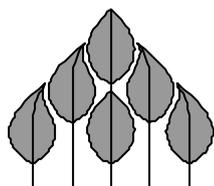


Monitoring salmonella in de diervoedersector 2002

Monitoring salmonella in the animal feed sector 2002

Kwaliteitsreeks 77
februari 2002



Productschap Diervoeder

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Programme

Monitoring salmonella in the animal feed sector 2002

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Preface

This publication contains the monitoring programme for salmonella in the animal feed sector for 2002. This programme was established by the committee of the Product Board Animal Feed on 23 January 2002. The programme was established within the framework of the GMP code for the animal feed sector.

Monitoring is intended to verify the effectiveness of the control measures used. A number of control measures have been included in the GMP code for the animal feed sector which relate to salmonella in animal feeds and compound feeds. The package of control measures and the action and rejection limits for salmonella, in particular, have been tightened up as a contribution from the animal feed sector to tackling salmonella in the poultry chain.

Previously, under the Product Board Animal Feed Decree on Company Inspections and Checks in the GMP Animal Feed Sector 1998, there were minimum requirements for the monitoring of feed materials and compound feeds. These have been somewhat expanded, especially for animal feeds. A decision has also been made to improve the structure and to bring together all the components into a single cohesive monitoring programme. This programme also includes the monitoring which the Product Board itself carries out as independent verification.

It is our express intention to evaluate progress and results.

There are both Dutch and English versions of this programme available.

The Hague, 23 January 2002

J. den Hartog
Secretary

1 Introduction

Standards and the necessary control measures have been laid down in the GMP code for the animal feed sector for the purpose of controlling salmonella in poultry feeds. The aim is to minimise the introduction of salmonella into the poultry feed chain via animal feeds.

The currently applicable standards (maximum salmonella incidence and process standards for enterobacteriaceae) are as follows:

Product norms	Maximum salmonella contamination percentage in batches to be delivered	Maximum %% with S. enteritidis / S. typhimurium in batches to be delivered
Poultry compound feeds and animal feed for single delivery to poultry companies, for:		
• Top breeding	0 ⁺ %	0 ⁺ %
• Raising parent stock	0 ⁺ %	0 ⁺ %
• Parent stock	0 ⁺ %	0 ⁺ %
• Rearing hens laying sector	1 %	0 ⁺ %
• Laying hens	1 %	0 ⁺ %
• Consumption turkeys	0 ⁺ %	0 ⁺ %
• Broilers	0 ⁺ %	0 ⁺ %
Process norms	Maximum kve enterobacteriaceae per gram	
	Target value	Action limit
Poultry compound feeds for:		
• Top breeding		100
• Raising parent stock		100
• Parent stock		100
Other poultry compound feeds if given heat treatment, for:		
• Breeding hens laying sector	<100	1.000
• Laying hens	<100	1.000
• Meat turkeys	<100	1.000
• Broilers	<100	1.000

The control measures are mostly aimed at the processing during the production of poultry feeds and at the supply of salmonella-critical feed materials which are used in this. In addition there are general control measures in the GMP animal feed sector code for other animal feeds than for poultry in order to minimise the introduction of salmonella via the feed. For these kinds of feed only standards for enterobacteriaceae after heat treatment have so far been laid down: the target value is '< 100 kve' enterobacteriaceae per gram, the intervention limit is 1,000 enterobacteriaceae per gram.

Monitoring is necessary *to verify the effectiveness of the control measures* for both the *salmonella-critical feed materials* and also the *poultry feeds*. In addition, it is important to keep track of the feeds for the other types of animal.

It is also necessary to keep track of the salmonella contamination of *non-salmonella-critical feeds materials*, in order not to be confronted unexpectedly with a source of contamination from that side

This monitoring is primarily done by the companies involved and an extra national, independent verification is done by the Product Board Animal Feed. This programme relates to the implementation of this monitoring of salmonella in the animal feed sector in 2002. This is the first time that it has been included in a single cohesive programme.

On the basis of the monitoring data for the 'output check' from producers / importers / shipping agents of feed materials and the 'input check' of the GMP certified compound feed manufacturers the Product Board Animal Feed maintains a half-yearly list of salmonella-critical feeds. The feeds in question from individual suppliers (production locations or shipping agents) may also be placed on a so-called "White List" on the basis of this data where less strict obligations for the compound feed manufacturers and also lower monitoring frequencies for the feed material suppliers will apply.

All the data from this programme is stored in the Product Board Animal Feed database for undesirable substances and products and is accessible to those providing information, those being the feed material suppliers and the compound feed manufacturers.

2 Risk assessment

Unlike other contaminants, salmonella can occur at more than one point in the production chain and can be eliminated. Major factors of influence are moisture and temperature.

Feed materials

Salmonella appears especially in feeds *containing protein*. Most feed materials which may contain this salmonella are subjected to processing such as oil extraction which kills of the salmonella. Recontamination may, however, occur during cooling and through mixing with waste flows which are created during the processing and which have not been subjected to heat treatment. Recontamination can also occur during transport to the customer / compound feed manufacturer or farmer.

Feed materials will be considered to be salmonella-critical from the 4th quarter of 2001 on the basis of a high contamination incidence in the available monitoring results in, among other places, the Product Board Animal Feed database for undesirable substances and on the basis of the findings of the Animal Feed Sector Inspectorate for compound feed companies where the frequent cause of salmonella contamination is shown to be these feed materials.

The following feed materials have currently been assessed as salmonella-critical: *Brazilian extracted soy beans and expeller, South American fish meal, extracted rapeseed and expeller, toasted soy beans and eggshells*. This list of salmonella-critical feed materials is maintained by the Product Board Animal Feed every half year on the basis of the monitoring results. The feed materials in question from individual suppliers (production locations or shipping agents) can, on the basis of monitoring and control data, be placed on a so-called "White List". These are suppliers of feed within the group 'salmonella-critical' who, if demonstrably from the suppliers in question, may be considered to be 'non-critical'.

