The growing importance of specialty plant nutrition products, such as potassium nitrate, is reflected in the fact that their global consumption has more than doubled over the last decade, whereas the growth rates of other alternatives, such as commodity fertilisers, have been more moderate (SQM, 2009). The impressive growth rate of specialty plant nutrition products, such as potassium nitrate, can be attributed to:

1) Growing world population and its effects on:

- Scarcity of water, suitable for agriculture, which triggers a call for higher water use efficiency. For example, this can be achieved through fertigation, which is the joint application of water and specialty plant nutrition products such as potassium nitrate.
- Increased competition on land use for living, industry, nature and agriculture, which results in less availability of land for the growing world population. Fertigation techniques will contribute to higher marketable yields per area of land.
- Water scarcity, reduced arable land availability at a higher cost per area, and higher energy and nutrient input costs, which will result in maximum marketable yields, less input costs per kg yield, thus a higher net income for the grower.

These three key drivers for increased use of potassium nitrate will be discussed in more detail below.

2) Increased per capita consumption of vegetables.

3) Growing demand for high-quality foods.

Growing world population. According to the United Nations (UN) 2008 estimates and medium variant projections, the world population is estimated to increase from 6,8 billion in 2009 to 8,0 billion people in 2025, and to 9,15 billion in 2050 (Figure 1) (United Nations, 2009).
Market growth drivers for potassium nitrate

Figure 1. UN 2008 estimates and medium variant projections of the growth of the world population (in billions).

Food production places a high demand on fresh water: 69 % of current water withdrawals are for irrigation in agriculture (Figure 2) (2030 Water Resources Group, 2009). The 2030 Water Resources Group (2009) mentioned further investment in drip irrigation as one of the big agricultural opportunities to increase the water use efficiency in order to make water available for alternative uses elsewhere.

Figure 2. Main water withdrawal segments.
b. Increased competition on land use for living, industry, nature and agriculture, which results in less land available for agriculture.

Land in agricultural use is 12% of the total world land use (Table 1) (FAOSTAT data, 2009).

Table 1. World land area and uses.

<table>
<thead>
<tr>
<th>Land use</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Million ha</td>
<td>%</td>
</tr>
</tbody>
</table>

...
Market growth drivers for potassium nitrate

Total world land area

13.000

100

Land use non arable & non permanent

8.068

62

Land under permanent pasture (prairie, grazing land)

3.378

26

Land in agricultural use (arable & permanent crops)

1.554
Market growth drivers for potassium nitrate

Land in agricultural use (arable land and land under permanent crops) in the world has increased over the last 40 years with about 11% from 1.406 million ha in 1968 to 1.554 million ha in 2007 (FAOSTAT data, 2009). World population grew in the same period by 86%. Consequently, the amount of land in agricultural use per capita decreased in time (Figure 3) and will further decrease in the future, as the world population is estimated to grow faster than the growth of arable land. Therefore, crop productivity per ha of arable land has to increase in order to provide the same amount of food for the world population.

Furthermore, it is estimated that poor drainage and irrigation practices have led to waterlogging and salinization (salt build-up) of about 27 million ha or 10% of the world's irrigated lands, thereby reducing productivity and limiting the agricultural use of arable land (FAO, 2003). From this, about 0.25-0.5 million ha are estimated to be lost from production every year as a result of...
Market growth drivers for potassium nitrate build-up (FAO, 2002).

c. Water and nutrient use efficiency

The use of drip irrigation results in the highest water use efficiency of 85% (Table 2) (Laegreid et al., 1999).

Table 2. Water use efficiency per type of irrigation system.

<table>
<thead>
<tr>
<th>Irrigation system</th>
<th>Water Use Efficiency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface system in Asia*</td>
<td>30</td>
</tr>
</tbody>
</table>
Market growth drivers for potassium nitrate

Surface system in developed countries**

37

Sprinkler system

60

Drip irrigation

85

* mostly paddy fields.
** mostly furrow irrigation.
The nutrient use efficiency is highest with a drip irrigation system, compared to furrow or sprinkler irrigation (Table 3) (Fertirrigação, 1999).

Table 3. Nutrient use efficiency per type of irrigation system.

<table>
<thead>
<tr>
<th>Nutrient Use Efficiency per irrigation system</th>
</tr>
</thead>
<tbody>
<tr>
<td>% N</td>
</tr>
<tr>
<td>% P   2 O 5</td>
</tr>
<tr>
<td>% K   2 O</td>
</tr>
<tr>
<td>Furrow</td>
</tr>
<tr>
<td>40-60</td>
</tr>
<tr>
<td>10-20</td>
</tr>
<tr>
<td>60-75</td>
</tr>
<tr>
<td>Sprinkler</td>
</tr>
</tbody>
</table>
Market growth drivers for potassium nitrate

60-70

15-25

70-80

Drip

75-85

25-35

80-90

References:


