Practical recommendation for sampling feed on agricultural companies

Feed monitoring coordinator and sampler

1 Goal of the feed monitoring

Feed monitoring is used to monitor the quality assurance of feed. For this purpose, compliance with maximum levels, action thresholds and guidance values, e.g. for mycotoxins, environmental toxins, pesticides, microorganisms, heavy metals and animal components, is regularly monitored. In the case of feed monitoring on agricultural companies, the feed components produced by a livestock owner himself or bought in and the company mixtures produced from them are sampled. Sampling of purchased, packaged feed is excluded from feed monitoring on agricultural companies.

2 Responsibilities

The sample must be taken by a competent person (in the presence of the livestock owner). Sample taking by the livestock owner or employees of the agricultural company is not allowed. It is important that a representative feed sample is taken. The sampling on the agricultural company is organized and commissioned by the coordinator. The location and method of sampling must be suitable for the parameters to be tested. In the following you will find assistance.

3 Terminology

- **Lot:** A quantity of feed that forms a unit and of which it is assumed that it has uniform characteristics.
- **Individual sample:** A quantity drawn from one place in a lot. The individual samples should be of equal size and taken at random over the entire lot.
- **Collective sample:** Homogenized total amount of individual samples.
- **Reduced collective sample:** Sub-quantity (approx. 2-3 kg) of the collective sample obtained from the last by representative reduction.
- **Final sample:** Sub-quantity of the reduced collective sample or homogenised collective sample; a final sample (min. 500 g) is submitted for analysis.
- **Trough sample:** Final self-mix, taken e.g. from the feed trough, the mixing tank or the feed mixer. The final self-mix may also contain purchased bagged goods.

4 Conduct of the sampling

Sampler

- The sample must be taken by a qualified person who is trained and experienced in sampling feed and who takes appropriate care when taking the sample. To avoid contamination during sampling, emphasis should be placed on clean clothing and hygiene (including washing hands immediately before sampling, wearing clean gloves).

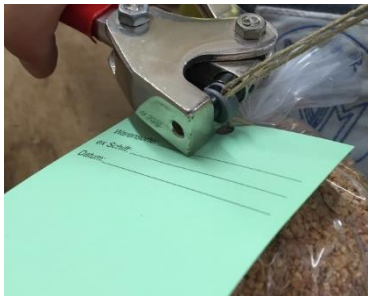
Sampling

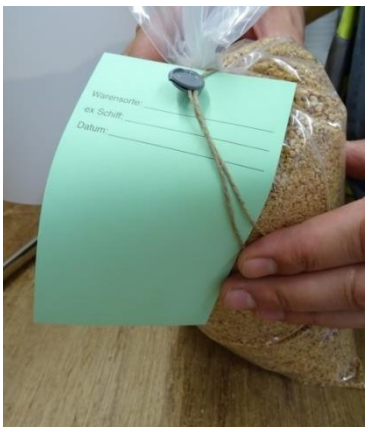
- The sampling has a decisive influence on the analysis result. It must therefore be carried out in such a way that the final samples obtained represent the lot as accurately as possible. It must be considered that an undesirable or prohibited substance may be unevenly distributed in a lot (nesting, e.g. Aflatoxin B1). Because incorrect sampling can lead to a result that is not representative for the lot, the points listed in this supporting document must be observed when taking samples (further details can be found in **Regulation (EU) No. 691/2013**).

- External influences must be taken into account during sampling. Contamination of the sample (e.g. by dust or rain) must be avoided.
- As soon as the individual samples have been taken, all further steps (formation of the homogeneous collective sample and the final samples) must also be carried out under hygienic conditions and with suitable auxiliary equipment (e.g. sample dividers).
- BEFORE taking the sample, it must be clarified how much material is needed so that all commissioned parameters can be examined. Sufficient sample material should be drawn so that a final sample of usually at least 500 g can be reduced.

