



DRAFT TANZANIA STANDARD

Compounded indigenous chicken feed — Specification

DRAFT STANDARD FOR PUBLIC REVIEW

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Ministry of Agriculture (MoA)
Tanzania Food and Nutrition Centre (TFNC)
Small Industries Development Organization (SIDO)
Tanzania Industry Research and Development Organization (TIRDO)
Tanzania Chamber of Commerce, Industry and Agriculture (TCCIA)
Tanzania Commission for Science and Technology (COSTECH)
Agricultural Council of Tanzania (ACT)
Government Chemist Laboratory Authority (GCLA)
Tanzania Private Sector Foundation (TPSF)
University of Dar es Salaam (UDSM).

The organizations marked with an asterisk (*) in the above list, together with the following were directly represented on the Technical Committee entrusted with the preparation of this Tanzania Standard:

International Tan Feeds Limited
Tanzania Animal Feeds Manufacturers Association (TAFMA)
Mhega Animal Feeds Company Limited
Morning Fresh Farms Company Limited
Tanzania Veterinary Laboratory Agency (TVLA)
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0 Foreword

Demand of indigenous chicken products (meat and eggs) lead to increased indigenous chicken production under intensive and semi intensive systems.

It is necessary to prepare this Tanzania standard, laying down specifications for compounded indigenous chicken feeds, so as to improve safety and quality of indigenous chicken products produced and or traded in the country.

In the preparation of this Tanzania standard assistance was drawn from;

Tanzania-based stakeholders producing compounded indigenous chicken feed.

In reporting, the results of a test or analysis made in accordance with this standard, if the final value observed or calculated, is to be rounded off, it shall be done in accordance with TZS 4 (see clause 2).

1 Scope

This Tanzania standard specifies requirements, sampling and test methods for compounded indigenous chicken feeds intended for use as supplementary feed for growers, finisher and layers.

This standard excludes other domesticated indigenous poultry.

2 Normative references

For the purpose of this Tanzania standard, the following references shall apply. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

TZS 4, Rounding off numerical values.

TZS 76, General method for determination of Arsenic silver diethyldithiocarbamate photometric method

TZS 268, General atomic absorption spectrophotometric method for determination of lead in food stuffs

TZS 538, Labelling of pre-packaged foods — General requirements

TZS 799, Food stuffs – Determination of aflatoxin B1 and the total content

TZS 821, Animal feeding stuffs – Preparation of test samples

TZS 2044, Animal feeding stuffs – Determination of ash insoluble in hydrochloric acid

TZS 2470, Animal feeding stuffs - Determination of lysine, methionine and threonine in commercial amino acid products and premixtures

TZS 2472, Animal feeding stuffs – Determination of acid detergent fibre (ADF) and acid detergent lignin (ADL) Contents

TZS 2473, Animal feeding stuffs - Determination of crude ash

TZS 2477-1 – Animal feeding stuffs - Determination of water-soluble chlorides content

TZS 2478, Animal feeding stuffs – Determination of moisture and other volatile matter content

TZS 2480, Animal feeding stuffs - Determination of nitrogen content and calculation of crude protein content - Part 1: Kjeldahl method

TZS 2482, Animal feeding stuffs, animal products, and faeces or urine - Determination of gross calorific value - Bomb calorimeter method

TZS 2487, Animal feeding stuffs - Determination of the contents of calcium, copper, iron, magnesium, manganese, potassium, sodium and zinc - Method using atomic absorption spectrometry

3 Terms and definitions

For the purpose of this standard, the following terms and definitions shall apply:

3.1 indigenous chicken feed

feed designed to be fed to chicken that has not undergone any selective breeding to improve genetic capacity for production of eggs or meat

3.2 indigenous grower diet

feed designed to be fed to indigenous chicken from week 9 to onset of lay

3.3 indigenous finisher diet

feed designed to be fed to indigenous chicken from 8 weeks to slaughter

3.4 indigenous layer diet

feed designed to be fed to indigenous chicken from onset of lay

4 Requirements

4.1 Raw materials

4.1.1 The ingredients/ raw materials used in the manufacture of compounded indigenous chicken feeds are given in Annex A. Other ingredients or mixtures may be used provided that they have been ascertained by inspection and or/ testing that they are suitable for use in compounded indigenous chicken feeds.

