Calculating the cost of soil acidity

Soil acidity stunts plant growth resulting in reduced crop and pasture production.

Plants vary in their sensitivity to soil acidity but most agricultural plants grow best in a pH range of 6 – 8.

Soil acidity can affect productivity well before it becomes discernible by eye.

This calculator estimates how much those losses in production could be costing the farm business.

To use, enter the soil’s current pH and the crop and pastures planned for the next 4 years, and their expected prices or returns.

Note that the pH is held at the same value for the 4 years – in reality, soil pH will continue to drop if the acidity is not neutralised.

Start
pH = 5.5

The Cost of Not Treating Soil Acidity:

Current pH value (CaCl₂)  Select pH value  5.5

This year
Select crop type  wheat (sens)  
Enter expected crop yield t/ha  2.5
Enter crop/pasture value $/t  $200
Estimated loss of production  0.1 t
Estimated value of lost production  $25

Next year
Select crop type  barley
Enter expected crop yield t/ha  3
Enter crop/pasture value $/t  $180
Estimated loss of production  0.2 t
Estimated value of lost production  $27

3 Year’s Time
Select crop type  canola
Enter expected crop yield t/ha  2
Enter crop/pasture value $/t  $450
Estimated loss of production  0.1 t
Estimated value of lost production  $39

4 year’s Time
Select crop type  beans
Enter expected crop yield t/ha  1.5
Enter crop/pasture value $/t  $300
Estimated loss of production  0.1 t
Estimated value of lost production  $23

Cumulative Loss /ha  $113

**Yield**

- wheat (sens)
- barley
- canola
- beans

**$ Value**

- wheat (sens)
- barley
- canola
- beans

**Cumulative $ Loss**

$0 - $1,200
pH = 5.0

The Cost of Not Treating Soil Acidity:

<table>
<thead>
<tr>
<th>Current pH value (CaCl₂)</th>
<th>This year</th>
<th>Next year</th>
<th>3 Year’s Time</th>
<th>4 year’s Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select pH value</td>
<td>Select crop type</td>
<td>Select crop type</td>
<td>Select crop type</td>
<td>Select crop type</td>
</tr>
<tr>
<td>5</td>
<td>wheat (sens)</td>
<td>barley</td>
<td>canola</td>
<td>beans</td>
</tr>
<tr>
<td>Enter expected crop yield t/ha</td>
<td>2.5</td>
<td>3</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Enter crop/pasture value $/t</td>
<td>$200</td>
<td>$180</td>
<td>$450</td>
<td>$300</td>
</tr>
<tr>
<td>Estimated loss of production</td>
<td>0.4 t</td>
<td>0.6 t</td>
<td>0.4 t</td>
<td>0.3 t</td>
</tr>
<tr>
<td>Estimated value of lost production</td>
<td>$72</td>
<td>$107</td>
<td>$185</td>
<td>$90</td>
</tr>
</tbody>
</table>

Cumulative Loss /ha $453

Yield

$ Value

Cumulative $ Loss
pH = 4.5

The Cost of Not Treating Soil Acidity:

Current pH value (CaCl₂)  
Select pH value 4.5

This year  
Select crop type wheat (sens)  
Enter expected crop yield t/ha 2.5  
Enter crop/pasture value $/t $200  
Estimated loss of production 0.6 t  
Estimated value of lost production $125

Next year  
Select crop type barley  
Enter expected crop yield t/ha 3  
Enter crop/pasture value $/t $180  
Estimated loss of production 1.0 t  
Estimated value of lost production $176

3 Year's Time  
Select crop type canola  
Enter expected crop yield t/ha 2  
Enter crop/pasture value $/t $450  
Estimated loss of production 1.0 t  
Estimated value of lost production $457

4 year's Time  
Select crop type beans  
Enter expected crop yield t/ha 1.5  
Enter crop/pasture value $/t $300  
Estimated loss of production 0.6 t  
Estimated value of lost production $180

Cumulative Loss /ha $938
pH = 4.0

The Cost of Not Treating Soil Acidity:

Current pH value \([\text{CaCl}_2]\):
- Select pH value: 4

This year:
- Select crop type: wheat (sens)
- Enter expected crop yield t/ha: 2.5
- Enter crop/pasture value $/t: $200
- Estimated loss of production: 1.0 t
- Estimated value of lost production: $192

Next year:
- Select crop type: barley
- Enter expected crop yield t/ha: 3
- Enter crop/pasture value $/t: $180
- Estimated loss of production: 1.3 t
- Estimated value of lost production: $236

