



ACTIVE<sup>TM</sup>  
AgriScience

ACTIVEAGRISCIENCE.COM

TECHNOLOGY BEYOND the POINT of NUTRITION™

# PRODUCT GUIDE

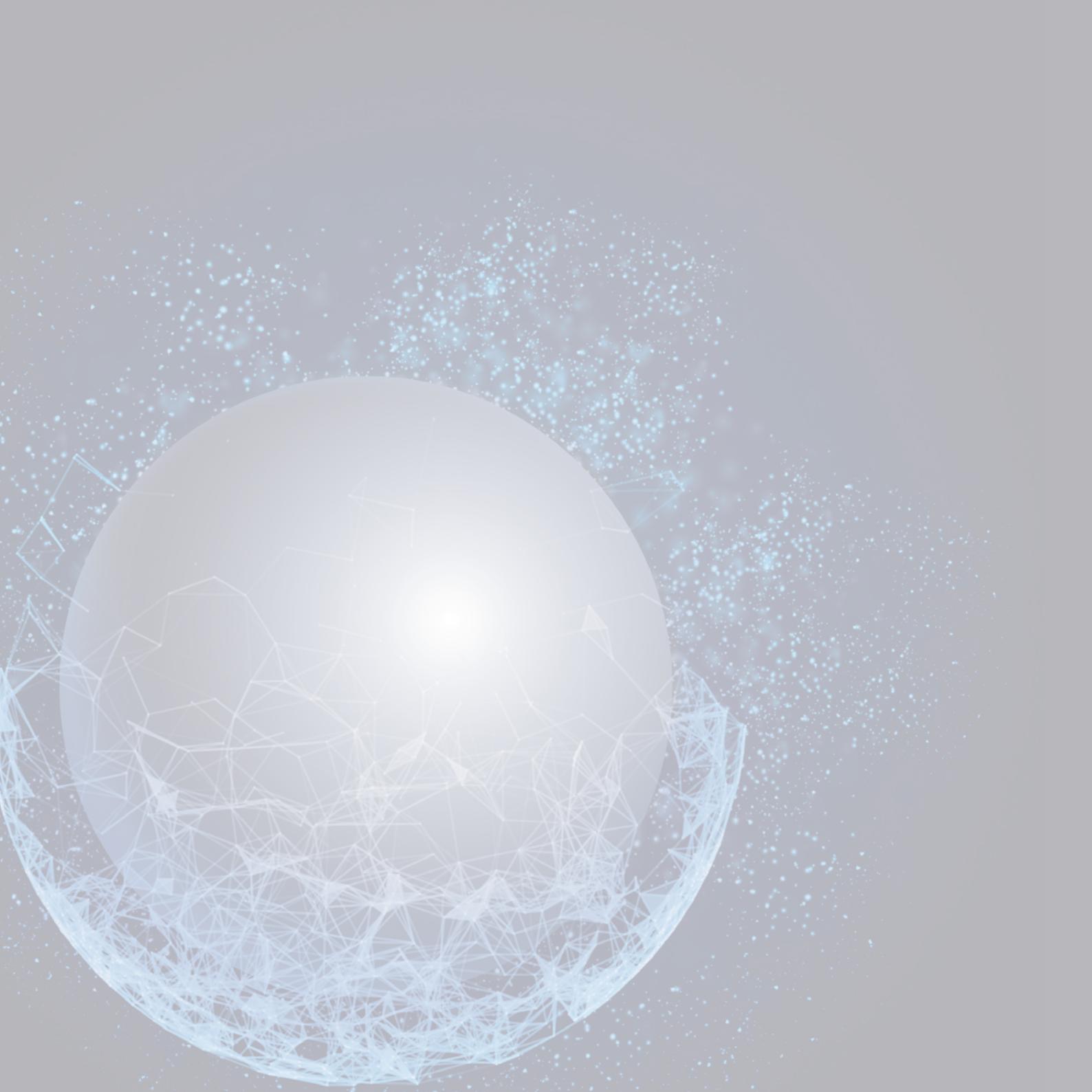
## NITROGEN STABILISERS

**ECONOMICAL**

**FLEXIBLE**

**SUSTAINABLE**







Special thanks to our

## **RESEARCHERS**

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# ● TABLE OF CONTENTS

|   |    |
|---|----|
| ABOUT US .....                                    | 1  |
| INTRODUCTION .....                                | 2  |
| PRODUCT COMPARISON.....                           | 7  |
| BENEFITS OF ACTIVE STABILIZER™ PLUS 20-3.....     | 8  |
| BENEFITS OF ARM U™ 28%NBPT .....                  | 9  |
| BENEFITS OF ARM U™ 16%DMPP .....                  | 10 |
| APPLICATION RATES .....                           | 11 |
| GREENHOUSE VOLATILISATION RESEARCH DATA.....      | 12 |
| FIELD VOLATILISATION RESEARCH DATA.....           | 16 |
| N2O EMISSIONS RESEARCH DATA .....                 | 20 |
| TREATED FERTILISER SHELF LIFE RESEARCH DATA ..... | 21 |
| NITROGEN STABILISER SHELF LIFE RESEARCH DATA..... | 22 |



• **ACTIVE**<sup>™</sup>  
AgriScience  
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### TECHNOLOGY BEYOND THE POINT OF NUTRITION™

Active AgriScience Inc. supports the farming community by providing innovative, effective and economical products. A leader in plant nutrient and bioactive compound research and technology, Active AgriScience uses rigorous scientific methods to develop full cycle fertiliser and nitrogen management solutions to help enhance crop potential while being mindful of environmental impacts.



# INTRODUCTION

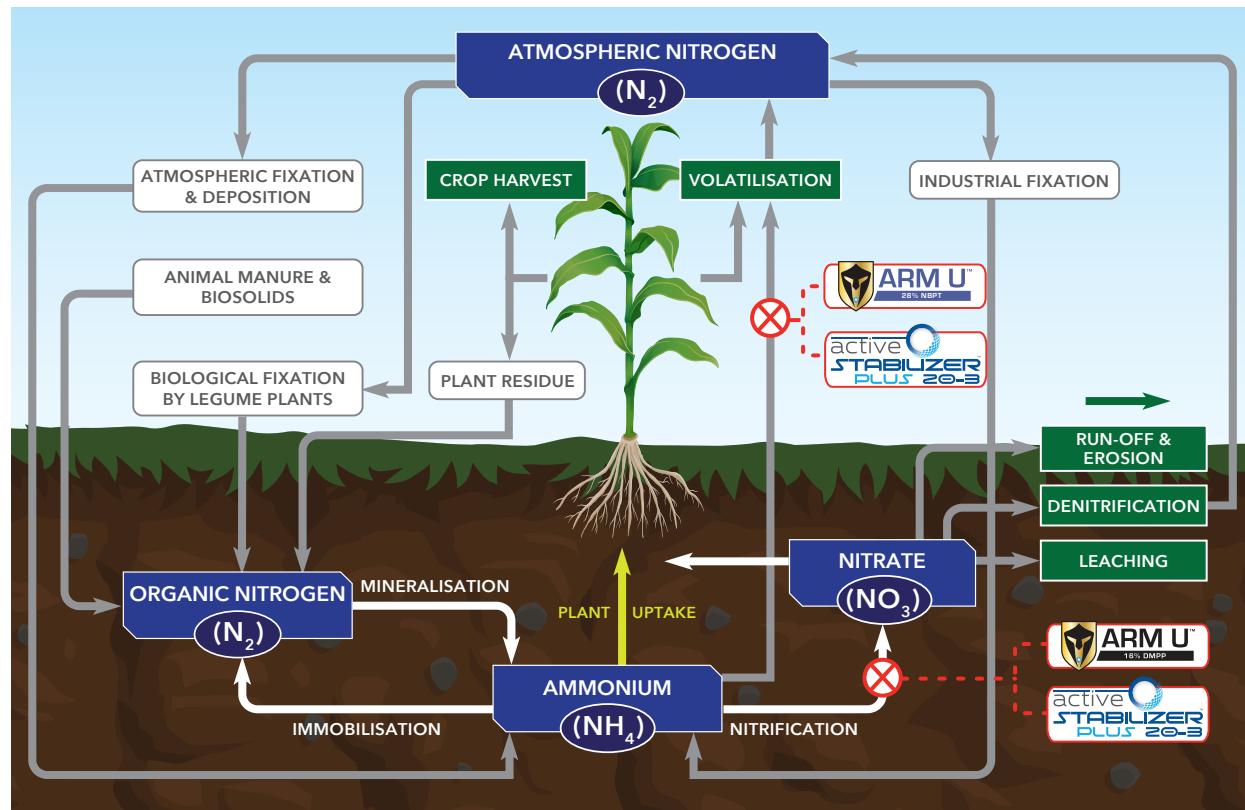
Nitrogen is essential for plant life and growth and is therefore a component of many fertilisers. Nitrogen loss is a challenge facing every grower when applying Urea or UAN in the spring or autumn, regardless of the application method.

