

---

---

**Animal feeding stuffs — Vocabulary**

*Aliments des animaux — Vocabulaire*

STANDARDSISO.COM : Click to view the full PDF of ISO 20588:2019



STANDARDSISO.COM : Click to view the full PDF of ISO 20588:2019



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
3.1 General terms.....	1
3.2 Terms related to feed and feeding.....	3
3.3 Terms related to sampling and feed analysis.....	8
3.4 Terms related to feed processing and technology.....	11
<b>Bibliography</b> .....	<b>14</b>

STANDARDSISO.COM : Click to view the full PDF of ISO 20588:2019

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 10, *Animal feeding stuffs*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

This document provides definitions of generic terms related to animal feeding stuffs. It aims to encourage a mutual and consistent understanding and use of uniform terms in processes and frameworks dealing with the management of risk. This vocabulary document, which contains some common technical terms used in feed industry, is compiled for proper understanding of special language words or terms associated with the technical field.

This document can be applied as a reference by competent authorities, as well as specialists involved in standardization systems, to better and more accurately understand relevant text, correspondences and communications.

STANDARDSISO.COM : Click to view the full PDF of ISO 20588:2019

[STANDARDSISO.COM](https://standardsiso.com) : Click to view the full PDF of ISO 20588:2019

# Animal feeding stuffs — Vocabulary

## 1 Scope

This document defines terms relating to animal feeding stuffs.

NOTE It includes the most common and frequently used terms in the field of animal feeding stuffs.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1 General terms

#### 3.1.1

##### **antibiotic**

antimicrobials produced by, or derived from, a micro-organism which destroys or inhibits the growth of other micro-organisms

#### 3.1.2

##### **antimicrobial agent**

substance of natural, semi-synthetic or synthetic origin that at in vivo concentrations kills or inhibits the growth of microorganisms by interacting with a specific target

#### 3.1.3

##### **antioxidant**

substance prolonging the storage life of *feed* (3.2.17) and *feed ingredients* (3.2.21) by protecting them against deterioration caused by oxidation

#### 3.1.4

##### **buffer**

substance used in livestock *rations* (3.2.42) to help resist changes in the acidity of the digestive tract

EXAMPLE Sodium bicarbonate.

#### 3.1.5

##### **carrier**

material to which *feed ingredients* (3.2.21) are added (e.g. absorbed, impregnated, coated) to facilitate their uniform distribution in *feed* (3.2.17)

#### 3.1.6

##### **chelated mineral**

organic mineral complex formed between an organic molecule and a mineral

### 3.1.7

#### **diluent**

substance mixed with *feed ingredients* (3.2.21) to reduce their concentration and make them more acceptable to animals, safer and easier to *mix* (3.4.18) uniformly in a *feed* (3.2.17)

Note 1 to entry: Diluent may also be a *carrier* (3.1.5).

### 3.1.8

#### **emulsifier**

substance that makes it possible to form or maintain a homogeneous mixture of two or more immiscible phases in *feed* (3.2.17)

Note 1 to entry: Emulsifier is commonly added to *milk replacers* (3.2.36) to prevent fat from separating.

### 3.1.9

#### **flavouring compound**

#### **flavouring enhancer**

substance included in *feed* (3.2.17) or *feed ingredients* (3.2.21) to improve smell or palatability

### 3.1.10

#### **macro-mineral**

#### **major mineral**

mineral required by animals in relatively large amounts

EXAMPLE Calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), chlorine (Cl), sulfur (S), sodium (Na).

Note 1 to entry: Macro-minerals are generally required in gram quantities per head per day.

### 3.1.11

#### **micro-ingredient**

vitamin, mineral or other material usually required in *feed* (3.2.17) in small amounts

### 3.1.12

#### **micro-mineral**

#### **trace mineral**

mineral required by animals in small amounts

EXAMPLE 1 Manganese (Mn), copper (Cu), zinc (Zn), selenium (Se), iron (Fe), cobalt (Co), iodine (I).

