• SOYBEANS – the most important oilseed!
• Global Soybean Production 320 MMT
• Meal equivalent approx. 250 MMT
• Oil equivalent approx. 60 MMT
• Food-type* Soy Proteins approx. 3.5 MMT

• Importance of Soy
• Product Differences
• Technology + Applications
• Mainstream – Lifestyle + Opportunities
• GMO vs non-GMO

* Soy Protein BEYOND SBM, includes Young Animal Nutrition + Aqua-feed

www.king-holding.org
Production of soybeans has increased much faster than that of other oilseeds, most of which in South America and the USA.
Importance of Soybeans: 61%
Importance of China (+ SEA)

World soybean trade has quadrupled in the past 20 years (from 32 to 132 Mn T)

China absorbs 62% of world soybean imports

Also other countries raised imports
Figure 1. U.S. Soybean Exports

- U.S. Exports to China
- U.S. Exports to Rest of World
- Percentage of U.S. Exports to China (Right Axis)

Source: USDA, FGIS & FAS
*Marketing year to date (March 19, 2015)
### Soy Protein categories

**Global Technical Capacities in MT:**

<table>
<thead>
<tr>
<th>Soy Protein Category</th>
<th>China</th>
<th>ROW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soy Protein Isolate</td>
<td>750,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Soy Protein Concentrate</td>
<td>300,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>fermented SBM/SoyFlour</td>
<td>700,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Textured Soy Proteins</td>
<td>200,000</td>
<td>200,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,500,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
Fig. 2. Soy protein products from defatted soy flakes (Rakosky, 1967).
From SPC to FSPC

Higher Technology Platforms = Processing:

“FUNCTIONAL” or PERORMANCE Proteins increase Solubility and Emulsification

Molecules of TRADITIONAL and REFOLDED SPC’s
Typical Human Food Opportunities for Vegetable Proteins (mostly Soy)

- **ISP (90 p):** (functional) spice blends
  processed meat products
  emulsifier /whole muscle/ fat binder
  beverage systems
  nutritional bars
  baby (infant) foods

- **SPC (60 – 70 p):**
  spice blends
  processed meats (water binding)
  extrudates / texturizer
  ground meat systems (meat replacement)
  vegetarian foods
  (spaghetti) sauces
  Further processing

- **(Text.) Flour (50 p):**
  bakery, cakes, confectionery
  Otherwise similar to SPC
Meat
8th Continent
Simple Change, Better Health

soymilk
LOW FAT
Excellent Source of Calcium

chocolate
NATURALLY AND ARTIFICIALLY FLAVORED

vanilla
NATURALLY AND ARTIFICIALLY FLAVORED

8 FL OZ (236mL)

HELPS LOWER CHOLESTEROL
25 grams of soy protein a day, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease.
8th Continent contains 7 grams of soy protein per serving.
In 2003, the new Soyprotec plant began manufacturing high-quality Soy protein concentrates, textured protein, and textured protein concentrates from non-GMO beans. Specialising in custom-made applications for the food industry, Soyprotec's expert engineers can develop new versions of Protex, a soy protein concentrate, suitable for various applications.

Protex 500 series are made from high-quality dehulled soy flour, and Protex 500 series are made from soy protein concentrates. By selecting the appropriate size for the application, Protex can offer a range of options. Protex is easy to use, maintains or improves the texture of various foods. Protex is a protein-enhancing ingredient, replacing the provider with high-quality dry ingredients without adding additional materials.

Protex can be used in vegetarian products, enhancing the nutritional value of plant-based meats without adding fats or oils. Protex can also be added to meat, poultry, and fish products, providing protein and additional health benefits.

Protex, with its ability to bond and adhere, can be used to extend shelf life of processed foods such as bakery items, snacks, baked goods, fish,我在培养的美好。
Meat Analogs

• Foods developed to emulate the characteristics of animal based meats

• Will not contain animal materials
High Moisture Extrusion
Boterham-Worst

Gebr. Gehakt Bieslook

Ingrediënten:
- 130g

Prijzen:
- €1,76

Gebruiksoverkoeping:
- 29/11/2003

Gebruiksoverkoeping:
- 12/11/2003

Vegetarisch

Tivall
VEGGIE HAM
Jambon Veggie
Simulated luncheon ham slices. Contains no meat.
Tranches de simili-jambon à sandwich. Sans viande.

