

## Why use UPGRADE® and how does UPGRADE® work?

Without UPGRADE®, the urea begins to break-down as soon as it is applied to the moist soil.

The urea is then lost to volatilization. If the soil is totally dry, no reaction happens.

However, with any moisture present, uncoated urea normally changes and converts to ammonia, nitrates and carbon dioxide.

This loss of urea can occur in 2-4 days and happens quicker on high pH soils.

Unless it rains, urea must be incorporated during this time to avoid ammonia loss.

**UPGRADE® SLOWS DOWN  
DISSOLUTION  
AND VOLATILIZATION.**

Are you losing more  
than nitrogen?

Using **UPGRADE®**  
means **LONGER** fertilization  
with more even plant growth,  
saving time and money.

So, please ask your fertilizer  
dealer for UPGRADE®  
Tell him 'It's Time to UpGrade!'.  
After all .....Isn't it about time?



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[www.atlantic-pacificAG.com](http://www.atlantic-pacificAG.com)

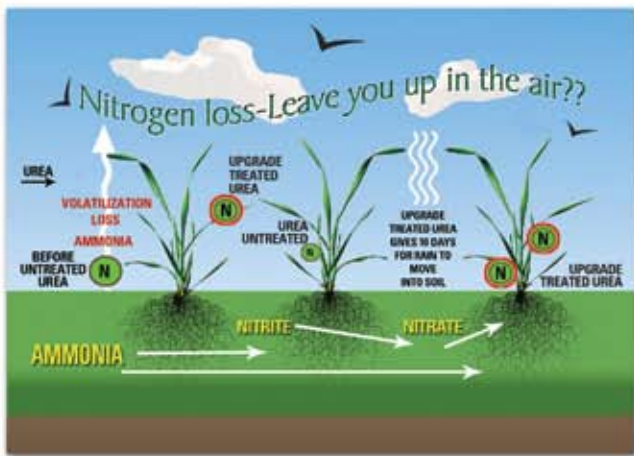


# UPGRADE

Slow Release Agent for Urea  
Using Polymer Technology

It's Time To...  
**UPGRADE!**





## What To Do About Nitrogen Loss

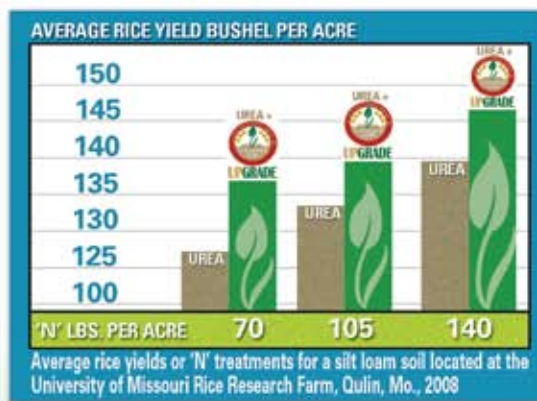
When you have 'N' loss from Volatilization there are several choices open to you but all cost money. Growers know Nitrogen lost is money lost.

### The choices are:

- 1) Reapplying.... each application (trip through the field) entails cost for machinery, labor and fuel; plus the potential for soil compaction.
- 2) Over application at time of original spreading... this adds the cost of additional urea.
- 3) Nothing. This is the cheapest initially. No time required, no additional trip across field, no more dollars spent. But, how happy are you going to be with lower yields? Good yields pay the bills. None of these are great choices and the first two increase the chance of environmental concerns.

## Enter UpGrade

UpGrade provides a piece of that flexible 'N' management when dealing with Urea. This flexibility is all 'about time'.



UpGrade allows you to make a decision of when or whether to incorporate, to irrigate where feasible and of course the standard... nature's rain ...to move urea into the soil with a minimum of volatilization loss.

Farms are different...fields are different. Soil temperature, drainage, etc varies from field to field. UpGrade gives you time to apply Urea in an order that works best for you.

## Why use UPGRADE and how does UPGRADE work?

UpGrade is Slow-Release Polymer Technology. UPGRADE is a unique polymer blend designed as a slow release agent which coats prilled urea. This gives 'Mother Nature' time to move the urea into the soil.

When UPGRADE is applied to urea, it provides more uniform

nitrogen availability for your crops. Its slow release polymer formula blend allows for nitrogen release over the growing season for longer potential growth. UPGRADE minimizes urea dissolution and volatilization.

Without UPGRADE®, the urea begins to breakdown as soon as it is applied to the moist soil. The urea is then lost to volatilization. If the soil is totally dry, no reaction happens. However, with any moisture present, even dew, uncoated urea normally changes and converts to ammonia, nitrates and carbon dioxide. This loss of urea can occur in 2-4 days and happens quicker on high pH soils. The loss of nitrogen from urea is then depleted from the soil. Unless it rains, urea must be incorporated during this time to avoid this loss.

## Now is the time to UPGRADE

### What does using UPGRADE mean to you?

- ❖ Extended time for urea to be incorporated into the soil thus reducing volatilization loss up to 10 days.
- ❖ UpGrade improves N efficiency and reduces 'N' losses by making it available to the plant. Result...Higher yields and lower environmental impact.

## How to Apply Upgrade

UpGrade is applied to Urea by the Fertilizer Dealer. UpGrade has a 'red' dye added so that you can tell if your urea has been 'UpGraded.'

Application Recommendation for Granular Urea or Granular Urea Fertilizer Blend Only.

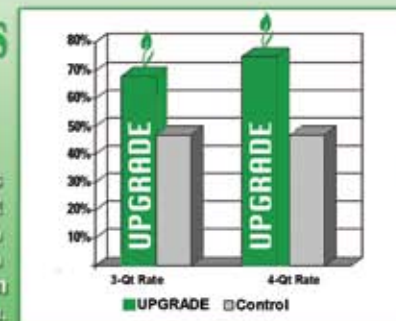
To obtain optimum coverage of UPGRADE® on granular fertilizers, it is APTC's recommendation that high-pressure spray be utilized. If conventional low-pressure spray is used, coverage of UPGRADE can be compromised and some of the fertilizer may not have the optimum UPGRADE coating.

## WATER DISSOLUTION OF UREA AND UPGRADE TREATED UREA

3 Quart and 4 Quart Rate of Upgrade

The Results Are In!

UpGrade® beats untreated urea at 3 qt / Ton by 40% and at 4 qt / Ton 55% better than untreated urea.



## The Problem:

### Nitrogen loss from Urea Hydrolysis

## The Solution:

### 'UpGrade' your Urea

Urea hydrolysis, the breakdown of urea's components reacting with the soil, causes Nitrogen loss called volatilization. Urea left on the soil is susceptible to loss of Ammonia to the atmosphere soon after application and continues until at least a .25 to .50 inch of rain moves it into the soil.

Urea needs to be incorporated by rain or irrigation otherwise volatilization losses can be significant. Studies show urea fertilizer losses can be 30% of 'N' in 3 days or possibly more depending on weather conditions. Worse with warm windy weather and moist soil. Once urea is in the soil it is converted to ammonia and will be retained.

## Historical Information:

Nutrient management has received national and international attention in the last few years since urea makes up a large part of the 'N' market.

Most of this attention focused on cost, over application, and on environmental stewardship. When fuel and 'N' was cheap, over application or reapplication was an accepted method of growing for yield.

Now fossil fuels prices are like being on a roller coaster. The ultimate goal of nutrient management for Nitrogen would consist of monitoring the amount that the plant needs and apply that amount required to make yield. Wish it were that simple!!