



# Salmonella and the feed industry

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FEFAC - European Feed Manufacturers Federation

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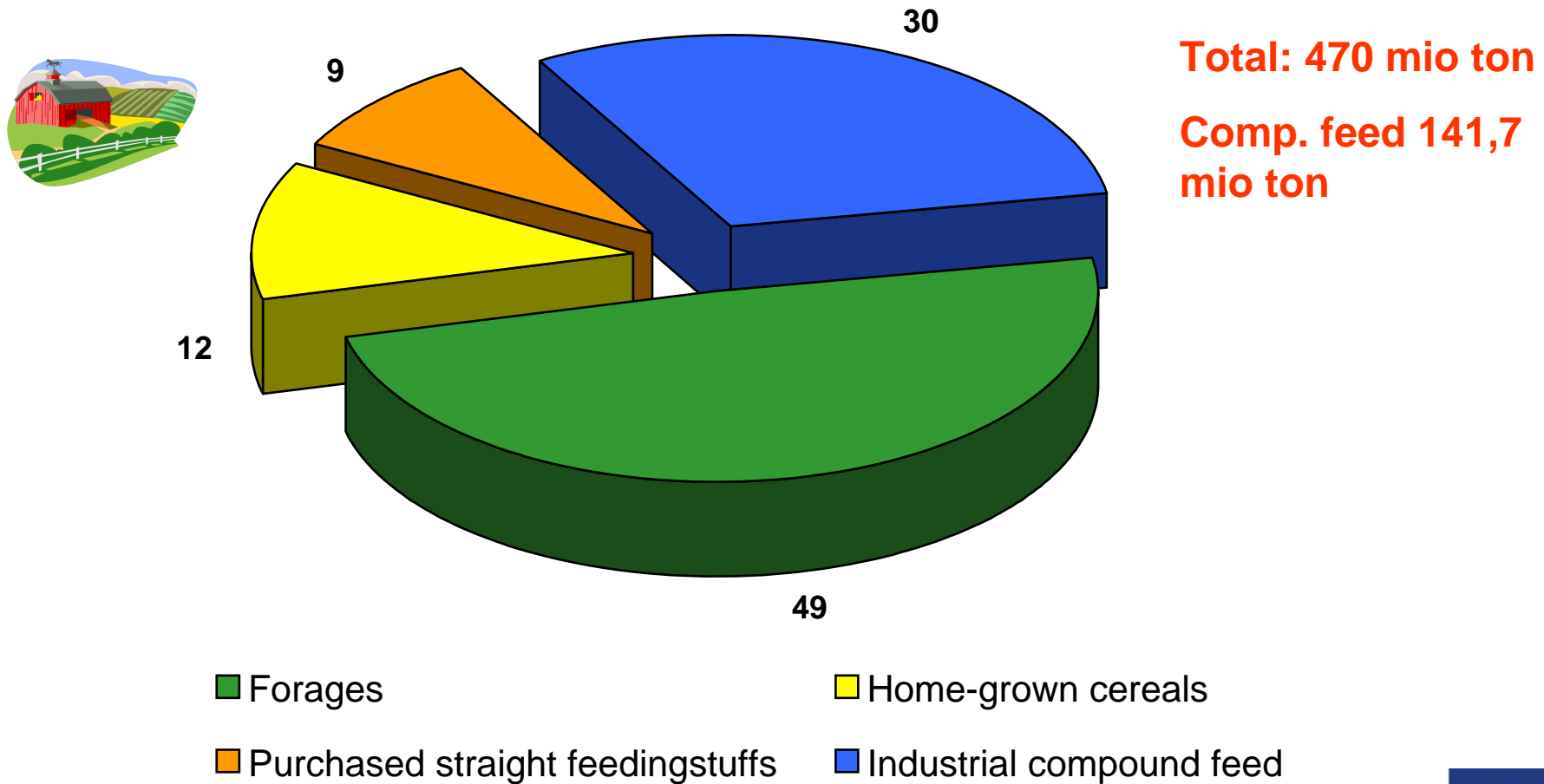
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# FEFAC in a nutshell

- Created in 1959
- Industrial compound feed and premixtures manufacturers
- 25 Members:
  - 21 Member Associations from 20 EU Member States
  - 2 Observer members (Turkey, Switzerland)
  - 2 Associate Members (FHL, EMFEMA)
- Represents 60% of the EU compound feed production
- 6 Technical committees to assist the FEFAC Council
  - Animal Nutrition
  - Industrial Compound Feed Production
  - Premix & Mineral Feed
  - European Feed Manufacturers Guide (EFMC)
  - Fish Feed
  - Milk Replacers

