

# Pastures

## Recommendation for use of TwinN for pastures.



TwinN is currently used in pasture production systems in many countries. The main reasons why farmers use TwinN for pasture production are to enable high production levels with reduced nitrogen fertiliser rates or to increase biomass and feed quality. Because the TwinN microbes provide a more even nitrogen nutrition supply to the pastures the nutritional value of the feed is improved by avoiding the cycles of very rapid production of leaf matter with lower nutritional value, followed by a period of sub-optimal nitrogen nutrition until the next application of fertiliser. Use of TwinN evens out the growth spurts and helps avoid unwanted high nitrate levels in feed. TwinN stimulates nodulation in legumes and this assists in maintaining persistence of clover and other legumes in pastures. Some growers want to increase production levels in their pastures without resorting to high nitrogen application rates, while others want to maintain a very high level, intensive production system with a small reduction in nitrogen fertiliser rates. TwinN enables more flexibility for farmers to select a profitable and sustainable pasture production system.

### Improved profitability

TwinN can be used to increase profitability by decreasing nitrogen fertiliser costs. Profitability is also increased by increased pasture productivity and improved herd health from better quality feed.

### Environmental Benefits

#### Reduced leaching of nitrogen into waterways

An additional benefit of reduced nitrogen fertiliser application and better nutrient capture is that leaching of nitrogen compounds into rivers, lakes and oceans is greatly reduced. In areas where nitrogen fertilizer use is restricted by legislation, TwinN allows producers to comply with environmental legislation while maintaining good yields.

#### Reduced Carbon Footprint

TwinN enables reduced application of nitrogen fertilisers, such as urea, that have a very high carbon footprint associated with their manufacture, transport and NO<sub>2</sub> emissions. This allows farmers to grow produce with reduced carbon footprint. TwinN has been audited for carbon footprint and MAB has purchased carbon credits to allow TwinN to be accounted as carbon footprint neutral. A study in New Zealand showed that a large proportion of the carbon footprint of cheese (as a case study) produced from a dairy pasture system was attributable to the urea fertiliser program used to grow the pasture.

### Fertiliser Recommendations

#### Four rules:

1. Apply the normal rates of P, K and other nutrients. If these nutrients are limiting then the crop will be unable to respond to TwinN application.
2. Reduce N fertiliser application rates by up to 25%. Please refer to Crop Application Guidelines for specific recommendations for the crop. Some growers who are using lower N rates as their standard practice apply TwinN on top of their normal program to target increased yields.
3. If N fertiliser is applied in two or more applications per season then keep the initial planting application at standard rates and reduce the later applications. This ensures the crop gets a strong early start. Do not vary the timing of fertiliser programs. For example, do not remove every second nitrogen application and replace it with TwinN as that will result in a very uneven nitrogen nutrition supply.
4. For organic pasture systems, apply TwinN on top of the standard organic nutrition sources such as composts, manures etc.

### Application

#### Application timing

- For high intensity pasture production systems keep the first nitrogen application of the main growing season at standard rates and apply TwinN as soon as the pasture is growing actively. Then apply TwinN every 2 months with a reduced nitrogen fertiliser program during the main growing season.
- In lower intensity pasture systems apply TwinN once at the start of active growth and again in 3-4 months if that is economically viable.

#### Application methods

Application needs to deliver the microbes into the moist root zone. These are commonly used methods:

- Boomspray onto moist pastures before rain, using as much water as possible, or immediately before overhead irrigation. Apply using very coarse nozzles and as much water as possible to wash the microbes into the roots.
- Apply via overhead irrigation or any fertigation system