

Wise Use of N-Fertiliser on Hill Country

What is Water Quality and How Can I Help Maintain It?

Frequently Asked Questions



What is Water Quality?

Water quality describes the condition of water required for a specific purpose. This purpose may be:

- Water supply for humans or stock
- Contact recreation (swimming)
- Fish spawning

Water quality can be assessed from on-farm measurements such as the temperature (high temperatures adversely affect aquatic insect and fish life), clarity and presence of aquatic organisms or analysis of water samples.



What Affects Water Quality?



The properties of water that determine water quality (and that can be analysed at several laboratories) include:

Nitrogen: Nitrate (NO₃) can promote nuisance weed and algal growth while ammonia (NH₄) can affect fish survival.

Phosphorus: Can promote nuisance weed and algal growth

Sediment: Can reduce feeding of fish

Faecal coliforms: Pathogens that can cause human disease.

Parasitic organisms: e.g. Giardia, adversely affect human health.

The farming activities that can adversely affect water quality include:

Activities associated with fertiliser application: direct input of fertiliser to waterbodies, runoff of fertiliser nutrients to water, accumulation of excessive levels of available nutrients in soils.

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Activities associated with management of stock: pugging damage causing runoff of nutrients and soil to waterbodies, presence of stock in waterbodies, frequent crossing of streams, leaching of nitrates from dung and urine patches.

Activities associated with cultivation: loss of soil from erosion, nitrate leaching of nitrogen from breakdown of organic matter.

What Can I Do To Maintain Water Quality?

Fertiliser management

- Ensure that fertiliser is not applied direct to water by maintaining a buffer strip
- Only apply the rate of phosphorus fertiliser required for optimal economic production.
- Avoid applying nitrogen to saturated soils.
- Apply phosphorus fertiliser in summer and autumn when intense rainfall is less likely to occur. If not feasible apply serpentine superphosphate or if agronomic conditions allow apply reactive phosphate rock.
- Ideally, apply low rates of N (e.g. 20-30 kg N/ha) at any one time to pasture mass greater than 1200 kg DM/ha four to six weeks before the feed is required avoiding June and July application.
- Consider using nitrification inhibitors – this will reduce nitrate leaching and nitrous oxide emissions and can increase dry matter production.



Stock management

- On flat and rolling land, fence off significant streams and bridge frequent stream crossing points.
- On hill land, leave at least a 10m strip besides waterbodies or leave scrub and bush in gullies.
- When grazing stock in wet soil conditions, avoid pugging of soil.

Cropping management

- Provide a standoff area for stock when wintering on crops in wet soil conditions.
- If out of high producing pasture, sow the crop soon after cultivation to minimise nitrate leaching from the break down of organic matter.



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