# EU-27 Livestock sourcing in feedingstuffs by categories of feed (%)



# Official monitoring of salmonella in compound feed

- A majority of the results (>60 %) in the EFSA report on zoonoses trend were supplied by NL, FI, SE and NO
- Only positive results from UK
- ~1 % from FR and ES
- Industry generally data not included
- Differences in prevalence between countries and feed types
- Basic facts are lacking

# The UK model - DEFRA/UFAS

Minimum requirement for sampling and testing for salmonella in national Code for the Control of Salmonella (since 1989?).

Raw materials:

Monthly aggregate samples of raw materials produced, entering or being despatched from stores ( $n < 40$ ).

Compound feed production:

Daily samples to weekly aggregate samples of 3 or 5 different feed categories.

If  $< 40$  tonnes/week samples representing 100 tonnes.

# The UK model - DEFRA/UFAS

Feedingstuffs in bulk for poultry breeders parent or grandparent stock **must** be subjected to a salmonella kill step by heat treatment or other validated method **unless** the customer specifies otherwise

## Salmonella kill step

Conditioning at time and temperature to achieve a total enterobacteriaceae count of less than 10 per gram feed.

The target temperature no less than 80 °C, with 75 °C as critical limit.

Other conditioning temperatures and/or methods may be specified by individual customers.

Where heat treatment is applied for feeds other than poultry breeder feeds, basic requirements must be complied with.

# The UK model - DEFRA/UFAS

Feeds which have been subjected to heat treatment should not share a line or route with products which have not been so treated.

The risk of recontamination should be considered within the HACCP study.

Records should be kept of the temperatures throughout the production run. The process should be verified by routine testing of finished feed for total enterobacteriaceae.

Environmental samples should be taken from the line, at a frequency and at points defined in the HACCP study, and tested for salmonella.

# The Dutch model - GMP+

Mandatory Salmonella-killing treatment when producing poultry feed with Salmonella-critical feedingstuffs.

Enterotoxin reduction test to show a reduction with at least a factor 1000. The test should be carried out at least twice per year.

Operators responsibility to specify critical points and to determine a minimum sampling plan.

Process control at points with possible risk for recontamination

# The Dutch model - GMP+

All poultry feeds should be supplied Salmonella-free.

Entry check for feed materials used in untreated poultry feed (mash) :

- non-Salmonella-critical feed materials can be used without an analysis of the batch in question being available
- Salmonella-critical feed materials can be used only if the batch is found to be Salmonella-free.
- Salmonella-critical feed materials complying with the norm 'non-Salmonella-critical' from a specific manufacturer may also be used.

# The Dutch model - GMP+

## Salmonella-critical feed materials 2006

The following feed materials were assessed as Salmonella critical:

- South American soybean meal and flakes
- Untreated fishmeal,
- Rape seed meal and flakes
- Roasted soybeans
- European sunflower seed meal
- French wheat bran and
- Eggshells

# The Dutch model - GMP+

## Sampling of soybean meal in South America

- for each 500 (m) tonnes at least 20 random sub-samples of max. 1 kg
- mixing of sub-samples into one aggregate sample per hold (8,000 to 10,000 tonnes)
- at least 2 final samples are taken from the mixed aggregate sample.

# The Dutch model - GMP+

## Monitoring in production lines

10 samples are taken from critical points in each production line.

The frequency of inspection is once per month.

Can be reduced to once per two months after six negative inspections.

Back to once per month for at least half a year if one sample is positive.

The positive samples must be serotyped.

If salmonella is found, corrective measures are immediately taken until demonstrable compliance with the norms.

