



# HCPSL

Herbert Cane Productivity Services Ltd.

## Enhanced Efficiency Fertiliser (EEF) User Guide for the Herbert Region

### Enhanced Efficiency Fertiliser (EEF)

Current commercially available EEF products use urea as their nitrogen base and apply one of a number of treatments in order to slow the rate of release of the nitrogen, or keep the nitrogen in a form that is less prone to being lost to the surrounding environment.

EEF has the potential to improve productivity as well as environmental outcomes. They do this primarily by reducing nitrogen losses from leaching, volatilisation and denitrification, as well as providing the crop with a steady supply of nitrogen over a longer period of time.

### Nitrification Inhibitor EEF

Nitrification inhibitors come as either pre-applied to the surface of a urea granule, or as a liquid that can be applied directly to the soil as fertiliser is being applied.

Nitrification inhibitors work by reducing the speed at which nitrogen is converted from the more stable ammonium form to the less stable and more mobile nitrate form.

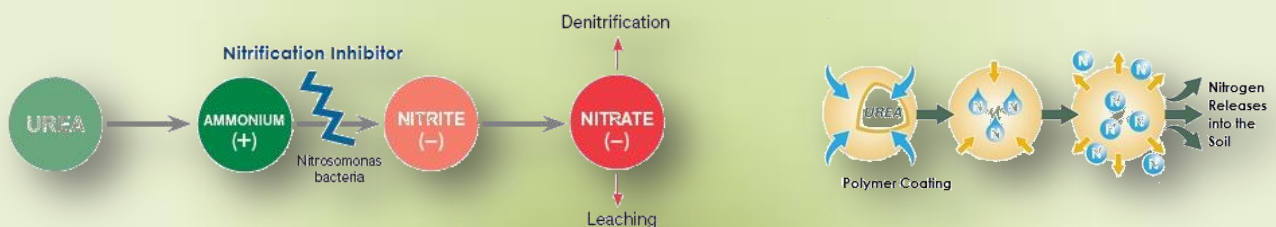
They do this by acting on the bacteria in the soil that allow this process to happen. Because the nitrogen is immediately available to the plant there is no need to blend it with any other nitrogen fertiliser.

### Polymer Coated EEF

Polymer coated products have a protective polymer coating applied over a urea granule. This coating gradually allows the nitrogen to slowly release into the surrounding soil where the plant can access it.

As this process happens over a long period of time polymer coated products are usually blended with regular urea to supply the crops immediate requirements.

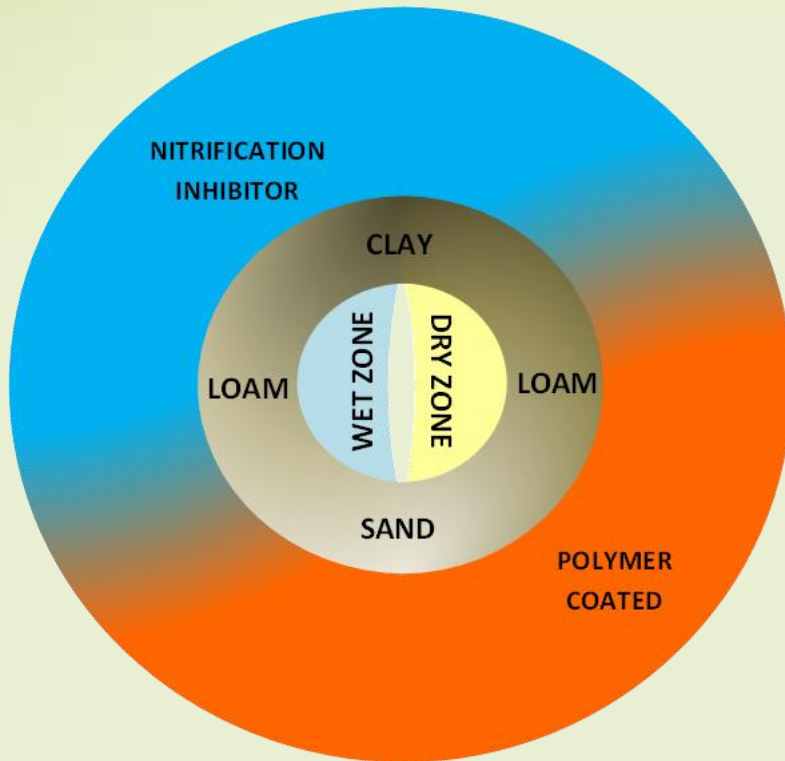
Unlike previously trialled “slow release” fertilisers, polymer coated “controlled release” EEF is less susceptible to rapid breakdown due to temperature and moisture issues.





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The diagram above is a guide to choosing an EEF to best suit your soil and environment based on current research.

### Application

Industry best practise is to apply all nitrogen fertiliser sub-surface. If for whatever reason this is not practical, it is recommended that a polymer coated EEF nitrogen fertiliser be used.

As nitrogen in the ammonium form it can be lost through volatilisation, nitrification inhibitors are not recommended in this situation.

### Effectiveness

Under the right conditions EEF products do reduce nitrogen losses. To do this however a loss event needs to occur; such as heavy rainfall or waterlogging.

Under these conditions conventional urea can be lost to leaching, denitrification and run-off.

EEF products however limit these losses from occurring.

### Choosing the Right EEF

Choosing the right EEF product to suit your soil type and environment is an important decision.

Recent infield and pot trial research conducted by HCPSL and their research partners has made this decision a little easier by developing a basic framework for choosing the right product.

Research to date has indicated that;

- **Nitrification inhibitors** perform well on heavy, wet soils that are prone to waterlogging and denitrification losses.
- **Polymer Coatings** perform well on light textured soils prone to leaching. This is particularly true following high rainfall events.



Pot trials conducted on the Macknade Research Station has lead to a better understand of EEF products.

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