



AMIS_Documents

Doc: AA_014

Originator:

Technical

Manager

Approver:
Management Rep

Revision No: 000

Revision Date: 22.01.2021

Issued By: Management Rep

Agriculture Certificate

Agri002

Certified Reference Material

Poultry Feeds, South Africa

Certificate of Analysis

1. Method of Preparation

The particle size distribution for this material was shown to have a nominal top size of 0.5mm. The procedure of preparation in brief is as follows: the material was crushed, dry-milled and air-classified to 0.5mm. It was then blended in a bi-conical mixer and systematically divided. The material is dried at 70°C between 12 to 48 hours to ensure the moisture content reaches a stable percentage (%) value.

2. Certified Concentrations and Standard Deviations

Table 1 gives the certified concentrations and standard uncertainty and the Confidence Interval (95%) for the certified reference material.

Table 1: Proximates and Elements

Analyte	Number of laboratories	Certified Value ¹	Standard Uncertainty u(xpt)
Ash	28	7.83	1.20
Crude Fibre	29	5.06	0.19
Fat	24	2.61	0.42
Moisture	26	6.38	0.40
Nx6.25 Protein	25	16.58	0.78
Starch	12	38.82	1.10

Element	Number of laboratories	Certified Value ¹	Standard Uncertainty u(xpt)
Cu	18	30.78	1.95
K	18	0.72	0.06
Mg	18	0.22	0.01
Mn	18	157.6	6.91
Na	16	0.05	0.02
P	19	0.10	0.05
Zn	19	19.12	5.41

Notes:

1. These values have been assigned using data derived from a variety of methods – see Section 5.

Table 2: Information purposes

Constituent	Value (%)
Cl	0.29
Dietary Fibre	23.26
Fat - Acid Hydrolysis	3.56

The following values are provided for information purposes and should be regarded as indicative values only.

3. Accepted Assay Data

34 laboratories submitted data however only acceptable data from the 28 laboratories, were used. After removal of outliers, the results were used for certification.

4. Participating Laboratories

The laboratories that provided timeous results are (Data from 28 laboratories were used):

1. Agri Enviro Lab
2. Agricultural Research & Extension Trust (ARET)
3. Agriculture Laboratory Namibia
4. ALS Analysis and Inspection - Durban (Pty) Ltd
5. Analytical Laboratory Services Namibia
6. Animal Nutrition Laboratory, Department of Animal, Wildlife & Grassland Sciences, University of the Free State
7. Animal Production Feed Laboratory Elsenburg
8. Aspirata Food & Beverage Lab
9. Chem Nutri Analytical
10. Crop Nutrition Laboratory Services Ltd
11. Crown Chickens T/A Sovereign Animal Feeds
12. DARD: KZN Department of Agriculture & Rural Development
13. Department of Animal Science; University of Stellenbosch
14. Intertek Agricultural Laboratory
15. Kimleigh Technologies (Pty) Ltd
16. Labworld, a division of Philafrica Foods Pty (Ltd)
17. M & L Laboratory Services
18. Meadow Quality Lab
19. Modderfontein Laboratory Services (Pty) Ltd
20. Nitrolab
21. Nutri Feeds (Pty) Ltd
22. Nvirotek Laboratories
23. Omnia Fertilizer (Sasolburg)
24. Quantum Analytical Services
25. RCL Foods Limited, Feed Central Lab
26. RCL Foods Sugar and Milling (Pty) Ltd, Malelane Feed Mill
27. SABS Commercial SOC Ltd
28. Sci-Ba Laboratories
29. Southern African Grain Laboratory
30. Tobacco Research Board
31. Tongaat Hulett Starch, Head Office
32. UP Nutrilab
33. Voermol Feeds
34. Zambia Bureau of Standards

5. Methods of Analysis Requested and Units

The following techniques were used:

Analyte	Techniques used			Number of laboratories
Ash	Furnace			28
Crude Fibre	Ankom	Fibretec	NIR	22
Fat	Ether	NIR		24
Moisture	Oven			26
Nx6.25 Protein	Dumas	Kjeldahl		25
Starch	Enzymatic	NIR	Polarimeter	12

