Novel feed crops and residual products: vision from the feeding industry

Ruud Tijssens
Group Director Public & Cooperative Affairs

August 30, 2021
Global

A leading agricultural cooperative with an international network of subsidiaries in **Europe, Asia, South America, Africa, United States of America** and a worldwide export and distribution network.
Facts and figures 2020

FINANCE
- € 39.8 million net income
- € 2.2 billion turnover
- € 492.1 million Group equity
- 57% solvency

SOLUTIONS
- Providing arable, nutritional and industrial solutions in the agricultural sector worldwide

EMPLOYEES
- c. 3,000 fte worldwide

COOPERATIVE
- Since 1892
- Equity 100% farmer owned

INTERNATIONAL
- Locations in Europe, America, Asia and Africa
- Global export and distribution

MEMBERS
- Collective ownership of over 10,000 Dutch farmers and growers
What do we feed animals?
What is the footprint of the feed industry?

Global emissions from livestock supply chains by category of emissions:
What is the footprint of the feed industry?

Biodiversity loss: Agriculture 'threatening 86% of at-risk species', says major UN-backed report

4 February 2021, source edie newsroom

What is the footprint of the feed industry?

Unlock inedible or unwanted biomass

9-23 g

g animal protein per person per day

0

60

Land (ha)

Hanna H.E. van Zanten
Defined a model which will help to turn into the right direction: Key: “% fit for feed use”

- Nutritional requirements
- Food & Feed safety requirements
- Technological requirements
- Circulair requirements
Transition of the feed industry towards raw materials, not in competition with human food

- Category 1: Primary raw materials
- Category 2: Co-products
- Category 3: Former foodstuffs
- Category 4: Additives, minerals, premixes

100% fit for feed use
Transition of the feed industry towards raw materials, not in competition with human food

> Category 1: Primary raw materials

> Primary raw materials category A:

Raw materials grown for feed quality, but could be produced for food quality (like feed quality wheat and corn – specific feed quality)

> Primary raw materials category B:

> Primary raw materials category C:

> Primary raw materials category D:
Transition of the feed industry towards raw materials, not in competition with human food

- **Primary raw materials**
  - **Category 1:** Primary raw materials
    - **Category A:** Raw materials grown for feed quality, but could be produced for food quality (like feed quality wheat and corn – specific feed quality)
    - **Category B:** Raw materials grown for human consumption but not suitable for human consumption due to high content of undesirable substances or low quality (wheat with high content of mycotoxins, soy with low protein content)
    - **Category C:** Raw materials grown for animal feed and due to product characteristics plays an important role in circular agriculture as a green manure or for the use of crop rotation (grasses, lupins)
    - **Category D:** Raw materials grown for animal feed that, due to crop characteristics, play an important role in the (future) circular agriculture (high-protein soy alternatives)
Transition of the feed industry towards raw materials, not in competition with human food

> Category 1: Primary raw materials

> Primary raw materials category A:
Raw materials grown for human food, but not normally suitable for human consumption (wheat and corn – specific feed quality)

> Primary raw materials category B:
Raw materials grown for human consumption but normally not suitable for human consumption due to high content of undesirable substances or low quality (wheat with high content of mycotoxins, soy with low protein content)

> Primary raw materials category C:
Raw materials grown for animal feed and due to product characteristics plays an important role in circular agriculture as a green manure or for the use of crop rotation (lupins)

> Primary raw materials category D:
Raw materials grown for animal feed that, due to crop characteristics, play an important role in the (future) circular agriculture (high-protein soy alternatives)

0% fit for feed use

20% fit for feed use

50% fit for feed use

80% fit for feed use
European protein developments
Production of soy in Europe – is that possible?
Why is > 500 Euro/ton so important? Because it needs to be competitive with alternative choices

