The Real Value of Agricultural Limestone

Monroe Rasnake
University of Kentucky, mrasnake@uky.edu

Follow this and additional works at: https://uknowledge.uky.edu/pss_views
Part of the Soil Science Commons

Repository Citation
https://uknowledge.uky.edu/pss_views/98
There are big differences in quality of agricultural lime sold in Kentucky. According to the most recent test results, the Relative Neutralizing Value (RNV) of Kentucky aglime ranged from a low of 50 to a high of 89. Actually, some were below the RNV of 50, but these did not meet state lime law regulations and could not legally be sold as ground agricultural limestone.

The real question is: What does this have to do with the value (cost) of lime to the farmer? To help answer this question, let us compare two lots of lime which are available to a farmer for use on a 20 acre field that soil test results have indicated needs three tons per acre. The first lot has an RNV of 50, costs $3.50 per ton at the quarry and is 20 miles from the farm. The second lot has an RNV of 90, costs $4.00 per ton and is 15 miles from the farm. The cost of spreading is three dollars per ton and hauling is ten cents per ton per mile.

UK aglime recommendations are made on the assumption that the lime to be used has an RNV of 67. Since the two sources of lime have differing RNV's, the rate needed should be adjusted proportionately. Because of this, more of the lower quality lime and less of the higher quality lime is needed to have the same effect. By making such an adjustment, it takes 4T/A of the first lot but only 2.2 T/A of the second lot.

\[ \frac{1}{\text{RNV}} \text{ is an expression of the percent of limestone which could be expected to dissolve within a 3-year period. It is calculated from values for limestone purity and fineness of grind.} \]
The cost to the farmer, if he uses the first lot of lime is:

4 tons per acre \( \times \) 20 acres = 80 tons lime

\[
\text{Lime} \rightarrow 80 \text{ tons } \times \$3.50/\text{T} = 280.00
\]
\[
\text{Spreading} \rightarrow 80 \text{ tons } \times \$3.00/\text{T} = 240.00
\]
\[
\text{Hauling} \rightarrow 80 \text{ tons } \times 20 \text{ mi } \times \$0.10/\text{T/mi} = 160.00
\]

Total $680.00

If using the second lot of lime:

2.2 tons per acre \( \times \) 20 acres = 44 tons lime

\[
\text{Lime} \rightarrow 44 \text{ tons } \times \$4.00/\text{T} = 176.00
\]
\[
\text{Spreading} \rightarrow 44 \text{ tons } \times \$3.00/\text{T} = 132.00
\]
\[
\text{Hauling} \rightarrow 44 \text{ tons } \times 15 \text{ mi } \times \$0.10/\text{T/mi} = 66.00
\]

Total $374.00

By using the higher quality lime, the farmer could save $306.00.

Obviously, this example uses larger differences of lime quality than most farmers are likely to see. However, the following table gives some examples which do frequently occur:

<table>
<thead>
<tr>
<th></th>
<th>Lime Needed (T/A)</th>
<th>Field Size (A)</th>
<th>Lime Spreading (T)</th>
<th>Spreading Costs ($)</th>
<th>Hauling Costs ($)</th>
<th>Total Costs ($)</th>
<th>Savings ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67</td>
<td>3.0</td>
<td>240</td>
<td>180</td>
<td>120</td>
<td>540</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>82</td>
<td>2.5</td>
<td>200</td>
<td>150</td>
<td>100</td>
<td>450</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>67</td>
<td>3.0</td>
<td>1200</td>
<td>900</td>
<td>600</td>
<td>2700</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>82</td>
<td>2.5</td>
<td>1000</td>
<td>750</td>
<td>500</td>
<td>2250</td>
<td>450</td>
</tr>
<tr>
<td>3</td>
<td>65</td>
<td>4.9</td>
<td>588</td>
<td>441</td>
<td>294</td>
<td>1323</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>3.6</td>
<td>432</td>
<td>324</td>
<td>216</td>
<td>972</td>
<td>351</td>
</tr>
<tr>
<td>4</td>
<td>70</td>
<td>3.8</td>
<td>456</td>
<td>342</td>
<td>228</td>
<td>1026</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>3.4</td>
<td>408</td>
<td>306</td>
<td>204</td>
<td>918</td>
<td>108</td>
</tr>
</tbody>
</table>

\(^{1/}\) Based on a price of $4.00/T, $3.00/T spreading, $0.10/T/mile hauling and a distance of 20 miles.

From these examples, it is obvious that the value of lime depends on its quality. As little as a ten point difference in RNV added up to a difference in cost of $108 for liming a 30 acre field. Certainly, larger differences in RNV, higher lime rates, longer haul distances and larger acreages make the consideration of lime quality even more important.

County Agricultural Extension Agents have information on lime quality in your area. Ask them to help you determine the "real value of agricultural limestone."