What’s Ahead For Nitrogen Fertilizer In The USA?

Kim Polizotto, Ph.D.
Chief Agronomist
PotashCorp
# Nitrogen Fertilizer Sources

- **Anhydrous Ammonia** \(\text{NH}_3\) 82-0-0
- **Urea** \(\text{CO(NH}_2\text{)}_2\) 46-0-0
- **Ammonium Nitrate** \(\text{NH}_4\text{NO}_3\) 33-0-0
- **UAN** 28/32-0-0
- **Ammonium Sulfate** \(\text{NH}_4\text{SO}_4\) 21-0-0-24S
- **MAP** \(\text{NH}_4\text{H}_2\text{PO}_4\) 11-50-0
- **DAP** \((\text{NH}_4\text{)}_2\text{HPO}_4\) 18-46-0
- **APP** \((\text{NH}_4\text{)}_3\text{HP}_2\text{O}_7\) 10-34-0
- **Potassium Nitrate** \(\text{KNO}_3\) 13-40-0
- **Slow Release-Controlled Release N** 43/44-0-0
What Drives N Fertilizer Markets in the USA/World?

- Manufacturing Technology/Capacity
- Cost
- World Markets
- Transportation
- Storage
- Convenience
1997-2003 Nitrogen Market

Driving Factors

- Record increase in world nitrogen capacity
- China’s ban on urea imports
- Collapse of the Russian ruble
- High U.S. natural gas prices
NYMEX Natural Gas Prices

Source: NYMEX Monthly Closing gas prices
US Nitrogen Consumption as % of total

Percent of Total N Tons Consumed

Source: Commercial Fertilizers
Comparative N Prices in Corn Belt

$ per lb N

- Ammonium Sulfate
- UAN
- Urea
- Ammonia
# Nitrogen Prices

<table>
<thead>
<tr>
<th>N Fertilizer</th>
<th>Wholesale Mid Cornbelt Price * $ per ton</th>
<th>$ per lb N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia (82%)</td>
<td>300-315</td>
<td>0.18-0.19</td>
</tr>
<tr>
<td>Urea (46%)</td>
<td>215-225</td>
<td>0.23-0.24</td>
</tr>
<tr>
<td>UAN (28%)</td>
<td>136-142</td>
<td>0.24-0.25</td>
</tr>
<tr>
<td>AM. Nitrate (33%)</td>
<td>185-195</td>
<td>0.28-0.29</td>
</tr>
<tr>
<td>AM. Sulfate (21%)</td>
<td>135-140</td>
<td>0.32-0.33</td>
</tr>
</tbody>
</table>

*Green Markets, Dec 15, 2003
U.S. natural gas prices are expected to moderate but will remain significantly above historical averages. This will likely result in:

- Increased reliance on imported N
- Further consolidation of the U.S. industry
  --Industrial ammonia suppliers along Gulf Coast likely to close and rely on imports.
  --Some urea capacity likely to close due to increased offshore competition

Tightening world balance and access to large domestic market, however, will allow bulk of the industry to remain competitive.