Table 1: Amount of feed available with respect to salmonella in 1999/2000 (x 1.000 ton)

Product (groups)	From domestic production	From other countries ('import')	Total
Oil seeds, extracted /expeller	1.076	3.213	4.289
Toasted Soy beans	not known	not known	146
Corn gluten feed meal	184	885	1.069
Fish meal		21	21
Animal meal	not known	not known	270
Feather meal	not known	not known	37
Phosphoric acid feed lime	not known	not known	6
Wheat	660	298	958
Maize	111	641	752

Compound feeds

A major source of salmonella introduction for the compound feed manufacturer is, firstly, the reception of (salmonella-critical) feed materials (raw materials). It is then important whether or not measures to control salmonella are used or not such as acidification, heating or pelletising. It was decided at the end of 2001 that for top breeding, breeding and parent stock feeds in the poultry sector there would be an action limit of 100 kve enterobacteriaceae per gram of feed. It was then decided that with respect to all poultry feeds that a salmonella killing step is mandatory when using salmonella-critical feed materials.

When heating is used the cooling is a factor in recontamination. Finally, proper cleaning of the transportation during transport is important in order to avoid recontamination during transport to the livestock breeding company.

Table 2: Compound feed made available in 1999 (x 1,000 ton)

Product (groups)	Domestic production (x 1,000 ton)
Pig feeds	6.729
Poultry feeds	3.579
- Laying poultry feed	1.878
- Broiler feeds	1.701
Cattle feeds	3.646
Pet foods	368
Other	386
Total	14.709

Items for monitoring

To measure the effectiveness of salmonella-killing treatments and the degree of recontamination the following monitoring moments are particularly important:

- Loading of transport with a feed material from the producer or loading port
- Reception of a feed material at a compound feed manufacturer
- Loading of transport with compound feed for delivery to the cattle farmer.

It is also, of course, important to make use of process control at various critical points within the production process by way of measurement of the germination capacity for enterobacteriaceae and/or Salmonella.

3 Monitoring of feed materials (raw materials)

Products	By supplier of feed materials (raw materials)	By compound feed manufacturer	By / on behalf of Product Board Animal Feed
Salmonella-critical feed materials	X	X	X
Non-salmonella-critical feed materials	X	X	X

3.1 *Salmonella-critical feed materials*

3.1.1 By suppliers of feed materials

Each of the following suppliers of salmonella-critical feed materials (GMP, GMP equivalent or QC verified) is obliged to implement a monitoring programme for salmonella as intended in this programme.

The monitoring programme will be implemented as follows:

- in the loading port during loading of the ship with Brazilian extracted Soya beans and expeller (loader);
- before the moment of import into the European Union or unloading of the ship with South American fish meal (importer);
- during loading (from the factory) of toasted Soya beans, extracted rapeseed and expeller and eggshells (producer).

This monitoring will take place in accordance with the protocols in appendices I to V of this programme. In practice this will result in the numbers of samples on an annual basis (globally) specified in appendix X.

The intention is – following a trial period in the 1st quarter of 2002 – on the basis of this data supplemented with the monitoring data from the compound feed manufacturers, to place or not place the supplier(s) in question on a so-called White List. This will be laid down in a protocol which will be part of this programme. Feed materials can also be scrapped generically on the basis of this data from the list of salmonella-critical feed materials (or be replaced on it).

3.1.2 By compound feed manufacturers

Every GMP accredited producer of *compound feeds* is obliged on receipt of *salmonella-critical feed materials* at a production location where *poultry feed is produced* to examine the feed materials in question for salmonella in accordance with the protocol in appendix VI. This monitoring is partly intended to verify the monitoring by the suppliers of these feed materials and the assessment of possible recontamination during transport.

The number of samples per product is related to the use (and the method of supply) of the feed materials in question in the compound feed industry. In practice this will result in the numbers of samples on an annual basis (globally) specified in appendix X.

3.1.3 By or on behalf of Product Board Animal Feed

The independent national verification of the monitoring programme of the suppliers of the salmonella-critical feed materials and of the receiving compound feed manufacturers by or on behalf of the Product Board may be limited in scope and covers in theory 5% of the number of samples which are examined in total by the companies in question spread over the various feed materials.

This monitoring will be carried out on the orders of the Product Board Animal Feed in accordance with the protocol in appendix X.

In practice this will result in the numbers of samples on an annual basis (globally) specified in appendix X.

3.2 *Non-salmonella-critical feed materials*

It is important to oversee the salmonella status of non-salmonella-critical feed materials. The current non-salmonella-critical feed materials may still after some time become a source of contamination either in the form of a compound feed or as a feed material (simple) which is used at the cattle farm.

It is also to be expected that due to intensive monitoring a number of the current salmonella-critical feed materials will after some time no longer be considered to be salmonella-critical through improved control of the production process. After this has taken place it is desirable to keep watch over the salmonella status of these feed materials. It is for this reason that a monitoring programme is necessary for non-salmonella-critical feed materials.

In this monitoring it is currently a matter of the following product groups in particular which, due to the presence of protein, may contain salmonella:

- animal proteins, in as far as they are not salmonella-critical
- oil-bearing seeds and by-products in as far as they are not salmonella-critical
- grains and grain by-products
- legumes
- dairy products

3.2.1 By suppliers of feed materials

Each supplier of feed material (GMP+, GMP equivalent or QC verified) is obliged to implement a monitoring programme for salmonella harmonised to the company's HACCP analysis.

3.2.2 By compound feed manufacturers

Each GMP approved manufacturer of compound feeds is obliged, in the event of production of untreated compound feeds and poultry feeds, also to examine feed materials, including non-critical feed materials, for salmonella. The instructions in question are in the protocol in appendices VI and VII.

3.2.3 By or on behalf of Product Board Animal Feed

The monitoring by or on behalf of the Product Board of non-salmonella-critical feed materials is only partly intended as verification of the monitoring programmes of the suppliers of feed material and compound feed manufacturers. It is also the intention to generate collective data on the bacteriological quality of these products for general use.