4.1.1.1 All ingredients and raw materials shall be of high quality and shall be of sound condition and not decomposed or deteriorated.

4.1.1.2 Ground raw soybean seed or soybean meal which has not been subjected to adequate heat treatment, shall not be used in poultry feed.

4.1.1.3 Ingredients of animal origin shall be sterilized before use.

4.1.1.4 Where standards have been declared for ingredients or raw materials, such ingredients or raw materials shall conform to such standards.

4.1.1.5 Vitamin preparations added to feed shall be in stabilized form.

4.1.1.6 Urea or any other nitrogenous substances shall not be added to or included in any poultry feed except such true protein and amino acids as required in this standard.

4.1.1.7 No antibiotics, drugs or hormones shall be added to compounded indigenous chicken feeds

4.2 General requirements

Compounded indigenous chicken feeds shall;

- a) be in form of a mash, crumbles or pellets.
- b) be free from harmful constituents such as metallic objects, adulterants, fungi, pathogens or insect infestation, and from fermented, musty, rancid or any other objectionable odours.
- c) be palatable.
- d) have a digestibility coefficient of not less than 65%.

4.3 Specific requirements

The compounded indigenous chicken feeds shall comply with the requirements specified in Table 1.

Table 1 – Specific requirements for compounded indigenous chicken feed in dry matter basis

s/no.	Parameter	Requirements	Test methods
1	Moisture, %, max.	13	TZS 2478
2	Metabolizable energy (Kcal/Kg) min.	2400	TZS 2482
3	Crude protein, %, min.	13	TZS 2480
4	Crude fibre, %, max	8	TZS 2472
5	Total ash, %, max,	12	TZS 2473
6	Acid insoluble ash, %, max,	5	TZS 2044
7	Calcium, %, min	0.8	TZS 2487
8	Available phosphorus, %, min	0.2	TZS 1486
9	Sodium, %, min	0.13	TZS 2487
10	Chloride (Cl), %, min	0.2	TZS 2477-1
11	Total Lysine, %, min	0.5	TZS 2470
12	Total Methionine, %, min	0.25	TZS 2470

4.4 Permitted feed additives

4.4.1 Additives in the following categories may be used in compounded Indigenous Chicken feeds: antioxidants; colourants; emulsifiers; stabilizers; thickeners and gelling agents; binders; anti-caking agents and coagulants; aromatic and appetizing substances and preservatives.

4.4.2 Compounded indigenous chicken feeds shall contain no added additives other than an additive of a name or description specified hereunder including other feed additives accepted internationally and approved by the World Organization for Animal Health (WOAH).

Table 2 – List of permitted feed additives and levels of use

S/No.	Name or description	Maximum content (mg/kg)
Antioxidants		
ii)	L-Ascorbic acid	Limited by GMP
iii)	Sodium L-ascorbate	
iv)	Calcium di (L-ascorbate)	
v)	5,6-Diacetyl-L-ascorbic acid	
vi)	6-Palmitoyl-L-ascorbic acid	
vii)	Tocopherol-rich extracts of a natural origin	
viii)	Synthetic alpha-tocopherol	
ix)	Synthetic gamma-tocopherol	
x)	Synthetic delta-tocopherol	
xi)	Propyl gallate	100, singly or in combination
xii)	Octyl gallate	150
xiii)	Dodecyl gallate	
xiv)	Butylated hydroxyanisole (BHA)	

Colorants

S/No.	Name or description	Maximum content (mg/kg)
i)	Capsanthin	Limited by GMP
ii)	Beta-opo-8-carotenal	
iii)	Ethyl ester of beta-opo-8-	
iv)	Carotenoic acid	
v)	Lutein	
vi)	Cryptoxanthin	
vii)	Cynthaxantin	
viii)	Zeaxanthin	Limited by GMP
ix)	Citranaxanthin*	Limited by GMP
x)	Patent Blue V	Limited by GMP
xi)	Acid brilliant green BS	

*Applicable to laying chicken

Emulsifiers, stabilisers, thickeners and gelling agents

S/No.	Name or description	Maximum content (mg/kg)
i)	Poly (ethylene glycol) (M.W 6 000)	300
ii)	Polyoxypropylene-polyoxyethelene polymers (M.W 6 800-9 000)	50
iii)	Propane-1,2-diol	36 000

