Farm Feeds Regulations, 2014

ARRANGEMENT OF SECTIONS

PART I

PRELIMINARY

Section

PART II

REGISTRATION

PART III

CONDITIONS OF SALE

PART IV

SAMPLING AND ANALYSIS

PART V

GENERAL

Section

IT is hereby notified that the Minister of Agriculture, Mechanisation and Irrigation Development has, in terms of section 21 of the Fertilizers, Farm Feeds and Remedies Act [*Chapter 18:12*], made the following regulations:—

PART I

PRELIMINARY

Title

1. These regulations may be cited as the Farm Feeds Regulations, 2014.

Interpretation

2. In these regulations—

"animal protein" means any protein source of animal origin;

"antibiotic" means derivatives of living microorganisms which kill or reduce growth of other microorganisms;

"composition" means all ingredients expressed as percent composition in an animal feed;

"constituent" means a component of a farm feed determined by the chemical means or the active component of any added vitamin, antibiotic, drug or hormone;

"crude protein" means protein and other nitrogenous compounds and is expressed as the total nitrogen content of a farm feed multiplied by a factor of 6.25;

"enzymes" means additives made to support digestion;

"form" means the appropriate form prescribed in the First Schedule;

"formulation" means the percentage of the ingredients included in a farm feed;

"growth promoter" means any substance that improves growth performance and feed efficiency of an animal;

"hormone" means any hormone or a synthetic substance having similar properties;

"ingredient" means any of the materials from which a farm feed is compounded;

"mixed feed" means a farm feed compounded of more than one ingredient and intended for the feeding of specific classes of livestock;

"mycotoxin" means a substance produced on plants by fungi that is toxic to animals;

"*per centum*" or "percentage" means *per centum* or percentage by mass;

"protein equivalent" means urea or biuret and is expressed as Nitrogen content of those ingredients multiplied by a factor of 6.25;

"ruminant" means any animal that chews the cud such as cattle and other small ruminants;

"sieve" means a sieve with openings ranging from 1.5 to 12mm diameter meant for characterising particle size distribution.

PART II

REGISTRATION

Introduction

A stockfeed intended for feeding animals at commercial level should be declared for registration whether it is for home consumption or not. It is the discretion of the registrar to do the exemptions where necessary. A stockfeed manufacturing plant should be registered.

Commercial level

Refers to feed that either directly is availed to the public.

Application for registration of stockfeed

3. (1) An application for the registration of a farm feed shall be made by—

(a) submission of a sample; and

(b) completing form F.F.1 specified in the First Schedule in triplicate and submitting it to registering officer; and

(c) accompanied by the container and a reproduction of any label or inscription on the container, in which the feed will be sold.

(2) Renewing of registration is made by sample submission and undergoing the same process as in subsection (1) and is done annually.

(3) The registering officer shall, on registering a farm feed or renewing the registration of a farm feed—

(a) issue a certificate of registration as the case may be; and

(b) return the certificate to the applicant.

(4) The registering officer shall consider an application for registration or for the renewal of a registration from outside Zimbabwe only if the application is submitted through a representative resident who may be carrying on business in Zimbabwe.

Pre-shipment inspection is mandatory for such registration

(5) An application for registration shall contain—

(a) the particulars set out in the Second Schedule; and

(b) a list of ingredients from which the farm feed is compounded and the percentage inclusion of each ingredient.

(6) Where proprietary names are used to describe the application for registration, such proprietary names shall be accompanied by a statement of the contents of the active components of such ingredients.

(7) Where a farm feed consists or is compounded of ingredients prescribed in the Third Schedule, such farm feed or ingredients shall comply with specifications prescribed in that Schedule.

(8) Where an applicant wishes to register constituents claimed to have nutritive or prophylactic value or growth-stimulating properties, other than those set out in the Second Schedule, the application for registration shall state—

(a) in the case of inorganic constituents other than salt, the percentage of the constituent expressed in terms of the elemental form; and

(b) in the case of salt, the maximum percentage expressed as NaCl; and

(c) in the case of added vitamins, antibiotics, drugs and hormones the content of the active constituent;

and shall be used at the levels accepted by the Medicines Control Authority of Zimbabwe and the registration number shall be quoted on the application for registration.

(9) An application for registration of a constituent referred to in subsection (8) shall be accepted at the discretion of the registering officer.

(10) An application for the registration or for the renewal of a registration of a farm feed containing any ingredient of animal origin shall contain a certificate stating that such substance has been sterilised in the manner prescribed in the Fertilizers and Farm Feeds (Sterilisation of Animal Products) Regulations, 1976, published in Rhodesia Government Notice 1127 of 1976.

Approval of brands

4. (1) Subject to the provisions of subsection (2) the registration of a farm feed under brand shall be subject to the approval of the registering officer, who shall, before registering any brand, consult the Registrar of Trade Marks.

(2) A farm feed shall not be registered under a brand if, in the opinion of the registering officer, the brand is—

(a) of an insufficiently distinctive nature; or

(b) so similar to a brand under which a farm feed has already been registered as to be liable to be mistaken for the other brand.

Application for registration of stockfeed manufacturing plant

5. An application for the registration of a stockfeed manufacturing plant shall be made by completing Form F.F.3 specified in the First Schedule and inspection of the plant by an inspector.

Appeals against decisions of registering officer

6. An applicant who decides to exercise his or her right of appeal under section 7 of the Act shall—

(a) request the registering officer, in writing, for his or her reasons for refusing the application, imposing conditions or cancelling the registration, and the registering officer shall within 14 days of receipt of the request, furnish the applicant, in writing, with his or her reasons; and

(b) within 56 days of being notified of the refusal, imposition of conditions or cancellation, appeal to the Minister, in writing, against the decision of the registering officer.