3 Year's Time:
- Select crop type: canola
- Enter expected crop yield t/ha: 2
- Enter crop/pasture value $/t: $450
- Estimated loss of production: 1.6 t
- Estimated value of lost production: $717

4 year's Time:
- Select crop type: beans
- Enter expected crop yield t/ha: 1.5
- Enter crop/pasture value $/t: $300
- Estimated loss of production: 1.2 t
- Estimated value of lost production: $360

Cumulative Loss/ha: $1,505

Yield:
- Wheat (sens)
- Barley
- Canola
- Beans

$ Value:
- Wheat (sens)
- Barley
- Canola
- Beans

Cumulative $ Loss:
- $1,200
- $1,100
- $1,000
- $900
- $800
- $700
- $600
- $500
- $400
- $300
- $200
- $100
- $0
Lime Cheque

A tool for calculating lime application rates for acidic soils and comparing the costs of lime from different suppliers.

Start

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## Lime Sources Cost Comparison

### Lime rate calculator

<table>
<thead>
<tr>
<th>Zone</th>
<th>Area</th>
<th>pH (CaCl₂)</th>
<th>Initial Soil Texture</th>
<th>Target Lime Rate</th>
<th>Org C %</th>
<th>Adjusted Lime Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>5.0</td>
<td>sandy loam</td>
<td>5.5</td>
<td>low</td>
<td>1.1</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### Lime Sources Comparison

<table>
<thead>
<tr>
<th>Source</th>
<th>Source 2</th>
<th>Source 3</th>
<th>Source 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kulpara</td>
<td>$15.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penlime</td>
<td>$23.00</td>
<td></td>
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</table>

**Enter Lime Cost $/t**

**Enter NV or ENV %**

**Enter Tonnes required**

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**Enter Distance from source**

**Enter Freight cost**

**Enter Spreading cost**

**Enter Contract F&S cost**

**Total $/t**

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**Product rate & cost**

<table>
<thead>
<tr>
<th>Zone 1</th>
<th>Rate $/ha</th>
<th>Cost $/ha</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>1.2</td>
<td>$38</td>
</tr>
<tr>
<td>2</td>
<td>1.4</td>
<td>$59</td>
</tr>
<tr>
<td>3</td>
<td>0.0</td>
<td>$0</td>
</tr>
<tr>
<td>4</td>
<td>0.0</td>
<td>$0</td>
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</tbody>
</table>

**Total for paddock**

<table>
<thead>
<tr>
<th>Paddock</th>
<th>Cost per paddock</th>
<th>Quantity of lime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$751.12</td>
<td>24</td>
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<tr>
<td></td>
<td>$1,173.02</td>
<td>27</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>NV or ENV %</td>
<td>64</td>
<td>50</td>
<td></td>
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</tr>
<tr>
<td>Tonnes required</td>
<td>35</td>
<td>45</td>
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</tr>
<tr>
<td>Enter Distance from source</td>
<td>km</td>
<td>km</td>
<td>km</td>
<td>km</td>
</tr>
<tr>
<td>Enter Freight cost</td>
<td>$/km/t</td>
<td>$/km/t</td>
<td>$/km/t</td>
<td>$/km/t</td>
</tr>
<tr>
<td>Enter Spreading cost</td>
<td>$/ha</td>
<td>$/ha</td>
<td>$/ha</td>
<td>$/ha</td>
</tr>
<tr>
<td>Enter Contract F&amp;S cost</td>
<td>$15.88</td>
<td>$13.75</td>
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<th>Rate t/ha</th>
<th>Cost $/t</th>
</tr>
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<tbody>
<tr>
<td>Zone 2</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Zone 3</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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<td>0.0</td>
</tr>
<tr>
<td>Zone 4</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Paddock</td>
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<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
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</tr>
</tbody>
</table>

### Cost per paddock

<table>
<thead>
<tr>
<th>Zone 1</th>
<th>Rate t/ha</th>
<th>Cost $/t</th>
<th>Rate t/ha</th>
<th>Cost $/t</th>
<th>Rate t/ha</th>
<th>Cost $/t</th>
<th>Rate t/ha</th>
<th>Cost $/t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.8</td>
<td>$55</td>
<td>2.3</td>
<td>$86</td>
<td>1.8</td>
<td>$55</td>
<td>2.3</td>
<td>$86</td>
</tr>
</tbody>
</table>

### Quantity of lime t

<table>
<thead>
<tr>
<th>Paddock</th>
<th>35</th>
</tr>
</thead>
</table>