

How to use nitrate strips to test water quality on your farm

Key messages

- Nitrate strips can be used to find out where nitrate losses may be occurring on a farm.
- Nitrate strips are relatively cheap and easy to use, but they only provide an approximate nitrate concentration range.
- Nitrate strips need to be kept cool and used within the expiry date otherwise they won't work.

Introduction

Nitrate strips enable quick tests for nitrate in surface water or groundwater on your farm. Refer to “**2. How to monitor surface water quality on your farm**” and “**3. How to monitor groundwater quality on your farm**” for further information on collecting surface water and groundwater samples. Nitrate strips are best used to find out where nitrate concentrations are high on your farm. They are not highly accurate and only give an estimate of a nitrate-N concentration range (e.g. 2.3 - 5.6, or 11 - 23, or 56 - 113 mg/L nitrate-N). Therefore, they are best used to assess relative losses throughout the farm and over time. Nitrate strips are not useful when nitrate-N concentrations are below 2.3 mg/L, which often occurs in high rainfall areas (due to dilution).

Are nitrate strips expensive?

Nitrate strips are relatively cheap (about \$1 AUD for each strip) and can be purchased online.

How do I use nitrate strips?

Nitrate strips must be:

- stored in a fridge (2 - 8°C) when not in use
- kept in an esky with ice bricks when taken in the field for water quality monitoring
- used by the expiry date

Otherwise, they may deteriorate and provide misleading results. High salinities can impact the results, so test strips should not be used in saline or salt-affected environments. Refer to the nitrate strip packet for specific instructions, as storage and use instructions may vary between brands.

The sample should be pre-filtered if the water is muddy, murky or cloudy, indicating high turbidity. Refer to “**5. How to process a water sample for laboratory analysis**” for further information on pre-filtering.

1. Take the nitrate strip from its container.
2. Immerse the end with the two test pads in the water sample for a second (Figure 1).
3. Shake off the excess water, lay the nitrate strip flat and wait for 1 minute.
4. Immediately compare the test strip with the colour scale (Figure 2). Do not wait, as the colour can change over time.
5. Record the result in Table 1.

How do I interpret the results?

Nitrate strips provide results in terms of concentration of nitrate (NO_3^-) or nitrate-nitrogen (nitrate-N or NO_3^- -N), and concentrations are shown in increments (Figure 3). Some brands of nitrate strips have an associated app that can be downloaded on your mobile device and used to register the reading and store records (Figure 4).

It is recommended that you check which type of nitrogen concentration the strips report before purchasing them, so you are aware of which kind of conversion to perform. The conversion factor between NO_3^- and NO_3^- -N concentrations can be found in Table 2. Laboratory results present nitrate as nitrate-N (NO_3^- -N), which is the form generally reported when referring to water quality.

NOTE: a result of 0 (e.g., no colour change) doesn't mean there are no nitrate losses. It might mean that the concentration is too low for the strip to detect (below 2.3 mg/L nitrate-N) or the strip gave an inaccurate result.



Figure 1: Immerse the end of the nitrate test strip in the sample for a second.



Figure 2: Compare the strip with the colour scale on the container.

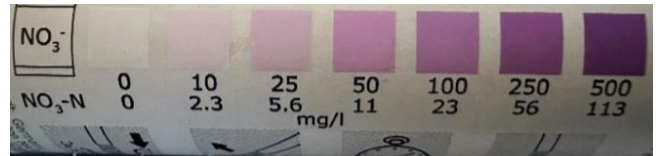


Figure 3: Results for nitrate test strips are shown in increments. Note in this example, the top number is the nitrate concentration, while the numbers below the nitrate-N concentration.



Figure 4: Some brands have an app that helps to read the results.