PART III

CONDITIONS OF SALE

Nature of feed originate

7. (1) all local manufacturers of farm feed shall ensure that—

(a) compulsory mycotoxin screening and analysis must be conducted annually; and

(b) they must submit sample and declare nutritional composition for registration; and

(c) plant inspection must be conducted within the registration period; and

(d) they get certificate of compliance to regulations issued to inspected plants.

(2) All importers of farm feeds shall ensure that—

(a) they comply with the requirements of section 3 of these regulations; and

(b) compulsory pre-shipment inspection, at the expense of the applicant, is conducted; and

(c) they submit, through inspectors, samples to the laboratory for analysis; and

(d) they make all necessary declaration of growth promoters, antibiotics, enzymes and GMO status before import permit is issued; and

(e) compulsory mycotoxin analysis, is conducted prior to registration; and

(f) they incorporate Zimbabwean registration number, name and physical address of the local distributor, and details of manufacturer on the label.

(3) All exporters of farm feeds shall ensure that—

(a) they comply with the requirements of section 3 of these regulations; and

(b) the feed and feedmill must be registered prior to application for export permit.

Restrictions

8. (1) No person shall register or sell any farm feed which—

(a) except in the case of a liquid farm feed or blood meal, contains more than $12^{1}/_{2}$ *per centum* of moisture; or

(b) is manufactured or intended for consumption by any animals other than cattle or sheep and which contains urea or biuret; or

(c) is manufactured or intended for consumption by pigs or poultry and which, when prepared according to the instructions of the manufacturer, will contain more than 1 *per centum* of salt expressed as NaCl;

(d) is contaminated with *Bacillus anthracis, Salmonella organisms, Clostridium botulinum, Clostridium chauvoie* or other pathogenic, putrefactive or spoilage organisms in quantities which are likely to endanger the health of livestock or poultry;

(e) contain synthetic growth promoters and prophylactic constituents unless feed is declared to be registered as "Prescription Feed". Only naturally, derived growth promoters are permitted;

(f) is ruminant feed but contain traces of animal protein.

Labelling of containers

9. (1) For the purposes of section 8 of the Act and subject to the provisions of this section, the container in which the farm feed is sold shall be durably and legibly marked or labelled in English or any of the vernacular languages with—

(a) the brand name under which the farm feed is registered; and

(b) the particulars specified in the Second Schedule, the numerical values of which shall be the same as the relevant information contained in the application for registration;

and if desired the name and address of the person in whose name such feed is registered may be similarly given.

(2) In the case of protein concentrate feeds, the label shall bear a statement of the proportions in which it is recommended that the concentrates shall be fed with grain meal.

(3) In the case of poultry mashes, the label shall state whether the feed is intended for feeding with or without scratch grain.

(4) Where a farm feed contains urea, biuret, antibiotic, drugs or hormones the label shall, if required by the registering officer in terms of section 4(4) of the Act, as a condition of registration bear—

(a) a statement giving instructions for use; and

(b) an appropriate warning.

(5) Where a label or inscription upon a container claims a content of any constituent, other than those set out in the Second Schedule, the content shall be registered and in the case of—

(a) inorganic constituents, the elemental content shall be stated except for salt where the maximum percentage, expressed as NaCl shall be stated; and

(b) added vitamins, antibiotics, drugs and hormones, the content of the active constituent shall be stated;

and shall be used at the levels accepted by the Medicines Control Authority of Zimbabwe and the Registration number shall be quoted on the application for registration.

(6) Any commercial bags should bear a registration number of the feed under consideration.

(7) Best before dates should be legibly inscribed on the carrier bag.

Invoices

10. The invoice referred to in section 10 of the Act shall set forth—

(a) the weight of the farm feed sold; and

(b) the brand and name under which the farm feed is registered; and

(c) in the case of a farm feed not packed in containers, the particulars required by section 8.

PART IV

SAMPLING AND ANALYSIS

Sampling procedure

11. (1) The manner of taking samples of farm feeds for the purposes of examinations or analysis, in terms of section 14 of the Act, shall be in accordance with the provisions of this section.

(2) Where the farm feed is packed in containers, the samples shall be taken from different parts of the whole quantity by means of a sampling probe not less than fifteen millimeters in diameter and if the quantity of the farm feed—

(a) does not exceed three tonnes, from not less than two unopened containers, per tonne or part thereof; and

(b) exceeds three tonnes, from one additional unopened container for every additional tonne or part thereof:

Provided that there is no case need samples be taken from more than twenty containers.

(3) Where the farm feed is not packed in containers, not less than two samples per tonne or part thereof shall be taken from different parts of the whole quantity by means of a sampling probe or by such other means as will ensure, as far as is practicable, the taking of a representative sample:

Provided that in all not less than six samples shall be taken, but not more than fifty samples need be taken.

(4) Where the farm feed consists of material that cannot be satisfactorily sampled with a sampling probe, portions shall be taken by some other suitable means from the selected containers or, if it is not in containers from different parts of the farm feeds.

(5) The several quantities taken for sampling in terms of this section shall, after any matted portions have been torn up, be thoroughly mixed together, formed into a flattened heap, and quartered. Two diagonally opposite quarters shall then be rejected and the remainder remixed and requartered. This procedure of mixing, quartering and rejecting shall be repeated until the gross sample has been reduced to approximately three kilograms in mass, and it shall then be dealt with as specified in section 14(3) of the Act.

Analysis and sampling at the request of a purchaser

12. (1) The purchaser of a farm feed may request an inspector to sample the farm feed in the manner prescribed in section 14(3) of the Act and in section 9.

(2) Any analysis done in terms of subsection (1) at the request of the purchaser shall be charged at the appropriate fee published, from time to time, by notice in the *Gazette.*

Certificate of sampling

13. The certificate referred to in section 14(3) of the Act shall be on form F.F.2 as specified in the First Schedule.

Certificate of analysis

14. The analyst to whom a sample of farm feed has been submitted in terms of section 14(3) of the Act shall state the results of the analysis on form F.F.4 as specified in the First Schedule.