**The risk of this nitrogen loss varies with:**

- the type of nitrogen
- soil type
- temperature
- management practices

**Without a protective coating, up to 50% of soil-applied nitrogen can be lost before the plant can use it.**

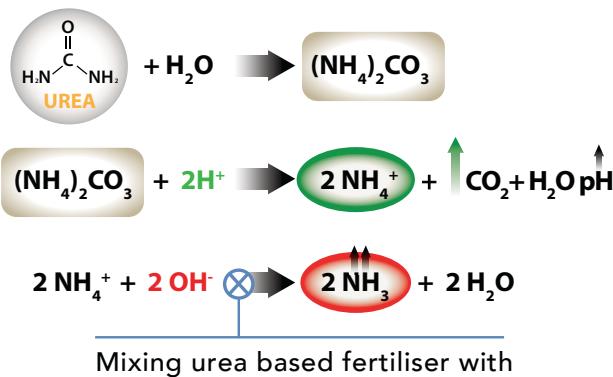
Nitrogen can be converted quickly into ammonia gas through the process of ammonia volatilisation and then released into the atmosphere. Nitrogen can also be lost in the soil through nitrification, the process of converting ammonium ions to less stable nitrate ions. Both of these mechanisms play a substantial role in the loss of valuable nitrogen. Understanding the nitrogen cycle and the factors that can result in nitrogen loss are crucial to finding the right solution to this problem.



**Volatilisation** and **nitrification** are two processes that are responsible for nitrogen loss.

## VOLATILISATION

Ammonia volatilisation occurs during the hydrolysis of urea and is governed by the urease enzyme.



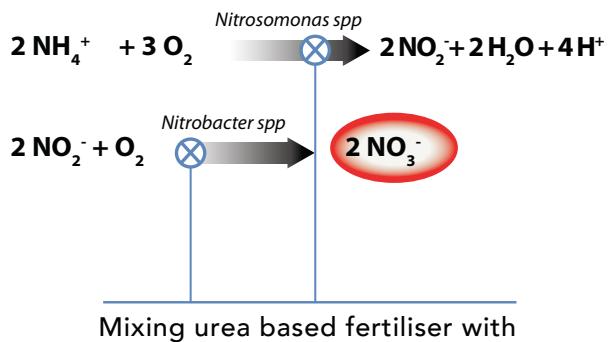
ARM U™ 28% NBPT  
Active STABILIZER™ PLUS 20-3

**reduces ammonia volatilisation**  
by inhibiting urease  
enzyme activity.



## NITRIFICATION

Nitrate is formed by the oxidation of ammonium in the presence of *Nitrosomonas* & *Nitrobacter* bacteria.

