Het Nieuw Vlees, de eiwit transitie

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share your talent.
move the world.
Suppose you got 4,1 million ha of land and there are 16 million people

What are you going to do to feed them?
Soja keten
Lupine keten
Protein sources

- Vegetable
  - Algae
  - Grain legumes,
  - sunflower, rapeseed (Canola)
  - Soy
  - Wheat (germ)
  - Fungi

- Animal
  - Insects
  - Fish/Shrimp
  - Pig
  - Cow
## Vegetable 2 Meat protein

<table>
<thead>
<tr>
<th>animal</th>
<th>Efficiency factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>17:1</td>
</tr>
<tr>
<td>Lamb</td>
<td>11:1</td>
</tr>
<tr>
<td>Pork</td>
<td>6.7:1</td>
</tr>
<tr>
<td>Chicken</td>
<td>3:1</td>
</tr>
</tbody>
</table>
## Protein content (% dry weight)

<table>
<thead>
<tr>
<th>source</th>
<th>% protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algae</td>
<td>25-35%</td>
</tr>
<tr>
<td>Grain legumes</td>
<td>20-50%</td>
</tr>
<tr>
<td>rapeseed</td>
<td>40%</td>
</tr>
<tr>
<td>soy</td>
<td>30-40%</td>
</tr>
<tr>
<td>wheat</td>
<td>15%</td>
</tr>
<tr>
<td>fungi</td>
<td>30-50%</td>
</tr>
<tr>
<td>insects</td>
<td></td>
</tr>
<tr>
<td>fish</td>
<td>30%</td>
</tr>
<tr>
<td>pork</td>
<td>40%</td>
</tr>
<tr>
<td>beef</td>
<td>40-50%</td>
</tr>
</tbody>
</table>
Vegetable proteins Europe

- EU imports more than 2/3 of its needs
- World production in 2008: 212 mio tons
- World production is concentrated in 3 countries: Brazil, Argentina, USA
- World trade in 2008: 143 mio tons
  - World trade will increase with 25% in coming 10 years
- Trade for China and Europe: 40 mio tons
  - NL imports 10 mio tons
- World trade dominated by 4 key players ABCD:
  - ADM, Bunge, Cargill, Dreyfuss
Vegetable proteins in Europe

- Soy bean price is doubled in 10 years from 200 $/ton to 450 $/ton in aug. 2010
- WTO agreements on oilseeds (Blair-House agreement 1994)
- As result: EU has disinvested in oilseed cropping research, consequence EU is almost 20 years behind
- Grain legumes have a positive contribution to sustainable cropping systems by nitrogen fixation
Conclusies

• EU is afhankelijk van importen van plantaardige eiwitten voor feed en food
• Vlees consumptie blijft voorlopig stijgen
• Intensieve vee/vis houderij is niet duurzaam (?)
• Er zijn lekkere plantaardige alternatieven en wat doen we er mee?