Limits of variation

15. (1) A farm feed shall be deemed to comply with the provisions of section 8(1)((d) of the Act if, upon analysis, the composition is found not to differ from the registered composition by more than the variations set out in the Fourth Schedule.

(2) Where no limit of variation is prescribed in the Fourth Schedule, the variation allowed shall be subject to any condition the registering officer may impose under section 4(4) of the Act.

Method of analysis

16. The methods of analysing farm feeds for the purposes of the Act shall be those set out in the Fifth Schedule.

PART V

GENERAL

Inspections

17. Inspections in terms of these regulations shall be conducted in the manner prescribed in the Seventh Schedule.

Fees

18. Fees in terms of these regulations shall be as specified in the Eighth Schedule.

Offences

19. (1) No person shall, after registration—

(a) add to or remove from any farm feed any substance or portion so as to alter its composition or formulation with the intention that the farm feed so treated may be sold under its name in an altered state;

(b) knowingly sell any farm feed under its name but altered in its composition or formulation.

(2) No person shall use any figures, numerals or words other than those required or permitted to be used by section 7 on any label or mark affixed to or inscribed upon any container in which a farm feed is sold, save as is otherwise provided in these regulations or in terms of the regulations made under the Trade Measures Act [*Chapter 14:23*], or with the approval of the registering officer.

(3) No person shall—

(a) import, manufacture, purchase or sell any animal products intended for consumption by ruminants; or

(b) use by-products of animal origin in ruminant farm feeds.

(4) Any person who contravenes the provisions of this section and other provisions of these regulations shall be guilty of an offence and liable to one or more fines specified in the Eighth Schedule.

Repeals

20. The regulations specified in the Sixth Schedule are repealed.

FIRST SCHEDULE (*Sections 2, 3, 5, 13 and 14*)

PRESCRIBED FORMS

Form F.F.1

FERTILIZERS, FARM FEEDS AND REMEDIES ACT [*CHAPTER 18:12*]

PART I

APPLICATION FOR THE REGISTRATION OF A FARM FEED

To be submitted in triplicate to the registering officer, Ministry of Agriculture, Mechanisation and Irrigation Development

1. Name of applicant: .....
2. Address of applicant: .....
3. Brand name: .....
4. Name of farm feed: .....
5. Composition—

   Crude protein (nitrogen x 6.25) ..... *per centum*

   Protein equivalent..... *per centum*

   Fat (ether extract)..... *per centum*

   Crude fibre..... *per centum*

   Calcium (Ca)..... *per centum*

   Phosphorus (P) ..... *per centum*

   ..... *per centum*

   ..... *per centum*

6. Ingredient of which the farm feed is compounded and their percentage inclusions (If trade names are used a certificate must be attached to this application form giving the contents of the active components of ingredients so described):.....

   .....

   .....

   .....

   .....

7. Period of registration for which application is made:.....
   .....20.....to the.....20.....

I certify that, to the best of my knowledge any ingredient contained in the farm referred to above has been sterilized in the manner prescribed in the Fertilizer and Farm Feeds (Sterilization of Animal Products) Regulations, 1963.

Signature .....

Note:—The percentage of crude protein, protein equivalent, fat, crude fibre, calcium, phosphorus, salt shall be stated to the first decimal place.

PART II

For Official Use Only

(i) Animal nutritionist remarks: .....:.....
.....
.....

(ii) Decision: .....
.....

Date: ..... Signature: .....

PART III

For official use only

No.....

I hereby certify that the feed referred to in Part I has been registered

Date: ..... Registering officer: .....

Form F.F.2

FERTILIZERS, FEEDS AND REMEDIES ACT [*CHAPTER 18:12*]

CERTIFICATE OF SAMPLING

To be submitted in triplicate

I hereby certify that the accompanying are samples of.....
.....taken by me on.....at
(full address).....
from stock in charge of.....
.....
in the presence of (state name and address of witness).....
.....
The following further particulars are given in connection with the samples—

Sample No.	Brand	Name	Quantity represented by sample
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Other particulars: .....
.....
.....

....
(*Signature of witness*) (*Inspector*)

Place:.....

Date:.....

Note:— A copy of this certificate shall be handed or forwarded to the owner or seller or to his agent. The second copy shall be forwarded to the analyst and the third copy shall be retained by the inspector.

Form F.F. 3

FERTILIZERS, FEEDS AND REMEDIES ACT [*CHAPTER 18:12*]

APPLICATION FOR REGISTRATION OR RENEWAL OF REGISTRATION OF STOCKFEED MANUFACTURING PLANT

STOCKFEEDS PLANT INSPECTION REPORT

To be submitted in triplicate

This report is to be completed by the Company representative prior to the Inspection and verified by the designated Inspector and is complete upon stamping and signing by both parties at the end of the tour of the plant and on provision of any supporting documents as the Inspection may demand.

Name of applicant (Company name): .....

Address: .....

Address of plant: .....

Nature of activities to be carried out in the plant: .....

.....

.....

Owner of plant: .....

Address of owner: .....

Please state weather you are applying for—

(a) first registration of plant: .....

(b) annual renewal of registration plant: .....

FOR OFFICIAL USE ONLY

Inspection by: ..... Date: .....

Company representative .....

Is there a clear separation of different feed ingredients in storage .....

Is there use of animal protein .....

Are there sterilization certificates available for raw materials of animal origin

Does the feedmill have a clear fumigation system for pests? .....

Does the feedmill have a clear rodent control program? .....

.....

Does the feedmill have a clear Bio-Security system in place at the entrances?

HORMONES & ENZYMES IN USE IN FEEDS:

(i).....

(ii).....

(iii).....

