



Federal Ministry  
of Food, Agriculture and  
Consumer Protection

# Management of Biological Hazards in Germany

Dr. Sabine Kruse

Federal Ministry of Food, Agriculture and Consumer Protection

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# Official Monitoring of Zoonosis

The objectives of the **monitoring of zoonosis** are

- classification of risks
- assessment of trends
- monitoring of antibiotic resistances

*Salmonella spp.*  
*Camphylobacter spp.*  
*Listeria monocytogenes*  
*Methicillin-resistant*  
*Staphylococcus aureus*  
(MRSA)  
*Verotoxin producing*  
*Escherichia coli* (VTEC)

## Results of the Monitoring of Salmonella in Feed

### *Salmonella spp.* in feed 2012

Feed	Number of samples	Number of samples salmonella positive	Samples salmonella positive ( %)
Rape seed	90	0	0.0
Rape cake	100	3	3.0

# Monitoring of salmonella carried out by the industry

## Voluntary monitoring of pig producing farms 2012

- 60 samples per year  
(1.7 million samples from meat juice and blood per year)
- 25 000 farms are categorized
  - 75.8 % category I (low risk)
  - 17.9 % category II (medium risk)
  - 6.3 % category III (high risk)
- Each farm with more than 40 % positive samples is categorized as “high risk of salmonella) and has to take measures against the contamination.

## Guideline of the official control on Management of Salmonella in Feed

- If **findings are positive**, a further possibility to bring the contaminated forage into circulation and further use as fodder has to be forbidden.
- A research regarding the **cause of contamination** should be conducted to identify the salmonella pathway .
- The forage containing salmonella should be subjected to a **particular method to abolish salmonella** such as heating (80-85°C) or pH-reduction (< 4,0).
- To **avoid further infections**, potentially infected areas, e.g. have to be disinfected.
- In case its not possible to conduct such a disinfection procedure, the forage has to be **eliminated from the feed chain** harmlessly.

# Guidelines of the industry on Management of Salmonella in Feed

The objective of the guidelines is to minimize Salmonella contamination all **along the feed supply chain** especially at the four main subsectors:

## **Import/storekeepers/transport**

- Good Hygiene Practices (GHP) and Good Managing Practices at this level to avoid contamination and recontamination (e.g. cleaning, disinfection).

## **Oilseed crushers**

- Prerequisite Programs (PRPs) implemented to avoid contamination via birds, personnel etc.
- Control points (CP) shall be defined according to the HACCP principles (e.g. Temperature, moisture, chemical treatment). Risk assessment shall concentrate on the point where reduction of Salmonella is achieved, thereafter where recontamination can be prevented.

# Guidelines of the industry on Management of Salmonella in Feed

The objective of the guidelines is to minimize Salmonella contamination all along the feed supply chain especially at the four main subsectors:

## Compound feed manufactures

- Prerequisite Programs (PRPs) implemented to avoid contamination via birds, personnel etc.
- Control Points shall be defined in relation to salmonella risk (e.g. incoming materials, heat or chemical treatment).

## On farm production of feed

- Feed business operators involved in productions of feed must follow basic hygiene procedures and apply risk-based approach to ensure the microbial quality of feed (cleaning, disinfection, pest control, avoiding contamination arising from livestock activities).

## Orientation scheme for microbiological quality of feed

**Spoilage of forage** means the forage as a whole and/or its single components is

- heavily polluted
- with stock pest, fungi or bacteria

therefore

- temporally or proportionately limited usage
- or overall uselessness

in particular because of risks regarding

- acceptance and digestibility and/or
- in food quality produced by animal.


**Abiotic** (e.g. fructolysine in dairy products, epoxide or peroxide in fat)

**Biotic by organisms** (e.g. insects, fungi, yeast, microbes)



# Orientation scheme for microbiological quality of feed

Classification of mould  
and other microorganisms  
(except pathogens)  
into groups and definition  
of quality grades  
of the feed.

 The orientation scheme is  
published on the web:  
[www.vdlufa.de](http://www.vdlufa.de)

FUTTERMITTELUNTERSUCHUNG Verfahrensanweisung Beurteilung

28.1.4

## Verfahrensanweisung zur mikrobiologischen Qualitätsbeurteilung

Stand: 18.09.2003, korr. Bucher 24.06.2004

*Verbandsmethode*

### 1 Zweck und Anwendungsbereich

Diese Anweisung beschreibt grundsätzliche Regeln, die für die Auswertung mikrobiologischer Keimzahldaten von Bakterien, Hefen, Schimmel- und Schwärzepilzen gelten (8.1 und 8.2) und eine mikrobiologische Qualitätsbeurteilung von Einzel- und Mischfuttermitteln nach Bestimmungen des Futtermittelgesetzes (§§ 3 und 7 Abs.3) und EU-Verordnungen ermöglichen.

Spezifische pathogene Mikroorganismen, wie Salmonellen, Escherichia coli, Listerien und Clostridium perfringens sind nicht Gegenstand dieser Verfahrensanweisung.

Die Verfahrensanweisung beschreibt im Einzelnen

- die Bewertungsgrundlagen
- die Kriterien der mikrobiologischen Beschaffenheit
- die Indikatorkeime der 7 Keimgruppen
- die Orientierungswerte der Keimgruppen zur Beurteilung von Futtermitteln
- die Keimzahlstufen der Keimgruppen
- die Qualitätsstufen
- die Qualitätsbeurteilung von Futtermitteln
- die Anforderungen an den Prüfbericht

# Orientation scheme for microbiological quality of feed

## Assessment of microbial cover in forage

Group	meaning	Group of microbes	indicator pathogens
aerobic, mesophilic bacteria	product-specific	GM 1	yellow microbes, Pseudomonas/Enterobacteriaceae
	(indicate spoilage)	GM 2	Bacillus spp. Staphylococcus/Micrococcus
		GM 3	Streptomyces spp.
mould - and Blackness-fungi	product-specific	GM 4	Verticillium, Acremonium, Fusarium, Aureobasidium
	(indicate spoilage)	GM 5	Aspergillus, Penicillium, Scopulariopsis, Wallemia
		GM 6	Mucorales (Mucosaceen)
yeasts	(indicate spoilage)	GM 7	all species

## Orientation scheme for microbiological quality of feed

Example soy meal		aerobic, mesophilic bacteria			Classes of microbial count			Yeasts
Group of microbes (GM)	GM 1	GM 2	GM 3	GM 4	GM 5	GM 6	GM 7	
meaning	product specific	(indicate spoilage)	product specific	(indicate spoilage)	product specific	(indicate spoilage)	(indicate spoilage)	
microbial counts	x10 <sup>6</sup> C I	0,12	1,3					
Classes of microbial counts (C)	C I	C II	C III	C IV	C I	C II	C III	C IV
valued	normal	slightly increased	normal	normal	significantly increased	increased	normal	

### Classes of microbial count

- C I** orientation value (OV)  
**C II** 5 times OV  
**C III** 5-10 times OV  
**C IV** > 10 times OV

### Quality grad of the feed (QG)

- QG I** all GM are C I (= OV) ("normal")  
**QG II** at least 1 GM is C II ("slightly increased")  
**QG III** at least 1 GM is C III ("clear increased")  
**QG IV** at least 1 GM is C IV ("high" or "very high")

**Result = QG III**