Slow Release N Fertilizers: Are We There Yet?

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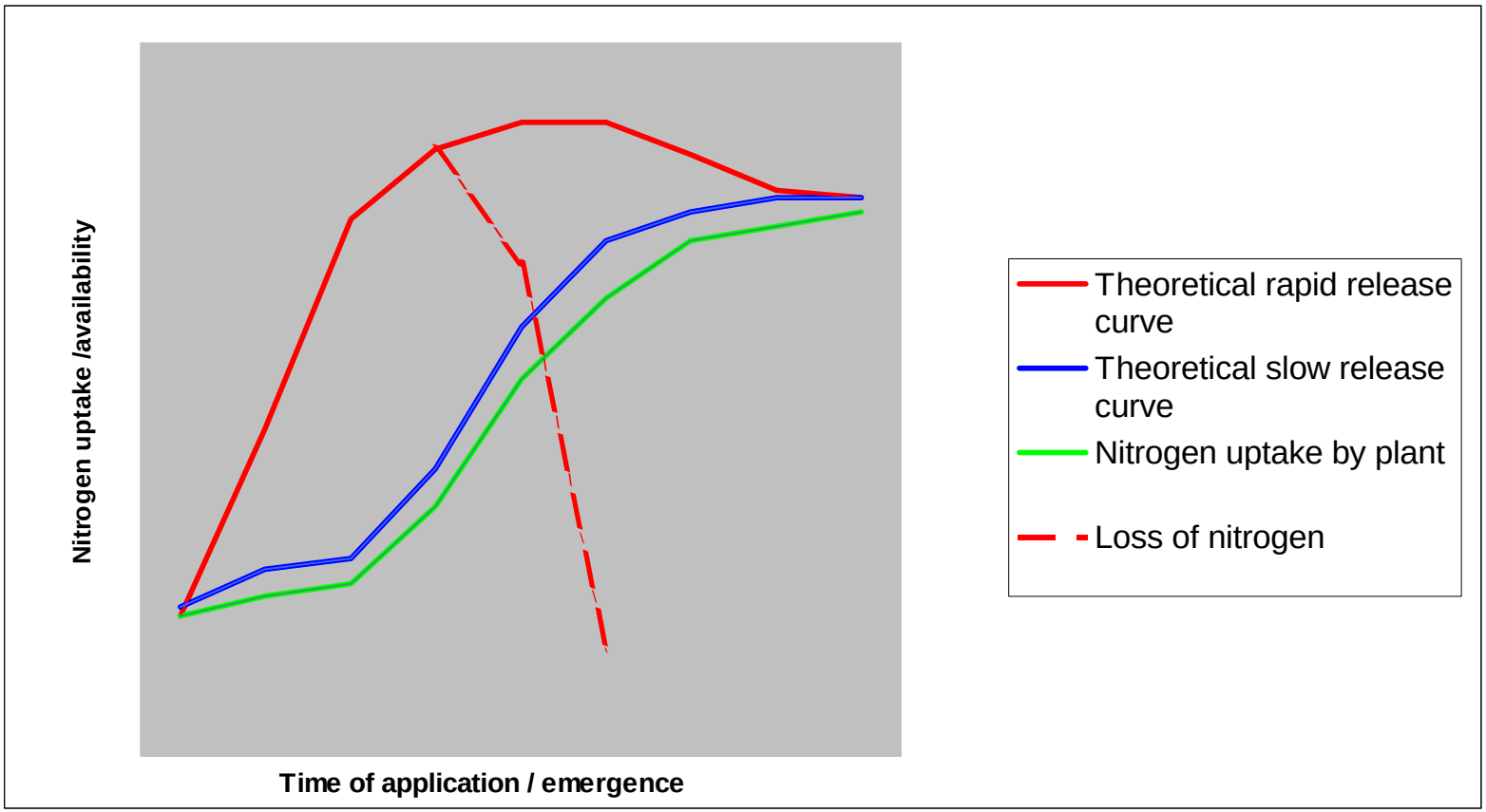
Nitrogen Uptake and Release Curves



Benefits of Slow Release N Fertilizers

- Reduce risk of N loss
- Higher crop yields at equal N rates
- Maintain crop yields with lower N rates
- Improve crop quality
- More flexible application of N