(iv).....

(v).....

(vi).....

(vii).....

(viii).....

(ix).....

OVERALL COMMENT BY INSPECTOR:

.....

.....

.....

.....

.....

.....

.....

OVERALL COMMENT BY INSPECTOR:

.....

.....

.....

.....

.....

INSPECTOR'S SIGNATURE: ..... DATE: .....

FEEDMILL AUTHORITY'S SIGNATURE: ..... DATE: .....

Form F.F.4

FERTILIZER, FARM FEEDS AND REMEDIES ACT [*CHAPTER 18:12*]

CERTIFICATE OF ANALYSIS OF A FARM FEED

To be submitted in triplicate

I hereby certify that I received on the.....day of.....20.....

From .....a sample of.....

BRAND	NAME OF FARM FEED	SAMPLED AT	SAMPLE No.	LABORATORY No.

ANALYTICAL REPORT

	ACTUAL ANALYSIS	REGISTERED ANALYSIS
CRUDE PROTEIN (NITROGEN X 6.25)	*PER CENTUM*	*PER CENTUM*
.....		
PROTEIN EQUIVALENT.....		
FAT (ETHER EXTRACT)		
.....		
CRUDEFIBRE.....		
CALCIUM (CA).....		
PHOSPHORUS (P).....		

Observations: .....

.....

.....

Date:..... .....

(Analyst)

SECOND SCHEDULE (*Sections 3 and 7*)

INFORMATION TO BE GIVEN ON APPLICATIONS FOR REGISTRATION, INVOICES AND CONTAINERS

PART I

Farm feed	*Particulars to be given on application for registration and containers or invoices*
Blood meal and dried yeast	The percentage of crude protein.
Meat meal, liver meal, maize germ meal and dried milk products	The percentage of crude protein and fat.
Ground cereal grains, malt culms, dried brewer's grains, dried msese, butu, cereal grain by-products not mentioned in this schedule, dried citrus pulp and lucerne meal	The percentages of crude protein and crude fibre.
Ground oilseeds, oil cakes and meals, hominy chop and cotton bran	The percentages of crude protein, fat and crude fibre.
Molasses	The percentage of sugar (both reducing and non-reducing forms of sugar expressed as sucrose).
Molasses feeds	The percentage of sugar (both reducing and non-reducing forms of sugar expressed as sucrose) and crude fibre.
Fish meal and whale meal	The percentages of crude protein, fat, calcium (expressed as Ca), phosphorus (expressed as P) and salt expressed as NaCl.
Meat and bone meal, bone meal	The percentages of crude protein, fat, calcium (expressed as Ca), phosphorus (expressed as P) and salt expressed as NaCl.
Mineral feeds	The minimum and maximum percentages of the principal constituents (expressed in the elemental form except for salt, which shall be expressed as NaCl)

PART II

Farm feed	*Particulars to be given on applications for registration*	*Particulars to be given on containers or invoices*
Mixed feeds for sheep and cattle	The percentages of crude protein, fat, crude fibre and ash; where a farm feed contains added urea or biuret, the percentage of protein equivalent	The percentages of crude protein, fat, crude fibre and ash; and, where a farm feed contains— A. urea or biuret, the percentage of protein equivalent, which shall be stated next to the percentage of crude protein; and B. antibiotics, drugs or hormones, such statement as the registering officer may require in terms of subsection (4) of section 7
Mixed feeds for poultry	The percentage of crude protein, fat, crude fibre, calcium (expressed as ca), phosphorus (expressed as p), salt (expressed nacl) and ash	The percentages of crude protein, fat, crude fibre, calcium (expressed as ca), phosphorus (expressed as p) and ash: and, where a farm feed contains antibiotics, drugs or hormones, such statement as the registering officer may require in terms of subsection (4) of section 7.
Other mixed feeds not mentioned elsewhere in this schedule	The percentages of crude protein, fat, crude fibre, salt (expressed as nacl)	The percentages of crude protein, fat, crude fibre, and ash; and, where a farm feed contains antibiotics, drugs or hormones, such statement as the registering officer may require in terms of subsection (4) of section 7.

Note:— The percentage of crude protein, protein equivalent, fat, crude fibre, calcium, phosphorus, salt and ash shall be stated to the first decimal place.

THIRD SCHEDULE (*Section 3)*

SPECIFICATIONS

Farm feed or ingredients	*Specifications*
Blood meal	Ground sterilized, artificially-dried blood containing not less 80 *per centum* crude protein and not more than 15 *per centum* moisture.
Maize bran	The outer coating of the maize grain with little or none of the starchy part or germ.
Hominy chop	A mixture of maize bran, maize germ, and some starchy part and containing not less than 4 *per centum* ether extract (fat).
Ground limestone	A product consisting of not less than 80 *per centum* calcium carbonate ($CaCO_3$) and ground so that 50 *per centum* passes through a wire cloth sieve, mesh No 10.
Molasses feed	A mixture of molasses and other ingredients derived from sugarcane, with or without added minerals.

FOURTH SCHEDULE (*Section 15)*

LIMITS OF VARIATION

Farm feed	*Limits of variations*
Blood meal and dried yeast	Crude protein not more than 1/10th above or 1/20th below the registered percentage.
Ground cereal grains, malt culms, dried brewers' grains, dried msese, butu, cereal grain by-products not mentioned elsewhere in this schedule, dried citrus pulp and lurcene meal	Crude protein not more than 1/6th above or 1/20th below the registered percentage.
Meat-bone-meal	Crude fibre not more than 1/8th above or 1/4th below the registered percentage. Crude fibre not more than 1/6th above or 1/20th below the registered percentage. Fat; not more than 1/8th above or below the registered percentage. Calcium and phosphorus not more than 1/5th below the registered percentage.