# The Dutch model - GMP+

## Monitoring finished poultry feed

<b>Target animals</b>	<b>No./24-ton deliveries</b>
<b>Top breeding</b>	<b>1 in 2 batches (50%)</b>
<b>Raising increase</b>	<b>1 in 5 batches (20%)</b>
<b>Increase</b>	<b>1 in 10 batches (10%)</b>
<b>Broilers</b>	<b>1 in 20 batches (5%)</b>
<b>Laying-hens and breeding hens</b>	<b>1 in 20 batches (5%)</b>
<b>Raising increase turkeys</b>	<b>1 in 5 batches (20%)</b>
<b>Increase turkeys</b>	<b>1 in 10 batches (10%)</b>
<b>Meat turkeys</b>	<b>1 in 30 batches (3,3 %)</b>

# The Dutch model - GMP+

## Monitoring feeds to other animals

<b>Annual production</b>	<b>No samples/ quarter</b>
<b>Up to 4000 tons</b>	<b>2</b>
<b>Up to 6000 tons</b>	<b>3</b>
<b>Up to 8000 tons</b>	<b>4</b>
<b>Up to 10000 tons</b>	<b>5</b>
<b>Up to 20000 tons</b>	<b>10</b>
<b>Up to 30000 tons</b>	<b>15</b>
<b>Up to 40000 tons</b>	<b>20</b>
<b>&gt;40000 tons</b>	<b>25</b>

# The Dutch model - GMP+

- Initiated in 1997 for poultry feed
- Salmonella control a point of attention, not a CCP
- Monitoring program extended to feed for other species and feed materials
- Suppliers involved in the program
- GMP targets 0+ % for poultry feeds except 1 % for layers
- No recalls
- Obligatory sampling when salmonella >3 % in a feed material.

# The Belgian model

Similar to the Dutch model

- ✓ HACCP since 2001
- ✓ Control of critical feed materials
- ✓ Targets for Enterobacteriaceae reduction in GMP since 2002
- ✓ Reduction by  $10^{-3}$ /g in heat treatment

# Danish model

- Monitoring of feed materials by suppliers
- All serotypes considered relevant
- If positive feed material → compound feed plant
- Systematic heat treatment of compound feed 81°C
- Monitoring of the compound feed production line
- In case of positive sample of compound feed → recall
- In case positive sample in the production line → stop and clean the production line

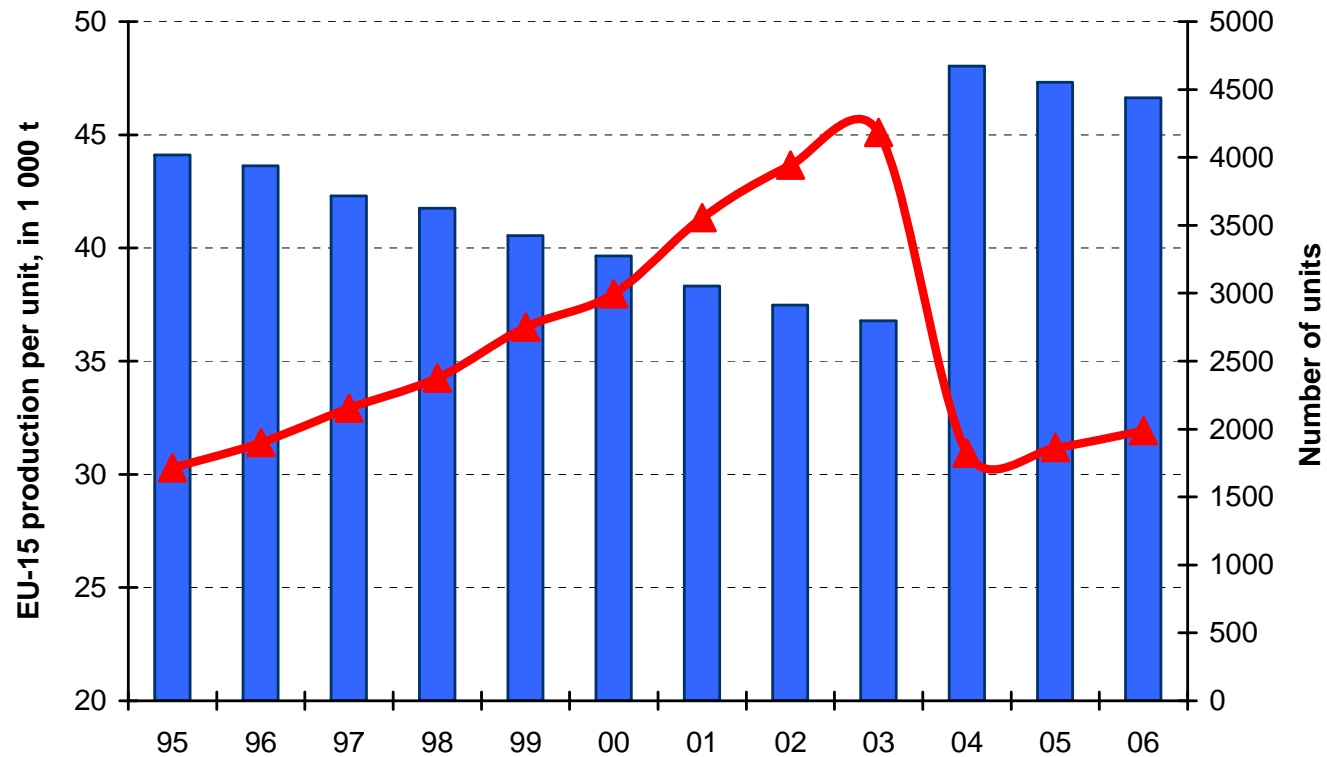
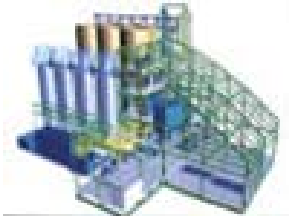
# General situation regarding salmonella control within the EU feed industry