EXAMPLE 2 Micro-minerals are required in units of mg/kg or smaller.

### 3.1.13

#### **non-structural carbohydrate**

#### **NSC**

simple carbohydrate, such as starch and sugar, stored inside the cell that serves as a cellular energy source

Note 1 to entry: Non-structural carbohydrates are rapidly and easily digested by an animal.

### 3.1.14

#### **nutrient allowance**

recommendation for the nutrient amounts necessary for maintenance, growth, gestation, yield, work or performance that includes a safety margin to account for variability in *feed ingredients* (3.2.21), environment, animal health, storage losses and waste in the feeding process

### 3.1.15

#### **nutrient requirement**

minimum amount of nutrients (such as protein, minerals and vitamins) and energy necessary to meet animals' needs for maintenance, growth, reproduction, yield or performance

Note 1 to entry: Nutrient requirement does not include a safety margin in *ration* (3.2.42) formulation.

**3.1.16****prebiotic**

non-digestible compounds in *feed* (3.2.17) that beneficially affect animals by selectively stimulating the growth and/or activity of one or a limited number of non-pathogenic bacteria population(s) in the colon

**3.1.17****preservative**

substance or, when applicable, micro-organism that protects *feed* (3.2.17) against deterioration caused by micro-organisms or their metabolites

**3.1.18****probiotic****direct-fed microbial****DFM**

live micro-organisms that, when administered in adequate amounts, confer a health benefit on the host

EXAMPLE Lactic acid producing strains, e.g. *Lactobacillus*.

**3.1.19****undesirable substance**

substance or product, with the exception of pathogenic agents, that is present in and/or on the product intended for animal *feed* (3.2.17) and causes a potential danger to animal or human health or to the environment or could adversely affect livestock production

**3.1.20****veterinary drug**

substance applied or administered to animals, whether used for therapeutic, prophylactic, metaphylactic or diagnostic purposes or for modification of physiological functions or behaviour

**3.2 Terms related to feed and feeding****3.2.1****ad libitum feeding****ad lib feeding**

feeding system by which animals can eat from a prepared *diet* (3.2.15) as much as they desire

**3.2.2****aquatic feed**

*feed* (3.2.17) that is fed to animals living in water

**3.2.3****balanced diet****balanced ration**

*feed* (3.2.17), *diet* (3.2.15) or *ration* (3.2.42) that contains all known required nutrients in proper amounts and proportions based upon recommendations of recognized authorities in animal nutrition for a given set of physiological requirements

**3.2.4****barn-dried hay**

*hay* (3.2.31) dried indoors by blowing air through it

Note 1 to entry: It is usually more nutritious than field-dried hay.

**3.2.5****bran**

milling fraction obtained from the removal of the outer layer of cereals

**3.2.6****canned pet food**

*feed* (3.2.17) for pets, which has been processed, packaged, sealed and sterilized for preservation in cans or similar containers

3.2.7

**chaff**

*hulls* (3.2.33) or other seed coverings, together with other plant parts separated from seeds during threshing or processing

3.2.8

**coccidiostat**

antiprotozoal agent used to prevent and/or control coccidial infections

EXAMPLE Lasalocid, monensin, narasin, salinomycin.

3.2.9

**complementary feed**

*compound feed* (3.2.11) that has a high content of certain substances but is not sufficient for a *ration* (3.2.42) and so is used in combination with other *feed* (3.2.17)

Note 1 to entry: Complementary feed is a form of compound feed.

3.2.10

**complete feed**

nutritionally adequate *feed* (3.2.17) compounded by a specific formula that is used as the sole *ration* (3.2.42) and that is capable of maintaining life and/or promoting production without any additional substance except water

Note 1 to entry: Complete feed is a form of *compound feed* (3.2.11).

