

Acidity hot spots

Time to *Re-Lime* Lime

Soil acidification is a natural process that is accelerated by agriculture.

Acidic soils cause significant losses in production and where the choice of crops is restricted to acid tolerant species and varieties, profitable market opportunities may be reduced. In pastures grown on acidic soils, production will be reduced and some legume species may fail to persist.

Target pH

The Avon Catchment Council has set target pH values (measured one part soil to five parts 0.01 M calcium chloride) for the Avon River Basin of **5.5 in the topsoil and 4.8 in the subsurface** by 2020. Achieving this soil pH profile will remove acidity as a constraint to production. These values are a good guide for all agricultural regions in WA and have been developed in conjunction with the Department of Agriculture and Food Western Australia based on hundreds of trial years of data.

pH in the Avon River Basin

Current data from the Avon Catchment Council Soil Acidity Project shows that 80% of topsoils and 45% of subsurface soils in the Avon River Basin are below target values.

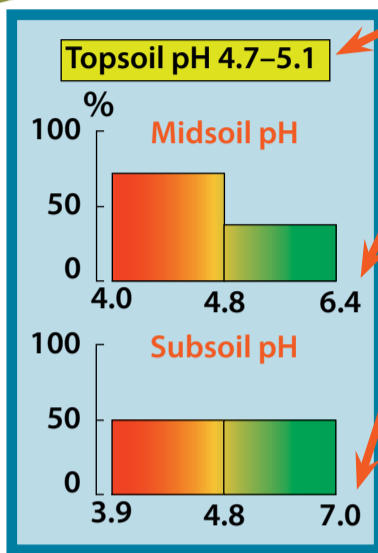
Building on the Precision SoilTech database, monitoring has revealed a trend of increasing topsoil pH associated with increased lime use in some areas of the Avon River Basin.

The Avon Catchment Council subsoil sampling subsidy has generated a baseline for subsurface pH in the Avon River Basin which can facilitate monitoring of future changes. This current data shows that subsurface acidity is a major concern in many areas (see opposite).

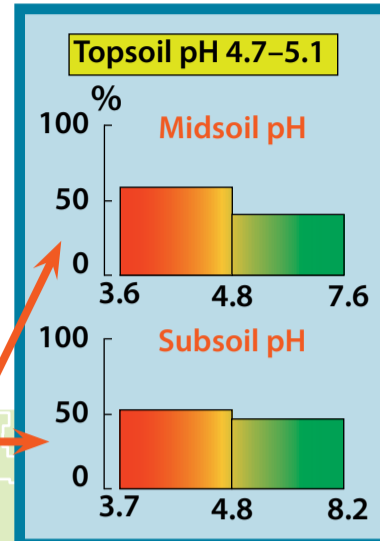
Maintenance & recovery liming

Regular liming is required to maintain topsoil pH above 5.5. This will be sufficient to treat on-going acidification in the topsoil due to farming and allow downward movement of alkalinity to treat subsurface acidification.

