Fertilization Outlook for Hay Producers

Over the next few minutes...

- Projected Production Costs
- The False Economy of Shortcuts
- Fertilizer Value of Different Forage Crops
- Fertilizer Industry Trends
  - Supply/Demand
  - Changes in Capacity
  - Imports and Consolidation
  - Price stability/decline?

Bermudagrass Hay Production – 2014 Breakdown of Projected Costs per Acre

- Fertilizer: $140
- Fuel and Maintenance: $36
- Pesticides: $12
- Interest on Var. Costs: $70
- Labor: $87
- Fixed & Mgmt Costs: $262
- Lime: $652/acre or $109/ton

What affects forage cost?

Forage Cost ($/lb) = \( \frac{\text{Total Cost ($/Acre)}}{\text{Forage Yield (lbs/Acre)}} \)

The False Economy of Shortcuts

<table>
<thead>
<tr>
<th>Cost of Production</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
<th>110%</th>
<th>120%</th>
</tr>
</thead>
<tbody>
<tr>
<td>$456</td>
<td>86%</td>
<td>84%</td>
<td>82%</td>
<td>82%</td>
<td>82%</td>
<td>82%</td>
</tr>
<tr>
<td>$522</td>
<td>78%</td>
<td>76%</td>
<td>74%</td>
<td>74%</td>
<td>74%</td>
<td>74%</td>
</tr>
<tr>
<td>$587</td>
<td>71%</td>
<td>69%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>$652</td>
<td>65%</td>
<td>63%</td>
<td>61%</td>
<td>61%</td>
<td>61%</td>
<td>61%</td>
</tr>
<tr>
<td>$717</td>
<td>59%</td>
<td>57%</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
<td>55%</td>
</tr>
<tr>
<td>$782</td>
<td>53%</td>
<td>51%</td>
<td>49%</td>
<td>49%</td>
<td>49%</td>
<td>49%</td>
</tr>
</tbody>
</table>

Dr. Dennis Hancock
Extension Forage Agronomist

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Total NPK Use in the U.S.
Demand is Driven by Corn

Source: Glen Buckley, NPK Fertilizer & Advisory Service, Nov. 2011.

World N Supply/Demand Balance


N Fertilizer Products Sold in the U.S.
Actual Product


N Fertilizer Products Sold in the U.S.
Actual N Applied

Adapted from USDA Economic Research Service (http://www.ers.usda.gov/Data/FertilizerUse/).

U.S. N Use is Dependent Upon Imports

Adapted from USDA Economic Research Service (http://www.ers.usda.gov/Data/FertilizerUse/).

Urea Imports by Country

Source: Glen Buckley, NPK Fertilizer & Advisory Service, Nov. 2011.
2014 Southeast Hay Convention
Fertilization Outlook for Hay Producers

U.S. UAN 32% Prices
(FOB Gulf Barge - $/ton)

Urea Prices
(Black Sea Urea Prices)

U.S. Petroleum and Other Liquid Fuels Supply

U.S. Energy Production by Fuel

U.S. Electricity Generation
(Billion kilowatthours)

U.S. Natural Gas Imports and Exports (trillion cubic feet)

Dr. Dennis Hancock
Extension Forage Agronomist
Phosphorus Supply

- Phosphorus over short term appears stable
- Price of MAP/DAP may be suppressed by inc. imports from Morocco & Russia.
  - 500%+ increase in imports in 2010 & 11.
  - Morocco has 40% of world’s supply of P
- Long term supply is questioned.
  - US has 19% of world’s supply of P
  - 65% of that comes from one area (Tampa)
  - Cons. estimates are that this resource will last less than 30 yrs.

U.S. P Use and Exports

Adapted from USDA Economic Research Service (http://www.ers.usda.gov/Data/FertilizerUse/).

World P Supply/Demand Balance


U.S. DAP Price Forecast (FOB Tampa - $/metric ton)


World K Supply/Demand Balance


U.S. K Use and Imports

Adapted from USDA Economic Research Service (http://www.ers.usda.gov/Data/FertilizerUse/).
Potash Supply by Country/Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Supply (Million Metric Tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>18,455</td>
</tr>
<tr>
<td>East Europe</td>
<td>5,548</td>
</tr>
<tr>
<td>Western Europe</td>
<td>5,797</td>
</tr>
<tr>
<td>China</td>
<td>5,895</td>
</tr>
<tr>
<td>Middle East</td>
<td>16,918</td>
</tr>
<tr>
<td>Latin America</td>
<td>4,000</td>
</tr>
<tr>
<td>USA</td>
<td>3,750</td>
</tr>
<tr>
<td>Other</td>
<td>1,117</td>
</tr>
</tbody>
</table>

Source: Glen Buckley, NPK Fertilizer & Advisory Service, Nov. 2011.

World Potash Capacity by Country/Company

<table>
<thead>
<tr>
<th>Country/Company</th>
<th>Volume (1000 metric tons of K2O)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada PCS</td>
<td>6364</td>
<td>13%</td>
</tr>
<tr>
<td>Mosaic</td>
<td>6845</td>
<td>13%</td>
</tr>
<tr>
<td>Agrium</td>
<td>1240</td>
<td>3%</td>
</tr>
<tr>
<td>Russia Uralkali</td>
<td>3452</td>
<td>7%</td>
</tr>
<tr>
<td>Silvinit</td>
<td>3763</td>
<td>8%</td>
</tr>
<tr>
<td>Belarus Belaruskali</td>
<td>5465</td>
<td>11%</td>
</tr>
<tr>
<td>Germany Kali &amp; Salz</td>
<td>4250</td>
<td>9%</td>
</tr>
<tr>
<td>Israel ICL Fertilizers</td>
<td>3600</td>
<td>7%</td>
</tr>
<tr>
<td>Jordan Arab Potash</td>
<td>1452</td>
<td>3%</td>
</tr>
<tr>
<td>Major Producers</td>
<td>36,131</td>
<td>73%</td>
</tr>
<tr>
<td>Others</td>
<td>13,066</td>
<td>27%</td>
</tr>
<tr>
<td>Total</td>
<td>49,197</td>
<td></td>
</tr>
</tbody>
</table>

Source: Glen Buckley, NPK Fertilizer & Advisory Service, Nov. 2011.

U.S. Potash Price Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>Expected High End</th>
<th>Expected Low End</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
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<tr>
<td>2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996-2010</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Bryce Knorr, FarmFutures.com (http://farmfutures.com/story-weekly-fertilizer-review-0-30765)

Summary

- Soil fertility is an investment.
  - "You get out of it what you put into it."
- Fertilizer prices in 2014 appear to be stabilizing
  - Increasing capacity/supply in near term may even temper prices.
- Long-term prospects appear positive
  - U.S. Energy policy and LNG exploration?
  - P supply is dwindling
  - Industry consolidation and political upheaval?

Resources


Questions?

www.georgiaforages.com