Binders, anticaking agents and coagulants

i)	Lignosulphonates;	Limited by GMP
ii)	Colloidal silica;	
iii)	Silicic acid,	
iv)	precipitate and dried;	
v)	Sodium aluminosilicate,	
vi)	Sodium, potassium and calcium stearate;	
vii)	Kaolin and Kaslinitic clays free of asbestos- natural accruing mixtures of minerals containing at least 65% complex hydrated aluminium silicates whose main constituent in Kasolinite;	
viii)	Bentonite and other montmerillonitee clays;	
ix)	Vermiculite-hydrated silicate of magnesium,	Limited by GMP
x)	aluminium and iron;	
xi)	Citric acid;	
xi)	Kieselguhr (diatomaceous earth, purified);	
xiii)	Calcium silicate (synthetic);	
xiv)	Natural mixtures of steatite and chlorite free of asbestos.	

Preservatives

i)	sorbic acid, sodium sorbate, potassium sorbate, calcium sorbate;	Limited by GMP
ii)	folic acid;	
iii)	ammonium formate, sodium formate, calcium formate;	
iv)	acetic acid, potassium acetate, sodium diacetate;	
v)	latic acid, sodium lactate, potassium lactate, ammonium lactate, calcium lactate;	
vi)	propionic acid, sodium propionate, potassium propionate;	Limited by GMP
vii)	L-tartaric acid;	
viii)	ctric acid, sodium citrates, calcium citrates;	
ix)	orthophosphoric acid;	
x)	fumaric acid;	
xi)	DL-Malic acid.	

Aromatic and appetizing substances

i)	Saccharin	Limited by GMP
ii)	All natural products and corresponding synthetic products	

Sucrose esters or fatty acids

i)	mixture of sucrose esters of monocyl and diacylglycerols (sucroglycerides, polyglycerides);	
ii)	polyglycerol esters of non-polymerised edible fatty acids;	
iii)	propylene glycol esters of fatty acids (propane-1,2-diol esters of fatty acids);	
iv)	stearoyl-2-lactylic acid; sodium stearoyl-1,2-lacylate; calcium stearoyl-1,2-lactylate;	
v)	stearoyl-1-tartrate; glycerol poly (ethylene glycol) ricinolcate; dextrans; sorbitan monostearate;	
vi)	sorbitan tristearate; sorbitan monolaurate; sorbitan mono-eleate; sorbitan monopalmitate;	
vii)	partial polyglycerol esters of polycondensed fatty acids of	

	castor oil (polyglycerol polyricinoleate) polyoxyethylene (20) sorbitan monolaurate;	Limited by GMP
viii)	polyoxyethylene (20) sorbitan monopalmitate, polyoxyethylene (20) sorbitan monostearate	
ix)	polyoxyethylene (20) sorbitan trileate, polyoxyethylene (8) sorbitan stearate; and	
x)	polyoxyethylene (40) stearate.	

5 Contaminants

5.1 Heavy metals

Compounded indigenous chicken feed shall comply with the maximum limits for heavy metals specified in Table 3.

Table 3: Heavy metal limits for compounded indigenous chicken feeds

S/No.	Heavy metal	Limits	Test Method
i)	Mercury (Hg), mg/kg, max	0.1	TZS 2616
ii)	Lead (Pb), mg/kg, max	5.0	TZS 268
iii)	Arsenic (As), mg/kg, max	2.0	TZS 76
iv)	Cadmium (Cd), mg/kg, max	1.0	TZS 1581-2

5.2 Pesticide residues

The compounded indigenous chicken feeds shall comply with maximum limits of pesticide residues established by the Codex Alimentarius Commission for pesticides residues for this commodity.

5.3 Aflatoxins

Compounded indigenous chicken feed shall comply with the aflatoxin maximum limits as stated in Table 4.