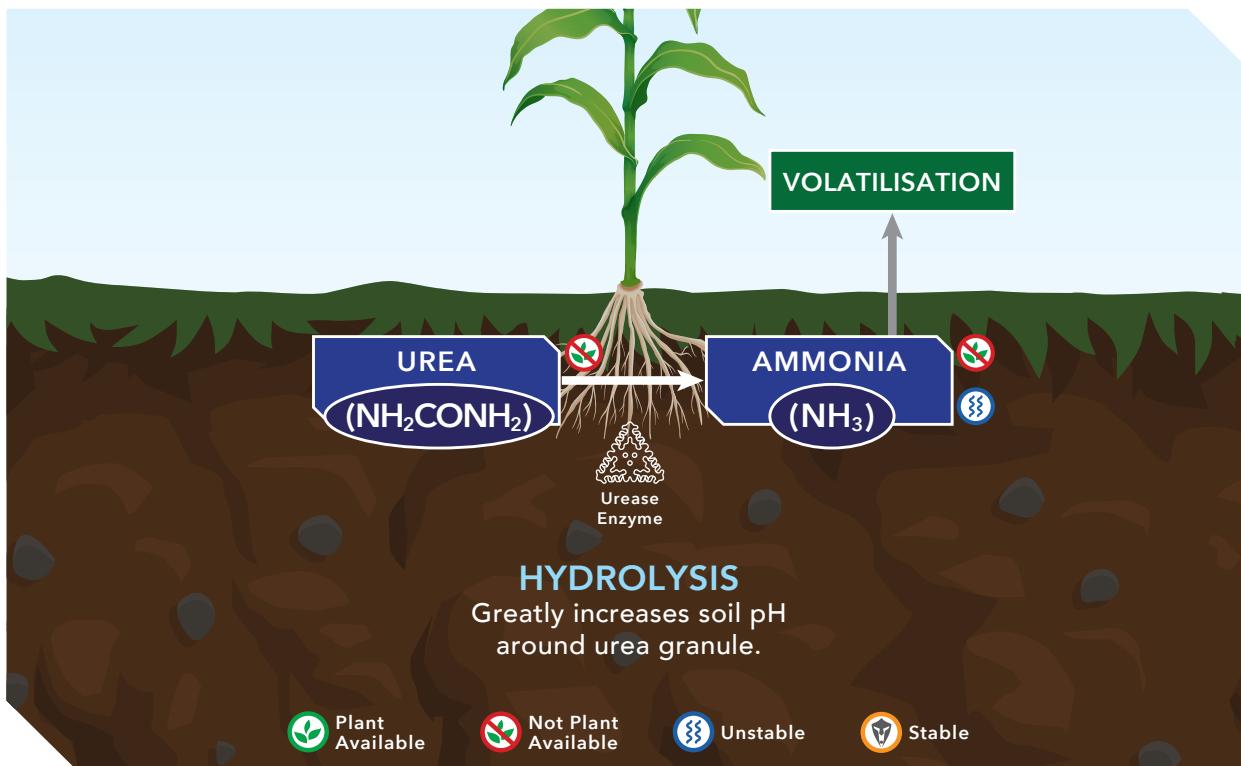


ARM U™ 16% DMPP  
Active STABILIZER™ PLUS 20-3

**reduces nitrification**  
by inhibiting *Nitrosomonas* and  
*Nitrobacter* bacterial activity.



## VOLATILISATION



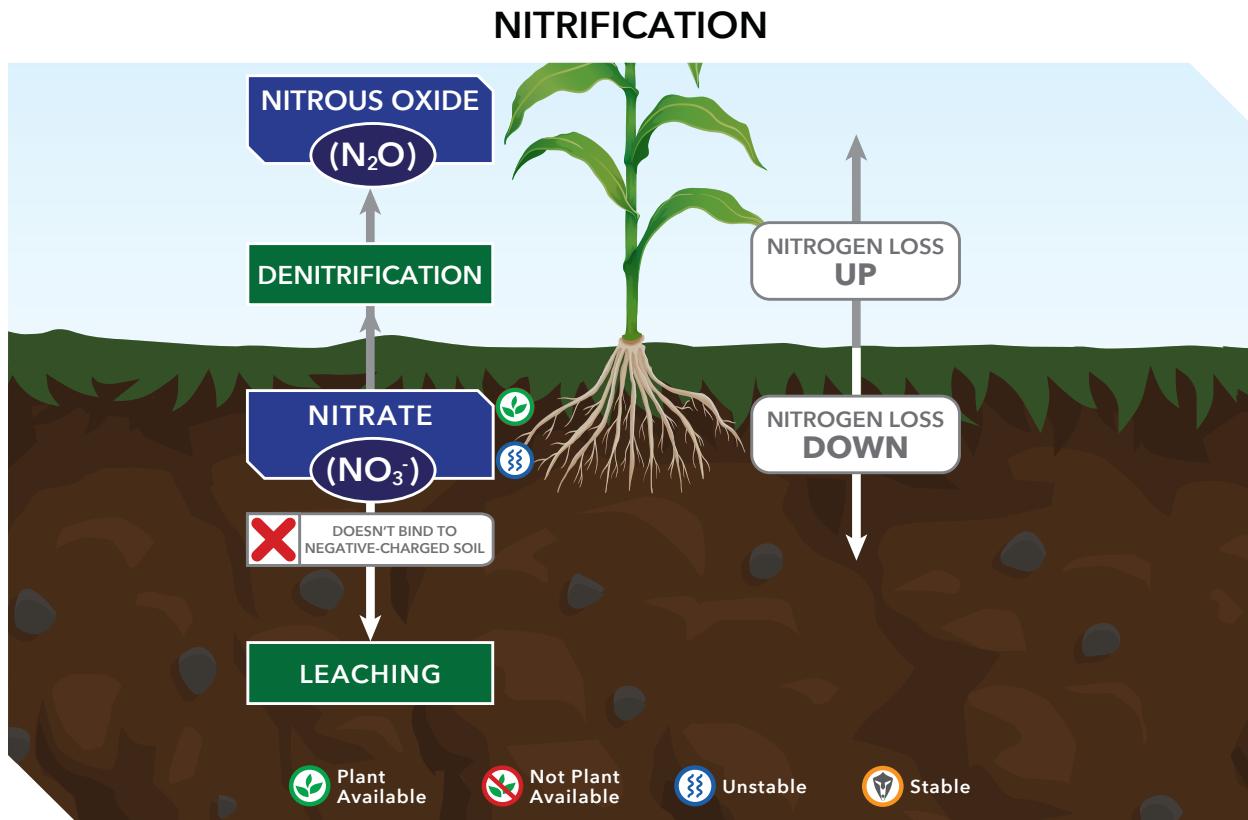
## AMMONIA VOLATILISATION

If urea converts at or near the soil surface, nitrogen losses are greatest. The urease enzyme breaks urea into carbon dioxide and ammonia (NH<sub>3</sub>). Because ammonia is unstable, it quickly escapes into the air—causing up to 50% nitrogen loss through volatilisation.

## CONSIDERATIONS OF VOLATILISATION LOSSES

1. Soil pH.
2. Soil Moisture.
3. Soil Temperature.
4. Thatch Cover — 18-30 times higher urease concentration than underlying soil\*.
5. Placement and Concentration.

\*"Urease Activity in a Kentucky Bluegrass Turf" – Torello & Wehner.



## DENITRIFICATION AND LEACHING

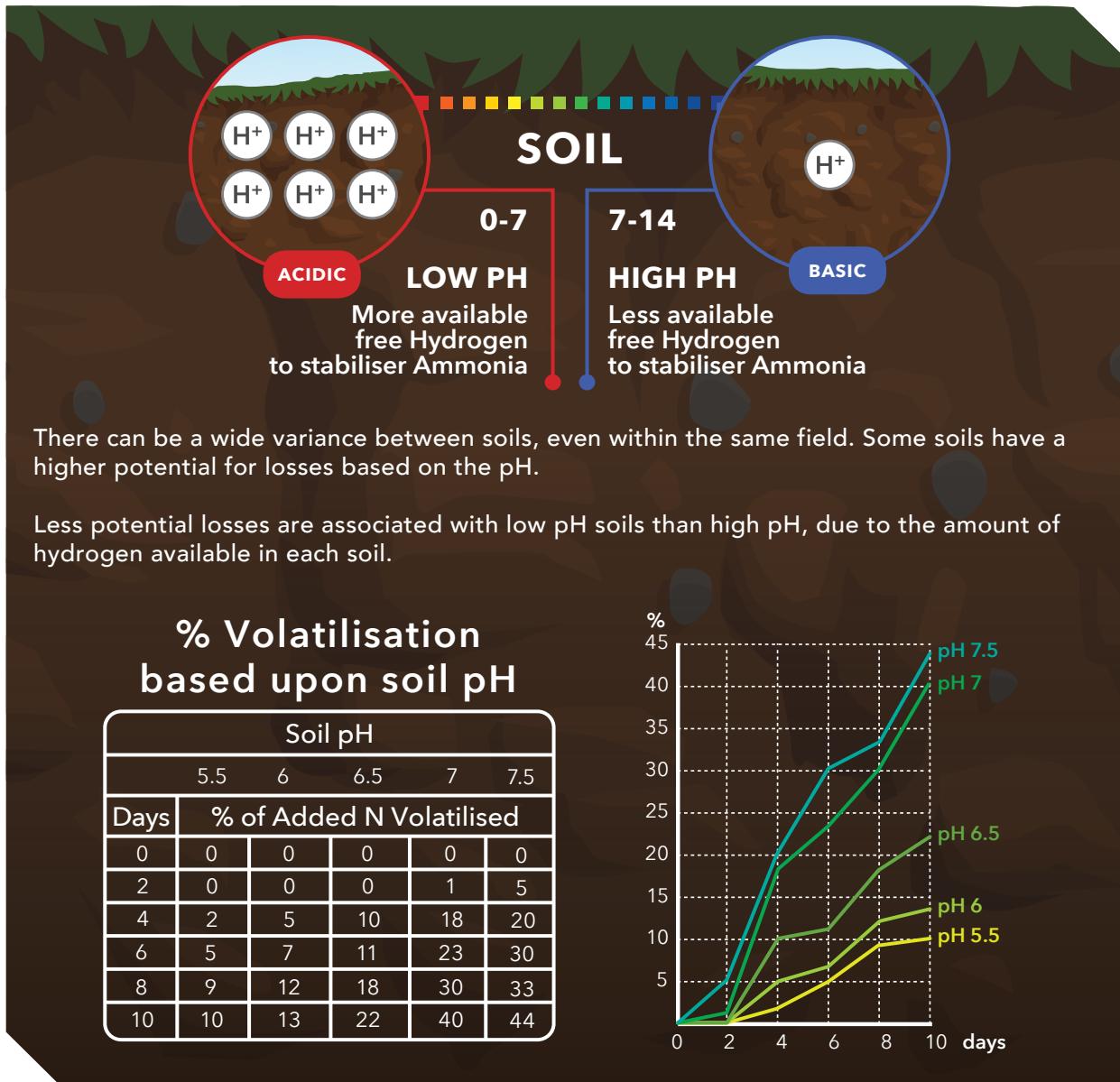
After nitrification, nitrogen can be lost in two main ways: in wet, low-oxygen clay soils ( $CEC > 23$ ), bacteria convert nitrate into  $N_2$  gas (**denitrification**). In sandy soils ( $CEC < 10$ ), nitrate is easily washed below the root zone by rainfall (**leaching**).