- Monitoring by feed material suppliers
- No guarantee on feed materials (other than safe, genuine and of merchantable quality)
- Monitoring by compound feed manufacturers (selection of suppliers)
- Increased monitoring In case of contamination of feed material
- In case of positive sample of compound feed → action depends on national control plan (depends on species, serotypes, etc.)

# Salmonella control within the EU feed industry

- ✓ The whole range from strict control of feed ingredients and production processes to no strategy at all.
- ✓ Increased focus recently due to results in EFSA baseline studies on layers and broilers
- ✓ Monitoring plans in the feed industry established or on the way in many MS
- ✓ Voluntary control and monitoring programs more ambitious than the official ones.
- ✓ A significant part of the compound feed produced under national CoPs

# Number and average size of feed production units in the EU-25



Source: FEFCO

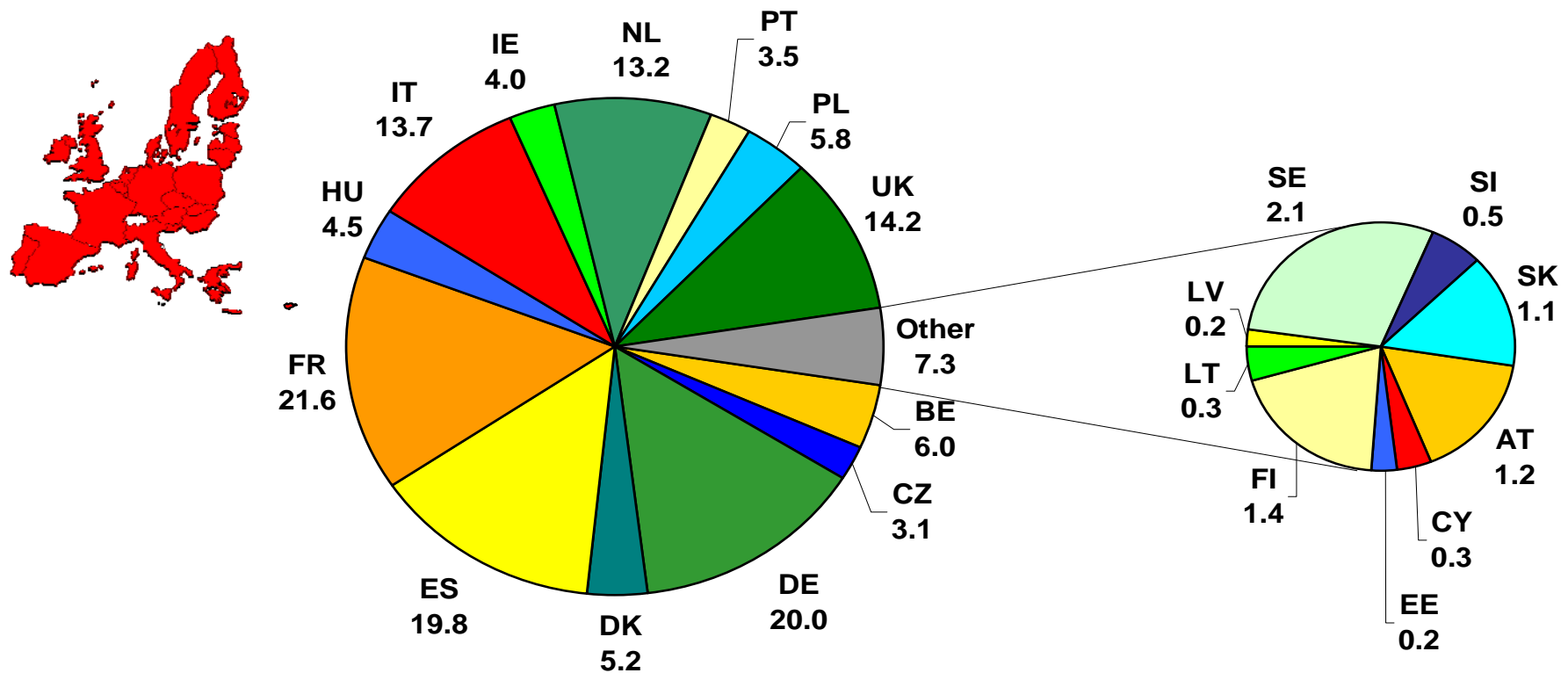
EU-25 from 2004 on

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# Industrial compound feed production per country 141.7 mio. t in 2006 in the EU-25

