The role of feed industry in animal production:
“challenge to ensure safe and healthy feed for food”

dr. Mia Eeckhout
• About Eufetec
• Importance of feed production
• Resource efficiency
• Ecological footprint
• Animal Health and welfare
• Safe Feed for safe Food
• Conclusions
About EUFETEC

• **Official launch**
  
  September 2008, Brussels

• **Mission**

  Support feed sector-bound and sector-steered technological innovation through
  
  – Harmonized, innovative (technical) research
  – Practical guidelines and training
  – Service provision
About EUFETEC: core team

Industry

Research institutes and academic community

www.eufetec.eu

EUFETEC
European Feed Technology Center

29 August 2011

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About EUFETEC: focal points

• Sustainable feed & environment
  – environmentally friendly feeds
  – reduction of emissions
  – byproducts utilization, new protein / energy sources
About EUFETEC: focal points

• Feed & food quality and safety
  – transfer of contaminants to milk, meat and eggs + residues
  – analysis and sampling methods for undesirable substances
  – feed hygiene regulation (183/2005) / auto control
  – cross contamination
  – emerging contaminants
About EUFETEC: focal points

• Production unit management
  – employee safety / occupational health
  – dust explosion
  – energy management
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Feeding EU Livestock

- 5 Mio EU farmers
- EUR 130 billion animals for food production
- 450 Mio tons of feed yearly

Types of Feed:
- Feed materials
- Feed additives
- Compound feed
- Medicated feed
Feeding EU livestock

- Livestock sourcing in feeding stuffs (Mio ton/year)

Source: FEFAC
Feeding EU livestock

- Value of purchased compound feed in total animal output value

Source: FEFAC
Global compound feed production in 2010 (mio. t)

Source: FEFAC / Feed International
Role of feed industry

- Resource efficiency
- Ecological footprint
- Animal health and welfare
- Safety and quality through the food chain
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Resource efficiency

- Feed production:
  - Knowledge on animal nutrition, metabolism
  - Least cost formulation – constant price
- Demand for resources increases, speculations
- Prerequisite for sustainable animal production
Feed material consumption by the EU compound feed industry

Source: FEFAC, 2010

- Feed cereals: 47%
- Cakes & Meals: 27%
- Oils & Fats: 2%
- Co-products from Food Industry: 12%
- Pulses: 1%
- Dairy products: 1%
- Dried forage: 2%
- Minerals, Additives & Vitamins: 3%
- Tapioca: 0.5%
- All others: 5%

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Origin of proteins used for animal feeding in the EU-27 in 2007/08

Source: FEFAC / PROLEA

- Soya meal 68%
- Rapeseed meal 15%
- Sunflower meal 5%
- Cotton meal 0.5%
- Copra/Palmist 2%
- Pulses 2%
- Dried forage 3%
- Corn gluten feed 2%
- Fish meals 2%
- Others 1%

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### EU-27 balance sheet for protein rich feed materials in 2007/08

Source: FEFAC / PROLEA

<table>
<thead>
<tr>
<th>Products</th>
<th>EU production (*1,000 T)</th>
<th>EU consumption (*1,000 T)</th>
<th>Self-sufficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Products</td>
<td>Proteins</td>
<td>Products</td>
</tr>
<tr>
<td>Soyabean meal</td>
<td>798</td>
<td>303</td>
<td>38,220</td>
</tr>
<tr>
<td>Sunflower meal</td>
<td>4,932</td>
<td>789</td>
<td>4,503</td>
</tr>
<tr>
<td>Rapeseed meal</td>
<td>18,358</td>
<td>3,672</td>
<td>11,569</td>
</tr>
<tr>
<td>Cottonseed meal</td>
<td>564</td>
<td>183</td>
<td>260</td>
</tr>
<tr>
<td>Copra-Palm meal</td>
<td>0</td>
<td>0</td>
<td>2,812</td>
</tr>
<tr>
<td>Pulses</td>
<td>1,950</td>
<td>429</td>
<td>1,875</td>
</tr>
<tr>
<td>Dried forage</td>
<td>4,458</td>
<td>847</td>
<td>4,200</td>
</tr>
<tr>
<td>Corn gluten feed</td>
<td>2,369</td>
<td>497</td>
<td>2,910</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>410</td>
<td>62</td>
<td>713</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>6,782</td>
<td></td>
<td>25,651</td>
</tr>
<tr>
<td>Fishmeal</td>
<td>445</td>
<td>307</td>
<td>810</td>
</tr>
<tr>
<td>Total</td>
<td>7,089</td>
<td></td>
<td>26,210</td>
</tr>
</tbody>
</table>
Resource efficiency