Element	AAS	ICP-OES
Cu	6	24
K	4	23
Mg	4	24
Mn	4	23
Na	4	-
P	-	23
Se	3	-
Zn	7	23

6. Intended Use

Agri002 is a Certified Reference Material, fit for use as a control sample in routine assay laboratory quality control when inserted within runs of test samples and measured in parallel to test samples. This material can also be used for method development, use as independent calibration verification check standard (*i.e.* if not used as a calibration standard in an instrument calibration), or for validation of accuracy in a method validation exercise. The recommend procedure for the use of this CRM as a control standard in laboratory quality control is to develop a Shewhart chart, where a mean value and corresponding 1, 2 and 3 standard deviations are derived from replicate measurements of the RM. This CRM can also be used to assess inter-laboratory or instrument bias and establish within-laboratory precision and within-laboratory reproducibility. The certified concentrations are property values based on an inter-laboratory measurement campaign and reflect consensus results from the laboratories that took part in the exercise.

7. Health and Safety

The material is a powder-coloured greyish orange (10YR, 7/4). Safety precautions for handling fine particulate matter are recommended, such as the use of safety glasses, breathing protection, gloves and a laboratory coat.

8. Handling and Storage Information

The material is packaged in Explorer Packs that must be shaken or otherwise agitated before use. The analyte concentrations are quoted on a dry basis; therefore, the user needs to determine the moisture content to convert any obtained assay values to an air-dry basis. The material should be stored in a cool dry place, in such a way that it does not compromise the integrity of the CRM. The material should be stored in conditions which will ensure it does not absorb moisture.

9. Metrological Traceability

Metrological traceability is defined as “the property of a measurement result whereby the result can be related to a reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty. Measurement of uncertainty of the assigned value is taken into consideration when calculating the Expanded Standard Deviation for Proficiency Assessment, which is used for calculation of the Satisfactory ranges. The values quoted herein are based on the consensus values derived from statistical analysis of the data from an inter-laboratory measurement program. Traceability to SI units is via the standards used by the individual laboratories.

10. Period of Validity

The values are valid for this product, while still sealed in its original packaging, until notification to the contrary. When stored properly in dry, moderate temperature conditions, feed can be stored for up to 4 months, although we recommend usage within 60 days in hot, humid summer months and 90 days in cooler months. The stability of the material will be subject to continuous testing for the duration of the inventory. Should product stability become an issue, all customers will be notified and notification to that effect will be placed on the www.amis.co.za website.

11. Minimum Sample Size and Availability

Most of the laboratories reporting used a 100g Solid sample size. These are the recommended minimum sample sizes for the use of this material.

The Explorer Packs contain material in standard geochem envelopes, nitrogen flushed, and vacuum sealed in foil pouches.

12. Certification of Mean

The samples used in this certification process have been selected in such a way as to represent the entire batch of material and were taken from the final packaged units. Initially the data submitted by all the laboratories are subjected to a z-score test, to exclude outliers and the remaining data sets examined for their normality in distribution.

13. Two Standard Deviations

AMIS reports two-standard deviations (2s) with all certified values. Two -standard deviations are calculated using the expression:

$$\text{Two standard deviations} = 2 (\text{Standard Deviation})$$

14. Moisture Determination

The value for moisture is an indicative value as the laboratory is required to use a correction factor based on the temperature the sample is dried at.

$$\text{Moisture correction factor (MCF)} = \frac{100 - \% \text{Moisture at (specific temperature used)}}{100}$$

15. Legal Notice

This certificate and the reference material described in it have been prepared with due care and attention. However, AMIS, Melesha Gopi Mungaroo and Chuma Makele; accept no liability for any decisions or actions taken following the use of the reference material.

Date of Version 000: 22 January 2021

Version: 000

Approving Officers:

African Mineral Standards: _____

Melesha Gopi Mungaroo (Technical Manager)

African Mineral Standards: _____

Chuma Makele (Quality Coordinator)

End of certificate