3.2.11

**compound feed**

**formula feed**

**feed mixture**

mixture of at least two *feed materials* (3.2.23), whether or not containing *feed additives* (3.2.18), for oral animal feeding in the form of a *complementary feed* (3.2.9) or a *complete feed* (3.2.10)

3.2.12

**concentrate**

*feed* (3.2.17) that contains high amounts of a nutrient or nutrients (usually rich in energy and/or protein but low in fibre) and mixed with other ingredients [usually *micro-ingredients* (3.1.11)] intended to be diluted or mixed to produce a *complementary feed* (3.2.9) or a *complete feed* (3.2.10)

EXAMPLE Concentrate may be unsafe if fed *free choice* (3.2.27) or alone.

3.2.13

**crumble**

pelleted *feed* (3.2.17) that has been broken into smaller granular pieces

3.2.14

**cured feed**

*feed* (3.2.17) that has been preserved, for example, by drying, chemical additives or other preservation methods

3.2.15

**diet**

*feed ingredient* (3.2.21) or a mixture of ingredients, including water, that is consumed by animals

3.2.16

**distillers' grain**

residual grain or by-product of a fermentation process in alcohol production from grains (especially corn), which may be fed wet or dry

**3.2.17****feed****feed stuff****feeding stuff**

single or multiple materials, whether processed, semi-processed or raw, and whether or not containing additives, for oral animal feeding

**3.2.18****feed additive**

substance intentionally added to *feed* (3.2.17) and/or water, not consumed as feed by itself, whether or not it has a nutritional value, that affects the characteristics of feed including organoleptic properties, animal products, animal production or performance or welfare, or the environment

Note 1 to entry: Microorganisms, enzymes, acidity regulators, trace elements, vitamins and other products fall within the scope of this definition, depending on the purpose of use and the method of administration.

Note 2 to entry: *Coccidiostats* (3.2.8) and histomonostats are a category of feed additives.

Note 3 to entry: Feed additive does not include *feed materials* (3.2.23) and *premixtures* (3.2.39).

**3.2.19****feed conversion ratio****FCR**

ratio describing the amount of *feed* (3.2.17) consumed per unit of production, e.g. weight gain, milk, eggs production

**3.2.20****feed grade**

quality of *feed* (3.2.17) suitable for animal, but not human, consumption

**3.2.21****feed ingredient**

component part or constituent of any mixture making up a *feed* (3.2.17), whether or not it has a nutritional value in the animal's *diet* (3.2.15), including *feed additives* (3.2.18)

Note 1 to entry: Ingredients are of plant, animal or aquatic origin, or other organic or inorganic substances.

**3.2.22****feed intended for a particular nutritional purpose****functional feed**

*feed* (3.2.17) that can satisfy a particular nutritional purpose by virtue of its particular composition or method of manufacture, which clearly distinguishes it from ordinary feed

Note 1 to entry: Feed intended for a particular nutritional purpose does not include *medicated feed* (3.2.34).

**3.2.23****feed materials**

products of vegetable or animal origin and products derived from industrial processing, either organic or inorganic substances, whether or not containing *feed additives* (3.2.18), that are intended for use in oral animal feeding to meet animals' nutritional needs

Note 1 to entry: Feed materials can be in their natural state, fresh or preserved.

Note 2 to entry: Feed materials may be fed to animals either directly as such, or after processing, or in the preparation of *compound feed* (3.2.11), or as *carrier* (3.1.5) of *premixtures* (3.2.39).

**3.2.24****feed supplement****supplementary feed**

*feed ingredient* (3.2.21) used with another to improve the nutrient balance or performance of the animal and that can be fed undiluted, diluted and mixed to produce a *complete feed* (3.2.10) or as *free choice* (3.2.27) with other parts of the *ration* (3.2.42)

**3.2.25**

**fish meal**

product obtained by drying and processing whole fish or parts thereof, of one or various species

**3.2.26**

**forage**

**fodder**

plants or plant parts other than separated grains that are fed to or grazed by domestic animals

Note 1 to entry: Forage may be fresh, dry or ensiled, e.g. pasture, green chop, *hay* ([3.2.31](#)), *haylage* ([3.2.32](#)).

