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भारतीय मानक *मसौदा*

गर्भवती गायों और भैंसों के लिए मिश्रित आहार — विशिष्टि

Draft Indian Standard

COMPOUNDED FEED FOR PREGNANT COWS AND BUFFALOES — SPECIFICATION

ICS 65.120

Animal Feeds and Nutrition Sectional Committee, FAD 05	Last Date of Comments **15 /09/2024**

NATIONAL FOREWORD

(*Formal adoption clause would be added later*)

Scientific feeding during advanced stage of pregnancy in cows and buffaloes is very important considering that the animals are under pregnancy stress as foetus is developing rapidly during last three month of pregnancy. The maximum growth of foetus inside the dam occurs within last two months of gestation, and the dam provides all the nutrients needed for this growth. Also, the quality and amount of antibodies found in colostrum depend largely on the nutritional status of dam, which directly impacts the health of new borne calf. Thus, balance nutrients should be supplied during last trimester to ensure optimum foetus growth, rebuild body energy reserves, regenerate milk secretory tissues and to avoid incidence of metabolic disorders.

Since the dry matter intake is decreased due to pressure of foetus on rumen, all essential nutrients should be provided to meet the nutrient requirements of pregnant animals. Requirement of vitamins especially vitamin E are increased many fold due to its anti-oxidant property as animal is under stress. Further, dietary cationic-anionic balance also needs to be taken into account. Therefore, it was felt to develop a separate specification on compounded feed for pregnant cows and buffaloes. General recommendation for feeding of pregnancy feed is about 3.0 kg for last two months of pregnancy.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:2022 ‘Rules for rounding off numerical values (*second revision*)’. The

number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

COMPOUNDED FEED FOR PREGNANT COWS AND BUFFALOES — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for compounded feed for pregnant cows and buffaloes during the last three months of pregnancy.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 REQUIREMENTS

3.1 General

Compounded feed for pregnant cows and buffaloes shall be in the form of meal or cubes or pellets. The feed shall be free from harmful constituents, metallic pieces and adulterants. The feed shall also be free from fungal growth and insect infestation and from fermented, musty, rancid or any other objectionable odour.

3.2 Ingredients

3.2.1 Ingredients as listed in Annex B of IS 2052 may be used for compounded feed for pregnant animals.

3.2.2 Any material of animal origin except milk and milk products shall not be used as ingredient for manufacturing the product.

3.2.3 Materials of plant origin used for manufacturing the product shall not have aflatoxin B1 content more than 20 ppb, except solvent extracted rice bran as livestock feed (*see* IS 3593, commonly called as de-oiled rice bran or DORB), rice polish (*see* IS 3163) and whole grains; wherein aflatoxin B1 shall not be more than 50 ppb when tested as per IS/ISO 14718* or IS 18143 or AOAC 2003.02.

NOTE — *In case of dispute, the method given in IS/ISO 14718 shall be the referee method.

3.3 The material shall also conform to the requirements prescribed in Table 1.

Table 1 Requirements for compounded feed for pregnant animals
(*Clause* 3.3 *and* 6.1)

Sl. No.	Characteristic	Requirements	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, Max	11.0	4 of IS 7874 (Part 1)
ii)	Crude protein (N x 6.25), percent by mass, Min	22.0	IS/ISO 5983 (Part 1)* or IS 5983 (Part 2)
iii)	Crude fat, percent by mass, Min	3.0	IS/ISO 6492
iv)	Crude fibre, percent by mass, Max	12.0	IS/ISO 6865
v)	Acid insoluble ash, percent by mass, Max	2.5	Annex A of IS 1712 or IS 14826*
vi)	Salt (as NaCl based on Na or Cl), per cent by mass, Max	0.2	**4** of IS 7874 (Part 2)
vii)	Calcium (as Ca), percent by mass, Min	0.4	IS 13433 (Part 1) or IS 15121* or EN 15621
viii)	Total phosphorus, percent by mass, Min	0.5	IS 14828* or EN 15621
ix)	Available phosphorus, percent by mass, Min	0.25	Annex F of IS 1374
x)	Urea, percent by mass, *Max*	0.5	IS 7874 (Part 1) or AOAC 967.07*
xi)	Vitamin A, IU/kg, Min	12,000	IS 15120
xii)	Vitamin D_3, IU/kg, Min	2000	Annex C of IS 2052* or *J. AOAC Int.* 2012, Vol. 95, No. 5, *Pages* 1487–1494
xiii)	Vitamin E, IU/kg, Min	400	IS 15948
xiv)	Aflatoxin B_1, ppb, Max	20	IS/ISO 14718* or IS 18143 or AOAC 2003.02
xv)	Cadmium, mg/kg, Max	0.5	EN 17053

NOTES:

1) The values specified for requirements at Sl No. (ii) to (xv) are on moisture-free basis.
2) In case of dispute, the test methods given above and wherever indicated by '*' shall be the referee method.
3) For crude fibre, the manual method given in IS/ISO 6865 shall be the referee method.