Partly in view of the relatively limited size of the number of samples of these feed materials which are examined by the suppliers and compound feed manufacturers, the number of samples examined by or on behalf of the Product Board is about 20% of the number of samples that are examined by the companies in question collectively spread over the various feed materials.

This monitoring of non-salmonella-critical feed materials is carried out by or on behalf of the Product Board Animal Feed in accordance with the protocol in appendix X.

The number of samples per product is related to the use (and the method of supply) of the feed material in question. In practice this will result in the numbers of samples on an annual basis (globally) specified in appendix X.

4 Monitoring of compound feeds and feeds intended for (poultry) breeder companies

Products	By supplier of feed material (raw materials)	By compound feed manufacturer or supplier of feed materials intended for (poultry) breeders	By / on behalf of Product Board Animal Feed
Compound feeds for poultry	-	X	X
Compound feeds for pigs	-	X	X
Compound feeds for cattle	-	X	X
Feed materials for simple feeding	-	X	X

4.1 Compound feeds and feeds for poultry

4.1.1 By compound feed manufacturers

The GMP-certified manufacturer of poultry feeds is obliged to carry out internal company checks (monitoring) of poultry feeds in accordance with the protocol in appendix VI.

The number of samples per product is related to the production volume of the various types of feeds for the various links in the poultry chain. The basic principle is that –depending on the link in the chain – that about every 48 to 720 tons (temporarily 480 tons) is sampled for salmonella examination.

In practice this will result in the numbers of samples on an annual basis (globally) specified in appendix X.

4.1.2 By suppliers of feed materials

Every GMP certified supplier of wheat, corn and possibly any other feed material intended for supply in simple form to poultry farms is obliged to sample these products per 720 tons approximately for salmonella examination. The instructions in question are in the protocol in appendices VI.

4.1.3 By / on behalf of Product Board Animal Feed

The independent national verification of the monitoring programme of the manufacturers of poultry feeds and suppliers of feed materials for poultry farms by or on behalf of the Product Board may be limited in scope and covers in theory 5% of the number of samples which are examined in total by the companies in question (for feed materials for simple feeding 20% is used).

This monitoring is carried out for the Product Board Animal Feed in accordance with the protocol in appendix X. In practice this will result in the numbers of samples on an annual basis (global) given in appendix X.

4.2 Compound feeds and feed materials for types of animals other than poultry

4.2.1 By compound feed manufacturers

The GMP-certified manufacturer of compound feeds other than poultry feeds (pigs and cattle feeds) is obliged to carry out internal company checks (monitoring) in accordance with the protocol in appendix VII. This may involve determinations of both salmonella and also enterobacteriaceae.

The number of samples per product is related to the total production volume of the compound feeds for the specific production location.

In practice this will result in the numbers of samples on an annual basis (globally) specified in appendix X.

4.2.2 By suppliers of feed materials

Each GMP-certified manufacturer or supplier of feed materials intended for animals other than poultry is obliged to carry out internal company checks (monitoring) in accordance with the protocol in appendix VIII.

These suppliers of feed materials for cattle farms should sample per quarter for a measurement / analysis of the microbiological status by way of a relevant determination of – depending on the type of product – the pH, the delivery temperature, the germination capacity or the presence or absence of salmonella and the number of colony-forming units of moulds for products with relatively high AW values / moisture contents.

4.2.3 By / on behalf of Product Board Animal Feed

The independent national verification of the monitoring programme of the manufacturers of the compound feeds and suppliers of feed materials for farms for other animals than poultry by or on behalf of the Product Board may be limited in scope and covers in theory 5% of the number of samples which are examined in total by the companies in question.

This monitoring is carried for the Product Board Animal Feed in accordance with the protocol in appendix X. In practice this will result in the numbers of samples on an annual basis (global) given in appendix X.

5 Classification of salmonella-positive samples

In theory there shall be classification in all cases, after the determination of salmonella in feed materials (raw materials), compound feeds and feed materials for cattle farms, (serotype and possibly phage type). The protocol in appendix IX applies.

The purpose of this classification is to establish more accurately any relationship among salmonella types in feed materials, the compound feeds produced from them, animals and animal products. It is an aid in investigating the possible cause of salmonella contamination in a subsequent link in the chain.

6 Product Board Animal Feed – database undesirable substances and products

The basic position is that all involved entrepreneurs are obliged to make their monitoring data available on a monthly basis to the Product Board Animal Feed database for undesirable substances and products. This also contains the monitoring data from the Product Board.

All those providing data may consult all the data on salmonella in the database on-line (via Internet). They can apply for a user name and password to do this.

A separate instruction has been drawn up for supplying the monitoring results for the database (<http://databases.Product Board Animal Feed.nl/dos/>).

The purpose of recording all the data in the database is that all interested parties may make proper use of the data in their own businesses and also to increase the transparency with respect to the bacteriological status of feed materials in the sector.

7 Costs and financing

The costs involved in the implementation of this programme are as follows.

Amounts in €(euro) for 2002:

	Raw materials business	Compound feed companies	Product Board Animal Feed	Total
Sample examination	404,000	1,221,000	88,000	1.713,000
Database of undesirable substances	10,400	17,400	25,000	52,800
Reporting			10,000	10,000
General			5,000	5,000
	414,400	1,238,400	128,000	1.780,800

The costs for the Product Board Animal Feed will be charged partly to the sub-function 'Quality; policy and regulation' and partly to the sub-function 'Animal Feed Sector Inspection Service'.