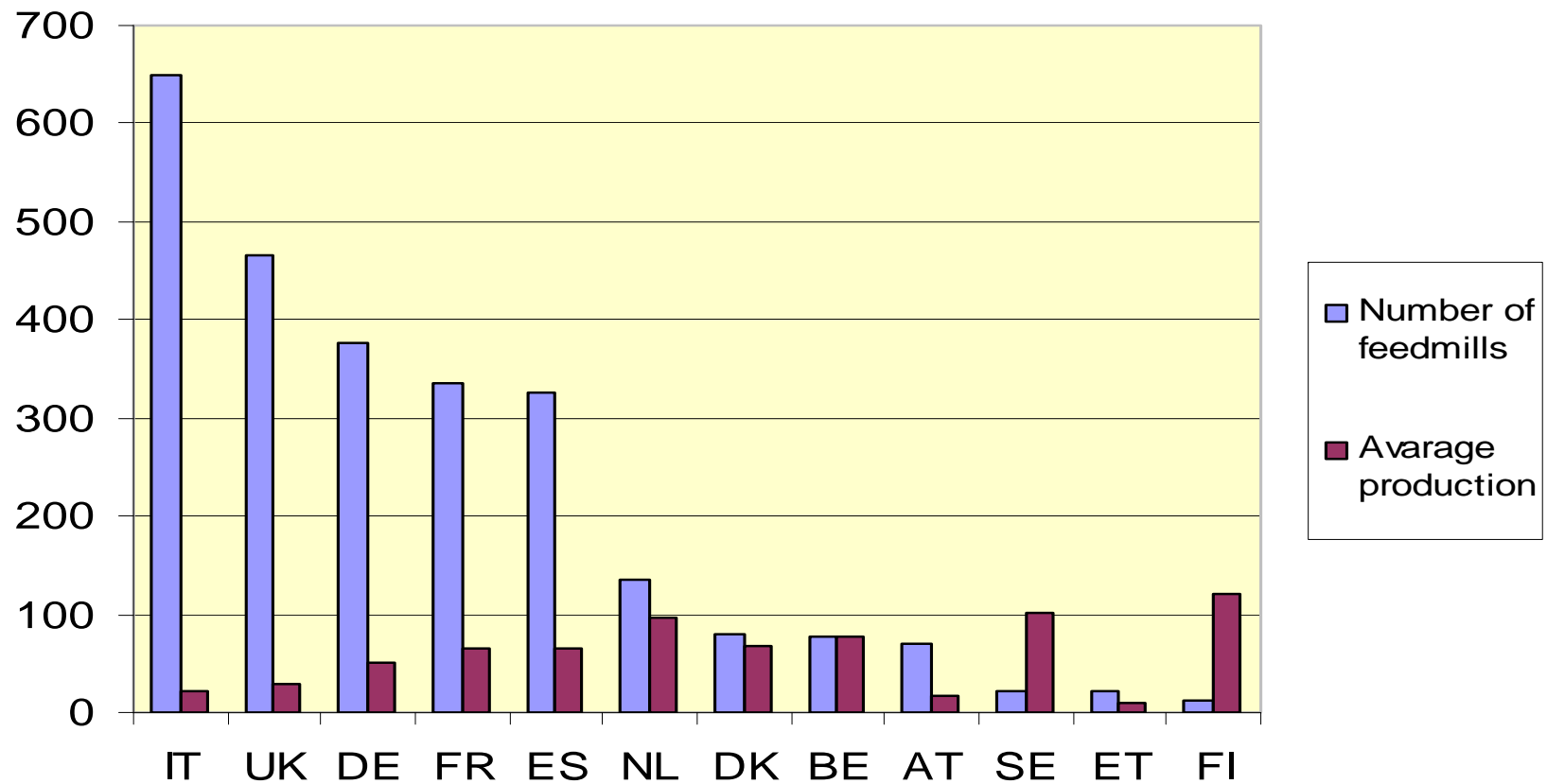


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# Structure of the feed industry in some EU-member states