## CONSIDERATIONS OF NITRIFICATION LOSSES

1. Soil type (CEC).
2. Soil moisture.
3. Soil temperature: Nitrosomonas and Nitrobacter bacteria remain active down to  $4^\circ C$ , so nitrate can form even in cool soils, increasing the risk of early-season losses.

# INTRODUCTION

## WHY SOIL PH IS IMPORTANT?



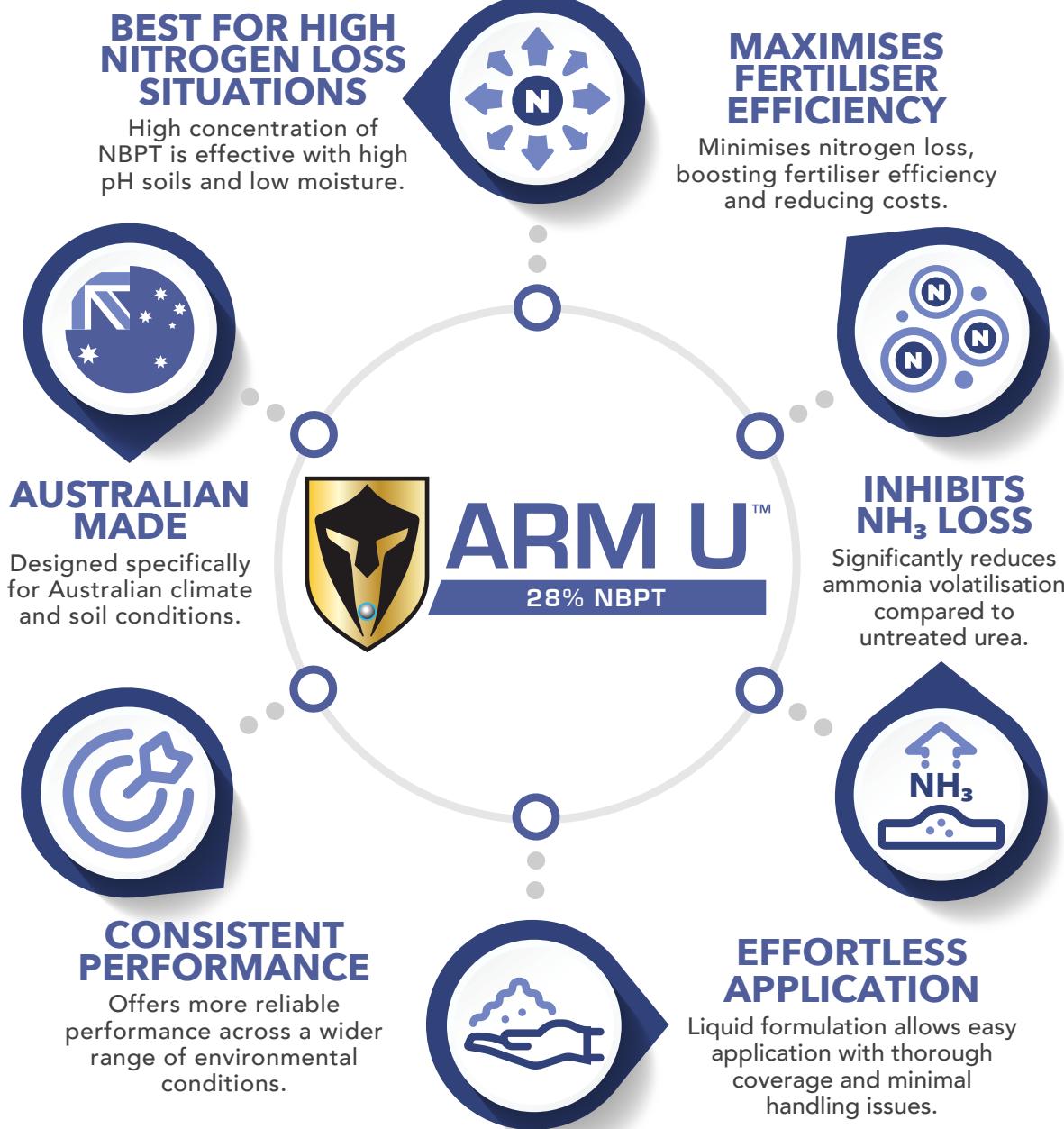
# PRODUCT COMPARISON



| N STABILISERS           | Active STABILIZER PLUS 20-3  | ARM U 28% NBPT   | ARM U 16% DMPP   |
|-------------------------|--|--|--|
| ROLE OF THE PRODUCT     | Reduces ammonia volatilisation, nitrate leaching, and nitrous oxide emissions. | Reduces ammonia volatilisation.  | Reduces nitrate leaching and nitrous oxide emissions.  |
| PATENTED                | Yes  | Yes  | Yes  |
| ANALYSIS                | 20% NBPT + 3.3% DMPP   | 28.6% NBPT   | 16.1% DMPP   |
| APPLICATION RATE (UREA) | 2 L/MT   | 1.5 - 2 L/MT   | 0.6 L/MT   |
| APPLICATION RATE (UAN)  | 1.5 L/MT   | 1 - 1.2 L/MT   | 0.35 L/MT  |
| COMPATIBILITY           | Can be mixed with other Active AgriScience stabilisers                         | Designed to allow ARM U NBPT and DMPP products to be easily mixed together as required for maximum flexibility to suit your needs. | Designed to allow ARM U NBPT and DMPP products to be easily mixed together as required for maximum flexibility to suit your needs. |

## BENEFITS OF ACTIVE STABILIZER™ PLUS 20-3

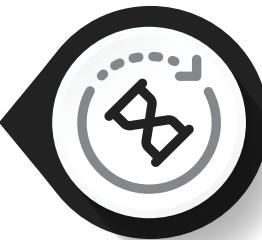




## BENEFITS OF ARM U™ 16%DMPP

### SLOWS DOWN THE N CYCLE

Slows the conversion of ammonium to nitrate, enhancing the efficiency of nitrogen fertilisers.



### IMPROVES NITROGEN-USE EFFICIENCY

Maximises fertiliser efficiency, lowering overall costs by reducing the amount needed.



