Brief Introduction to IFA and IPI new publication on Fertigation: a tool for efficient fertilizer and water management

Tian Youguo  Dr. Prof. in extension

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Background: Chinese Agriculture development relies on high inputs and high resource consumption
We cultivate too much land which is not naturally suitable for agriculture.

The potential production of new varieties are continuously increasing but the real yields in field scale are increasing relatively slowly, which means the fertility of soil has become the limit factor for high yield varieties.
### Chemical Fertilizer Consumption (10^4 tones)

<table>
<thead>
<tr>
<th>Year</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>12,426.26</td>
</tr>
<tr>
<td>2010</td>
<td>12,675.72</td>
</tr>
<tr>
<td>2009</td>
<td>12,770.02</td>
</tr>
<tr>
<td>2008</td>
<td>11,861.97</td>
</tr>
<tr>
<td>2007</td>
<td>11,649.96</td>
</tr>
<tr>
<td>2006</td>
<td>10,690.10</td>
</tr>
<tr>
<td>2005</td>
<td>10,355.72</td>
</tr>
<tr>
<td>2004</td>
<td>9,259.33</td>
</tr>
<tr>
<td>2003</td>
<td>7,762.62</td>
</tr>
<tr>
<td>2002</td>
<td>7,399.02</td>
</tr>
<tr>
<td>2001</td>
<td>6,766.02</td>
</tr>
<tr>
<td>2000</td>
<td>6,333.13</td>
</tr>
<tr>
<td>1995</td>
<td>5,104.32</td>
</tr>
<tr>
<td>1990</td>
<td>2,314.62</td>
</tr>
</tbody>
</table>


### NUE in the World

- **Global average**: >0.50
- **EU**: 0.66
- **USA**: 0.52
- **China**: <0.36

### Fertilizer Consumption (kg/ha of arable land)

<table>
<thead>
<tr>
<th>Country</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>3.062</td>
<td>3.099</td>
<td>3.217</td>
<td>3.693</td>
<td>3.311</td>
</tr>
<tr>
<td>Brazil</td>
<td>1.666</td>
<td>1.793</td>
<td>1.566</td>
<td>1.451</td>
<td>1.301</td>
</tr>
<tr>
<td>USA</td>
<td>1.458</td>
<td>1.584</td>
<td>1.651</td>
<td>1.470</td>
<td>1.712</td>
</tr>
<tr>
<td>India</td>
<td>1.051</td>
<td>1.154</td>
<td>1.276</td>
<td>1.384</td>
<td>1.425</td>
</tr>
</tbody>
</table>

Water consumption in China in 1993 is 525.4 billion m$^3$  
For agricultural use, it is 385.1 billion m$^3$, occupying 73.3%  
• 556.6 billion m$^3$ in 1997  
For agriculture, 392 billion m$^3$, 70.4%  
• 556.7 billion m$^3$ in 2001  
For agriculture, 392.6 billion m$^3$, 68.7%  
• 590.9 billion m$^3$ in 2008  
For agriculture, 330.6 billion m$^3$, 55.9%

China produces 26% of the world's agricultural products, feeding 20% of the world population, by using 9% of the world's cultivated land and 6% of the world's water resources.

"Scarcity of water" is much severer than "scarcity of land" in China.
Fertigation is the best way to increase the efficiency of water and nutrients usage, the best way to meet the challenges in the fast developing rural area in China!

Soil Fertilizing ➔ Crop fertilizing
Irrigating the land ➔ Irrigating the root of crops
National Survey shows the fertigation application can:

- increase the yield: vegetables by 15-28%, fruits by 10-15%, cotton by 10-20%, maize by 25-35%; potatoes by 50%
- Improve the quality obviously
- Increase the income: more than 20% in average
- Save fertilizer: Fruits by 25-35%, vegetables by 20-30%
- Save water: fruits 150 m³ per mu and vegetables 100 m³

USA: among agriculture under irrigation, 25% of maize, 60% of potatoes and 32.8% of fruits are being applied fertigation;

Israel: 100% of irrigation are accompanied by fertigation;

China: only 2.87% of 0.9 billion irrigation area are applying fertigation; only 1% of planting area are using fertigation if taking multiple-crop index into account.

Fertigation has a great potential in China.
The target setup by MOA in 2013

- The area using fertigation technology will be increased from the current 30 million mu to 80 million mu by 2015.
- Maize increases 15 m mu. Wheat, 5 m mu. Potatoes, 5 m mu. Cotton, 5 m mu. Vegetables, 8 m mu. Fruits, 10 m mu and others, 2 m mu.
- Saving water 50%, saving fertilizer 30%; the yield of grain crops increases 20% and cash crops income increases 600 rmb per mu.

How did this book in Chinese come into being?

Two distinguished authors and an excellent and professional book;
Useful and meaningful for Chinese agriculture;
My personal interests;
Support from IFA and IPI, and individuals.
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Thanks for attention

For a hard copy, please contact:

Tian Youguo  Dr and prof. in extension

National agriculture technology extension and service center (NATESC), Ministry of Agriculture (MOA)
No. 20 building, Maizidian Str., Chaoyang Dist., Beijing, 100125, China

Tel: 010-59194121, 59194515(fax); Mobile: 13611099438
E-mail: tianyouguo@agri.gov.cn
www.natesc.gov.cn