

Water for Profit

MEASURING AND ADJUSTING SOIL PH



Soil pH may change with irrigation, fertiliser and crop management practices.

Introduction

Ammonium-based nitrogen and crushed sulfur fertilisers can lower soil pH while the use of high salinity irrigation water may raise pH. As soil pH changes, soil nutrients may become either more or less available to the plant. Hence, it is important to monitor soil pH changes over time to ensure that the level stays within an acceptable range.

Measuring Soil pH

Most Queensland laboratories use a 1:5 soil:water suspension method to determine pH. However, some laboratories use different testing methods. For this reason it is advisable to seek professional advice when interpreting the significance of test results and in planning management strategies.

For a quick measure of soil pH in the field, use a hand held meter or a pH kit. These options will determine if your soil is overly acid or alkaline and require further detailed examination.

Is pH Adjustment Required?

The following figure shows the effect of soil pH on nutrient availability. For instance, a plant may become nitrogen deficient if the soil pH is less than 6.0 or greater than 8.0. The nitrogen may be in the soil but unavailable to the crop.

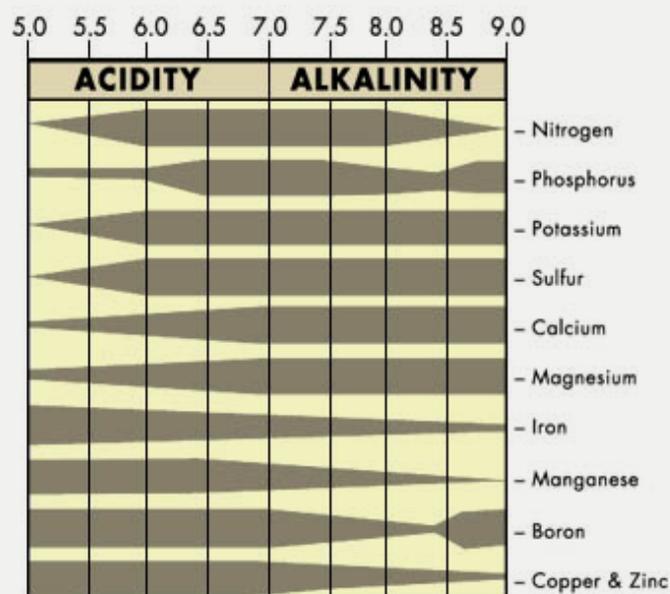
Increasing soil pH

The amount of lime or dolomite required to correct a low soil pH depends on the soil type. Soils with high organic matter and clay content will be more resistant to changes in pH and will require larger application rates of lime or dolomite.

Field trials, in which good quality lime was cultivated into the soil surface to a depth of 10 cm, have been undertaken on a number of acidic soils in Queensland.

Every tonne of lime added per hectare increased soil pH from 0.1 to 0.8 pH units. The most common change was an increase of 0.2 to 0.3 pH units with the larger pH increases obtained on sandy soils with low organic matter content.

Hence, typical commercial application rates of around 2 tonnes of lime per hectare are likely to increase the pH by only about 0.5 of a pH unit. However, these small pH increases are often enough to result in an increased yield. Simple and cheap field kits are available to measure soil pH. Laboratory testing is required to obtain an accurate pH value.



Some of the information contained on this sheet was obtained from the Queensland Department of Natural Resources and Mines and is gratefully acknowledged.

For more details contact Growcom on 07 3620 3844.

Disclaimer: This information is provided as a reference tool only. Seek professional advice for irrigation specifics.

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