### AUSTRALIAN MADE

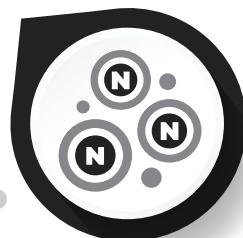
Designed specifically for Australian climate and soil conditions.



**ARM U™**  
16% DMPP

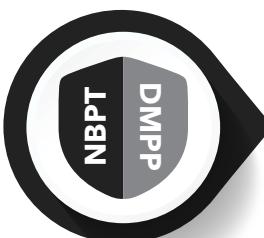
### REDUCES N<sub>2</sub>O EMISSIONS

DMPP inhibits nitrification which reduces nitrous oxide emissions.



### LESS PRODUCT, MORE IMPACT

Requires less product per metric tonne of fertiliser compared to competitor brands.



### ADD NBPT FOR DUAL PROTECTION

Can be mixed with ARM U 19% NBPT or 28% NBPT to inhibit all forms of nitrogen loss.



READ THE ENTIRE LABEL BEFORE USING THESE PRODUCTS.



## ACTIVE STABILIZER™ PLUS 20-3 BLENDING INSTRUCTIONS

**Blending into Urea:** Use 2 L Active STABILIZER PLUS 20-3 / 1000 kg Urea. For uniform coating, use batch blending or continuous blending methods with calibrated impregnation equipment. Weigh urea and transfer to blender. Add required amount of Active STABILIZER PLUS 20-3 to urea in blender. Blend until the urea is uniformly coated with Active STABILIZER PLUS 20-3. Do not add any other fertiliser materials until Active STABILIZER PLUS 20-3 is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added. **Blending into UAN:** Use 1.5 L of Active STABILIZER PLUS 20-3 / 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure Active STABILIZER PLUS 20-3 and add to the tank. Mix well. Add other products at this stage, if needed. Add second half of UAN solution. Continue mixing until well blended. Keep agitator running while mixing.



## ARM U™ 28% NBPT BLENDING INSTRUCTIONS

**Blending into Urea:** Use 1.5 - 2 L ARM U 28% NBPT/1000 kg Urea. For uniform coating, use batch blending or continuous blending methods with calibrated impregnation equipment. Weigh urea and transfer to blender. Add required amount of ARM U 28% NBPT to urea in blender. Blend until the urea is uniformly coated with ARM U 28% NBPT. Do not add any other fertiliser materials until ARM U 28% NBPT is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added. **Blending into UAN:** Use 1 - 1.2 L ARM U 28% NBPT/ 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure ARM U 28% NBPT and add to the tank. Mix well. Add other products at this stage if needed. Add second half of UAN solution. Continue mixing until well blended. Keep agitator running while mixing.

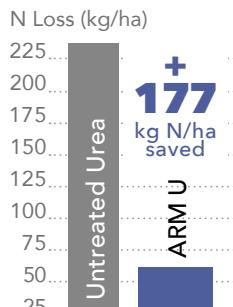


## ARM U™ 16% DMPP BLENDING INSTRUCTIONS

**Blending into Urea:** Use 0.6 L ARM U 16% DMPP/1000 kg Urea. For uniform coating, use batch blending or continuous blending methods with calibrated impregnation equipment. Weigh urea and transfer to blender. Add required amount of ARM U 16% DMPP to urea in blender. Blend until the urea is uniformly coated with ARM U 16% DMPP. Do not add any other fertiliser materials until ARM U 16% DMPP is thoroughly distributed. If mixture appears wet or sticky, a drying agent may be added. **Blending into UAN:** Use 0.35 L ARM U 16% DMPP/ 1000 kg UAN solution. Fill spray tank with half the desired amount of UAN. Measure ARM U 16% DMPP and add to tank. Mix well. Add other products at this stage, if needed. Add the second half of the UAN solution. Continue mixing until well blended. Keep agitator running while mixing.

## AMMONIA VOLATILISATION FROM UREA

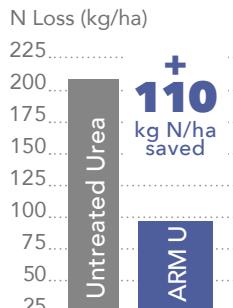
21 day cumulative NH3 loss with ARM U 28% NBPT vs untreated



### NH3 LOSS - UREA • SANDY SOIL

Roseisle MB; pH-7.8, OM-0.5%, CEC-8.4;  
3rd Party Research by the University of Manitoba - 2024

| TREATMENT      | BANDED                      |                 | BROADCAST                   |                 |
|----------------|-----------------------------|-----------------|-----------------------------|-----------------|
|                | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION |
| Urea           | 92.9                        |                 | 237.7                       |                 |
| ARM U 28% NBPT | 41.4                        | 55.5            | 60.9                        | 74.4            |



### NH3 LOSS - UREA • LOAMY SOIL

Carman MB; pH-6.8, OM-2.4%, CEC-11  
3rd Party Research by the University of Manitoba - 2024

| TREATMENT      | BANDED                      |                 | BROADCAST                   |                 |
|----------------|-----------------------------|-----------------|-----------------------------|-----------------|
|                | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION |
| Urea           | 69.4                        |                 | 208.1                       |                 |
| ARM U 28% NBPT | 50.8                        | 26.8            | 98.3                        | 52.7            |

Application Rates with Urea: 2L/tonne.

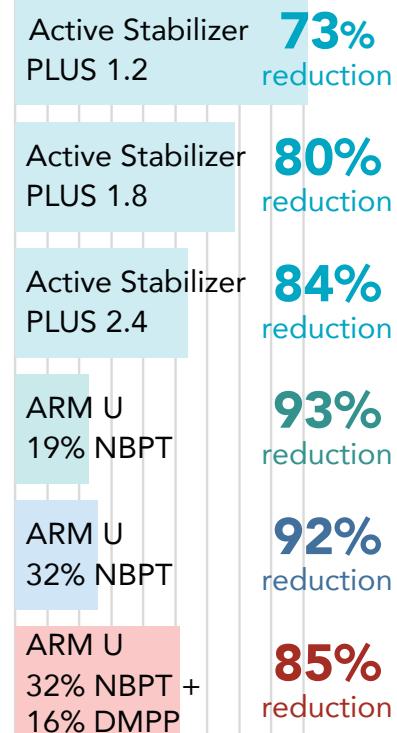
## AMMONIA VOLATILISATION FROM UREA

14 day cumulative NH3 loss with Active AgriScience nitrogen stabilisers vs untreated



NH3 Loss (kg/ha)

0 1.0 2.0 3.0 4.0



### NH3 LOSS - UREA

3rd Party Research by the University of Manitoba - 2021

| TREATMENT                  | BANDED                      |                 | BROADCAST                   |                 |
|----------------------------|-----------------------------|-----------------|-----------------------------|-----------------|
|                            | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION |
| Urea                       | 16.6                        |                 | 19.2                        |                 |
| Active Stabilizer PLUS 1.2 | 4.6                         | 72.5            | 7.4                         | 61.5            |
| Active Stabilizer PLUS 1.8 | 3.4                         | 79.4            | 4.8                         | 75.2            |
| Active Stabilizer PLUS 2.4 | 2.7                         | 83.8            | 5.7                         | 70.3            |
| ARM U 19% NBPT             | 1.1                         | 93.1            | 3.4                         | 82.4            |
| ARM U 32% NBPT             | 1.3                         | 92.3            | 2.4                         | 87.6            |
| ARM U 32% NBPT + 16% DMPP  | 2.6                         | 84.5            | 4.5                         | 76.5            |

**Application Rates with Urea:** Active Stabilizer PLUS 1.2 = 1.2L/tonne; Active Stabilizer PLUS 1.8 = 1.8L/tonne; Active Stabilizer PLUS 2.4 = 2.4L/tonne; ARM U 19% NBPT = 2L/tonne; ARM U 32% NBPT = 1.5L/tonne; ARM U 32% NBPT + 16% DMPP = 1.8L/tonne.

