Comparison of Ammonium Nitrate and Urea as Nitrogen Source for Topdressing Established Grass Sods

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COMPARISON OF AMMONIUM NITRATE AND UREA AS NITROGEN SOURCE
FOR TOPDRESSING ESTABLISHED GRASS SODS

Grant Thomas and Harold Miller

When urea is broadcast and not worked into the soil there is a risk of some of
the nitrogen being lost to the atmosphere as ammonia. In an effort to measure the
effectiveness of urea compared to ammonium nitrate as sources of nitrogen for top­
dressing on established grass sod, an experiment comparing these two sources at rates
to supply 0, 50, 100 and 150 pounds of nitrogen per acre was conducted in 1971.

March 18, 1971, the nitrogen treatments were broadcast on an old sod mixture
of bluegrass - orchardgrass. The plots were harvested four times during the growing
season and yields calculated on the basis of pounds of dry matter per acre. Each
treatment was replicated 4 times. Yields for each harvest, total yield for the season
and yield increases over the check plots for the nitrogen applications are shown below.

<table>
<thead>
<tr>
<th>Actual Nitrogen</th>
<th>Pound of Dry Matter Per Acre</th>
<th>Total for Season</th>
<th>Yield Increase Over check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lb/A Source</td>
<td>1st Cut May 17</td>
<td>2nd Cut June 8</td>
<td>3rd Cut Aug. 2</td>
</tr>
<tr>
<td>None</td>
<td>743</td>
<td>282</td>
<td>725</td>
</tr>
<tr>
<td>50 A. N. *</td>
<td>1981</td>
<td>404</td>
<td>841</td>
</tr>
<tr>
<td>50 Urea</td>
<td>1746</td>
<td>383</td>
<td>874</td>
</tr>
<tr>
<td>100 A. N.</td>
<td>3198</td>
<td>437</td>
<td>1187</td>
</tr>
<tr>
<td>100 Urea</td>
<td>2655</td>
<td>453</td>
<td>1218</td>
</tr>
<tr>
<td>150 A. N.</td>
<td>3650</td>
<td>586</td>
<td>1770</td>
</tr>
<tr>
<td>150 Urea</td>
<td>2937</td>
<td>599</td>
<td>1514</td>
</tr>
</tbody>
</table>

*A. N. - ammonium nitrate

Total production of dry matter for the season was higher at each rate of
nitrogen from the ammonium nitrate treated plots than from the urea treated plots.
Yield differences were 18, 540 and 817 pounds per acre in favor of the ammonium
nitrate at the 50, 100 and 150 pound nitrogen rates respectively. Under the condition
of this experiment for the 1971 season considering the average yield increases over the check plots for the three rates, urea was 86% as effective as ammonium nitrate when applied as a topdressing.

Dry matter production on the ammonium nitrate plots increased roughly 3/4 ton for each 50 pound addition of nitrogen through the 150 pound rate. When this additional production is utilized as pasture, hay or silage it is very low cost feed.