Sampling equipment and containers

- The sampling equipment (e.g. buckets, shovels, scoops, insertion devices) must be made of materials which cannot contaminate the feed to be sampled. Equipment intended for multiple use must always be cleaned to avoid cross-contamination.
- Suitable sampling equipment include a shovel with a flat bottom and rectangular raised rim or a sampling rod with a long slot or chambers.
- The choice of container for the final sample is also crucial. The container must be clean and suitable for keeping the sample hygienically in such a way that its properties and quality are not altered. The containers must also be sealed so that they cannot be opened and reclose without being noticed (see illustrations as an example).





Sample shipment

- Once a sample has been drawn, it must be sent to the laboratory as soon as possible, at the latest ten days after sampling. It must be ensured that the sample is not affected by external factors such as sunlight or moisture. If necessary, the sample must be sufficiently cooled (e.g. if it is to be tested for microbial contamination such as salmonella).
- The coordinator entered the sample related data into the QS database (see instructions for feed monitoring) and commissions the laboratory via the database. The sample must be marked as a QS sample. For this purpose, the sample accompanying sheet can be printed out directly from the database and enclosed with the sample when it is shipped. All the relevant information is listed on it. In this way, the laboratory immediately recognizes that it is a QS sample and that the results must be entered into the QS database.

5 Place of sampling

On the agricultural company, feed samples are taken from self-produced feed components, loose purchased primary products or finished company mixtures.

In the case of finished company mixtures, sampling is carried out from the mixing tank, feed mixer or feed trough. Tests for antibiotically active substances are to be carried out in the finished self-mix, therefore the sample material is to be taken via a trough sample.

The sampling of self-produced feed components and the bulk purchased primary products takes place at a suitable location on the agricultural company (e.g. high or flat silo, grain store). Samples for pesticides analyses must be taken directly from the unprocessed primary product.

To obtain a representative final sample in the case of openly stored feed (e.g. flat silo, open storage box), a collective sample must be taken from several different points. In contrast, for closed stored feed (e.g. high silo, big pack), the sample must be taken at the point of collection.

In the case of silage, samples must be taken from at least three different points on the fresh cut surface, preferably not in the edge area. Alternatively, the sample can also be taken with a drill (sampling tube).

6 Parameter

The following table helps to estimate in which feed the respective parameters are to be examined most meaningfully.

Parameter	Occurrence/existence, properties, suggestion
Dioxin	Dioxins can be formed during combustion and drying processes. In addition, they can occur when contaminated by, for example, chemicals or by natural processes (e.g. in clayey soils). **Sampling for example at** dried products like grain
Dioxinlike PCB Non-dioxinlike PCB	Often occurs in combination with dioxin. Contamination can occur from lubricants, paints (e.g. silo paint) or hydraulic oil, among others. **Sampling for example at** oils and fats (e.g. fish oil, fatty acids)
Heavy metals (Pb, Cd, Hg, As)	Heavy metals can be introduced into feed through production processes or from the environment. **Sampling for example at** coarse and green feeds
Pesticides	Pesticides are used at different times during the growing season and in stock protection. Improper application can lead to residues in feed. **Sampling of** all unprocessed primary products - primarily cereal products (e.g. wheat, corn) as well as oilseeds and legumes (rapeseed, peas, lupin, etc.)
Salmonella	Salmonella can be found everywhere. Pathways of introduction include pests, animals, humans, transport vehicles and the environment (e.g. ventilation, dust). **Sampling for example at** protein-rich, moist feed, e.g. rapeseed or soybean extraction meal/cake; final self-mixes

Parameter	Occurrence/existence, properties, suggestion
Mycotoxins: Aflatoxin B1 DON ZEA	Mycotoxins can already be formed in the field and/or during storage under unfavorable conditions and thus enter the feed. **Sampling for example at** (Aflatoxin B1) corn/by-products **Sampling for example at** (DON und ZEA) plant products such as cereals and sugar beet pulp; final self-mixes for pigs
Antibiotic active substances	Antibiotically active substances are used in agricultural companies. Improper use of medications can lead to contamination (e.g. residues in the feeding system). **Sampling of** final self-mixes (trough sample)
Animal components	The feeding of animal proteins and animal meals to ruminants is prohibited in the EU. **Sampling, for example**, of finished self-mixes for cattle