**3.2.27**

**free choice**

**self-fed**

feeding system by which animals are given free access to the separate components or groups of components constituting their *diets* ([3.2.15](#))

**3.2.28**

**gluten**

visco-elastic proteinaceous material formed when flour and water are mixed into a dough, and that may be isolated by washing, which eliminates the starchy endosperm particles and cell walls as well as the *soluble proteins* ([3.3.23](#))

**3.2.29**

**grits**

coarsely ground grain from which *bran* ([3.2.5](#)) and germ have been removed and that is usually *screened* ([3.4.25](#)) to uniform particle size

**3.2.30**

**groats**

grain from which *hulls* ([3.2.33](#)) have been removed

**3.2.31**

**hay**

aerial portion of grass or herbage especially cut and cured for animal feeding

**3.2.32**

**haylage**

*silage* ([3.2.47](#)) made from *forages* ([3.2.26](#)) that is partially dried

Note 1 to entry: Haylage may be stored in a silo or cut and compressed into bags.

Note 2 to entry: Haylage and silage are both ensiled forages but haylage is drier than silage and its *dry matter* ([3.3.11](#)) percent is higher than 50 %.

**3.2.33**

**hull**

**husk**

outer covering of grain or other seed

**3.2.34**

**medicated feed**

*feed* ([3.2.17](#)) that contains *veterinary drugs* ([3.1.20](#))

**3.2.35**

**middlings**

by-product of milling

Note 1 to entry: It consists of granular particles containing differing proportions of grain, endosperm, *bran* ([3.2.5](#)) and *gluten* ([3.2.28](#)).

**3.2.36****milk replacer**

*compound feed* (3.2.11) administered in dry or liquid form for feeding young animals such as calves, lambs or kids as a complement to, or substitute for, post-colostral milk

**3.2.37****mineral mix****mineral supplement****mineral feed**

*feed* (3.2.17) that mainly consists of mineral elements, which is as an entire mix free-flowing

**3.2.38****oilseed meal****oilseed cake**

*feed* (3.2.17), high in protein, made from the residue of seeds that have been crushed to produce oil

**3.2.39****premixture****premix**

uniform mixture of one or more *micro-ingredients* (3.1.11)/*feed additives* (3.2.18) with a *diluent* (3.1.7) and/or *carrier* (3.1.5), and that is not intended for direct feeding to animals

Note 1 to entry: Premixtures are used to facilitate the uniform dispersion of the micro-ingredients/additives in a larger mix.

**3.2.40****protein supplement****protein concentrate**

*feed* (3.2.17) or mixture of *feed ingredients* (3.2.21) containing a mass fraction of 20 % or more protein or protein equivalent

**3.2.41****range cube**

large *pellet* (3.4.20) designed to be offered to animals on the ground

**3.2.42****ration****daily ration**

amount of total *feed* (3.2.17) that is provided to an individual animal over a 24-hour period

**3.2.43****roughage**

*feed* (3.2.17) high in fibre that tends to be bulky, coarse and low in energy

EXAMPLE *Forage* (3.2.26), *hay* (3.2.31), *silage* (3.2.47) and *haylage* (3.2.32) are sometimes called "roughage".

Note 1 to entry: The fibre content of roughage is mostly greater than a volume fraction of 18 %.

**3.2.44****rumen-protected feed**

*feed* (3.2.17) that has been treated or combined with another substance to prevent the breakdown of the nutrients by micro-organisms in the rumen

EXAMPLE Rumen-protected fat, bypass protein.

**3.2.45****screenings**

small, imperfect kernels, broken grains, *hulls* (3.2.33), weed seeds and other foreign material obtained from the cleaning of grain

**3.2.46**

**semi-moist pet food**

meat-based *feed* (3.2.17) product for pets or aquatic animals that has been partially dried to prevent microbial decomposition

**3.2.47**

**silage**

*feed* (3.2.17) resulting from an anaerobic fermentation process of sugars in *forage* (3.2.26) with a high moisture content and that is preserved in a succulent condition

EXAMPLE Corn silage, *haylage* (3.2.32).