Oh NATUREL
Meatless Chick'n Cordon Melts™
Poulet farci à la suisse sans viande
Salmon Feed composition Norway 2013*

- Veg meal: 30%
- SPC: 18%
- Fish meal: 14%
- Veg oil: 21%
- Fish oil: 9%
- Other: 8%

1.7 mln tons*

* Marine Harvest, Biomar and LMC
HARD LIQUOR

Porcimat Piglets
Projected Demand for SPIs and SPC, 2000-2020

Ref © LMC International Ltd

SPI Human Food
SPI Industrial
SPC Human Food
SPC Aquafeed
SPC Other Animals
SPC Industrial
Main Non-GMO Soybean FOOD Markets EU

France allowed cheaper Indian GMO free SBM (premium of $40-60/t) while other key destinations took Brazilian at higher premium ($80-150/t)

Potential trends: Some major turkey slaughteries expect animals to be fed with gmo-free in the last 10 weeks (life cycle is 16 weeks (hens) and 20 weeks cocks)

<table>
<thead>
<tr>
<th>Top GMO-free markets</th>
<th>ktons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>675</td>
</tr>
<tr>
<td>France</td>
<td>480</td>
</tr>
<tr>
<td>Switzerland</td>
<td>300</td>
</tr>
<tr>
<td>UK</td>
<td>240</td>
</tr>
<tr>
<td>Netherlands</td>
<td>230</td>
</tr>
<tr>
<td>Denmark</td>
<td>160</td>
</tr>
<tr>
<td>Belgium</td>
<td>87</td>
</tr>
<tr>
<td>Austria</td>
<td>46</td>
</tr>
<tr>
<td><strong>total</strong></td>
<td><strong>2 218</strong></td>
</tr>
</tbody>
</table>
Bayer: Keine Genpflanzen in Europa

Der Chemiekonzern Bayer will auch nach der Übernahme des US-Saatgutherstellers Monsanto keine genveränderten Pflanzen in Europa anbieten. "Wenn die Politik und die Gesellschaft in Europa genverändertes Saatgut nicht möchten, dann akzeptieren wir das, auch wenn wir anderer Meinung sind", sagte Bayer-Chef Baumann der "Süddeutschen Zeitung".

Monsanto stellt gentechnisch veränderte Nutzpflanzen her und auch das umstrittene Unkrautvernichtungsmittel Glyphosat. Der Saatguthersteller hat vielerorts einen schlechten Ruf. Bayer will die Übernahme bis Ende 2017 abschließen.
FOOD:
- Non-GMO required, ideally also ProTerra, etc.
- Functional Performance Emulsifiers for sausages and hams
- Dispersible Protein for nutrition and beverage systems
- Light Colored TSPC for Poultry Meat application (USA + EU)
- Red Colored TSP for nitrite stab. canned meats (mainly Asia)

FEED:
- Particle size < 63 µ for (Calf) Milk Replacer (bulk/BB)
- 100 µ for general young animal nutrition
- >150 µ for piglets, aqua-culture (bulk/BB)
- Fermented SBM for pigs, poultry, aqua (China/Asia, etc.)
- Enzyme-modified low ANF protein for Hypo-allergenic dogs
Trends GMO vs NON-GMO

- Steep reduction non-GMO Brazil
  - 10 mln tons produced 2013 / 5 mln tons certified
  - 4.8 mln tons produced 2015/2016 / 4.4 mln tons fully segregated/contracted
- Specific nutritional food industries in US and CAN pushing for non-GMO raw materials
- New Vermont labelling law on GMO declaration
- One major EU non-GM soy flour and TSF producer closed down
- German/Austrian poultry growers requiring non-GM
- Norway law requires non-GMO
- Others, i.e. China, India, etc.

Future?
GMO vs non-GMO 2015 Brazil

Figura 2. Taxa de adoção da biotecnologia agrícola no Brasil.

Fonte: CÉLERES® | Atualizado em 4/agosto/2015
Thank You
Obrigado
Gracias
Danke
Merci