<table>
<thead>
<tr>
<th></th>
<th>Soy</th>
<th>Summer wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>259</td>
<td>124</td>
</tr>
<tr>
<td>Fertilization</td>
<td>147</td>
<td>257</td>
</tr>
<tr>
<td>Weed control</td>
<td>170</td>
<td>49</td>
</tr>
<tr>
<td>Control of diseases</td>
<td>87</td>
<td>163</td>
</tr>
<tr>
<td>Total production costs</td>
<td>€ 663</td>
<td>€ 593</td>
</tr>
<tr>
<td></td>
<td>Soy</td>
<td>Summer wheat</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------</td>
<td>--------------</td>
</tr>
<tr>
<td>Total production costs</td>
<td>663,00</td>
<td>593,00</td>
</tr>
<tr>
<td>Production (kg/ha)</td>
<td>2.900</td>
<td></td>
</tr>
<tr>
<td>-/- cost of intake, including margin</td>
<td>-24,90</td>
<td>-12,40</td>
</tr>
<tr>
<td>netto per ton (€/ton)</td>
<td>489,60</td>
<td>151,20</td>
</tr>
<tr>
<td>netto per hectare</td>
<td>1420,00</td>
<td>1194,00</td>
</tr>
<tr>
<td>saldo EM</td>
<td>€ 757,00</td>
<td>€ 601,00</td>
</tr>
</tbody>
</table>
Major challenges

> Development of a stable supply chain
> Value creation
  > By market development
  > By increased productivity
Transition of the feed industry towards raw materials, not in competition with human food

> Category 2: Co-products

> Co-product category A: 
co-product suitable for human consumption

> Co-product category B: 
co-product not suitable for human consumption, and economic allocation <25%
(e.g. palm kernel expeller)

> Co-product category C:
co-product not suitable for human consumption, and economic allocation between 25 and 50%
(e.g. wheat bran)

> Co-product category D: 
co-product not suitable for human consumption, and economic allocation > 50%
(e.g. soy bean meal)
Transition of the feed industry towards raw materials, not in competition with human food

> **Category 2: Co-products**

> **Co-product category A:**

  co-product suitable for human consumption

> **Co-product category B:**

  co-product not suitable for human consumption, and economic allocation 100% fit for feed use

> **Co-product category C:**

  co-product not suitable for human consumption, and economic allocation 80% fit for feed use

> **Co-product category D:**

  co-product not suitable for human consumption, and economic allocation 0% fit for feed use
Transition of the feed industry towards raw materials not in competition with human food

> Category 3: Former Foodstuffs

Defined as: Products from food industry not consumed for human food, or legally (no longer) allowed for human consumption 100% fit for feed use

3.5 MILLION TONNES
of former foodstuffs are processed into animal feed annually in the countries where EFFPA holds active membership

5 MILLION TONNES
of former foodstuffs are estimated to be processed into animal feed in the entire EU

7 MILLION TONNES
EFFPA estimates the EU former foodstuff processing industry could expand up to this amount by 2025, taking future innovations and EU drive to reduce food waste into account.

100 FORMER FOODSTUFF PROCESSORS
varying from very small scale to medium-size companies are active in the EU, according to EFFPA estimations.
Transition of the feed industry towards raw materials, not in competition with human food

> The easy accessible former foods stuff are already in use now

> 40 million tons (EU) to go!

> What about catering waste?
> What about products with beef meat (not allowed because of BSE)?
> What about the cannibalism regulation?
> What about high moisture containing food products & microbiological contamination?
Former food stuff – it’s all about the production chain

Food safety is based on:

> Hazard analysis
> Hazard control

HACCP
Major challenges and opportunities concerning former foodstuff

- Development of innovative closed supply chains
- Innovation of drying processes
- Innovations in risk reduction
  - Heat treatment
  - Detoxification treatments
In conclusion: major opportunities and challenges

- Standardisation content of feed not in competition with human consumption (definitions & guidelines for transition)
- Development of innovative closed supply chains
- Innovations in technology and risk reduction
  - Heat treatment
  - Detoxification treatments
Our vision
A responsible food chain for future generations
Thank you for your attention