leader
Nutrition, Food Safety, and Quality
USDA-ARS

Mention of trade names does not constitute an endorsement by University of Maryland Cooperative Extension, University of Maryland College Park, or University of Maryland Eastern Shore.

SLOW RELEASE FERTILIZERS

by

Thomas M. Blessington, David L. Clement, and Kevin G. Williams
Central Maryland Research and Education Center
University of Maryland

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, University of Maryland, College Park, and local governments. Cheng-i Wei, Director of Maryland Cooperative Extension, University of Maryland.

The University of Maryland is equal opportunity. The University's policies, programs, and activities are in conformance with pertinent Federal and State laws and regulations on nondiscrimination regarding race, color, religion, age, national origin, gender, sexual orientation, marital or parental status, or disability. Inquiries regarding compliance with Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Educational Amendments; Section 504 of the Rehabilitation Act of 1973; and the Americans With Disabilities Act of 1990; or related legal requirements should be directed to the Director of Human Resources Management, Office of the Dean, College of Agriculture and Natural Resources, Symons Hall, College Park, MD 20742.