**3.2.48**

**silage additive**

substance, such as enzymes or microorganisms, that is intended to be incorporated into *forage* (3.2.26) to improve the production of *silage* (3.2.47)

Note 1 to entry: Silage additives enhance the production of lactic acid and/or a rapid decrease in pH of the forage during the *ensiling process* (3.4.11).

**3.2.49**

**sweet feed**

commercial *feed* (3.2.17) sweetened with molasses or other sweeteners to improve palatability

**3.2.50**

**texturized and sticky feed**

mix of assorted grains and commercial *feed* (3.2.17) (generally pelleted) treated with a coating of molasses

**3.2.51**

**total mixed ration**

**TMR**

homogenous mixture of all *ration* (3.2.42) ingredients [e.g. *forages* (3.2.26), grains, *feed supplements* (3.2.24)] that is supplied to an animal for a 24-hour period

Note 1 to entry: In practice, the 24-hour allotment of the mixture may be offered in one or more feedings.

**3.3 Terms related to sampling and feed analysis**

**3.3.1**

**acid detergent fibre**

**ADF**

amount of residue (primarily cellulose, lignin and variable amounts of silica) remaining after boiling a *feed* (3.2.17) sample in an acid detergent solution

Note 1 to entry: ADF does not include hemicellulose.

Note 2 to entry: ADF is often used to calculate *digestibility* (3.3.9), *total digestible nutrients* (3.3.24) and/or *net energy* (3.3.18) for lactation.

**3.3.2**

**as fed**

content of a substance (e.g. feed nutrient) with moisture included

Note 1 to entry: The content of a substance on an as-fed basis is always lower than on a *dry-matter basis* (3.3.12).

**3.3.3****chemical analysis  
analytical chemistry**

standardized or validated chemical analytical methods used to determine the composition of a *feed* (3.2.17) sample

Note 1 to entry: Chemical analysis consists of wet chemical methods and instrumental methods.

**3.3.4****composite sample  
aggregate sample**

aggregate of incremental samples taken from the same sampled portion

**3.3.5****crude ash**

inorganic part of a *feed* (3.2.17), consisting of mineral elements determined in a laboratory by incineration at a high temperature and weighing the residue

**3.3.6****crude fat**

total fat content of a *feed* (3.2.17) determined by a laboratory test

Note 1 to entry: Crude fat includes some waxes, pigments and other lipids to a minor degree in addition to true fats.

**3.3.7****crude fibre**

residue obtained after acid and alkaline digestion of a *feed* (3.2.17) sample that contains cellulose, hemicellulose, lignin and pectin

Note 1 to entry: Crude fibre has been replaced by *acid detergent fibre* (3.3.1) and *neutral detergent fibre* (3.3.19) in ruminant nutrition but it is still reported for monogastric nutrition.

Note 2 to entry: The cellulose, hemicellulose, lignin and pectin that form the plant cell wall are known as "structural carbohydrates" or "fibre".

**3.3.8****crude protein  
CP**

total protein content of a *feed* (3.2.17), which is determined by analysing the nitrogen content of feed and multiplying the result by a factor

Note 1 to entry: This factor is generally equal to 6,25. However, it may differ in some categories of *feed materials* (3.2.23), such as grains due to difference in the quality of amino acids constituents of protein.

Note 2 to entry: The reference method for analysing the crude protein content on the basis of the nitrogen content is the Kjeldahl method.

Note 3 to entry: Crude protein includes true protein and other nitrogen-containing substances, such as ammonia, amino acids and nitrates.

**3.3.9****digestibility**

measure of the apparent extent that a *feed* (3.2.17) or nutrient is digested, usually expressed as a percentage of the amount consumed

**3.3.10****digestible energy****DE**

apparent energy of a *feed* (3.2.17) that is available to the animal by digestion

Note 1 to entry: Digestible energy is calculated as the difference between the *gross energy* (3.3.14) content of a feed and energy contained in the feces (fecal energy or FE).

