



# Sustainable Fertiliser N Programmes Using Protected Urea



## Why should I use protected urea?

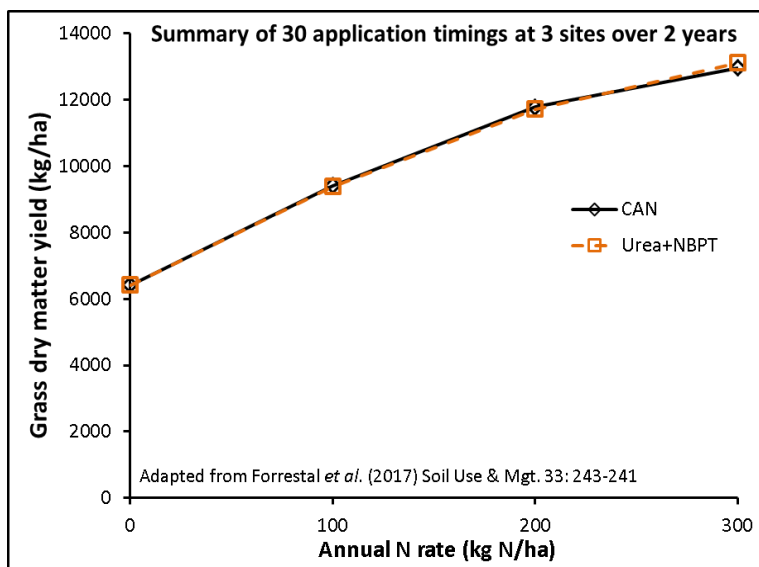
Protected urea is the No. 1 technology for farmers to reduce losses of both ammonia (from urea) and the GHG nitrous oxide (from CAN).

## What is protected urea?

Protected urea (ProUrea) is urea which is treated with a urease inhibitor. The urease inhibitor can be either **a)** coated onto the outside of the fertiliser granule or **b)** incorporated into the urea granule melt during manufacture.

## Will using protected urea reduce yields and N efficiency?

No, published Teagasc trials (Figure 1) have shown that protected urea consistently yields as well as CAN and is as efficient in Irish grasslands.



**Figure 1.** Summary of total annual grass dry matter yield (kg/ha) for CAN and protected urea evaluated across two growing seasons (two years) on three soils (locations).

The 2 main sources of N used on Irish farms are CAN & Urea. Due to possible N losses as either nitrous oxide (from CAN) or ammonia (from urea) under poor soil / weather conditions that promote N loss. Urea treated with a urease inhibitor (NBPT / 2-NPT) reduces both ammonia & nitrous oxides losses helping to reduce their impact on both air & water quality.

### Example fertiliser programmes integrating protected urea as the main N source during the growing season for both dairy & drystock farms at different stocking rates.

**Table 1:- Outlines recommended rates of N, P & K for a dairy farm stocked 0.8 LU /ac (170kg Org N/ha or 2.0LU/ha). Soil P and K levels assumed to be index 3**

Advice		March	April	May	June / July	Sept	Total Units/ac
<b>Product (units/ac)</b>		1.75 bags/ac 18-6-12	1.0 bag/ac ProUrea + S	0.65 bag/ac ProUrea	0.75 bag/ac ProUrea + S	0.6 bag/ac ProUrea	
<b>N</b>	<b>160</b>	32	40	30	30	27	<b>159</b>
<b>P</b>	<b>11</b>	11					<b>11</b>
<b>K</b>	<b>24</b>	21					<b>21</b>
<b>S</b>	<b>12</b>		6		5		<b>11</b>
<b>Cost €/ac</b>		<b>34</b>	<b>20</b>	<b>35</b>	<b>38</b>	<b>32</b>	<b>€96/ha</b>

ProUrea = Urea 46% + NBPT / 2-NBPT, Cost/tonne = €430/t, ProUrea 40% N & 6% S- €400t/, 18-6-12 - €385, Urea - €390, CAN - €285. To convert units/ac to kg/ha multiply by 1.25



**Table 2:- Outlines recommended rates of N, P & K for a dairy farm stocked 1.0 LU /ac (210kg Org N/ha or 2.5LU/ha). Soil P and K levels assumed to be index 3**