- **Soy meal**: worlds best protein : self sufficiency of EU-27 is low (2%)
  - Since 2000 (BSE) ban of animal proteins in EU (before: 15 mio tons) resulting in 10 % increase of soy consumption and the addition of pure amino acids → July 2011 reintroduced
  - Initiative on Responsible Soy (RTRS)
Resource efficiency

• Soy meal and corn gluten feed from US, Brazil and Argentina → **non EU authorized GMO** → blockage → risk for economic loss*

• February 2011: 0,1% Threshold for non EU approved GM events in feed imported from third countries

(* read more in DG AGRI report on - ECONOMIC IMPACT OF UNAPPROVED GMOS ON EU FEED IMPORTS AND LIVESTOCK PRODUCTION)
Resource efficiency

- 85 mio ton of **by-products from food and drink for animal production**
- 60 mio ton are used by EU compound feed industry

Ex. Sugar from sugar beet
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Ecological Footprint

- CFP = total amount of CO₂ equivalents that are emitted during total production chain
- Livestock = 10 to 18% of total EU emission (EU report)
- Reduce CFP
  - Improve efficiency of production
  - Decrease CFP of Feed production
- Feed production chain → from crop growing to feed production – more efficient processing, more digestible feed, ...
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• Optimizing feed formula
  – Ex. cows
    • Oxidative stress leads to animal health problems and may lower the daily milk production
    • Feed can be supplemented with anti-oxidative products (Vitamin E and Se)
      → Animal health (reduce mastitis)
      → Enhance quality of animal products (Meat color and rancidity)
Animal Health and Welfare

- Optimizing feed formula
  - Ex. poultry
    - Lameness $\rightarrow$ negative implications for both bird welfare and productivity levels
    - dietary silicon supplement for reducing lameness*

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Safe feed for safe food

- REGULATION (EC) No 183/2005 laying down requirements for feed hygiene
- Feed safety assurance system based on HACCP principles
- Prerequisite → Good Feed Hygiene Practices

<table>
<thead>
<tr>
<th>Requirements feed facilities</th>
<th>Handling of feed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements for equipment</td>
<td>Packaging of feed</td>
</tr>
<tr>
<td>Cleaning and disinfection</td>
<td>Heat treatment</td>
</tr>
<tr>
<td>Pest control programme</td>
<td>Storage and Transport</td>
</tr>
<tr>
<td>Handling of waste</td>
<td>Traceability</td>
</tr>
<tr>
<td>Personal hygiene</td>
<td>Training</td>
</tr>
<tr>
<td>Raw materials</td>
<td></td>
</tr>
</tbody>
</table>

- Community and national guides to good practice
Safe feed for food: HACCP

What is HACCP?

To do

To obtain

- Hazard
- Analysis
- Critical
- Control
- Point
Safe feed for safe food: HACCP

- Hazards → Risk = Frequency x Severity
  - Biological
    - Salmonella
  - Chemical
    - Mycotoxins
    - Contaminants: heavy metals, pesticides, dioxin
    - Cross-contamination of veterinary medicinal products, coccidiostats
    - Errors in supplementation: salt, amino acids
  - Physical
    - Metal parts
Safe feed for food: HACCP

- **Critical control point (CCP)** is a point, step or procedure at which controls can be applied to prevent, eliminate or reduce to acceptable (critical) levels.

- Some examples
Safe feed for food: HACCP

- Raw material intake
  - Ex. Mycotoxins in cereals e.o.,
    - Variety of clinical and sub-clinical symptoms
    - Nephrotoxicity, negative impact in performance of farm animals → economic implications
    - Unavoidable presence
  - Prevention:
    - Risk analysis raw material
    - Monitoring raw material storage/intake
    - Feed safety assurance system at suppliers’ level
Safe feed for food: HACCP

• Mixing step
  – Ex. coccidiostats: carry-over, cross contamination
  – Feed hygiene prerequisite:
    • dust management, cleaning of equipment
  – HACCP prevention and control measures:
    • scheduling of production (reduce),
    • Determine degree of cross contamination
    • remove coccidiostats from production line (eliminate)
Safe feed for safe food: traceability

- Traceability (down and upstream)
  - Actions: detailed record keeping
  - Objectives:

![Diagram showing relationships between Traceability, Targeted recall, Feed labeling, and Information to authorities.]

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Conclusions

Compound Feed Industry:
- Important key role player in animal production
- Challenges and responsibilities
  - Enhance animal health and welfare
  - Reduce environmental impact (CFP)
  - Feed Security and Profitability through resource management
  - Feed/food Quality and Safety
Thank you for your attention