Appendix I: Protocol for the monitoring of suppliers of Brazilian extracted soy beans and soy beans expeller

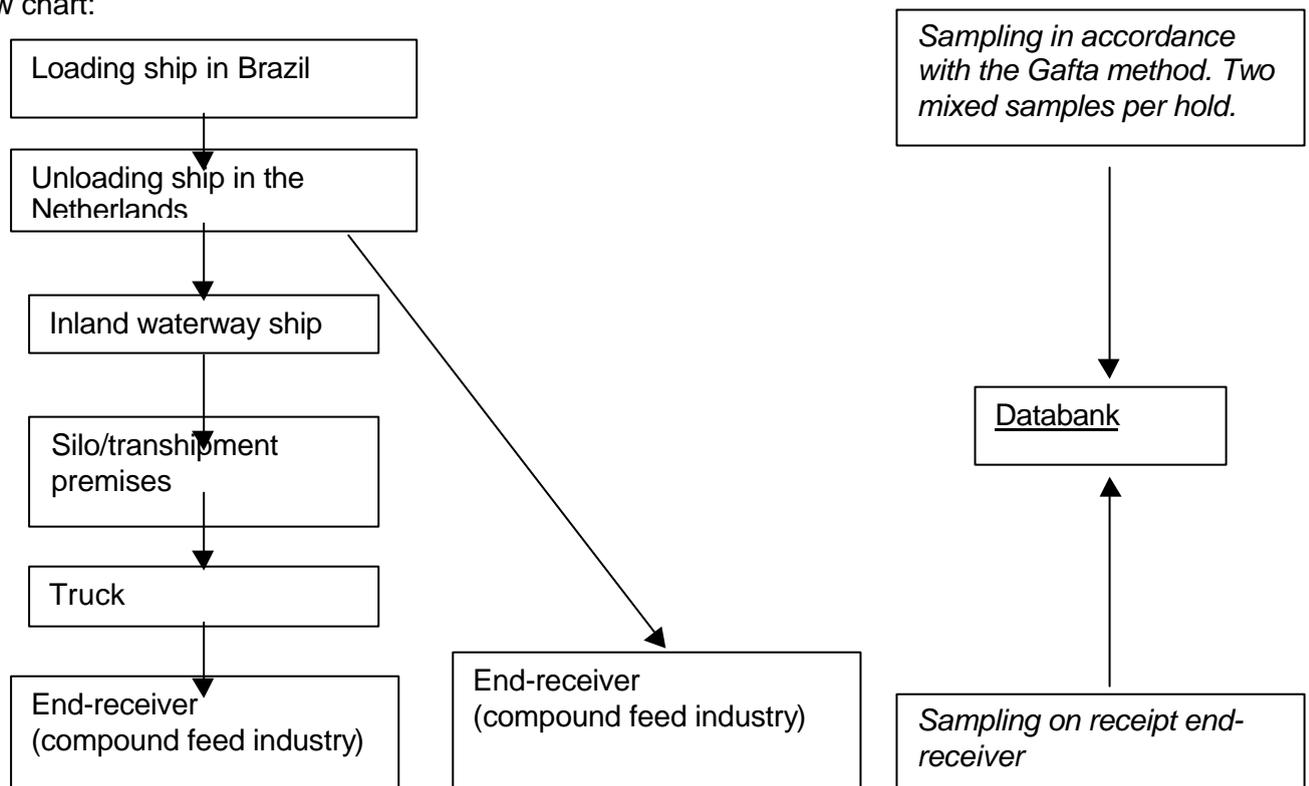
1. TARGET GROUP

Suppliers of extracted Brazilian Soy beans and soy beans expeller (especially shipping agents).

2. PRODUCTS

Extracted Soy beans and soy beans expeller in Brazil (incl. pellets).

Flow chart:



3. GENERAL CONDITIONS

If a salmonella-positive result is obtained then this should be typified.

When delivering animal feeds the name of the shipping agent (and the port of loading, place and country) and ship and hold should be notified to the customer.

4. EXAMINATION FREQUENCY

During loading of ship:

From each hold in question (of 8,000 to 10,000 tons) at least two representative final samples are made up and inspected for Salmonella.

5. SAMPLING METHOD

During loading of ship:

- for each 500 (m) tons at least 20 random sub-samples, via 'grabs/scoops' of max. 1 kg.;
- composition and mixing of all the sub-samples into 1 collective sample per hold;
- at least 2 final samples to be taken from the (mixed) collective sample.

Extra conditions in addition to the above for sampling for salmonella:

- Sampling location: - as close as possible to the receiving hold (preferably in the flow)
- Instructions to personnel: - As much as possible direct from the flow.
- Use disinfected sampling scoop (alcohol)
- If the scoop is not used then store in protective bag.
- Personal hygiene: use sterile gloves.
- Store interim samples in PE bags
- Equipment: - Scoop – stainless steel
- Alcohol 95% to clean scoop in the flame
- Bottles: Sterile glass or PET of 500 CC or
- Bags: PE bags of 1.5 litres.
- Samples: - Store interim samples as above.
- Mix in sterile location and in sterile conditions.
- Send in sterile bottle or bag as described above.
- Avoid contact with heat / sunlight / damp / equipment.
- Send samples immediately.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other analysis method in the PDV documentation bundle, Inspection Methods, Part II

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation for the determination of salmonella or by a laboratory deemed to be an equivalent by the PDV.

7. CORRECTIVE MEASURES

-

8. REPORTING ANALYSIS RESULTS

The results of the determination of salmonella should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the PDV (via the Excel programme made available by the PDV database). Data to be sent: sample number, generic product name, name of shipping agent, shipping port, place and country, ship and hold, date of sampling, analysis result and typification if salmonella-positive).

The instruction applies which relates to delivery of data to the PDV database for undesirable substances and products.

Appendix II: Protocol for the monitoring of suppliers of South American Fish Meal

1. TARGET GROUP

Suppliers of fish meal.

2. PRODUCTS

Fish meal produced in or originating in South America.

3. GENERAL CONDITIONS

If a salmonella-positive result is obtained then this should be classified.

The country of production for the fish meal should always be reported to the customer when the feed material is delivered.

4. EXAMINATION FREQUENCY

On reception in the EU sea port / During or after unloading of ship into silos (from 200-600 tons) or inland waterway boats / barges (from 600-1500 tons):

Basic regime: Every ship

Sampling and examination for Salmonella will be done by the veterinary authorities.

5. SAMPLING METHOD

On reception in the EU sea port / During or after unloading of ship into silos (from 200-600 tons) or inland waterway boats / barges (from 600-1500 tons):

During or after unloading per silo or inland waterway boat / barge into which reception takes place:

- minimum 25 sub-samples of c. 25 grams, for the first 250 (m)ton;
- for every 50 (m)ton extra, 5 extra samples.