Advice		Feb	March	April	May	June / July	Sept	Total Units/ac
<b>Product</b> (units/ac)		0.5 bag/ac ProUrea	2.5 bags/ac 18-6-12	1.0 bag/ac ProUrea + S	0.75 bag/ac ProUrea	0.85 bag/ac ProUrea + S	0.5 bag/ac ProUrea	
<b>N</b>	<b>200</b>	23	45	40	35	34	23	<b>200</b>
<b>P</b>	<b>15</b>		15					<b>15</b>
<b>K</b>	<b>28</b>		30					<b>30</b>
<b>S</b>	<b>12</b>			6		5		<b>11</b>
<b>Cost €/ac</b>		<b>11</b>	<b>48</b>	<b>20</b>	<b>16</b>	<b>17</b>	<b>11</b>	<b>€123/ac</b>

ProUrea = Urea 46% + NBPT / 2-NBPT, Cost/tonne = €430/t, ProUrea 40% N & 6% S- €400t/, 18-6-12 - €385, Urea - €390, CAN - €285. To convert units/ac to kg/ha multiply by 1.25

### Is protected urea more costly?

No, prices in € per tonne fertiliser and € per unit N delivered for the three main fertiliser N types available as per 14 March 2019.

To convert to cost per unit to cost per kg N multiply by 2.

Fertiliser N Product	N content (%)	Cost per tonne (€)	Cost/unit N (€)
Urea	46%	391	0.43
Protected urea	46%	430	0.47
CAN	27%	285	0.53



**Table 3:- Outlines recommended rates of N, P & K for a drystock farm stocked 0.8 LU/ac (130kg Org N/ha or 1.5LU/ha). Soil P and K levels assumed to be index 3.**

Advice		March	April	May	June / July	Sept	Total Units/ac
<b>Product</b> (units/ac)		0.8 bag/ac ProUrea	1.0 bag/ac 18-6-12	0.2 bag/ac ProUrea + S	0.3 bag/ac ProUrea + S	0.3 bag/ac ProUrea + S	
<b>N</b>	<b>90</b>	36	18	12	12	12	<b>90</b>
<b>P</b>	<b>6</b>		6				<b>6</b>
<b>K</b>	<b>8</b>		12				<b>12</b>
<b>S</b>	<b>8</b>		3	2	2	2	<b>9</b>
<b>Cost €/ac</b>		<b>17</b>	<b>19</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>€54/ac</b>

ProUrea = Urea 46% + NBPT / 2-NBPT, Cost/tonne = €430/t, ProUrea 40% N & 6% S- €400t/, 18-6-12 - €385, Urea - €390, CAN - €285. To convert units/ac to kg/ha multiply by 1.25

### Can I spread protected urea throughout the growing season?

Yes, you can spread at times when you would otherwise spread calcium ammonium nitrate (CAN) or unprotected urea, potentially simplifying spreading and fertiliser spreader setting.



**Table 4:- Outlines recommended rates of N, P & K for a drystock farm stocked 1.0 LU/ac (170kg Org N/ha or 2.0LU/ha).  
Soil P and K levels assumed to be index 3.**

Advice		March	April	May	June / July	Sept	Total Units/ac
<b>Product</b> (units/ac)		1.3 bags/ac 18-6-12	1.0 bag/ac ProUrea + S	0.65 bag/ac ProUrea	0.48 bag/ac ProUrea + S	0.37 bag/ac Urea +	
<b>N</b>	<b>130</b>	24	40	30	19	17	<b>130</b>
<b>P</b>	<b>8</b>	8					<b>8</b>
<b>K</b>	<b>12</b>	16					<b>16</b>
<b>S</b>	<b>10</b>		6		3		<b>9</b>
<b>Cost €/ac</b>		<b>25</b>	<b>20</b>	<b>14</b>	<b>10</b>	<b>8</b>	<b>€77/ac</b>

ProUrea = Urea 46% + NBPT / 2-NBPT, Cost/tonne = €430/t, ProUrea 40% N & 6% S- €400t/, 18-6-12 - €385, Urea - €390, CAN - €285. To convert units/ac to kg/ha multiply by 1.25

Fertiliser programmes incorporating protected urea instead of CAN offers both environmental (reduces GHG's & Ammonia losses) & economic benefits. A protected urea based programme is ~ €6 to 17/ha cheaper than a CAN based programme.

**Contact your local advisor to complete a farm fertiliser plan to make adjustments for farm N & P allowances as per the NAP depending on soil test results, stocking rate, concentrate feed usage, cattle slurry applications.**







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