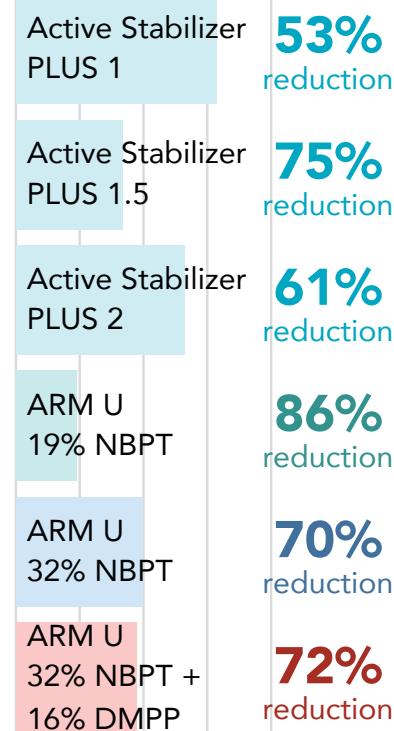
## AMMONIA VOLATILISATION FROM UAN

14 day cumulative NH3 loss with Active AgriScience nitrogen stabilisers vs untreated



NH3 Loss (kg/ha)

0 0.5 1.0 1.5 2.0



### NH3 LOSS - UAN

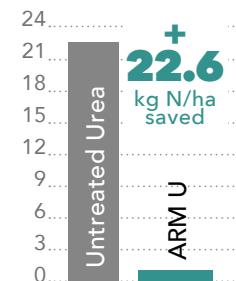
3rd Party Research by the University of Manitoba - 2021

| TREATMENT                  | DRIBBLE BANDED              |                 | BROADCAST                   |                 |
|----------------------------|-----------------------------|-----------------|-----------------------------|-----------------|
|                            | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION | CUMULATIVE NH3 LOSS (kg/ha) | % NH3 REDUCTION |
| UAN                        | 3.3                         |                 | 2.8                         |                 |
| Active Stabilizer PLUS 1   | 1.6                         | 53.1            | 2.1                         | 23.7            |
| Active Stabilizer PLUS 1.5 | 0.8                         | 75.0            | 2.7                         | 1.9             |
| Active Stabilizer PLUS 2   | 1.3                         | 60.5            | 2.6                         | 6.2             |
| ARM U 19% NBPT             | 0.5                         | 85.8            | 1.7                         | 39.7            |
| ARM U 32% NBPT             | 1.0                         | 70.4            | 1.6                         | 41.4            |
| ARM U 32% NBPT + 16% DMPP  | 0.9                         | 71.9            | 2.1                         | 25.5            |

**Application Rates with UAN:** Active Stabilizer PLUS 1 = 1L/tonne; Active Stabilizer PLUS 1.5 = 1.5L/tonne; Active Stabilizer PLUS 2 = 2L/tonne; ARM U 19% NBPT = 1.2L/tonne; ARM U 32% NBPT = 1L/tonne; ARM U 32% NBPT + 16% DMPP = 1.1L/tonne.



N Loss (kg/ha)



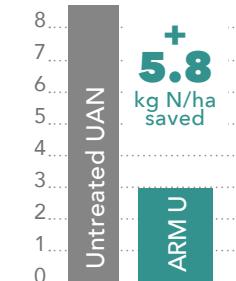
N loss reduction:  
**96%**

## NH3 LOSS - UREA

3rd Party Research by the University of Manitoba - 2016

| TREATMENT      | CUMULATIVE NH3 LOSS (kg N/ha) | % NH3 REDUCTION | NITROGEN SAVED (kg N/ha) |
|----------------|-------------------------------|-----------------|--------------------------|
| Urea           | 22.6                          |                 |                          |
| ARM U 19% NBPT | 1.0                           | 95.8            | 21.6                     |

N Loss (kg/ha)



N loss reduction:  
**53%**

## NH3 LOSS - UAN

3rd Party Research by the University of Manitoba - 2016

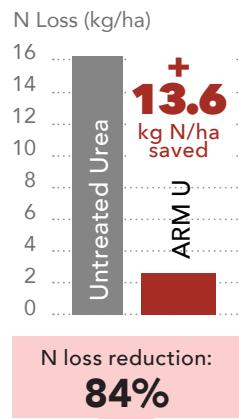
| TREATMENT      | CUMULATIVE NH3 LOSS (kg N/ha) | % NH3 REDUCTION | NITROGEN SAVED (kg N/ha) |
|----------------|-------------------------------|-----------------|--------------------------|
| UAN            | 8.8                           |                 |                          |
| ARM U 19% NBPT | 3.0                           | 65.4            | 5.8                      |

**Application Rates:** Urea: 2L/tonne; UAN: 1L/tonne.

# FIELD VOLATILISATION RESEARCH DATA

## WHEAT • AMMONIA VOLATILISATION FROM UREA

28 day cumulative NH3 loss with ARM U 19% NBPT, 32% NBPT + 16% DMPP vs untreated

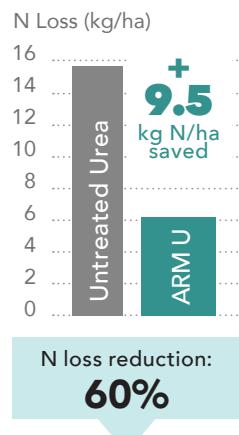


## WHEAT - NH3 LOSS • AUTUMN APPLIED UREA

Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2017-2018

| TREATMENT                 | 2017 NH3 LOSS (kg of N/ha) | 2018 NH3 LOSS (kg of N/ha) | 2 YEAR AVG. NH3 LOSS (kg of N/ha) | % LOSS REDUCTION | NITROGEN SAVED (kg of N/ha) |
|---------------------------|----------------------------|----------------------------|-----------------------------------|------------------|-----------------------------|
| Untreated Urea            | 14.4                       | 18.3                       | 16.3                              |                  |                             |
| ARM U 19% NBPT            | 4.1                        | 2.7                        | 3.4                               | 79.3             | 13.0                        |
| ARM U 32% NBPT + 16% DMPP | 3.7                        | 1.7                        | 2.7                               | 83.5             | 13.6                        |



## WHEAT - NH3 LOSS • SPRING APPLIED UREA

High Bluff, Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2016-2018

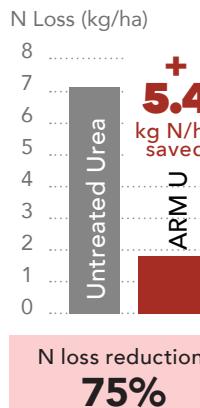
| TREATMENT                 | 2016 NH3 LOSS (kg of N/ha) | 2017 NH3 LOSS (kg of N/ha) | 2018 NH3 LOSS (kg of N/ha) | 3 YEAR AVG. NH3 LOSS (kg of N/ha) | % LOSS REDUCTION | NITROGEN SAVED (kg of N/ha) |
|---------------------------|----------------------------|----------------------------|----------------------------|-----------------------------------|------------------|-----------------------------|
| Urea                      | 18.6                       | 19.7                       | 9.2                        | 15.8                              |                  |                             |
| ARM U 19% NBPT            | 4.3                        | 10.1                       | 4.5                        | 6.3                               | 60.3             | 9.5                         |
| ARM U 32% NBPT + 16% DMPP | 4.0                        | 10.6                       | 7.5                        | 7.4                               | 53.5             | 8.5                         |

### Application Rates with Urea:

ARM U 19% NBPT = 2L/tonne; ARM U 32% NBPT + 16% DMPP = 1.5L/tonne.