(Possible) composition of collective samples from the sub-samples in question.

Final samples: Every sample examined for salmonella (more than one per silo or inland waterway boat or barge) should be salmonella-negative before the batch may be accepted into the EU trading traffic.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other analysis method in the Product Board Animal Feed documentation bundle, Inspection Methods, Part II

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation for the determination of salmonella or by a laboratory deemed to be an equivalent by the Product Board Animal Feed.

7. CORRECTIVE MEASURES

If a batch of fish meal from outside the EU has a salmonella-positive result during import control then this batch should be decontaminated (heat treatment or chemical treatment) and should be salmonella-negative when re-examined before the batch is allowed into the EU trading traffic.

8. REPORTING ANALYSIS RESULTS

The results of the determination of salmonella should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database). Data to be sent: sample number, generic product name, name of producer, production location (location + country), date of sampling, analysis result and classification if salmonella-positive.

The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

Appendix III: Protocol for the monitoring of toasted soy beans

1. TARGET GROUP

Producers of toasted soy beans (toasters).

2. PRODUCTS

Toasted soy beans

3. GENERAL CONDITIONS

There should be a list available at the production site showing the following details: number of vehicles loaded and the amount delivered per ship, which vehicles were sampled and the number of samples per ship, date of sending samples to the laboratory and the results (and, in the event of salmonella positive, the classification). This list will be archived and made available on request to the inspector from the supervisory body.

If a salmonella positive result is obtained then it should be classified.

When feed material is being delivered then the name of the manufacturer and the country of manufacturer (and possibly the production site) of the manufacturer should always be notified to the customer.

4. EXAMINATION FREQUENCY

At least one sample per production site will be examined every delivery day for the presence of salmonella.

5. SAMPLING METHOD

In the event of loads per axle, one sample of at least 25 grams will be taken for each production site during the loading from the first delivery on that day and then from every fourth vehicle load. In the event of ships cargo a sample should be taken for every 500 tons or part thereof.

The sample material should be taken from the product flow during loading and packed in sterile sample pots. The manufacturer will send the samples within 2 working days and will commission the laboratory to make a mixed sample from the material and to analyse it.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other method which is included in the PDV documentation bundle Research Methods, part II

The analysis to detect salmonella will be carried out by a laboratory approved under the Labcode regulation for the animal feed sector or by a laboratory which is classified as being an equivalent by the PDV.

7. CORRECTIVE MEASURES

-

8. REPORTING THE ANALYSIS RESULTS

The results of the salmonella determination should be sent at least once per month by E-mail (or diskette) to the PDV Database for Undesirable Substances and Products (via the Excel programme made available by the PDV database). Data to be provided: sample number, name of manufacturer, if possible production location (in any event the country), date of sampling, name of feed material, result positive/negative, typification of positive results.

The instructions for the provision of data to the PDV Database of Undesirable Substances and Products apply

Appendix IV: Protocol for the monitoring of extracted rape seed and rape seed expeller

1. TARGET GROUP

Producers of extracted rape seed and rape seed expeller.

2. PRODUCTS

Extracted rape seed and rape seed expeller.

3. GENERAL CONDITIONS

There should be a list available at the production site showing the following details: number of vehicles loaded and the amount delivered per ship, which vehicles were sampled and the number of samples per ship, date of sending samples to the laboratory and the results (and, in the event of salmonella positive, the classification). This list will be archived and made available on request to the inspector from the supervisory body.

If a salmonella positive result is obtained then it should be typified.

When feed material is being delivered then the name of the manufacturer and the country of manufacturer (and possibly the production site of the manufacturer) should always be notified to the customer.

4. SAMPLING FREQUENCY

At least one sample per production site will be examined every delivery day for the presence of salmonella.

5. SAMPLING METHOD

In the event of loads per axle, one sample of at least 25 grams will be taken for each production site during the loading from the first delivery on that day and then from every fourth vehicle load. In the event of ships cargo a sample should be taken for every 500 tons or part thereof.

The sample material should be taken from the product flow during loading and packed in sterile sample pots. The manufacturer will send the samples within 2 working days and will commission the laboratory to make a mixed sample from the material and to analyse it.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other method which is included in the PDV documentation bundle Research Methods, part II

The analysis to detect salmonella will be carried out by a laboratory approved under the Labcode regulation for the animal feed sector or by a laboratory which is classified as being an equivalent by the PDV.

7. CORRECTIVE MEASURES

-

8. REPORTING THE ANALYSIS RESULTS

The results of the salmonella determination should be sent at least once per month by E-mail (or diskette) to the PDV Database for Undesirable Substances and Products (via the Excel programme made available by the PDV database). Data to be provided: sample number, name of manufacturer, if possible production location (in any event the country), date of sampling, name of feed material, result positive/negative, typification of positive results.

The instructions for the provision of data to the PDV Database of Undesirable Substances and Products apply.

Appendix V: Protocol for the monitoring of producers of egg shells

1. TARGET GROUP

Producers of eggshells, being the egg processing industry which is registered and approved in accordance with EU Directive 89/437.

2. PRODUCTS

Dried eggshells.

3. GENERAL CONDITIONS

At the production location there should be a list showing the following details: the number of vehicles loaded, which vehicles were sampled, date of consignment of samples to the laboratory and the result (and the classification if salmonella-positive). This list will be filed and made available on request to the inspector of the supervising agency.

If a salmonella-positive result is obtained then this should be typified.

When delivering animal feed materials the name of the producer and the country of production (and possibly the production location) and the products of the customer should be specified.

4. EXAMINATION FREQUENCY

For each production location at least one sample per delivery day will be examined for the presence of salmonella.

5. SAMPLING METHOD

For each production location, for each load per axle one sample will be taken.

