

Focus your liming dollars

Time to *Re-Lime* Lime

Apply the right amount of lime
—only where it is needed

Knowing your soil pH profile allows you to use your liming dollars more efficiently. More lime can be applied where necessary rather than a lower rate over whole paddocks. Adding too little lime does not treat subsurface acidity. Guessing how much lime to apply from only topsoil samples can lead to inadequate lime application. Yield will continue to be lost as pH continues to decline and inhibit root growth.

Soil sampling

Even the most experienced farmers and advisers cannot guess soil pH; the only way is to sample and test. Acidity in the subsurface cannot be detected or estimated by knowing the topsoil pH. Monitoring in the Avon River Basin by the Avon Catchment Council Soil Acidity Project has revealed that 80% of topsoils and 45% of subsurface soils are below regional targets*.

It is important to lime to keep topsoil pH above 5.5. This is sufficient to treat on-going acidification in the topsoil due to farming and allow sufficient alkalinity to move down the soil profile and treat subsurface acidification. If the subsurface is acidic, higher liming rates, or more regular applications will be needed. Soil sampling every 3–4 years is important to allow refinement of liming programs.

Targeting lime applications

Without information about the subsurface pH, the recommended tonnes of lime over a 10 year period is less precise and is given as a range. This may lead to some areas being under limed and others being limed unnecessarily. With knowledge of the soil pH profile, lime applications can be targeted to use lime efficiently.

On sandy soils, a band of acid soil often occurs in the midsoil at 10–20 cm depth, over a subsoil with optimal pH. This band of acid soil forms a barrier, preventing root access to the more suitable subsoil. In this case amelioration may be profitable quicker than where soils are acidic to depth. Sampling and testing the 10–20 cm midsoil in addition to the topsoil and subsoil will detect such an acid layer and allow informed management decisions.

Using **OPTION 3** opposite, a simple method of liming would be to spread 2 t/ha on all areas that require liming. Then in 2–4 years time spread 1 or 2 t/ha on the areas which required 3 or 4 t/ha over the 10 year period. Remember to re-sample soil in 3–4 years and adjust liming rates where necessary.

Sample the top, mid and subsoil

- More precise liming recommendations
- Better use of liming dollars
- Better treatment of soil acidity
- Better production

Site	Topsoil information only		Top, mid and subsoil information		
	Topsoil pH	Recommended lime over 10 years (t/ha)	Midsoil pH	Subsoil pH	Recommended lime over 10 years (t/ha)
1	5.0	2–4	4.6	4.8	2
2	5.3	2–4	4.3	4.6	3
3	6.9	0–3	7.7	8.0	0
4	5.6	1–3	4.5	4.5	2
5	4.9	2–4	4.1	4.1	4
6	6.7	0–3	7.2	7.9	0

31 t applied where not needed

All areas had the right amount

Site	Area (ha)	Lime applied over 10 years (t/ha)		
		OPTION 1 1 t/ha applied over whole paddock	OPTION 2 lowest amount recommended from topsoil pH	OPTION 3 recommended from full pH profile
1	10	10	20	20
2	10	10	20	30
3	15	15	0	0
4	23	23	23	46
5	16	16	32	64
6	16	16	0	0
Total	90 ha	90 t	95 t	160 t

This lime is needed elsewhere

The subsurface will continue to acidify

- Right amount of lime applied
- No lime was needed
- Not enough lime

#17 published
Farm Weekly
6th Mar 2008

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.