**3.3.11**

**dry matter**

**dry mass**

**DM**

residue left after all the moisture has been removed by drying (e.g. 100 % dry matter)

**3.3.12**

**dry-matter basis**

method used to compare nutrient composition or animal intake of *feed* (3.2.17) by eliminating differences in moisture content

**3.3.13**

**dry-matter intake**

**DMI**

amount of moisture-free *feed* (3.2.17) or *diet* (3.2.15) consumed by animals

**3.3.14**

**gross energy**

**GE**

total combustible energy in a *feed* (3.2.17) that is determined by the amount of heat produced when a feed sample is completely burnt in a bomb calorimeter

**3.3.15**

**metabolizable energy**

**ME**

amount of the useful energy in a *feed* (3.2.17) that represents that portion of the feed *gross energy* (3.3.14) not lost in feces, urine and eructated gas

**3.3.16**

**metabolizable protein**

total amount of amino acids absorbed in small intestine of ruminants, which is supplied by both rumen-undegradable protein (by-pass protein) and rumen-microbial protein

**3.3.17**

**near-infrared analysis**

**near-infrared spectroscopy**

**NIRS**

*chemical analysis* (3.3.3) method that uses a specific wavelength of near-infrared region to estimate constituents (e.g. moisture) and parameters [e.g. *digestibility* (3.3.9)] of *feed* (3.2.17)

Note 1 to entry: The accuracy of NIRS is dependent on correct calibration of the instrument with a sufficient number of representative feed samples.

**3.3.18**

**net energy**

**NE**

amount of *feed* (3.2.17) energy actually available for animal maintenance and production

Note 1 to entry: Net energy can be further partitioned into the net energy necessary for maintenance ( $NE_M$ ), growth ( $NE_G$ ) and lactation ( $NE_L$ ).

Note 2 to entry: Net energy is calculated as the difference between *metabolizable energy* (3.3.15) of a feed and heat increment (heat produced in body during digestion of feed, metabolism of nutrients and excretion of waste).

**3.3.19****neutral detergent fibre****NDF**

insoluble fraction containing all plant cell wall components left after boiling a *feed* (3.2.17) sample in a neutral detergent solution

Note 1 to entry: NDF is of low *digestibility* (3.3.9) but can be broken down somewhat by the digestive tract microorganisms.

Note 2 to entry: NDF value is used to predict ruminant feed intake.

**3.3.20****non-protein nitrogen****NPN**

nitrogen not derived from true protein, but usable by rumen microbes to build microbial protein

EXAMPLE Urea.

**3.3.21****proximate analysis**

analytical determinations of major categories of components in *feed* (3.2.17) consisting of moisture (water), *crude ash* (3.3.5), *crude fat* (3.3.6), *crude fibre* (3.3.7), *crude protein* (3.3.8) and nitrogen free extract (NFE) in feed

**3.3.22****soluble intake protein****SIP**

portion of the protein intake that is completely soluble in rumen fluid and rapidly utilized by rumen microorganisms to synthesize rumen-microbial protein

Note 1 to entry: Soluble intake protein forms part (or all) of the degradable intake protein (DIP) value of a *feed* (3.2.17).

**3.3.23****soluble protein**

portion of *crude protein* (3.3.8) that goes into a solution of pepsin in dilute hydrochloric acid

Note 1 to entry: ISO 6655 specifies a method for determination of soluble nitrogen content of animal feeding stuffs.

**3.3.24****total digestible nutrients****TDN**

sum of the digestible fibre, protein, lipid and carbohydrate content of *feed* (3.2.17), which expresses the energy value of feed as calculated using formulae and not reported as measured values

Note 1 to entry: TDN is directly related to *digestible energy* (3.3.10) and is often calculated based on *acid detergent fibre* (3.3.1)

**3.4 Terms related to feed processing and technology****3.4.1****aspirate**

remove *chaff* (3.2.7), dust or other light materials by use of air

**3.4.2****blend**

mingle or combine two or more ingredients or *feed* (3.2.17), but not necessarily to achieve uniform dispersion