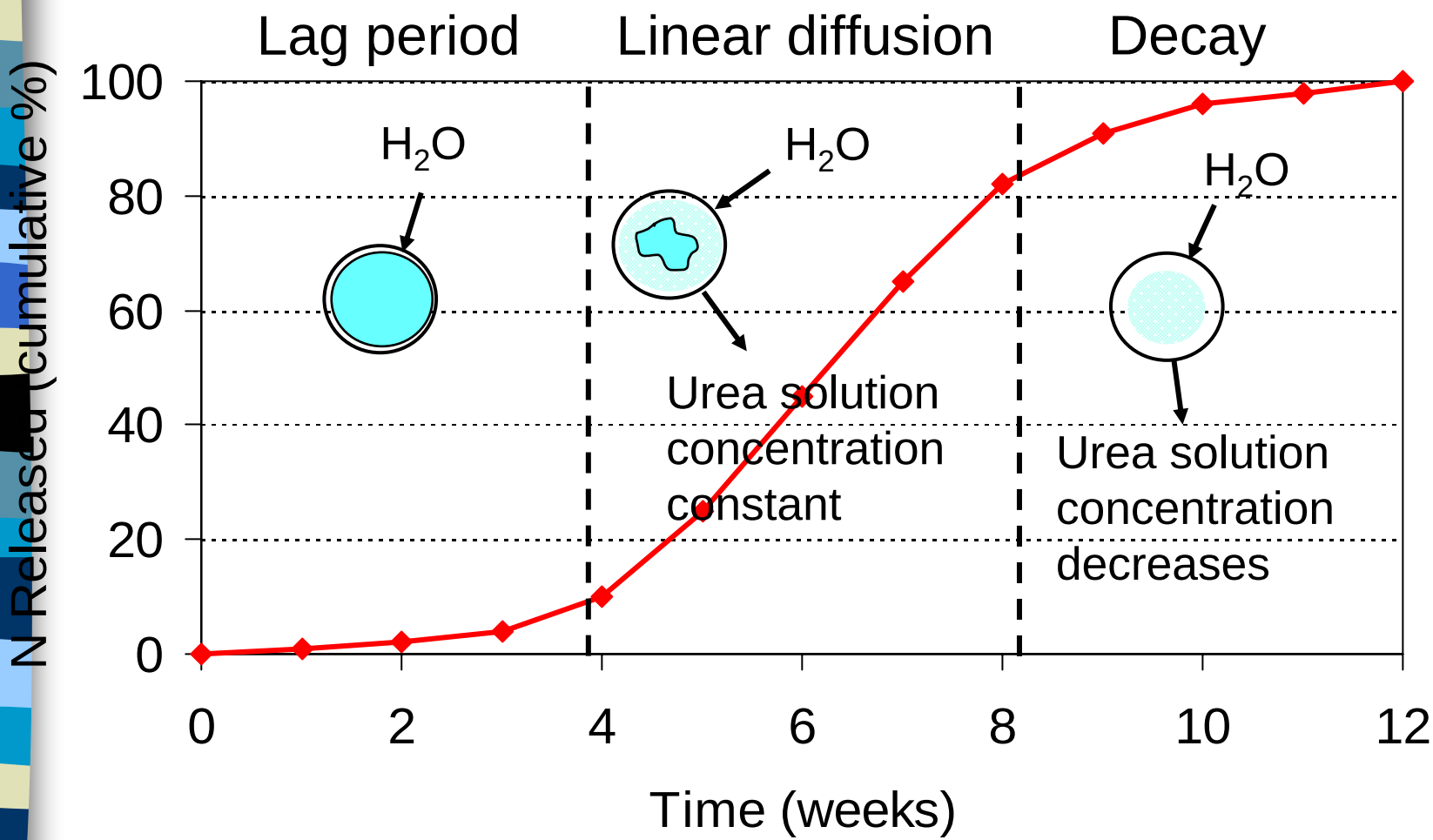
Forms of Slow Release N

- Organic fertilizers
- Sulfur-coated urea
- ESN-a polymer-coated urea from Agrium
- Polyon-a polymer-coated urea developed by Pursell Technologies and marketed by Simplot
- Nitamin-a urea based polymer developed by Georgia-Pacific

How Does the Slow Release Process Work

- Organic fertilizers: by soil microbial action
- Polymer-coated urea: by gradual diffusion of nitrogen through the polymer coating dependant on soil moisture and temperature
- Nitamin: release of nitrogen from the urea-based polymer by soil microbial action

ESN Release Mechanism



Crops Used in Slow Release Nitrogen Trials

- Corn
- Wheat & oats
- Pastures
- Potatoes
- Vegetable crops

Are We There Yet?