Molasses	Sugar; not more than 1/20th below the registered percentage.
	Sugar; not more than 1/10th below the registered percentage.
	Crude fibre; not more than 1/8th above or 1/4th below the registered percentage
Molasses feeds	All constituents; not less than the registered minimum percentages and not more than the registered maximum percentages.
	Crude protein and protein equivalent, not more than 1/6th above or 1/20th below the registered percentages.
Mineral feeds	Crude fibre; not more than 1/8th above or 1/4th below the registered percentages.
Farm feeds not mentioned elsewhere in this schedule	Fat; not more than 1/8th above or below the registered percentage with a minimum of 1.0 *per centum*.
	Calcium and phosphorus; not more than 1/10th above or below the registered percentage with a minimum of 0.2 *per centum* ca or p and a maximum of 1.0 *per centum* ca or p.
	Salt; not more than 1/10th above or below the registered percentage with a minimum of 0.5 per centum nacl; provided that in feeds for pigs and poultry the salt content of the feed when prepared according to the instructions of the manufacturer shall not exceed 1 *per centum*.
	Ash; not more than 2.5 *per centum* above the registered percentage.

Note.— Where no limit of variation is stated, the variation allowed shall be subject to such condition as the registering officer may impose under subsection (4) of section 4 of the Act.

FIFTH SCHEDULE (*Section 16)*

METHODS OF ANALYSIS

Preparation of the samples for analysis

1. (1) If the sample contains any extraneous matter or material that cannot be conveniently ground, weigh the whole sample, remove and weigh the extraneous matter or material, allow for the portion removed in calculating the results of analysis.

(2) Where the sample is in a fine condition and passes a sieve having apertures one millimetre square, mix the sample thoroughly.

(3) Where the sample is in a course condition or contains larger pieces of material. Grind so that the whole sample passes a sieve having apertures one millimetre square.

(4) Where the sample is too moist to be ground in its original condition, mix the sample thoroughly and remove a portion for a moisture determination. Dry the remaining portion at 100°C. Express the results of analysis of the dried sample in terms of the sample as received.

(5) Where the sample is of such a nature that it cannot be conveniently ground, mix the sample thoroughly.

(6) Store an approximately 250-gm. Portion of the prepared sample in a non corrodible container with an air- tight closure.

Determination of moisture

2. Weigh to the nearest milligramme about 5gm. Of the sample, heat at 100°C for 2 to 3 hours, cool in a dessicator and weigh. Reheat for another hour, cool and reweigh. If the difference in weights exceeds 10mgm, continue the heating and cooling procedure until a weight constant within 2 mgm. is attained. Calculate the total loss of weight as a percentage of the original weight and regard as moisture.

Determination of ash

3. Weigh to the nearest milligram about 2gm of the sample and proceed as in paragraph 2 until the mass is constant within 2mg.Ignite in a muffle at 600°C for two hours or until combustion is complete whichever is the longer, cool in the desiccator and weigh with the least possible delay. Calculate the residue left after ignition as a percentage of the original mass and regard as ash.

Determination of crude protein

4. (1) Reagents to be used—

Concentration sulphuric acid.

Mercury or mercuric oxide.

Anhydrous sodium sulphate or potassium sulphate.

Sodium thiosulphate.

Paraffin wax.

50% sodium hydroxide solution-Dissolve 500gm. Of sodium hydroxide in water and dilute to one litre.

N/5 sulphuric or hydrochloric acid.

N/5 sodium hydroxide solution-Carbonate-free.

Methyl-red indicator solution-Screened or unscreened.

Sucrose-Analytical reagent grade.

Procedure—

(2) Weigh to the nearest milligram about 2mg of the sample and transfer to a Kjeldahl flask. Add 25 ml of concentrated sulphuric acid, 0,4gm of mercury or 0.5gm of mercuric oxide, and 10gm of anhydrous sodium sulphate or potassium sulphate. Heat gently until frothing ceases, increase the heat and continue the digestion until the liquid is practically colourless. Continue to heat for a further hour, avoiding local over-heating. If frothing is excessive, add about 0.5gm of paraffin wax.

To the cooled digest add water to a total volume of about 250ml.Add 5gm of sodium thiosulphate and mix. Add sufficient 50per cent sodium hydroxide to neutralize the acid and about 10ml in excess, add a few small granules of zinc to prevent bumping, immediately connect to a distillation apparatus, and mix well. Heat until not less than 150ml has distilled, absorbing the ammonia in an appropriate volume of N/5 acid. Titrate the excess of acid with N/5 sodium hydroxide solution, using methyl-red indicator .Carry out a blank test on the reagents, using 1mg of sucrose in place of the sample. Express the results in terms of crude protein.

1ml. N/5acid-0.01750gm. crude protein.

Determination of protein equivalent

Reagents to be used

5. (1) Urease solution—

(a) to standardize the urease, determine its alkalinity by dissolving 0.1gm.in 50ml of water and titrating with N/10 hydrochloric acid, using methyl-red indicator. Then prepare a neutralized 1% solution to 0.1gm. portion of pure urea and proceed with the enzymatic digestion and distillation as described in the procedure below;

(b) to prepare the urease solution for the actual determination, dissolve urease in water in such a proportion that 10ml. Of the neutralized solution will convert at least 0.1gm of pure urea under the condition described below.

(2) The solution must be freshly prepared for each determination.

(3) Heat to boiling 200ml.of 1.25%sulphuric acid and add to the flask. Connect the flask to a reflux condenser and bring the contents of the flask to boiling within one minute, then boil gently and continuously for 30 minutes. The

contents of the flask should be rotated at 5minute intervals during the boiling period. Care should be taken to ensure that that no material is out of contact with the boiling liquid.

(4) At the end of 30 minutes immediately filter with suction through a Whatman No.541 filter-paper supported on a pre-warmed Hartley funnel or through an equivalent filtering system. The time of filtration for the 200ml. Of liquid should not exceed 10 minutes? Wash the residues with boiling water until the washings are no longer acid.