## WHEAT • AMMONIA VOLATILISATION FROM UAN

28 day cumulative NH3 loss with ARM U 19% NBPT, 32% NBPT + 16% DMPP vs untreated

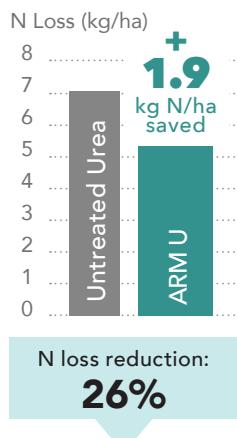


### WHEAT - NH3 LOSS • AUTUMN APPLIED UAN

Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2017-2018

| TREATMENT                    | 2017<br>NH3 LOSS<br>(kg of N/ha) | 2018<br>NH3 LOSS<br>(kg of N/ha) | 2 YEAR AVG.<br>NH3 LOSS<br>(kg of N/ha) | % LOSS<br>REDUCTION | NITROGEN<br>SAVED<br>(kg of N/ha) |
|------------------------------|----------------------------------|----------------------------------|---|---------------------|-----------------------------------|
| Untreated UAN                | 8.6                              | 5.8                              | 7.2                                     |                     |                                   |
| ARM U 19% NBPT               | 4.5                              | 2.8                              | 3.6                                     | 49.8                | 3.6                               |
| ARM U 32% NBPT<br>+ 16% DMPP | 1.7                              | 1.9                              | 1.8                                     | 75.3                | 5.4                               |



### WHEAT - NH3 LOSS • SPRING APPLIED UAN

High Bluff, Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2016-2018

| TREATMENT                     | 2016<br>NH3 LOSS<br>(kg of N/ha) | 2017<br>NH3 LOSS<br>(kg of N/ha) | 2018<br>NH3 LOSS<br>(kg of N/ha) | 3 YEAR AVG.<br>NH3 LOSS<br>(kg of N/ha) | % LOSS<br>REDUCTION | NITROGEN<br>SAVED<br>(kg of N/ha) |
|-------------------------------|----------------------------------|----------------------------------|----------------------------------|---|---------------------|-----------------------------------|
| UAN                           | 7.8                              | 8.5                              | 5.0                              | 7.1                                     |                     |                                   |
| ARM U<br>19% NBPT             | 4.9                              | 6.3                              | 4.4                              | 5.2                                     | 26.3                | 1.9                               |
| ARM U<br>32% NBPT<br>16% DMPP | 5.0                              | 9.0                              | 4.8                              | 6.3                                     | 11.7                | 0.8                               |

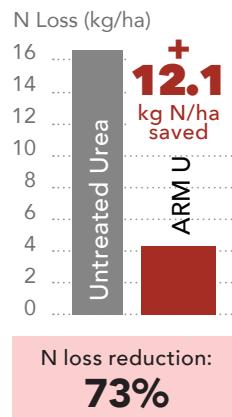
#### Application Rates with UAN:

ARM U 19% NBPT = 1L/tonne; ARM U 32% NBPT + 16% DMPP = 1L/tonne.

# FIELD VOLATILISATION RESEARCH DATA

## CANOLA • AMMONIA VOLATILISATION FROM UREA

28 day cumulative NH3 loss with ARM U 19% NBPT, 32% NBPT + 16% DMPP vs untreated



### CANOLA - NH3 LOSS • AUTUMN APPLIED UREA

Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2017-2018

| TREATMENT                 | 2017 NH3 LOSS (kg of N/ha) | 2018 NH3 LOSS (kg of N/ha) | 2 YEAR AVG. NH3 LOSS (kg of N/ha) | % LOSS REDUCTION | NITROGEN SAVED (kg of N/ha) |
|---------------------------|----------------------------|----------------------------|-----------------------------------|------------------|-----------------------------|
| Untreated Urea            | 17.4                       | 15.9                       | 16.6                              |                  |                             |
| ARM U 19% NBPT            | 3.2                        | 6.1                        | 4.7                               | 72.0             | 12.0                        |
| ARM U 32% NBPT + 16% DMPP | 4.8                        | 4.3                        | 4.5                               | 72.8             | 12.1                        |



### CANOLA - NH3 LOSS • SPRING APPLIED UREA

High Bluff, Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2016-2018

| TREATMENT                 | 2016 NH3 LOSS (kg of N/ha) | 2017 NH3 LOSS (kg of N/ha) | 2018 NH3 LOSS (kg of N/ha) | 3 YEAR AVG. NH3 LOSS (kg of N/ha) | % LOSS REDUCTION | NITROGEN SAVED (kg of N/ha) |
|---------------------------|----------------------------|----------------------------|----------------------------|-----------------------------------|------------------|-----------------------------|
| Urea                      | 19.2                       | 23.2                       | 16.6                       | 19.6                              |                  |                             |
| ARM U 19% NBPT            | 4.1                        | 9.5                        | 6.9                        | 6.8                               | 65.3             | 12.8                        |
| ARM U 32% NBPT + 16% DMPP | 5.3                        | 12.8                       | 9.3                        | 9.1                               | 53.5             | 10.5                        |

#### Application Rates with Urea:

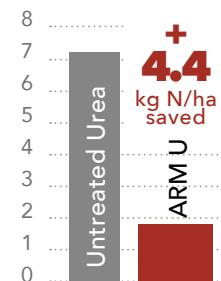
ARM U 19% NBPT = 2L/tonne; ARM U 32% NBPT + 16% DMPP = 1.5L/tonne.