4 PACKING AND MARKING

4.1 Packing

Compounded pregnancy feed shall be packed in clean and sound plain or polyethylene lined jute or laminated paper bags or HDPE bags. The mouth of each bag shall be machine stitched.

4.2 Marking

Each bag shall be legibly marked or labelled to give the following information:

a) Name and type of the material;
b) Name of the manufacturer and address;
c) Net mass in kg;
d) Batch or Code number;
e) Proximate composition including Crude protein content; Crude fat content; Crude fibre content; Calcium content; Total phosphorus content; Available phosphorus content and urea percent;
f) Acid insoluble ash;
g) Aflatoxin B1 content;
h) Date of manufacture;
j) Best before date in month & year format;
k) Directions for use (including inside literature); and
m) Any other requirement as given under the Legal Metrology (*Packaged Commodities*) Rules, 2011.

4.2.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

5 SAMPLING

5.1 Representative samples of the material for ascertaining conformity to this standard shall be drawn according to the method prescribed in Annex D of IS 2052.

6 TESTS

6.1 Tests shall be carried out as prescribed in co1 (4) of Table 1.

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE - ‘Pure chemicals’ shall mean chemicals that do not contain impurities which affect the test results.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No./Other Standards	*Title*
IS 1070: 2023	Reagent grade water — Specification (*fourth revision*)
IS 1374 : 2024	Chicken feeds — Specification (*sixth revision*)
IS 1712 : 2022	Cottonseed oilcake as livestock feed ingredient — Specification (*third revision*)
IS 2052 : 2023	Compounded feeds for cattle — Specification (*fifth revision*)
IS 3163 : 2022	Rice polish as livestock feed ingredient — Specification (*first revision*)
IS 3593 : 2022	Solvent extracted rice bran (De-oiled rice bran) as livestock feed — Specification (*third revision*)
IS/ISO 5983 (Part 1) : 2005	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content: Part 1 (Kjeldahl Method)
IS 5983 (Part 2) : 2021 /ISO 5983-2 : 2009	Animal feeding stuffs — Determination of nitrogen content and calculation of crude protein content: Part 2 Block digestion and steam distillation method (*first revision*)
IS/ISO 6492 : 1999	Animal feeding stuffs — Determination of fat content
IS/ISO 6865 : 2000	Animal feeding stuffs — Determination of crude fibre content — Method with intermediate filtration
IS 7874	Methods of tests for animal feeds and feeding stuffs:
(Part 1): 1975	General methods
(Part 2): 1975	Minerals and trace element
IS 13433 (Part 1) : 2024 / ISO 6490-1 : 1985	Animal feeding stuffs — Determination of calcium content: Part 1 Titrimetric method (*first revision*)
IS/ISO 14718 : 1998	Animal feeding stuffs — Determination of aflatoxin B_1 content of mixed feeding stuffs — Method using high-performance liquid chromatography
IS 14826: 2021/ISO 5985 : 2002	Animal Feeding Stuffs — Determination of ash insoluble in hydrochloric acid (*first revision*)
IS 14828 : 2000/ISO 6491 : 1998	Animal feeding stuff — Determination of total phosphorus content spectrophotometric method
IS 15120 : 2002/ISO 14565 : 2000	Animal feeding stuffs — Determination of vitamin A content — Method using high-performance liquid chromatography
IS 15121 : 2002/ISO 6869 : 2000	Animal feeding stuffs — Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc - method using atomic absorption spectrometry
IS 15948 : 2011/ISO 6867 : 2000	Animal feeding stuffs — Determination of Vitamin E content — Method using high-performance liquid chromatography

IS No./Other Standards	*Title*
IS 18143 : 2023 / ISO 17375 : 2006	Animal feeding stuffs — Determination of aflatoxin B_1
EN 15621 : 2017	Animal feeding stuffs — Methods of sampling and analysis — Determination of calcium, sodium, phosphorus, magnesium, potassium, sulphur, iron, zinc, copper, manganese and cobalt after pressure digestion by ICP-AES
EN 17053 : 2018	Animal feeding stuffs — Methods of sampling and analysis — Determination of trace elements, heavy metals and other elements in feed by ICP-MS (multi-method)