



moNolith46<sup>®</sup>



Proved in agricultural field practice

Fertilizer Technology by Phoenix



Recommended by Polish Ministry of Agriculture experts for both environment protection as well as improving economics of agricultural production.



# Fertilizer Technology

BY PHOENIX

Controlling nitrogen loss so your plants get more, the environment gets less, and you get the most out of your fertilizer investment.

## WHAT IS moNolith46® ?

moNolith46® uses Phoenix's unique liquid formulation with NBPT to either coat urea granules or mix with urea nitrate solutions (UAN). This helps control ammonia volatility until rain can occur.

## WHY DO I HAVE TO WORRY ABOUT NITROGEN LOSS?

The more nitrogen you make available to your plants, the better they will grow, so it makes sense to fertilize your crops in a way that minimizes nitrogen loss.

Figure 1 shows what happens to most urea-based fertilizers after they are applied. Micro-organisms in the soil produce an enzyme urease, which interacts with urea to release nitrogen as ammonia gas. The loss of nitrogen from urea in the form of ammonia is referred to as volatilization.

This breakdown of urea begins as soon as it is applied to the soil. Volatilization rates are affected by many factors including rate of fertilizer application and placement, ground cover and residue, soil and atmospheric temperature, soil moisture content, relative humidity, soil pH, soil buffering capacity and soil cation exchange capacity. Generally, the rate of nitrogen volatilization from urea-based fertilizers is greatest just after application, with the majority occurring within two to four days or even faster on high pH soils.

## HOW DOES PHOENIX'S TECHNOLOGY HELP REDUCE VOLATILITY?

Phoenix's unique patented system dissolves NBPT (otherwise known as N-(n-butyl) thiophosphoric triamide) into solution to coat urea granules or mix with urea based solutions. NBPT was identified as a urease inhibitor in the 1980s and some studies show it has been one of the most effective inhibitors available in the last 25 years.

Figure 2 shows the results of field study that measured the nitrogen volatilization of untreated urea and Phoenix treated urea moNolith46® when used on agricultural soil. The graph demonstrates that moNolith46® - coated urea with NBPT reduced ammonia volatilization losses more than 70% in the field test under these conditions.

Figure 3 shows the results of a wheat field trial at ODR Szepietowo/Poland. This study shows the potential impact of increasing crop yields by using moNolith46® instead of untreated urea. The results show that fertilizing with moNolith46® instead of untreated urea one can obtain yields and quality as in case of fertilizing with ammonium nitrate.

## ARE THERE OTHER WAYS TO PREVENT AMMONIA LOSS?

In guidance „Code of Good Agricultural Practice for Reducing Ammonia Emissions” published 27 July 2018 by Department for Environment Food & Rural Affairs (DEFRA) the following measures are recommended to help minimise ammonia emissions from the application of manufactured nitrogen fertilizer: rapidly incorporating (>50% ammonia emission reduction or injecting >80% ammonia emission reduction) urea fertilizers into the soil. When possible use of urea with urease inhibitors (70% mean ammonia emission reduction for solid urea, 40% mean ammonia emission reduction for liquid UAN). Urease inhibitors can delay the breakdown of urea to allow subsequent rainfall to wash it deep into the soil.

The same measures to limit ammonia loss are listed in guidance „Code of Good Agricultural Practice for Reducing Ammonia Emissions” published 12 August 2019 by Polish Ministry of Agriculture.

## WHY CHOOSE moNolith46® ?

moNolith46® is easy to use and does not require special equipment. It can be applied to granular urea, or mixed with UAN, which are the most readily available, and generally the most cost efficient, sources of nitrogen. moNolith46® helps keep nitrogen in the soil by decreasing potential loss from volatility. Improved nitrogen availability helps maximize potential growth and yields from your nitrogen investment.

## CHOOSING A FERTILIZER THAT GETS THE JOB DONE

Field trials and lab studies show significant loss of nitrogen is likely when using urea fertilizers in broadcast applications on the soil surface. This is particularly true where there is crop residue or grass sod covering the soil.

moNolith46® is a urease inhibitor product that helps reduce loss of urea N as ammonia until rainfall or water can move urea into the soil.

## Economic Benefits

Generally, urea treated with moNolith46® costs less per unit of Nitrogen compared to CAN. This helps farmer to save money on his Nitrogen fertilizer inputs. Can help increase crops yield in comparison to untreated urea.

## Logistical and Time Savings

Urea treated with moNolith46® has a high Nitrogen concentration with 70% more N than CAN. This means farmer has less haulage and reduced product to spread, saving him time, fuel and money.

## Reliable Agronomic Performance

Urea treated with moNolith46® has been independently trialed by scientific institutions supervised by Polish Ministry of Agriculture under both grassland & tillage. The trial results show that moNolith46® yields are consistently as good as AN/CAN.

## Environmentally Stable

Urea treated with moNolith46® is stable in the soil and has a lower carbon footprint than other Nitrogen fertilizers. moNolith46® reduces ammonia emissions by 73%.

Figure 1

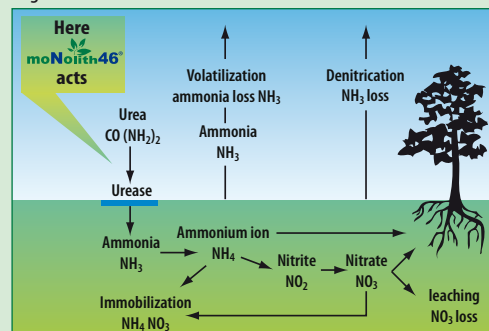


Figure 2

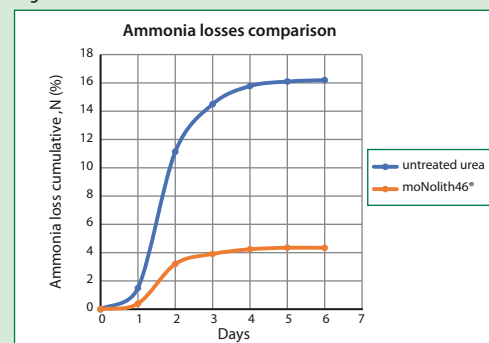
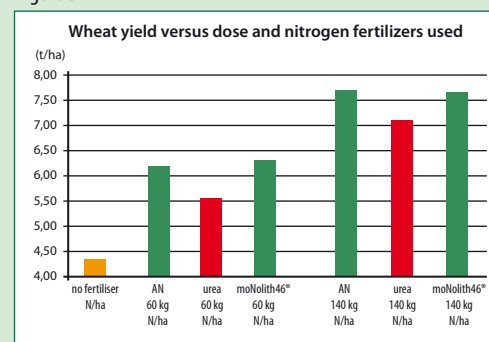


Figure 3



## moNolith46® Fertilizer Technology by Phoenix

For getting answer about PHOENIX fertilizer technology, contact:  
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## REFERENCES

1. Polish Ministry of Agriculture "Code of good agricultural practice for ammonia limitation": <https://www.gov.pl/web/rolnictwo/kodeks-dobrej-praktyki-rolniczej-w-zakresie-ograniczania-emisji-amoniaku>
2. DEFRA "Code of good agricultural practice for ammonia limitation": <https://www.gov.uk/government/publications/code-of-good-agricultural-practice-for-reducing-ammonia-emissions/code-of-good-agricultural-practice-cogap-for-reducing-ammonia-emissions#executive-summary>
3. Research undertaken by both Teagasc and the Agri-Food and Biosciences Institute (AFBI): <https://www.afbini.gov.uk/news/balancing-greenhouse-gas-and-agricultural-production-targets-irish-farms>