The sample material should be taken from the product flow during loading and will be packed in sterile sample pots. The size of the samples to be taken is at least 60 grams, sufficient to compose a sample and a duplicate sample of 25 grams each. The producer will send the samples within 2 working days after taking the samples and will order the laboratory to:

- a) to make a mixed sample from the material if there are multiple samples per delivery day;
- b) to analyse a single final sample for each delivery day.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other analysis method in the Product Board Animal Feed documentation bundle, Inspection Methods, Part II

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation for the determination of salmonella or by a laboratory deemed to be an equivalent by the Product Board Animal Feed.

7. CORRECTIVE MEASURES

-

8. REPORTING ANALYSIS RESULTS

The results of the determination of salmonella should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database). Data to be sent: sample number, generic product name, name of producer, production location (in any event the country), date of sampling, analysis result and classification if salmonella-positive.

The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

Appendix VI: Protocol for the monitoring of suppliers of poultry feeds

1. TARGET GROUP

Producers of poultry compound feeds and suppliers of feed materials for poultry

2. PRODUCTS

Compound feeds and feed materials for poultry

3. GENERAL CONDITIONS

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4. EXAMINATION FREQUENCY

4.1 Poultry compound feeds

The following microbiological examination should be carried out in accordance with the minimum frequencies shown in the following schedules (per business unit).

Examination for Salmonella	
Type of compound feed	minimum frequency, calculated per delivery batch of 24 tonnes
Grand parent stock ⁴	1 in 2 batches (50%)
Raising/breeding parent stock ⁴	1 in 5 batches (20%)
Parent stock ⁴	1 in 10 batches (10%)
Broilers	1 in 20 batches (5%) ⁵
Laying-hens and breeding/raising laying hens	1 in 20 batches (5%) ⁵
Raising parent stock turkeys	1 in 5 batches (20%)
Parent stock turkeys	1 in 10 batches (10%)
Meat turkeys	1 in 30 batches(3 1/3%)

⁴ meat and egg sectors, respectively

⁵ during the trial period: until 1 March 2002. When during a continuous period of 2 years with an examination in the concerning type of feed there is found no more salmonella-positive sample, than the minimum sample-frequency may be held on 1 of the 30 lots (31/3%)

4.2 Feed materials for production of compound feeds

For every production location where poultry compound feed is produced there should be an examination for salmonella of salmonella-critical feed materials in accordance with the minimum frequencies shown in the following schedule, irrespective of whether they will be processed in compound feeds for poultry or for other animals

Salmonella-critical feed material:

Type of feed material	Minimum frequency
- rapeseed products containing protein; - fish meal from South America; - toasted Soy beans - extracted soy beans and expeller from Brazil; - eggshells; also the specified feed materials where the country of preparation cannot be shown	On arrival (received consignment) by ship at the compound feed production location: representative sampling per 500 tons (demonstrably per 500 ton on average)
	On arrival per axle at the compound feed production location: representative sampling per 100 tons (demonstrably per 100 tons on average)

Non-salmonella-critical feed materials

Also for every production location where poultry compound feed is produced there should be an examination for salmonella of non-salmonella-critical feed materials which are processed in compound feeds for poultry in accordance with the minimum frequencies shown in the following schedule.

Amount of annual production of poultry feed by business unit	Minimum number of samples per quarter
up to 2,000 tonnes	1
up to 4,000 tonnes	1
up to 6,000 tonnes	2
up to 8,000 tonnes	2
up to 10,000 tonnes	3
up to 20,000 tonnes	5
up to 30,000 tonnes	8
up to 40,000 tonnes	10
more than 40,000 tonnes	13

4.3 Feed materials for direct supply to poultry farms

For feed materials which are simply supplied to poultry farms sample taking and analysis for salmonella should be done in accordance with the following schedule:

Type of feed material	Minimum frequency, calculated per 24-ton delivery
Wheat, corn and other feed materials intended for single delivery to poultry companies	1 in 30 batches (3 1/3%)

4.4 Proces Control

For the production of poultry compound feeds and single delivery of wheat and corn to poultry farms sample taking and analysis should also take place at least twice per year for salmonella at critical points in the production process (compound feed) or the logistical process (feed materials).

If a salmonella-killing treatment is used in the process then an examination for enterobacteriaceae should also be carried out at the following points in each line where the salmonella-killing treatment is used:

- at least twice a year at the critical points in the production process in order to determine the course of the level of enterobacteriaceae to test the production process (salmonella-killing treatment);
- at least 5 samples of end product per quarter

5. SAMPLING METHOD

The samples of compound feed or feed materials intended for single feeding should be taken from the product flow at a point as close as possible before the loading of the bulk container (or the filling of the sacks), or, in the event of process control, as close as possible to the critical point in the process. The samples of end product for process control on the basis of enterobacteriaceae must be taken at a point that is as close as possible before loading the bulk container (or the filling of the sacks). The quantity of the samples to be taken is at least 60 grams, sufficient to compose a sample and a duplicate sample of 25 grams each.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other analysis method in the Product Board Animal Feed documentation bundle, Inspection Methods, Part II

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation for the determination of salmonella.

7. CORRECTIVE MEASURES FOR A SALMONELLA-POSITIVE RESULT

If a sample is found to be salmonella-positive then the following actions should be taken.

7.1 Compound feed or feed materials intended for single feeding

- All processed salmonella-critical feed materials which are still present to be examined for salmonella and;
- Each salmonella-positive sample of compound feed and feed material must then be typified (type of salmonella) and;
- Sampling and analysis to be carried out at critical points in the production process (compound feed) and/or logistical process (feed material) and;
- Additional investigation of the cause, and;
- Suitable measures should be taken to remove the cause.

7.2 Feed material intended for processing in compound feed

When the presence of salmonella-positive feed material is detected in the factory:

- there should be an analysis for salmonella at all critical points in the factory;
- the necessary cleaning and decontamination measures should be taken.

8. REPORTING ANALYSIS RESULTS

8.1 The Product Board database for undesirable substances

The results of the determination of salmonella and enterobacteriaceae should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database).

