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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 18868-2024

Replacing GB/T 18868-2002

Rapid determination of moisture, crude protein, crude fibre, crude fat, lysine and methionine in feeds - Near infrared spectroscopy

饲料中水分、粗蛋白质、粗纤维、粗脂肪、赖氨酸、蛋氨酸快速测定 近红外光谱法

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Standardization Administration of China

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1.Structure and drafting rules for standardization documents" Drafting is required. This document replaces GB/T 18868-2002 "Fast determination of moisture, crude protein, crude fiber, crude fat, lysine and methionine in feeds" Compared with GB/T 18868-2002, in addition to structural adjustments and editorial changes, the main technical changes are as follows: The scope of application has been changed (see Chapter 1, Chapter 1 of the.2002 edition);

a) Changed terms and definitions (see Chapter 3, Chapter 4 of the.2002 edition);

b) Changed the principles (see Chapter 4, Chapter 3 of the.2002 edition);

c) The instrumentation has been changed (see Chapter 5, Chapter 5 of the.2002 edition);

d) The sample has been changed (see Chapter 6 and Appendix A, Chapter 6 of the.2002 edition);

e) The test steps have been changed (see Chapter 7, Appendix B, Appendix C and Appendix D, Chapter 7 of the.2002 edition);

f) Added experimental data processing (see Chapter 8);

g) The precision has been changed (see Chapter 9, Chapter 8 of the.2002 edition);

h) The criteria and procedures for awarding certificates (see Appendix A of the.2002 edition) have been deleted.

i) Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Feed Industry Standardization Technical Committee (SAC/TC 76). This document was drafted by: Sichuan Well Testing Technology Co., Ltd., Agricultural Quality Standards and Testing Technology Research Institute of the Chinese Academy of Agricultural Sciences Institute, Tongwei Agricultural Development Co., Ltd. The main drafters of this document are. Song Tao, Zhang Fengping,

Fan Xia, Qi Mengmeng, Tang Yao, Feng Yuchao, Liu Xiaolu, Zhuo Lin, Guo Jinsong, Zhang Lu, Duan Ling, and Yuan Lujun. The previous versions of this document and the documents it replaces are as follows: First published in.2002 as GB/T 18868-2002; This is the first revision. Water, crude protein, crude fiber, Rapid determination of crude fat, lysine and methionine Near-infrared spectroscopy

1 Scope

China's national near infrared method for determining the six values a feed mill needs from every incoming batch: moisture, crude protein, crude fibre, crude fat, lysine and methionine. It specifies the rapid determination of these constituents in feeds by near infrared spectroscopy. Feed formulation is a least-cost optimisation run against the actual composition of the ingredients, and the ingredients vary - a soybean meal delivery differs from the last one, a maize crop differs from the last harvest. Formulating against book values rather than measured ones either wastes expensive protein and amino acid supplementation or under-formulates and loses animal performance. But the reference methods are slow: Kjeldahl for protein, ether extraction for fat, acid and alkali digestion for fibre, ion exchange chromatography after acid hydrolysis for the amino acids. A lorry cannot wait. Near infrared solves this by measuring the absorption of the sample in the overtone and combination bands of the C-H, N-H and O-H bonds, and predicting composition from the spectrum through a calibration model. It is a secondary method and everything depends on that model, which is exactly what the standard governs: the instrument requirements and their verification, the sample preparation and presentation - particle size and packing change the spectrum as much as composition does - the construction of the calibration set and its coverage of the population to be analysed, the validation of the model and the statistics that qualify it, the detection of outliers and spectra that lie outside the calibration space, and the ongoing monitoring and updating of the model against reference analyses. Issued on 26 October 2024 and in force since 1 May 2025, it replaces GB/T 18868-2002.

This document describes the rapid determination of moisture, crude protein, crude fiber, crude fat, lysine and methionine in feed using near infrared spectroscopy. method. This document applies to the moisture, crude protein content of compound feed, concentrated feed, concentrate supplement and feed raw materials (excluding mineral feed raw materials). Rapid determination of protein, crude fiber and crude fat, as well as lysine and protein in compound feeds, concentrate feeds, concentrate supplements and protein feeds Rapid determination of amino acids.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the latest version (including all amendments) applies to this document. In this

document.

GB/T 6432 Determination of crude protein in feeds - Kjeldahl method

GB/T 6433 Determination of crude fat in feeds

GB/T 6434 Determination of crude fiber content in feed

GB/T 6435 Determination of moisture in feeds

GB/T 15399 Determination of sulfur amino acids in feeds-Ion exchange chromatography

GB/T 18246 Determination of amino acids in feed

GB/T 20195 Preparation of animal feed samples

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 near infrared spectrum The sample's absorption intensity of light in the near-infrared spectral range of 770 nm to 2 500 nm (12 900 cm-1 to 4 000 cm-1).

3.2 near infrared spectrometernear infrared spectrometer An instrument for measuring the near-infrared spectrum of a sample, with detection modes such as diffuse reflection or transmission.

Note. The spectral range of the instrument is the near-infrared full spectrum range of 770 nm ~ 2 500 nm (12 900 cm-1 ~ 4 000 cm-1), part of the full spectrum range or selected The wavelength or wave number of the wavelength. According to the optical principle, it can be divided into dispersion type, interference type or athermal type.

3.3 measuring accessories Components that carry the specimen.