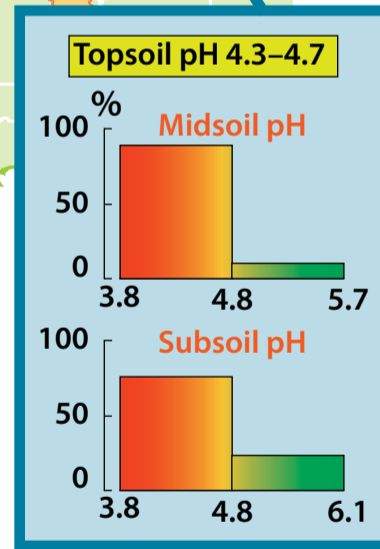
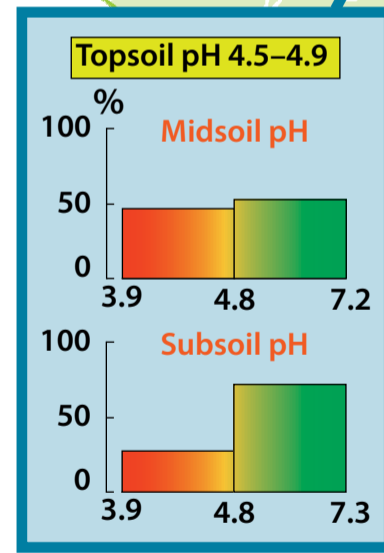
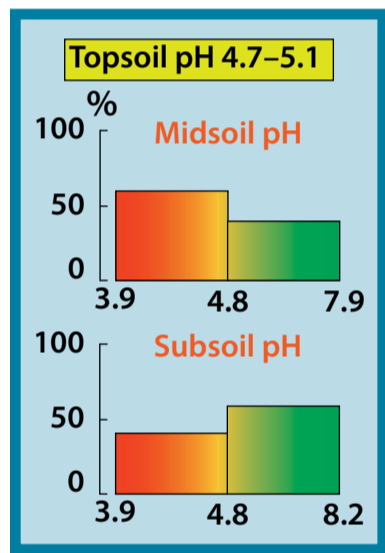
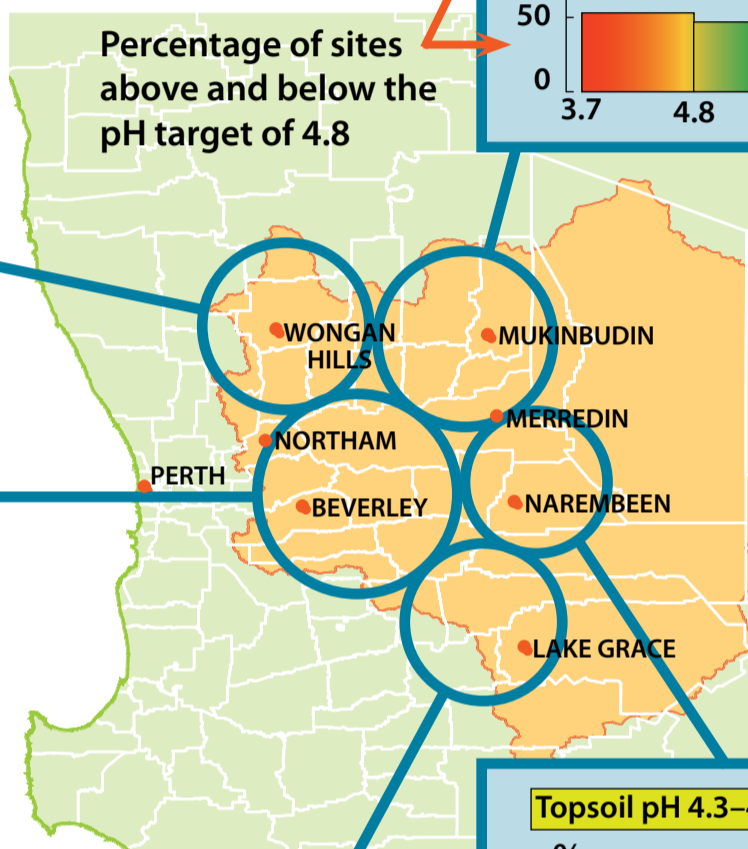
If the subsurface is acidic, higher liming rates or more frequent applications will be needed for recovery of the soil pH to prevent production losses.



The most common topsoil pH values... have a large range of 10-20 cm midsoil & 20-30 cm subsoil pH values



Percentage of sites above and below the pH target of 4.8



- In these areas, the most common topsoil pH is below the target of 5.5
- A large percentage of these topsoils have subsurface soils below the pH target of 4.8

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| Rule-of-Thumb Lime Guide | | |
|---|-----------|--------------------------|
| <i>(Seek expert advice to develop individual recommendations)</i> | | |
| Soil depth | pH | Lime amount over 5 years |
| 0-10 cm | under 5 | 2 t/ha |
| | under 5.5 | 1 t/ha |
| <i>plus</i> | | |
| 10-20 cm | under 4.5 | 2 t/ha |
| | under 4.8 | 1 t/ha |
| <i>plus</i> | | |
| 20-30 cm | under 4.5 | 1 t/ha |
| | under 4.8 | measure pH in 3 years |

*The Avon Catchment Council has set a target pH_{CaCl2} of 5.5 for topsoils and 4.8 for subsurface soils in the Avon River Basin by 2020. This article is produced by the Avon Catchment Council Soil Acidity Project, a collaborative project between the Department of Agriculture and Food Western Australia (DAFWA) and Precision SoilTech. The project is funded by the Avon Catchment Council with investment from the Western Australian and Australian Governments through the National Action Plan for Salinity and Water Quality. For more information on soil acidity or liming, please contact Chris Gazey, DAFWA, 9690 2000, or your advisor.