Table 4 – Aflatoxin limits for compounded indigenous chicken feeds

S/No.	Aflatoxins	Limits (mg/kg, max)	Method of test
i)	Total aflatoxin	20	TZS 799
ii)	Aflatoxin B1	10	TZS 799

6 Hygiene

6.1 The production of pig feed concentrates shall observe Good Manufacturing Practice (GMP) and other food and feed safety guidelines such as Hazard Analysis and Critical Control Points (HACCP) and Codex Code of Practice on Good animal feeding.

6.2 Compounded indigenous chicken feeds shall comply with the microbiological limits specified in Table 5 when tested with the methods specified therein.

Table 5 — Limits for compounded indigenous chicken feed

S/N	Parameter	Limit	Test method
i.	<i>Salmonella spp.</i> in 25 g	Absent	ISO 6579-1
ii.	<i>Escherichia coli</i> cfu/g	Absent	ISO 16654
iii.	<i>Clostridium spp</i>	Absent	ISO 15213-2

7 Sampling and tests

7.1 Sampling

Sampling of the product shall be done according to TZS 34-1 and TZS 821 (see clause 2).

7.2 Tests

Testing of compounded indigenous chicken feed shall be done according to test methods prescribed in Tables 1, 3, 4 and 5 (see clause 2).

8 Packaging, marking and labelling

8.1 Packaging

In addition to the provisions of the TZS 538, compounded indigenous chicken feed shall be packed in containers which are of sufficient strength and sufficiently sealed so as to withstand reasonable handling without tearing, bursting or falling open during normal handling and transportation. The container shall be clean and not previously used.

8.2 Marking and labelling

8.2.1 Compounded indigenous chicken feed for each container shall be marked to display the following information:

- a) Name of product (compounded indigenous chicken feed);
- b) Name and physical address of the manufacturer;
- c) Net Weight content;
- d) Batch or code number;
- e) Date of manufacture shall be clearly shown on the container;
- f) Expiry date shall be clearly shown on the container;
- g) Instructions for use and storage;
- h) Nutrient content.

8.2.2 The container may also be marked with TBS Certification Mark.

NOTE – The TBS Standards Mark of Quality may be used by the manufacturers only under licence from TBS. Particulars of conditions under which the licences are granted may be obtained from TBS.

Annex A (normative)

Ingredients for poultry feeds

In the compounding of poultry feeds, various types of ingredients are used. This Annex lists some of the common ingredients which may be used in the manufacture of poultry feeds:

A.1 Grain products

- Maize
- Wheat
- Oat
- Barley
- Rice
- Sorghum

A.2 Grain by products

- Rice bran
- Rice bran (defatted)
- Rice polishing's
- Wheat feed (a mixture of wheat bran and wheat pollard)
- Maize bran
- Wheat bran
- Wheat germ
- Maize germ meal
- Pollard

A.3 Animal products

- Bone meal
- Blood meal
- Meat and bone meal
- Meat meal
- Offal meals (treated)
- Dried skimmed milk
- Dry whey
- Milk powder
- Cheese meal
- Poultry by-products (excluding manure)
- Hydrolyzed feather meal
- Fishmeal
- Fish processing wastes
- Whole milk

A.4 Oil seed cakes and meals

- Soybean cake or meal
- Coconut cake or meal (Copra cake)
- Ground nut cake or meal
- Palm kernel cake
- Sesame cake or meal

- Cotton seed cake or meal
- Cashew nut cake or meal
- Kapok cake or meal
- Sunflower seed cake or meal

A.5 Fats and oils

A.6 Tubers and related materials

- Potatoes (*Solanum tuberosum*)
- Sweet potato
- Cassava chips or dry cassava roots

A.7 Grasses and legumes

- *Moringa oleifera*
- Lucerne or Alfalfa meal
- *Leucaena* sp
- *Crotalaria* spp (marejea)
- *Stylosanthes gracilis*
- Pineapple bran

A.8 Waste materials and industrial by – products (Excluding grain by products)

- Brewer's yeast and dried grains
- Sugarcane molasses
- Raw sugar
- Cassava waste meal
- Brewery residues or wastes

A.9 Minerals, vitamins and supplements

- Common salt
- Calcium phosphate (di, mono, tri) phosphate – fluorine content not to exceed 0.2 %.
- Calcium lactate
- Manganese sulphate
- Phosphoric acid
- Limestone
- Vitamin and mineral premixes.
- Oyster shells