With respect to the salmonella-critical feed material analysed on reception the name of the producer or shipping agent (for Brazilian extracted soy beans and expeller) and the production location or shipping/loading location (for Brazilian extracted soy beans and expeller) should be indicated. The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

8.2 Animal Feed Sector Inspection Service

In compound feed and feed materials intended for single feeding there must, for every salmonella-positive result, immediately after the result is known, including classification, be a submission of part A of the sample form in appendix XI to the KDD. For each salmonella-positive result, the entrepreneur must instigate an enquiry into the cause, take measures and without delay submit a report to the KDD, using part B of the example form in appendix XI.

If a recurrent salmonella-positive result occurs within three months in a compound feed or feed materials intended for single feeding then the entrepreneur must immediately confer with the KDD regarding the effectiveness of the previous measures.

In addition the entrepreneur must, for every detection of *Salmonella enteritidis* (S.e.) and *typhimurium* (S.t.) in compound feed for the egg sector, without delay confer with the KDD regarding the effectiveness of the previous measures.

Appendix VII: Protocol for the monitoring of producers of other compound feeds than poultry feeds

1. TARGET GROUP

Manufacturers of other compound feeds than those intended for poultry

2. PRODUCTS

Other compound feeds than those intended for poultry

3. GENERAL CONDITIONS

N.A.

4. EXAMINATION FREQUENCY

The sampling from the distinguishable types of end product must be done in accordance with the minimum frequency (per company unit) indicated below. This depends on the treatment the product has had.

4.1 Salmonella-reducing treatment

In the event of salmonella-reducing treatment, testing for Enterobacteriaceae and/or Salmonella must be carried out.

4.1.1 Salmonella

If it is decided to test for salmonella then the test should take place as follows.

Samples should be taken of feed materials and compound feeds for analysis for salmonella. The basic principle is that at least half of the sampling should be on compound feed and the remainder from the most critical feed materials and the non-salmonella-critical feed material in the judgement of the entrepreneur.

The following table clarifies the number of samples to be taken.

Annual production of compound feed for other types of animal than poultry by business unit (for moisture-rich mixes: quantities of dry substance)	Number of samples per quarter
up to 2,000 tonnes	2
up to 4,000 tonnes	2
up to 6,000 tonnes	3
up to 8,000 tonnes	4
up to 10,000 tonnes	5
up to 20,000 tonnes	10
up to 30,000 tonnes	15
up to 40,000 tonnes	20
more than 40,000 tonnes	25

4.1.2 Enterobacteriaceae

If testing for Enterobacteriaceae has been opted for then this must be done per production line on which salmonella-reducing treatment is carried out, through:

- sampling twice a year at the critical points in the production process in order to determine the course of the level of Enterobacteriaceae to test the production process (thermal treatment);
- 5 samples of end product per line per quarter.

In addition, at least twice a year, sampling and analysis for salmonella must take place at critical points in the production process.

4.2 No salmonella-reducing treatment

If no salmonella-reduction treatment takes place then there should be an inspection as intended in § 4.1.1.

5. SAMPLING METHOD

The samples of compound feed or feed materials intended for single feeding should be taken from the product flow at a point as close as possible before the loading of the bulk container (or the filling of the sacks), or, in the event of process control, as close as possible to the critical point in the process. The samples of end product for process control on the basis of enterobacteriaceae must be taken at a point that is as close as possible before loading the bulk container (or the filling of the sacks). The quantity of the samples to be taken is at least 60 grams, sufficient to compose a sample and a duplicate sample of 25 grams each.

6. ANALYSIS METHOD

ISO 6579; 1993 (E) or any other analysis method in the Product Board Animal Feed documentation bundle, Inspection Methods, Part II

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation for the determination of salmonella.

7. CORRECTIVE MEASURES FOR A SALMONELLA –POSITIVE RESULT

If a sample of end product or feed material is found to be salmonella-positive then the following actions should be taken.

- Sampling and analysis for salmonella to be carried out at critical points in the production process and;
- Each salmonella-positive sample of feed must then be typified (type of salmonella).

8. REPORTING ANALYSIS RESULTS

The results of the determination of salmonella and enterobacteriaceae should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database).

With respect to the salmonella-critical feed material analysed on reception the name of the producer or shipping agent (for Brazilian extracted soy beans and expeller) and the production location or shipping/loading location (for Brazilian extracted soy beans and expeller) should be indicated. The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

Appendix VIII: Protocol for the monitoring of producers and suppliers of feed materials intended for cattle farms (except poultry farms)

1. TARGET GROUP

Producers and suppliers of feed materials intended for cattle farms (except poultry farms)

2. PRODUCTS

Feed materials intended for cattle farms (except poultry farms)

3. GENERAL CONTROLE MEASURES

In the case of seasonal or incidental products, a sample is taken from the first batch at the start of the production. The fixed inspection frequency is then maintained from then on.

4. INSPECTION FREQUENCY

The entrepreneur takes one sample per period, per product, per supplier and has it tested for one of the applicable parameters, namely:

- pH
- delivery temperature
- Enterobacteriaceae
- Salmonella
- mould

If the producer already carries out these tests, they can replace the trader's own tests, under the condition that these results are present at the company and the company conducts an annual inspection of these figures.

If a GMP-approved trader purchases products from a GMP-approved supplier, the inspection programme is not necessary if the trader does not carry out any additional processes.

5. SAMPLING METHOD

The samples of feed material intended for single feeding must be taken from the product flow, at a point that is as close as possible before loading the bulk container (or the filling of the sacks). The quantity of the samples to be taken is at least 60 grams, sufficient to compose a sample and a duplicate sample of 25 grams each.

6. ANALYSIS METHOD

A method in the Product Board Animal Feed documentation collection Examination Methods, part II.

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation.

7. CORRECTIVE MEASURES IN THE EVENT OF STANDARDS BEING EXCEEDED

In the event of violation of the norm, a new sample is taken from the same batch within 14 days. If this is no longer possible, a new batch of the same origin must be sampled. Return to the regular testing can take place after two good results.

8. REPORTING ANALYSIS RESULTS

The results of the determination of enterobacteriaceae, salmonella and moulds should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database).

