

# BROADACRE

## Recommendation for use of TwinN on broadacre crops

TwinN is used on many broad acre crops in many countries. These crops include wheat, barley, oats, grain and grazing sorghum, sunflower, cotton, corn, soy bean and rice. TwinN is used to allow high yields with reduced nitrogen fertiliser applications. Farmers use TwinN to increase profitability, improve their soils over time, and to farm in a more environmentally sustainable way. TwinN helps grow crop plants that are resilient to dry spells by providing a lower rate of nitrogen steadily through the growing season. This avoids growing leafy, soft plants that suffer badly in dry spells. TwinN also drives strong early root growth (see TwinN Mechanism of Action) and this sets up the crop for resilience in a bad season and for strong yield in a good season. For most farmers getting a good yield regularly over the years is the key to long term profitability and this is a challenge in our variable climate.



### Improved profitability

TwinN can be used to increase profitability by decreasing nitrogen fertiliser costs and when grain prices are low this is of value. When grain prices are higher improved profitability is driven mainly by improved yields and producers usually make small reductions in N and target high yields.

### 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 production of food ingredients 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.

### Fertiliser Recommendations

Three 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%. 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 application. This ensures the crop gets a strong early start.

### Application

#### Application timing

- For annual broadacre crops, apply TwinN when the plants have about five leaves. In cereals this is about mid tillering. The aim is to apply TwinN early enough to drive a strong early growth but not so early that there is only a limited amount of roots available for the microbes to colonise.
- Later applications can be used if the season looks good and farmers want to maximise yields. In cereals an application at booting or flag leaf stage will boost yield in a good season.

#### Application methods

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

- Boomspray onto moist soil 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. If banding is possible then band the application onto the crop rows.
- Drip irrigation, micro-sprinkler irrigation, overhead irrigation or any fertigation system
- Liquid inject with a cutting disc or tine combined with standard liquid inject lines. Do not mix TwinN solution with pesticides or strong chemical fertiliser solutions.



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