(5) Heat to the boiling 200ml. Of 1.25% sodium hydroxide solution and with this wash the residue back into the original conical flask.

(6) Boil for 30 minutes observing the precautions stated for the acid treatment.

(7) At the end of 30 minutes, immediately filter with suction through a suitable filter-crucible. Wash the residue once with boiling water, then with hot 1%hydrochloric acid, and then again with boiling water until the washings are no longer acid. Finally wash three times with ethyl alcohol.

(8) Dry the crucible and residue for 2hours at 100°C., cool and weigh, Ignite, until free from carbonaceous material, at a temperature not exceeding 600°C., cool and weigh.

(9) Express the loss in weight on ignition of the dried residue as a percentage of the original sample weight.

Determination of ether extract (fat)

Reagents to be used:

6. (1) Petroleum ether with a boiling range of 40°C. to 60°C.

Procedure

(2) Weigh to the nearest milligramme about 2gm. of the sample and transfer to an extraction thimble. Place the thimble in an extraction apparatus and allow it to stand in petroleum ether for at least five hours. After evaporation of the solvent, dry the fat for 30 minutes at 100°C.

(3) Calculate the weight of fat as a percentage of the sample weight.

Determination of crude fibre

7. (1) Reagents to be used—

1.25% Sulphuric acid-Prepare a sulphuric acid solution of 0.255 normality.

1.25% Sodium hydroxide solution-Prepare a solution containing 12.5gm. per litre of sodium hydroxide.

1% Hydrochloric acid

Ethyl alcohol (95%V/V).

(2) Procedure—

(a) weigh to the nearest milligramme about 2 gm of the sample and extract the bulk of the fat. (The residue from the ether—extract determination may be used);

(b) transfer to a conical flask of such dimension that 200mi. Of liquid will form a layer one-one and a half (1-11/2) inches deep;

(c) heat to boiling 200ml of 1.25% sulphuric acid and add to the flask. Connect the flask to a reflux condenser and bring the contents of the flask to boiling within one minute, then boil gently and continuously for 30 minutes. The contents of the flask should be rotated at 5-minute intervals during the boiling period. Care should be taken to ensure that no material is out of contact with the boiling liquid;

(d) at the end of 30 minutes immediately filter with suction through a Whatman No.541 filter paper supported on a pre-warmed Hartley funnel or through an equivalent filtering system. The time of filtration for the 200ml. Of liquid should not exceed 10 minutes? Wash the residue with boiling water until the washings are no longer acid;

(e) heat to boiling 200ml. Of 1.255 sodium hydroxide solution and with this wash the residue back into the original conical flask;

(f) boil for 30 minutes observing the precautions stated for the acid treatment;

(g) at the end of 30 minutes immediately filter with suction through a suitable filter- crucible. Wash the residue once with boiling water, then with hot 1% hydrochloric acid, and then again with boiling water until the washings are no longer acid. Finally wash three times with ethyl alcohol;

(h) dry the crucible and residue for 2hours at 100°C., cool and weigh. Ignite until free from carbonaceous material, at a temperature not exceeding 600°C., cool and weigh;

(i) express the loss in weight on ignition of the dried residue as a percentage of the original sample weight.

Determination of calcium

8. (1) Reagents to be used—

Dilute ammonium hydroxide solution—Dilute 1 volume of ammonium hydroxide solution (S.G. 0.91) with 1 volume water

Glacial acetic acid

Dilute acetic acid—Dilute 1 volume of glacial acetic acid with 2 volumes of water

Saturated ammonium oxalate solution

Saturated calcium oxalate solution

Dilute sulphuric acid—Add 1 volume of concentrated sulphuric acid to 9 volumes of water

N/10 potassium permanganate

Bromo-cresol green indicator

(2) Procedure—

(a) weigh to the nearest milligramme about 2gm. of the sample into a silica basin. Ignite at a temperature not exceeding 600°C, until all organic matter is destroyed;

cool, moisten with a little water and 25ml of 1:4 hydrochloric acid and 1ml of concentrated nitric acid, taking suitable precautions to avoid loss by effervescence;
heat to incipient boiling and keep at this temperature for 10 minutes. Filter and wash into a beaker and then add 0.5ml. of glacial acetic acid;

heat the solution to boiling and add slowly from a burette 25ml. of saturated ammonium oxalate solution. While still hot add dilute ammonium hydroxide solution until the suspension is light apple-green in colour (pH 3.9-4.0); Allow to stand for at least four hours (preferably overnight); filter through a 9-cm Whatman No 44 paper or similar filtering system and test the filtrate with saturated ammonium oxalate solution for completeness of precipitation. Wash the precipitate ten times with saturated calcium oxalate solution;

transfer the precipitate to the original beaker and slowly add 10ml. of warm dilute sulphuric acid; dilute to 150ml with water, heat to 70-80°C, and titrate with N/10 potassium permanganate until a faint pink colour persists for 30 seconds;

(b) where 2gm. of the sample contains more than 50mgm. of calcium (Ca), the ash extract may be made up to a definite volume and a suitable aliquot taken.

Determination of phosphorus

9. (1) Reagents to be used—

calcium acetate solution—Dissolve 120gm. calcium acetate in 1 litre of water and slowly add 1 litre of alcohol;

dilute hydrochloric acid—dilute one volume of concentrated hydrochloric acid with three volumes of water.

20% sodium hydroxide.

Surface-active agent—a 0.5% solution of sodium dodecyl benzene sulphonate is suitable.

