aic agricultural industries confederation

# SAMPLING AND TESTING GUIDANCE

**December 2021**

**To be read in conjunction with FEMAS 2019 Standard**

For minimum analysis requirements refer to the FEMAS Calculator

Feed Materials FEMAS Assurance Scheme

# Contents

# 1. Introduction

An effective feed safety management system requires the development of a sampling, inspection and analysis Schedule, which considers many factors to ensure both nutritional integrity and feed safety are always maintained. Some of these factors will be unique to the Participant.

This guidance document can be used to develop a sampling and analysis Schedule forming part of the Participant's Quality Management System.

The Schedule should include both the frequency of sampling and the frequency of the various types of analyses to be completed on:

- Raw materials
- Feeds
- Transport, storage, handling equipment & premises (where applicable)
- Process validation & verification

# 2. Sampling

## 2.1 Sampling methods

The method used to obtain a representative sample is fundamental to the credibility of any analysis carried out.

The chosen method to obtain a representative sample, should consider:

- Type of analysis (chemical, microbiological, physical, sensory)
- The homogeneity (or otherwise) of the analyte
- The material/ area being sampled

Any method for sub-sampling or reduction in sample size prior to analysis should also be considered, as this will affect the validity of any analysis if not completed in a controlled manner.

## 2.2 Sample Size

The sample size should be sufficient to enable initial testing and also the retention of enough of the sample for future reference, investigations, or additional testing.

When samples are despatched to an external laboratory for testing, Participants should also retain a representative sample. This retained portion (typically 250g) may be needed in the event of any dispute or if supporting tests are required.

## 2.3 Sampling Equipment

Equipment should be suitable to permit a representative sample to be taken. Any sub-sampling should be completed using methods that ensure the representative nature of the sample is maintained. The use of sample dividers should be considered for this purpose.

### 2.4 Hygiene

Attention should be given to the hygiene of sampling equipment. Ensuring the use of clean (and sterile if used for microbiological samples) equipment will avoid any sample contamination.

Additionally, samples taken for microbiological testing should be handled in accordance with the Defra/DAERA Code of Practice for the control of Salmonella, to prevent contamination by the person taking the sample.

### 2.5 Labelling of samples

Sample containers should be promptly labelled with sufficient information to allow subsequent traceability to the product delivered or manufactured.

### 2.6 Sample Containers

Consideration should be given to the containers in which samples will be held or stored. In addition to ensuring that the sample is maintained in its original condition, it is important to ensure that the container is not itself a source of contamination. Sample containers should always be clean (and sterile if used for microbiological samples). Consideration may also need to be given to the design and specification of the sample container (for example the seals fitted to some glass jars have been found to leach Dioxins into the sample).

## 3. Sensory Inspection

Testing is not limited to laboratory analysis and sensory inspection has a place within any analysis Schedule.

In addition to confirming the identity of the raw material/ feed, inspecting a sample and smelling it can also indicate whether there are any issues with mould, damage or contamination.

It may be helpful to maintain reference samples at the inspection point in the form of either physical samples or reference photographs.

# 4. Guidelines for Preparing a Sampling and Analysis Schedule

The Sampling and Analysis Schedule should enable the Participant to verify compliance with specifications and regulatory requirements.

The Schedule will be driven by various factors, including but not limited to:

- Legal obligations to protect both animal health and the health of humans consuming livestock products
- Ensuring feed labels and descriptions comply with legislation
- The Participant's implementation of 'due diligence'
- Agreed customer requirements/ specifications
- The Company Quality Policy, QMS and HACCP Study
- Any requirements specified under contract terms
- Other sources (including industry, suppliers and others), which may contribute credible analytical data

PLEASE NOTE: Risk assessment is the method by which a Participant will determine appropriate analyses. The FEMAS Calculator should be used as a tool by Participants in their risk assessment process.

## 4.1 Protection of Human and Animal Health

Testing requirements for the protection of human and animal health will be driven by an understanding of the raw materials, feeds produced, manufacturing processes, storage and transport. It is vital to consider the origin of any potential hazard. Typically, hazards are introduced by one or more of the following:

- Inherent in the raw material or feed
- Introduced during processing
- Introduced during storage
- Introduced during transport
- Increased during one of the above (e.g. by concentration into a specific stream or by associated conditions)

Consideration of these factors will help determine what testing should be carried out on raw materials and feed. Controls on raw materials and during processing may influence the level of testing required for feed.

### 4.1.1 Raw Materials

The requirements of FEMAS relating to supplier and raw material approval are intended to reduce the occurrence of hazards in raw materials. However, this does not preclude the requirement to carry out testing on receipt; particularly for those raw materials where there may be a potential risk inherent in the material, its source, the way it has been processed, stored or transported. These potential risks should have been identified by the Participant as part of the risk assessment carried out for each raw material.

### 4.1.2 Processing, Storage & Transport

Where hazards could arise or increase in intermediate products and feed during processing, storage or transport, the analysis schedule should include analyses to monitor these.

## 4.2 Compliance with Legislation

Feed Legislation defines a range of potential contaminants that need to be managed where testing to demonstrate compliance may be useful. The AIC website contains guidance on current legislation.

https://www.agindustries.org.uk/sectors/animal-feed/resources/legislation-and-guidance.html

## 4.3 Compliance with FEMAS

There are specific requirements for inspection, sampling and testing within the FEMAS Standard and Participants should be familiar with the relevant clauses.

## 4.4 Contractual Sampling

Participants may purchase raw materials and sell feeds under the terms of industry contracts that may contain specific requirements for sampling and testing methods. Where this is the case, Participants should ensure that correct methods are applied. For example:

### 4.4.1 AIC No.1 & No. 2 Grain & Pulses Contracts

It is a requirement of the AIC No.1 (First Purchaser) and No. 2 (Wholesale) Grain & Pulses Contracts that:

- Deliveries are sampled by the receiver at the final consignment point in accordance with ISO 24333
- Samples are analysed by using equipment calibrated to the reference methods specified in the TASCC Testing Facilities Code, or by an external laboratory using those reference methods

# 5. Dispersion Testing

The FEMAS Standard requires the verification of mixing or dispersion, where this forms an essential part of the process.

Where different batch sizes, or mixing times or dosage levels are used, trials should be carried out to confirm that the homogeneity of the mix is achieved under each set of circumstances.

Consideration should be given to completing additional trials after engineering works have been completed on the relevant equipment.

# 6. Microbiological Monitoring

## 6.1 Salmonella

The FEMAS Standard requires that *Salmonella* sampling and testing are undertaken in accordance with the current *Defra Code of Practice for the Control of Salmonella* and the risk assessment.

Serotyping of salmonella isolations may be useful in investigating their origins.

## 6.2 Other Microbiological Testing

To protect human and animal health, where indicated by risk assessment, it may be appropriate to test for additional organisms (pathogens or as hygiene indicators). This may include bacteria, yeast, moulds, or other micro-organisms.

# 7. Evaluation of Results

There should be a regular formal, timely and documented review of all results. This should be carried out by a designated and competent person with the authority to instigate any necessary action as a result of this review. A record should be made of any actions taken as a consequence of reviewing results.

The evaluation of results should ensure:

- The suitability of raw materials
- The effective and safe operation of processes, through validation and verification testing
- The demonstration of effective action taken where results are found to be outside legal or specified limits
- The maintenance of microbiological integrity and standards
- Demonstration that feed safety has been maintained
- Demonstration that feed specifications have been achieved