



Instructions for Use – NitroGuard™

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.

Step 1 Rehydrating the microbes

Obtain two 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.

Freeze-dried microbe vial

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. The microbes must be fully resuspended, not remaining in clumps.

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.

Pour in approximately half a litre of water, 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.

Bacillus container

Open the Bacillus container carefully and empty contents into the second 1 or 2 L container or bucket. Part fill with water, secure lid and shake or stir until fully suspended. Top up the container to make one litre.

NOTES 1) The microbe solutions can be kept in the fridge for 1 week. **Do not to let them freeze.**

2) Do not mix the TwinN and the Bacillus solutions together until preparing the tank mix for application.

3) If you are preparing NitroGuard for a larger area you can mix multiple vials into each litre of water. Just keep track of how many Ha the solution is to be applied to. Always apply at least the full dose rate. Higher dose rates are not harmful and may be used to restore beneficial soil and root microflora.

Step 2 Application to the crop

Application methods need to deliver the NitroGuard solution into the moist root zone. Contact with foliage is not a problem but the bulk of the application should contact the roots. **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. Apply in as much water volume as is practical (minimum 100L/ha).
4. For tree crops without fertigation calculate the number of trees/ ha and make up a tank mix volume to allow for 1 – 2 L per tree. Squirt this into the root zone onto moist soil. **Do not apply to dry soil.** Use a similar approach for new plantings – add 0.5 – 1 L into the root ball at planting.
5. Via boomspray onto **moist soil.** Use very coarse or streaming nozzles and as much water as is practical. For wide row crops the application should be banded onto the plants.

Calculate the amount of water to be delivered to the crop area and mix in the correct amount of each of the two NitroGuard microbe solutions – after shaking to re-suspend the microbes. Apply the tank mixed microbes within 24 hours and stir 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 NitroGuard microbe mixes. Consult TwinN@mabiotec.com for alternative de-chlorination methods for organic growers.

When to apply Nitroguard

- For annual crops such as cereals, canola (oil seed rape), maize (corn), sugar beet, sugarcane, rice, 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 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 per season is sufficient.
- For pastures apply NitroGuard 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 NitroGuard 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 NitroGuard?

Note that growers can cut N by using NitroGuard 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 NitroGuard with a small reduction in N, or on top of the standard rate of N.

- For annual crops such as cereals, canola (oil seed rape), maize (corn), sugar beet, cotton, sugarcane, vegetables etc, that use high rates of N, cut N by % **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 30 - 40% **up to a maximum of 50 U/ha**. Spread the cuts in N across the growing season.
- For pastures cut N by 25% **up to a maximum of 40 U/ha**. Spread the cuts in N across the growing season.

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

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