Citric-molybdic acid solution—Stir 54mg. of molybdic anhydride (MoO3) with 200ml. of water, add 1 1gm. of sodium hydroxide and stir the mixture whilst heating until the molybdic anhydride dissolves. Dissolve 60mg. of citric acid in 250-300ml. of water and add 140ml. of concentrated hydrochloric acid. Pour the molybdate solution into the acid solution, stirring throughout the addition. Then cool and, if necessary, filter the solution through a paper-pulp pad. Dilute the solution to 1 litre. If the solution is slightly green or blue in colour, add drop-wise a dilute (0.5 or 1.0%) solution of potassium bromated until the colour is discharged. This reagent should be kept in the dark.

Quinoline solution—Measure 60ml. of concentrated hydrochloric acid and 300–400ml of water into a 1-litre beaker and warm to 70–80°C. Pour 50ml. of quinoline in a thin stream into the diluted acid, whilst stirring. When the quinoline has dissolved, cool the solution, dilute to 1 litre and, if necessary, filter through a paper-pulp pad.

N/2 sodium hydroxide solution—Carbonate-free.

N/2 hydrochloric acid.

N/10 sodium hydroxide solution—Carbonate-free.

N/2 hydrochloric acid.

Indicator solution—Mix 3 volumes of thymol blue solution and 2 volumes of phenolphthalein solution, prepared as follows—

(a) thymol blue solution—Dissolve 250 mgm. Thymol blue in 5.5ml. of N/10 sodium hydroxide solution and 125ml. of alcohol. Dilute with water to 250ml;

(b) phenolphthalein solution—Dissolve 250mgm. Phenolphthalein in 150ml. alcohol and dilute with water to 250ml.

(2) Procedure—

(a) weigh to the nearest milligramme about 2gm. of the sample (containing not more than 15mgm P) into dish of about 5cm diameter and add 10ml of calcium acetate solution. Dry the contents of the dish slowly and ignite at a temperature not exceeding 550°C until all organic matter destroyed,

cool, moisten with a little warm water and add a mixture of 25ml of 1:4 hydrochloric acid and 1ml of concentrated nitric acid, taking

suitable precautions to avoid loss by effervescence. Heat to incipient boiling and keep at this temperature for 10 minutes. Filter and wash into 500ml stoppered conical flask marked at 100ml and 150ml. Add 20% sodium hydroxide solution drop-wise until a faint permanent precipitate is formed. Dissolve the precipitate by the drop-wise addition of dilute hydrochloric acid but avoid excess;

dilute to 150ml and add 50ml of citric-molybdic acid reagent. Heat the solution almost to boiling point, maintain at this temperature for 3 minutes and then bring to the boil. Slowly add 25ml of the quinoline solution with constant swirling throughout, the first few millilitres being added drop-wise, the rest in a slow stream. Keep the solution boiling gently during the addition. Immerse the flask in boiling water for 5 minutes, then cool in running water,

filter the contents of the flask with suction on a paper-pulp pad and wash the flask, precipitate and filter with successive small quantities of cold water until free from acid. Transfer the filter pad and precipitate to the original flask and add water to a volume of 100ml. Stopper the flask and shake vigorously until the pulp and precipitate are completely dispersed. Add a measured volume of N/2 sodium hydroxide solution sufficient to dissolve the precipitate and leave a few millilitres in excess. (To facilitate the dispersal of the precipitate after the addition of N/2 sodium hydroxide solution, a few drops of the surface-active agent may be added, if necessary.) Add 0.5-1.0ML OF THE INDICATOR solution and titrate the excess of sodium hydroxide with the N/2 hydrochloric acid until the indicator changes from violet to green-blue and then very sharply to yellow at the end point,

carry out a blank determination on all the reagents, omitting only the sample, and using N/10 standard alkali and acid for titration. Calculate the blank in terms of N/2 alkali and subtract it from the original result,

calculate the amount of phosphorus (P) in the portion taken for analysis from the factor:
1.0ml N/2 sodium hydroxide = 0.5961 mgm P;

(b) where 2gm of the sample contains more than 10mgm of phosphorus (P), the ash extract may be made up to a definite volume and a suitable aliquot taken.

Determination of sodium chloride

10. (1) Reagents to be used—

Calcium oxide.

Dilute nitric acid-Dilute 1 volume of concentrated nitric acid with 1 volume of water.

Nitrobenzene-Analytical reagent grade.

N/10 silver nitrate solution.

N/10 potassium or ammonium thiocyanate solution.

Ferric alum indicator solution-Prepare a saturated solution of ferric ammonium sulphate and add a small quantity of dilute nitric acid.

(2) Procedure—

Weigh to the nearest milligramme 4 gm.of the sample in a dish, mix with 1gm.of finely divided calcium oxide and sufficient water to give a thin paste. Dry the mixture carefully and ignite at a temperature not exceeding 550°C. until all organic matter is destroyed.

Cool, moisten with a little water and dissolve the ash in 25ml. of dilute nitric acid.

Filter and wash into a 250ml. conical flask and dilute with water to 150ml. When cool, add an excess of N/10 silver nitrate, 2-3ml. of nitrobenzene and 1ml. of ferric alum indicator. Shake vigorously to coagulate the precipitate. Titrate the residual silver nitrate with N/10 potassium or ammonium thiocynate solution until a faint reddish-brown colour persists.

1ml. N/10 silver nitrate=5.845mgm.NaCl.

Determination of sugar

11. (1) Reagents to be used—

Potassium oxalate solution- Dissolve 50gm.of potassium oxalate in water and dilute to 1 litre.

Zinc acetate solution-Dissolve 219gm.of crystallized zinc acetate and 30ml. of glacial acetic acid in water and dilute to 1 litre.

Potassium ferrocyanide solution- Dissolve 106gm.of crystallized potassium ferrocyanide in water and dilute with 250ml.of water.

10% sodium hydroxide solution- Dissolve 100gm. of sodium hydroxide in water and dilute to 1litre.