## CANOLA • AMMONIA VOLATILISATION FROM UAN

28 day cumulative NH3 loss with ARM U 19% NBPT, 32% NBPT + 16% DMPP vs untreated



N Loss (kg/ha)



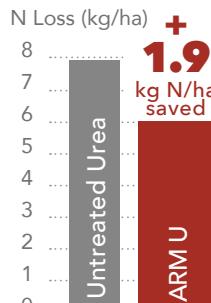
N loss reduction:  
**61%**

### CANOLA - NH3 LOSS • AUTUMN APPLIED UAN

Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2017-2018

| TREATMENT                 | 2017 NH3 LOSS (kg of N/ha) | 2018 NH3 LOSS (kg of N/ha) | 2 YEAR AVG. NH3 LOSS (kg of N/ha) | % LOSS REDUCTION | NITROGEN SAVED (kg of N/ha) |
|---------------------------|----------------------------|----------------------------|-----------------------------------|------------------|-----------------------------|
| Untreated UAN             | 5.3                        | 9.2                        | 7.3                               |                  |                             |
| ARM U 19% NBPT            | 3.2                        | 3.2                        | 3.2                               | 56.2             | 4.1                         |
| ARM U 32% NBPT + 16% DMPP | 2.4                        | 3.3                        | 2.9                               | 60.7             | 4.4                         |



N loss reduction:  
**25%**

### CANOLA - NH3 LOSS • SPRING APPLIED UAN

High Bluff, Carman and Portage Manitoba

3rd Party Research by the University of Manitoba - 2016-2018

| TREATMENT                 | 2016 NH3 LOSS (kg of N/ha) | 2017 NH3 LOSS (kg of N/ha) | 2018 NH3 LOSS (kg of N/ha) | 3 YEAR AVG. NH3 LOSS (kg of N/ha) | % LOSS REDUCTION | NITROGEN SAVED (kg of N/ha) |
|---------------------------|----------------------------|----------------------------|----------------------------|-----------------------------------|------------------|-----------------------------|
| UAN                       | 9.5                        | 8.4                        | 5.9                        | 7.9                               |                  |                             |
| ARM U 19% NBPT            | 5.3                        | 8.4                        | 5.0                        | 6.2                               | 21.9             | 1.7                         |
| ARM U 32% NBPT + 16% DMPP | 6.0                        | 8.3                        | 3.6                        | 6.0                               | 24.6             | 1.9                         |

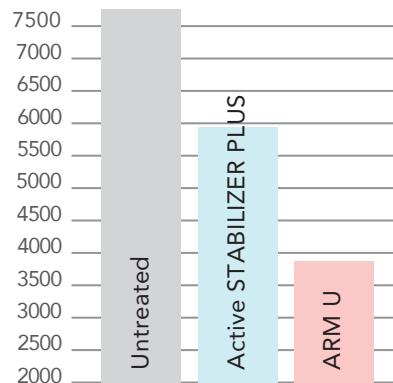
#### Application Rates with UAN:

ARM U 19% NBPT = 1L/tonne; ARM U 32% NBPT + 16% DMPP = 1L/tonne.

# N<sub>2</sub>O EMISSIONS RESEARCH DATA

## N<sub>2</sub>O EMISSIONS RESEARCH

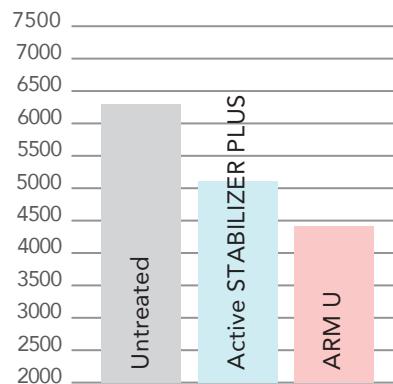
Active STABILIZER PLUS and ARM U 32% NBPT + 16% DMPP vs untreated urea



### N<sub>2</sub>O EMISSIONS FROM BROADCASTED UREA

3rd Party Research by the University of Manitoba

| TREATMENT                 | N <sub>2</sub> O FLUX (g/ha) | DIFFERENCE | % REDUCTION |
|---------------------------|------------------------------|------------|-------------|
| Untreated                 | 7760                         |            |             |
| Active STABILIZER PLUS    | 5965                         | 1794       | 23.1        |
| ARM U 32% NBPT + 16% DMPP | 3889                         | 3871       | 49.9        |



### N<sub>2</sub>O EMISSIONS FROM BANDED UREA

3rd Party Research by the University of Manitoba

| TREATMENT                 | N <sub>2</sub> O FLUX (g/ha) | DIFFERENCE (g/ha) | % REDUCTION |
|---------------------------|------------------------------|-------------------|-------------|
| Untreated                 | 6301                         |                   |             |
| Active STABILIZER PLUS    | 5161                         | 1141              | 18.1        |
| ARM U 32% NBPT + 16% DMPP | 4462                         | 1839              | 29.2        |

## SHELF LIFE STUDY • AMMONIA VOLATILISATION

ARM U 19% NBPT treated fertiliser has minimum one year shelflife.

### ARM U 19% NBPT-TREATED UREA EFFICACY VS SHELF LIFE

3rd Party Research by the University of Manitoba - 2017

| TREATMENT                                | CUMULATIVE NH3 LOSS (kg/ha) |       |       |        |                | % NH3 REDUCTION | NITROGEN SAVED (kg/ha) |
|--|-----------------------------|-------|-------|--------|----------------|-----------------|------------------------|
|  | Day 2                       | Day 4 | Day 7 | Day 14 | Day 21 (Total) |                 |                        |
| Untreated Urea                           | 3.4                         | 20.3  | 28.8  | 32.8   | 33.1           |                 |                        |
| ARM U 19% NBPT Urea – April 2016         | 0.6                         | 1.4   | 2     | 3.8    | 4.3            | 87.3            | 28.8                   |
| ARM U 19% NBPT Urea – October 2016       | 1.7                         | 2.6   | 4.1   | 8.5    | 9              | 73.2            | 24.2                   |
| ARM U 19% NBPT Urea – January 2017       | 0.8                         | 1.4   | 2.1   | 5.5    | 6.3            | 81.1            | 26.8                   |
| ARM U 19% NBPT Urea – Fresh (April 2017) | 0.5                         | 1.1   | 1.8   | 8.5    | 8.7            | 73.9            | 24.4                   |

### ARM U 19% NBPT-TREATED UAN EFFICACY VS SHELF LIFE

3rd Party Research by the University of Manitoba - 2017

| TREATMENT                               | CUMULATIVE NH3 LOSS (kg/ha) |       |       |        |                | % NH3 REDUCTION | NITROGEN SAVED (kg/ha) |
|---|-----------------------------|-------|-------|--------|----------------|-----------------|------------------------|
|   | Day 2                       | Day 4 | Day 7 | Day 14 | Day 21 (Total) |                 |                        |
| Untreated UAN                           | 5.4                         | 14.6  | 21.2  | 31.3   | 31.8           |                 |                        |
| ARM U 19% NBPT UAN – October 2016       | 2.7                         | 3.6   | 5.2   | 8      | 8.6            | 73.3            | 23.2                   |
| ARM U 19% NBPT UAN – January 2017       | 2.3                         | 3.8   | 5.8   | 8.7    | 9.4            | 70.6            | 22.4                   |
| ARM U 19% NBPT UAN – Fresh (April 2017) | 3                           | 5.5   | 6.9   | 10.5   | 11.9           | 62.6            | 19.8                   |

## NITROGEN STABILISER SHELF LIFE RESEARCH DATA



Average efficacy:  
**99%**

| SAMPLING TIME | % NBPT EFFICACY | % DMPP EFFICACY |
|---------------|-----------------|-----------------|
| 2 months      | 100%            | 98%             |
| 6 months      | 100%            | 98%             |
| 10 months     | 100%            | 100%            |



Average efficacy:  
**97%**

| SAMPLING TIME | % NBPT EFFICACY |
|---------------|-----------------|
| 1 month       | 95%             |
| 10 months     | 99%             |



Average efficacy:  
**99%**

| SAMPLING TIME | % DMPP EFFICACY |
|---------------|-----------------|
| 5 months      | 98%             |
| 10 months     | 100%            |



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