The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

Appendix IX: Protocol for the sero-classification of salmonella-positive samples

1. TARGET GROUP

Suppliers of compound feeds for farm animals, dog and cat feeds and receivers of feed materials (compound feed raw materials).

2. PRODUCTS

Compound feeds for farm animals, dog and cat feed and feed materials (compound feed raw materials and for single feed).

3. GENERAL CONDITIONS

Participants in the GMP code animal feed sector are obliged to classify samples of animal feeds or feed material found to be salmonella-positive. GMP-approved companies and suppliers of dog and cat feeds which fall under the Hygienic Production and Trade in Pet foods Regulation 1997 must send samples of feed and any production substance samples which are found to be salmonella-positive to the RIVM for free classification.

The cultures (pure cultures) identified as salmonella cultures should be sent in:

- in dispatch tubes made available by RIVM (agar tubes) and packaging (tubes);
- with the standard form from the RIVM which should be filled in completely with, among other things, the following data:
 - Name/address/place of the sender;
 - company ordering the sampling of the product (possibly in code);
 - Type of feed or feed material from which the salmonella was isolated;
 - country of origin of the feed.

For the first consignment the technique for isolating salmonella should be specified once and also any future changes in the technique used.

4. REPORTING ANALYSIS RESULTS

The results of the determination of salmonella should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database).

The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

Appendix X: Monitoring by or on behalf of the Product Board Animal Feed

1. TARGET GROUP

Animal Feed Sector Inspection Service and any other inspection service used by the Product Board Animal Feed.

2. PRODUCTS

- salmonella-critical and non-salmonella-critical feed materials
- poultry feeds, pig feeds and cattle feeds

3. INSPECTION FREQUENCY

Number of samples monitoring salmonella animal feed sector in 2002, incl. through Product Board Animal Feed

Products	By feed (raw) materials supplier	By supplier of animal feed	By / on behalf of Product Board Animal Feed	Total
<u>Salmonella-critical feed material</u>				
▪ Brazilian extracted Soy beans and expeller	120	1,750	95	1,965
▪ Extracted rapeseed /expeller	3,600	1,500	255	5,355
▪ South American fish meal	50	400	25	475
▪ Toasted Soy beans	2,000	600	130	2,730
▪ Eggshells	not yet known	not yet known	not yet known	not yet known
<u>Non-salmonella-critical feed materials</u>				
▪ Feather meal ⁶	-	p.m.	p.m.	p.m.
▪ Animal meal ⁷	-	p.m.	p.m.	p.m.
▪ Fish meal (not SA)	-	50	10	60
▪ Phosphoric acid feed lime	-	60	20	80
▪ Extracted soy beans /expeller, not Brazilian	-	150	30	180
▪ US corn gluten feed meal	-	40	10	50
▪ Wheat	-	200	40	240
▪ Maize	-	50	10	60
<u>Poultry feeds</u>				
▪ Top breeding (GPS) feeds	-	800	40	840
▪ Breeding/raising parent stock feeds	-	475	25	500
▪ Parent stock feeds	-	1,200	60	1,260
▪ Turkey feeds	-	245	10	255
▪ Broilers	-	2,500	125	2,625
▪ Laying hen feeds (laying end sector)	-	2,175	110	2,285
<u>Pig feeds</u>	-	2,500	125	2,625
<u>Cattle feeds</u>	-	2,750	135	2,885
Total	5,770	17,445	1,255	24,470

⁶ When the feed in question is admitted again as feed material for farm animals

⁷ When the feed in question is admitted again as feed material for farm animals

4. SAMPLING METHOD

The monitoring of the products:

- which are mostly imported from third countries via sea transport are carried out on the orders of the Product Board Animal Feed in the loading port (Brazil extracted Soy beans and expeller) or in transshipment ports (South American fish meal) by inspection agencies which are already active there
- which are produced in European countries (incl. The Netherlands) are carried out by the Animal Feed Sector Inspection Service either at the producer, the storage or transshipment point or in the compound feed industry. for the compound feed industry not only compound feeds are sampled but feed material (raw materials) may be sampled.

The samples of feed material intended for single feeding must be taken from the product flow, at a point that is as close as possible before loading the bulk container (or the filling of the sacks). The quantity of the samples to be taken is at least 60 grams, sufficient to compose a sample and a duplicate sample of 25 grams each.

5. ANALYSIS METHOD

A method in the Product Board Animal Feed documentation collection Examination Methods, part II.

The analysis will be carried out by a laboratory certified under the Labcode animal feed sector regulation.

6. CORRECTIVE MEASURES FOR A SALMONELLA-POSITIVE RESULT

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7. REPORTING ANALYSIS RESULTS

The results of the determination of salmonella should be sent at least once per month by e-mail (or diskette) to the Database for Undesirable Substances and Products of the Product Board Animal Feed (via the Excel programme made available by the Product Board Animal Feed database).

The instruction applies which relates to delivery of data to the Product Board Animal Feed database for undesirable substances and products.

In addition the usual working method of the KDD applies that the findings are reported to the company involved.

Appendix XI: Reporting procedure for salmonella-positive poultry feeds

PART A: FORM FOR DIRECT REPORTING OF SALMONELLA CONTAMINATION IN COMPOUND FEEDS IN THE POULTRY MEAT SECTOR AND THE EGG SECTOR

- Only for internal use by Central Reporting Office -

Name and main office of compound feed manufacturer:

.....

Type of feed (poultry category)¹ :

.....

Date of production:

Type of Salmonella:

Identification number of sample:

Purchaser no.	Delivery date	Names, addresses (company location), postal codes and town of purchasers and, if known, flock numbers and dates of birth of poultry
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

¹ Draw a distinction among a) Top breeding/grandparent animals poultry meat sector (incl. raising for top breeding), b) Raising parent stock poultry meat sector, c) Parent stock poultry meat sector d) broilers e) top breeding/grandparent stock egg sector, g) raising parent stock egg sector, h) parent stock egg sector i) laying hens (including rearing), l) raising feeds not distinguished by link.

