Knowledge grows

Water use in agriculture – Yara’s approach

Bent Axelsen
CFO & SVP Global Business Excellence
Yara’s leading global position and differentiated product portfolio represent key sources of competitive edge

Global #1 in Nitrates¹

<table>
<thead>
<tr>
<th>Company</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yara</td>
<td>7.7</td>
</tr>
<tr>
<td>Eurochem</td>
<td>4.2</td>
</tr>
<tr>
<td>Ostchem</td>
<td>3.0</td>
</tr>
<tr>
<td>Uraichem</td>
<td>2.9</td>
</tr>
<tr>
<td>Borealis</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Global #1 in NPK²

<table>
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<th>Company</th>
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<tr>
<td>Yara</td>
<td>6.2</td>
</tr>
<tr>
<td>C. mandel</td>
<td>3.3</td>
</tr>
<tr>
<td>Gresik</td>
<td>2.7</td>
</tr>
<tr>
<td>Iffco</td>
<td>2.7</td>
</tr>
<tr>
<td>Acron</td>
<td>2.2</td>
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</tbody>
</table>

Fertilizer product portfolio³

- Standard products (Urea, UAN, Ammonia) 34%
- Differentiated Products (CAN, AN) 21%
- NPK blends 19%
- Specialty (CN, Compound NPK, Fertigation) 26%

1) Including TAN and CN – Including companies’ share of JVs 2016YE
2) Compound NPK, excluding blends
3) 2016/2017 season volume
4) Ammonia trade not included in chart above
Our Mission

Responsibly feed the world and protect the planet

Our Vision

A collaborative society; a world without hunger; a planet respected
Responding to global challenges is an integral part of our business model and strategy

Resources
Resource Efficiency

Food
Sustainable Agriculture

Environment
Reduced Emissions

Our business is uniquely positioned to provide shared value for shareholders and society
The challenge with water and agriculture
Global annual Water use - today and projection into 2050
“Business as usual” is not an option

Today

"Business as usual"
2050

Target Scenario
2050

Source: International Water Management Institute
70% of all water that is used today is used for agriculture
Most of the water taken up by crops is lost through transpiration

Example - lettuce

1 kg lettuce = ~100 g Dry Matter + ~900 g Water + ~44 litres are transpired

~2% remains in the crop

~98% Transpiration
Yara’s approach improved crop nutrition
Good crop nutrition enables the crop to use water more efficiently
Example Maize, Tanzania

Waterfootprint in m$^3$ per ton of corn

- Farmer Practice
- Yara Treatment
Good crop nutrition enables the crop to use water more efficiently
Example Coffee, Vietnam

Water footprint in m$^3$ per ton of green beans

- Farmer Practice
- Yara Treatment
Yara Water Solution
Solving big problems in water optimization
Yara fertigation solutions: profitable crops, satisfied growers.

More than 100 years of experience since first fertigation product development: calcium nitrate; now expanded to support grower’s needs.

Yara offers a wide range of fertigation products for growers – both for greenhouses and open fields.
Yara solutions helps to increase the water efficiency via better usage of resources in open field irrigation systems.

<table>
<thead>
<tr>
<th>Water Efficiency:</th>
<th>Flooding</th>
<th>Furrow</th>
<th>Pivots / Sprinkler</th>
<th>Drip</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30 - 40%</td>
<td>55 - 70%</td>
<td>70 - 85%</td>
<td>90 - 95%</td>
</tr>
</tbody>
</table>

Increased accuracy of irrigation application and reduced water per ton of crop.
Moving to fertigation creates value both for the farmer and for the environment: Example Potatoes

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (t/ha)</th>
<th>Yield (€/ha)</th>
<th>Fertilizer cost (€/ha)</th>
<th>Water cost (€/ha)</th>
<th>Total costs (€/ha)</th>
<th>Profit (€/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pivot</td>
<td>59.1</td>
<td>8373</td>
<td>464</td>
<td>723</td>
<td>1187</td>
<td>7186</td>
</tr>
<tr>
<td>Fertigation (drip)</td>
<td>71.1</td>
<td>10073</td>
<td>732</td>
<td>595</td>
<td>1327</td>
<td>8746</td>
</tr>
<tr>
<td>Differences</td>
<td>12</td>
<td>1700</td>
<td>268</td>
<td>-128</td>
<td>140</td>
<td>1560</td>
</tr>
</tbody>
</table>

Fertigation benefits

- 31% less water use / ton crop
- 36% less CO₂ eq. / ton crop
- 10.5% more profit (after drip investment costs)

Ref: Collaborative trial partners: Yara, Netafim, Regaber, Pepsico
Potato price = €142/t
The significant growth potential of fertigation products & strong profitability above alternatives makes this segment highly interesting for Yara.
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