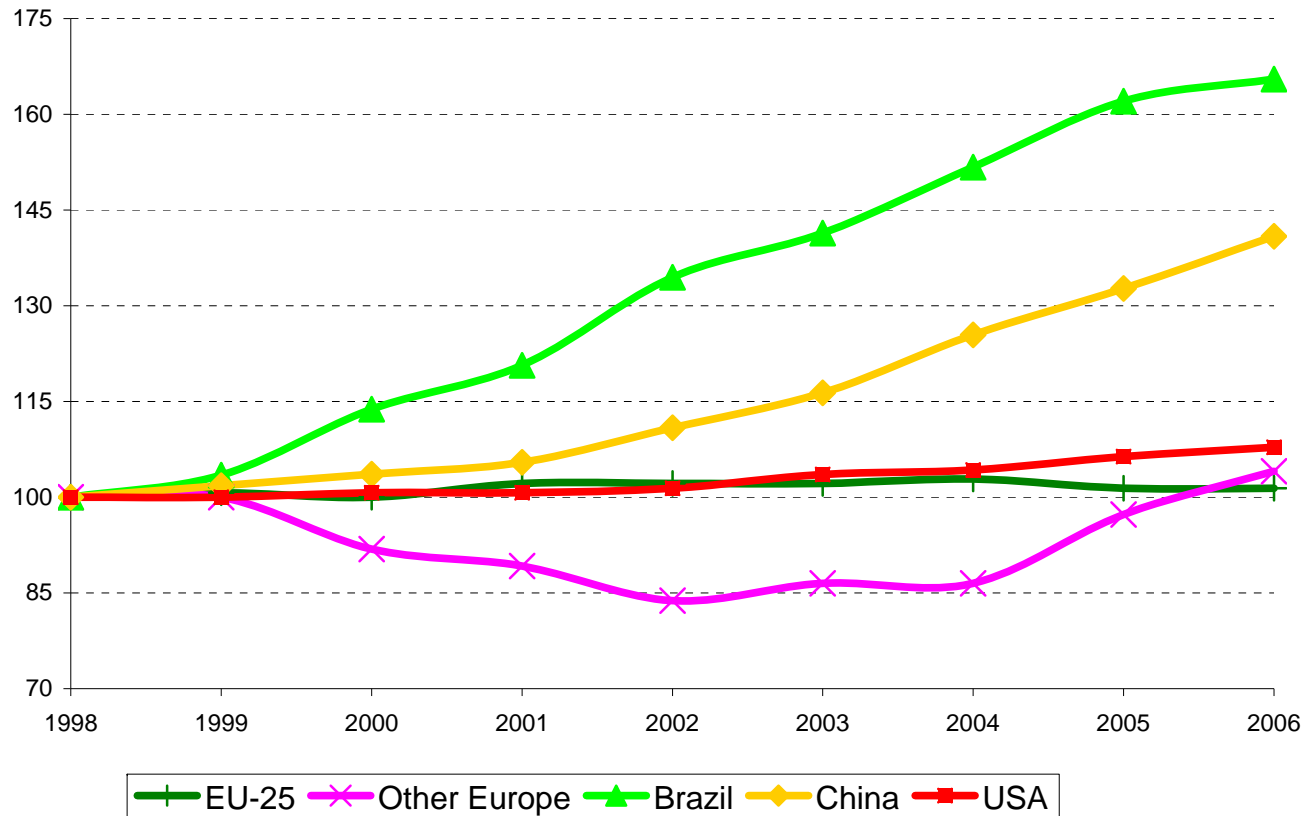


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# Evolution of global compound feed production (Index 100 = 1998)