- Rates to use
- Placement
- Best timing of application
- Need for combination of fast release and slow release forms of N

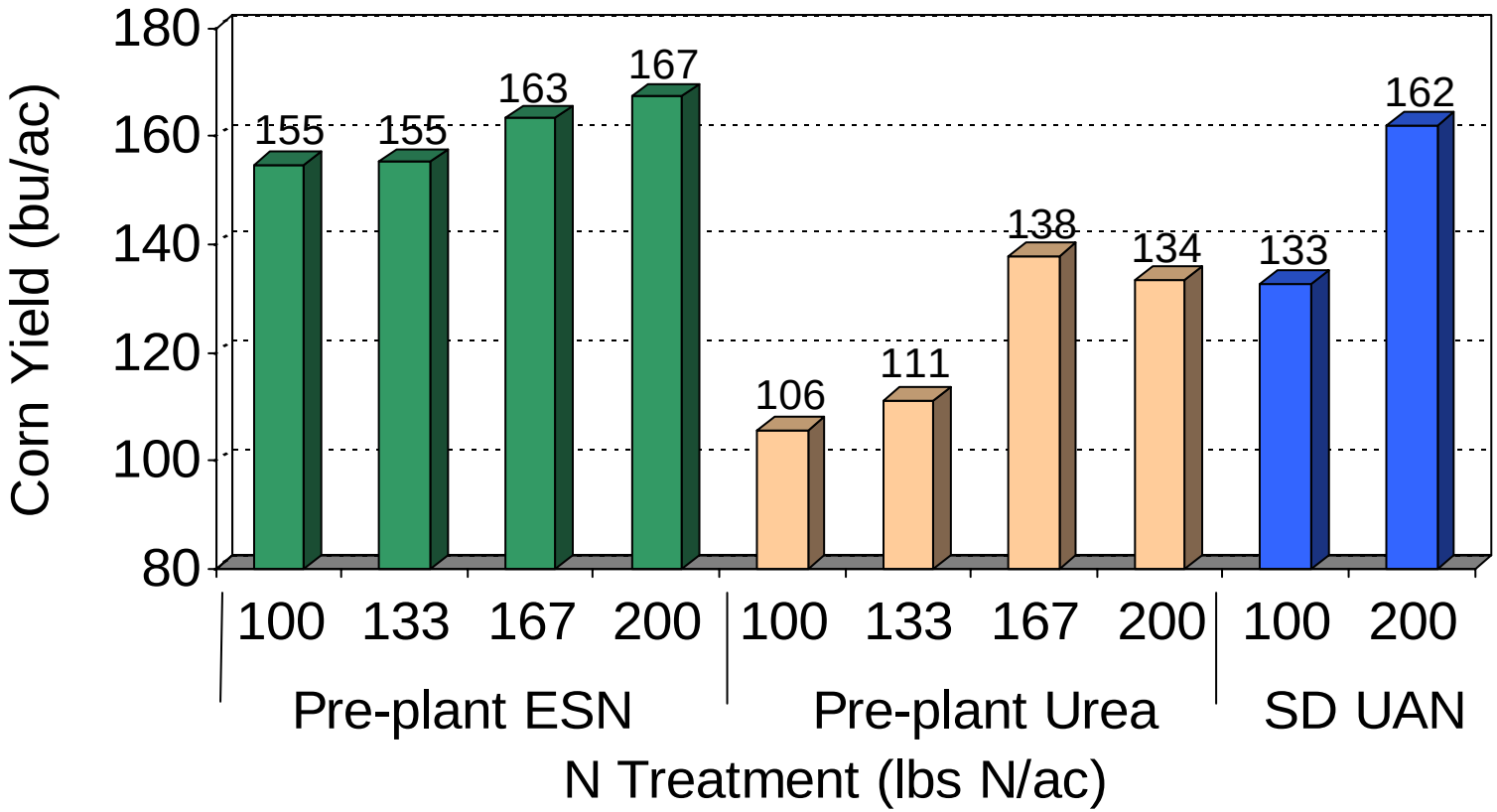
Pre-plant ESN and Urea on Corn Grain Yield at Hancock

Source: Dr. Larry Bundy

Nitrogen Treatment	Nitrogen Rate	Corn Yield
2005 ESN Preplant	100 lbs	174 bu/acre
2005 Urea Preplant	200 lbs	160 bu/acre
2004 ESN Preplant	100 lbs	147 bu/acre
2004 Urea Preplant	200 lbs	148 bu/acre

