



Instructions for Use – TwinN

Use a 1 ha pack for 1 ha, a 5 ha pack for 5 ha, or a 10 ha pack for 10 ha. Double or treble rates can be used for trees and vines with root vigour problems. Do **not** apply at less than x1 rate

Step 1 Rehydrating the microbes

Use clean 1 or 2 L containers with lids to allow vigorous shaking during mixing. Several litres of **non-chlorinated** water will be required. Do **not** use chlorinated tap water. One 1 L container can be used per 4 x 5 ha packs.

Remove the sealed lid of the vial, and take out the rubber bung. Pour in some of the water, replace bung, secure, and shake vigorously. Tip contents into one of the plastic containers. Repeat until all contents of the vial has been washed out and is in the container. Multiple vials can go into each 1 or 2 L container.

Add non-chlorinated water to half fill the 1 L container, secure lid, and shake **thoroughly** for about a minute. Check that the freeze-dried microbes are fully dispersed. If clumps are visible then shake more until they dissolve. Top up the container to make one litre.

Screw the lid on firmly and shake **thoroughly** for 30 sec to 1 minute. Keep a note of how many hectares dose of TwinN is in each 1 L container. The microbes are now ready to mix into the application tank to apply to the crop. Shake again and add to mixing tank for application.

The TwinN solution can be kept in the fridge for 1 week taking good care **not to let them freeze**.

Step 2 Application to the crop

Application methods need to deliver the TwinN solution into the moist root zone. Contact with foliage is not a problem but the bulk of the application should contact the roots to maximise efficacy. **Do not tank mix with fertilisers or agrochemicals.** Application methods include:

1. Via overhead irrigation in enough water to take the microbes into the root zone.
2. Via any fertigation system including micro-sprinklers, drip irrigation, trickle tape or similar.
3. Via liquid injection from a tine that cuts into the root zone. Note that tines are available that can deliver fertiliser products at one depth and TwinN at a different depth. Apply in as much water volume as is practical.
4. Via water run in-furrow irrigation. This applies to farmers who are set up to deliver urea etc by this method.
5. By boom spray onto **moist** soil. Use very coarse or streaming nozzles and as much water as is practical. For wide row crops band the application onto the plants.

Calculate the amount of water to be delivered to the crop area and mix in the correct amount of TwinN microbe solution – after shaking it to re-suspend the microbes. Apply the tank mixed microbes within 24 hours and remix to resuspend the microbes in the tank before application.

Chlorinated water can be de-chlorinated by adding 2g sodium thiosulfate (STS) per 100L. Pre-dissolve in a small volume of water and mix into the tank water thoroughly. Wait 5 minutes before adding TwinN mix. Consult TwinN@mabiotec.com for alternative de-chlorination methods for organic growers.

When to apply TwinN

- For annual crops such as cereals, canola (oil seed rape), maize (corn), sugar beet, sugarcane, vegetables etc, apply once at 5 - 8 leaf stage. If very high yields are targeted a second application at the end of vegetative stage can be used, but for most situations a single application is sufficient. A single application later in the crop cycle can be used to boost yields or recover the crop from water-logging.
- For ratoon crops apply once soon after active re-growth has commenced.
- For cotton apply once at start of squaring or later on top of standard N rates.
- For potatoes use one application at 5 – 6 leaf stage and a second application a month later.
- For tree crops (including tea) apply at the start of active spring growth and again at the end of the season before root activity has ceased. For forestry apply at planting and then once per year in spring/early summer or in the rainy season.
- For most vine crops use one application at the start of active vine growth. Use a second application 2/3 through the season for high value crops. For wine grapes a single application is sufficient.
- For pastures apply TwinN at the start of the growing season onto actively growing pasture. Use a second application 4 months later or 2/3 of the way through the growing season. For very high intensity pastures consider 3 applications per year.

For enquiries about application of TwinN in other crops, or how to fit it into your nutrition program, contact your local distributor, or TwinN@mabiotec.com for personalised advice.

How much nitrogen to cut with TwinN?

Note that growers can cut N by using TwinN but should **not reduce P, K** etc.

If N is applied in split applications, **keep the first application standard** and cut N in later applications.

If crop prices are high and yield maximisation is the goal then apply TwinN with a small reduction in N, or on top of the standard rate of N.

- For annual crops such as cereals, rice, canola (oil seed rape), maize (corn), sugar beet, cotton, sugarcane, vegetables etc, that use high rates of N, cut N by up to 25% **up to maximum cut of 30 U of N/ha**.
- For tree crops that use moderate rates of N eg 100 – 140 kg N/ha cut N by up to 30 % **up to a maximum of 30 U/ha**. Spread the cuts in N across the growing season.
- For pastures cut N by up to 25% **up to a maximum of 30 U/ha**. Spread the cuts in N across the growing season.

For any enquiries and individual advice contact TwinN@mabiotec.com or Office +(61)0754 457 151

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