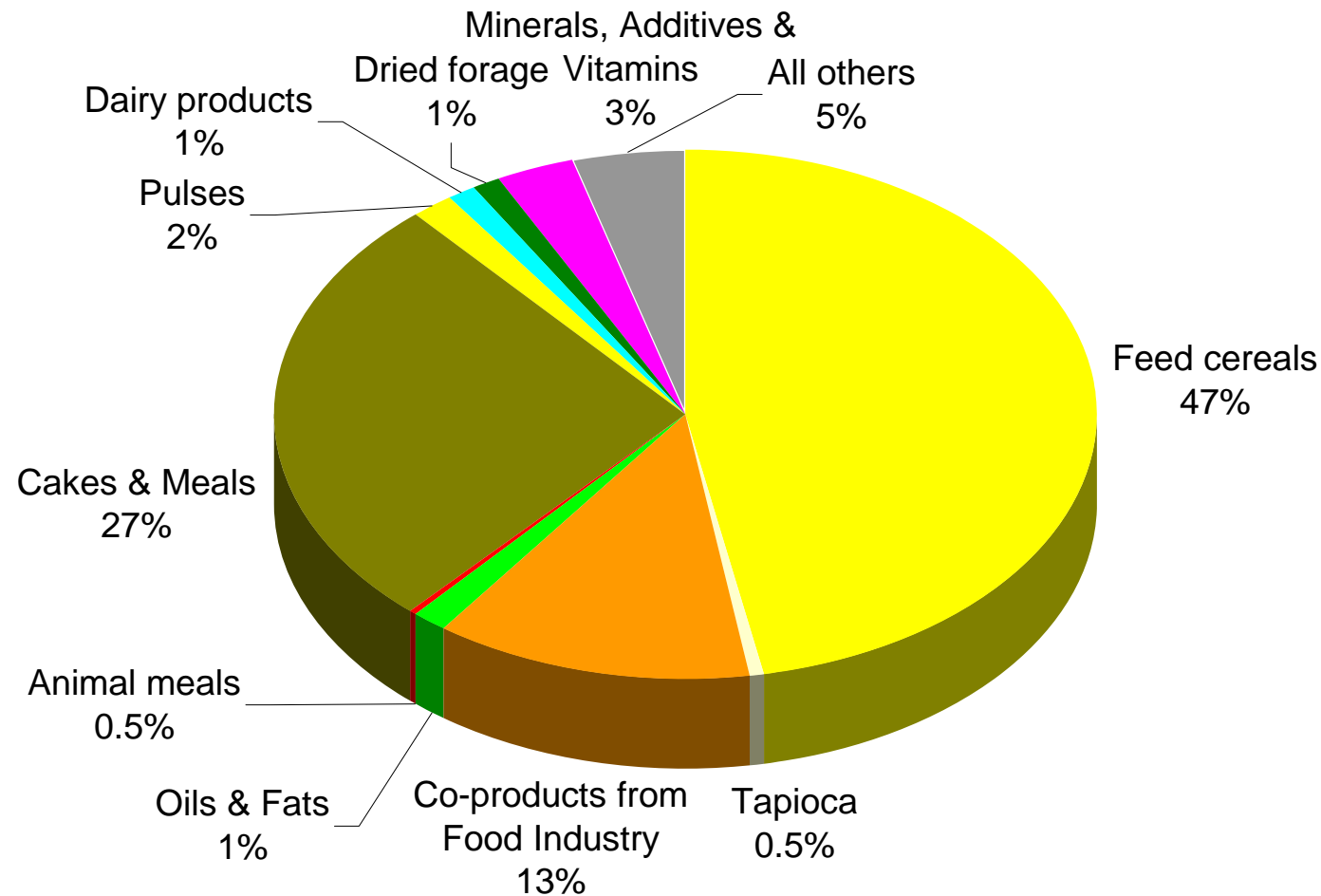
Source: FEFAC - Feed International

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# Feed material consumption by the EU-27 feed industry in 2006



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# Possible way forward?

- ✓ Chain approach from feed materials to primary food products.
- ✓ Focus on serotypes of relevance for human health
- ✓ Codes of Practice for continuous improvement
- ✓ Standardized protocols for monitoring
- ✓ No “punishment” when salmonella is found!
- ✓ “Rewards” for improvements!