ESN – A Smarter Nitrogen

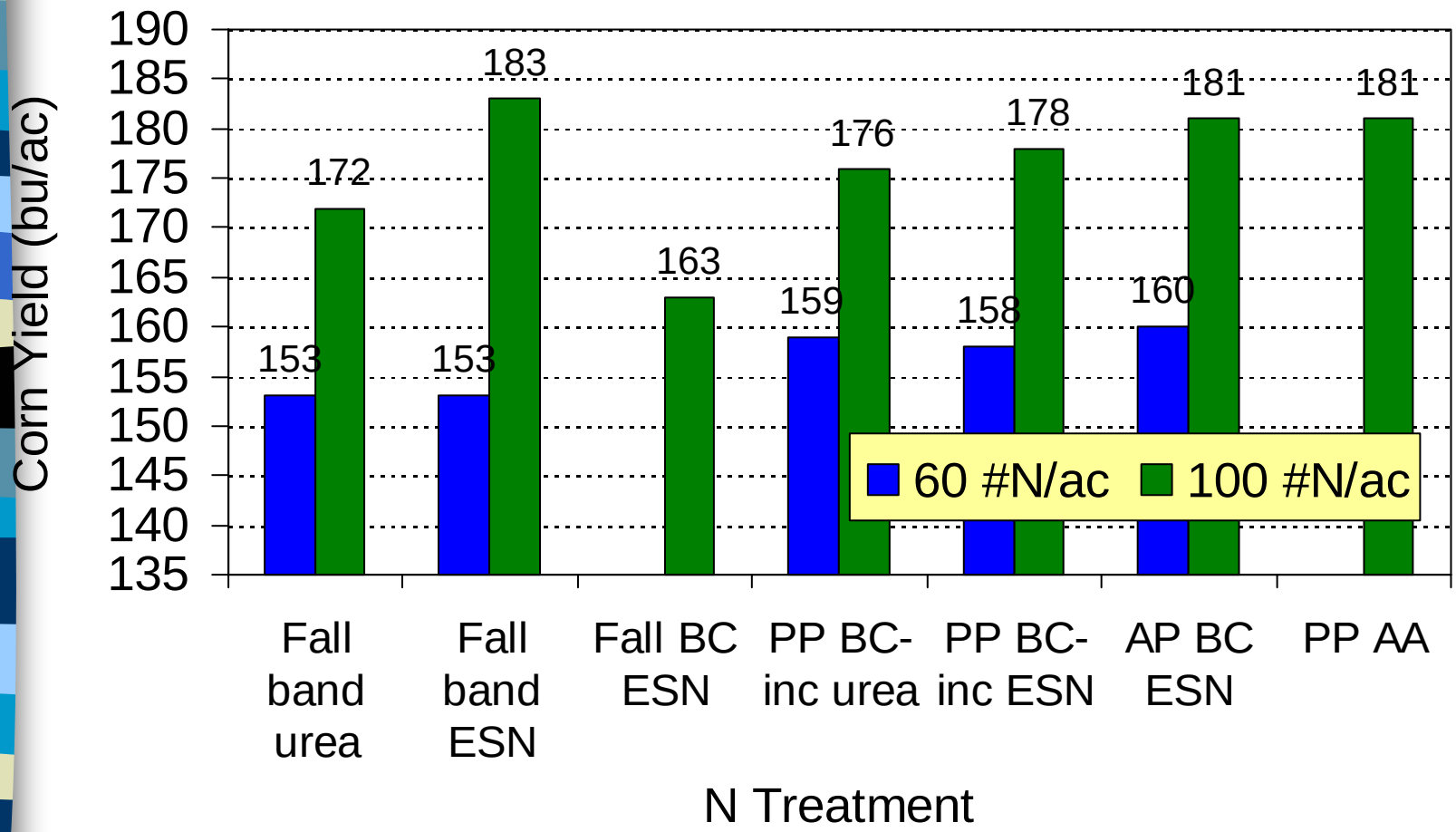
Danville, IL, 2004



ESN and urea broadcast/incorporated before planting

Source: Dr. Randy Simonson, TSM, Danville, IL

Three-Year Average Corn Yields Waseca, MN, 2003-2005



Source: Dr. Gyles Randall, Univ of Minnesota

Summary

- Results are highly weather dependent. You need the right moisture and temperature to get release that matches the plants need for nitrogen
- Slow release products “shine” in wet years, wet sites or sandy soils