Fehling's solution-Mix equal volumes of a solution of copper sulphate and a solution of sodium potassium tartrate prepared as follows- in water and dilute to 1 litre.

Note.—The strength of Fehling's solution should be such that 10ml. is equivalent to 0.0525 gm. of invert sugar. It should be checked by titrating with a solution of pure sucrose as described in the note following paragraph (2) (b) (iii).

Methylene blue solution-Dissolve 2.5gm.of methylene blue in water and dilute to 250ml.

(2) Procedure:

(a) Preparation of the sample—

(i) When the substance is solid form—

Weigh to the nearest 10mgm. About 20gm. of the sample or a sufficient quantity to contain about 2gm. Of sugar. Grind in a mortar with hot water (temperature not to exceed 60°C) and transfer with the aid of water to a 250ml. beaker using in all about 120ml. of water. Stir well and decant through muslin into a 250ml. volumetric flask, allowing to drain until the liquid is substantially removed, and then squeeze the residue on the muslin.

Return the residue to the beaker, add about 50ml. of water, mix and decant through the muslin into the volumetric flask, again squeezing the residue after draining. Repeat this treatment with a further 50ml. of water, and finally squeeze the residue on the muslin. Add 5ml. of potassium oxalate solution to the contents of the volumetric flask followed by 5ml. of potassium ferrocyanide solution, dilute to 250ml., mix well and filter. Determine the sugar in 50ml of the filtrate by the method described in paragraph (b).

(ii) When the substance is in liquid form—

Weigh to the nearest milligramme about 5gm. of the sample and wash with water into a 250ml. volumetric flask using about 200ml. of water. To clear the solution add 5ml. of zinc acetate solution. Mix, then add 5ml. of potassium ferrocyanide solution, again mix, dilute to 250ml. mix well and filter. Determine the sugar in 50ml. of the filtrate by the method described in paragraph (b).

(b) Determination of the sugar content—

(i) Inversion of the sucrose—

Transfer the measured volume of filtrate obtained as described in paragraph (a) (i) or paragraph (a) (ii) to a 300ml. beaker, add 15ml. of N hydrochloric acid, dilute to 150ml.with water, cover with a glass and heat to the boiling point. Continue to boil for 2 minutes, cool, add 2 or 3 drops of phenolphthalein indicator solution, just neutralize with 105 sodium hydroxide solution, transfer to a 200ml. volumetric flask and dilute to 200ml.Filter if necessary.

(ii) Preliminary estimation (This estimation is usually necessary where the percentage of sugar is known)—

Transfer exactly 10ml. of Fehling's solution to a 250ml. conical flask and add 20ml. of water. add from a burette approximately 10ml. of the filtrate prepared as described in paragraph (b) (i), heat to boiling point and boil briskly for 1 minute. Add 3 drops of methylene blue solution and titrate from the burette at the rate of 1ml. per 15 seconds until the blue colour is discharged, the contents of the flask being kept boiling throughout the titration. Note the total number of millilitres required and call this Xml. This titration should not be outside the range 15–40ml., otherwise the determination should be repeated using a more appropriate volume of the filtrate.

(iii) Exact determination

To 10ml of Fehling's solution in a 250ml conical flask add from a burette (X-1) ml of the filtrate prepared as described in paragraph (b) (i), together with sufficient water to make a total volume of 60ml. Heat to boiling point, boil briskly for 1½minutes and add 3 drops of methylene blue solution. Titrate from the burette at the rate of approximately 0.25ml per 15 seconds until the blue colour is discharged, the contents of the flask being kept boiling briskly throughout the titration which must not take more than 1½ minutes. Then the total number of millilitres used in the determination equals the sugar equivalent of 10ml Fehling's solution.

Not more than 1ml of filtrates should be required for the completion of the titration. If more than 1ml is required then the determination should be repeated using more closely calculated volume of filtrate for the original addition. The time taken from the initial boiling point until the end of the titration should be about 3 minutes. If this time is exceeded by more than 20 seconds, the titration should be repeated.

10ml Fehling's solution = 0.0525gm invert sugar. The total copper reducing power should finally be determined in terms of sucrose ($C_{12}H_{22}O_{11}$).

Note.—

The Fehling's solution should be standardized as follows. Dissolve 2.375gm sucrose (dried at 100°C) in about 100ml of water in a 300ml beaker, add 15ml of N hydrochloric acid and add sufficient water to give a volume of 150ml. Heat to boiling point, boil for

2 minutes, cool, add 2 or 3 drops of phenolphthalein solution, just neutralise with 10% sodium hydroxide solution, transfer to a 500ml volumetric flask and dilute to 500ml. Then follow the procedure described in paragraph (b) (iii).

1ml of this solution=0.00475gm invert sugar, i.e. 10ml. of Fehling's solution= 10.5 of this standard invert solution.

SIXTH SCHEDULE (*Section 20*)

REPEALS

1. Farm Feed Regulations, 1968, published in Rhodesia Government Notice 184 of 1968.
2. Farm Feeds (Amendment) Regulations, 1970 (No.1), published in Rhodesia Government Notice 306 of 1970.
3. Farm Feeds (Amendment) Regulations, 1975 (No.2), published in Rhodesia Government Notice 1030 of 1975.
4. Farm Feeds (Amendment) Regulations, 1976 (No.3), published in Rhodesia Government Notice 1123 of 1976.
5. Farm Feeds (Amendment) Regulations, 1978 (No.4), published in Rhodesia Government Notice 402 of 1978.
6. Farm Feeds (Amendment) Regulations, 1980 (No.5), published in Statutory Instrument 835 of 1980.
7. Farm Feeds (Amendment) Regulations, 1996 (No.6), published in Statutory Instrument 186 of 1996.
8. Farm Feeds (Amendment) Regulations, 1997 (No.6) published in Statutory Instrument 277 of 1997.
9. Farm Feeds (Amendment) Regulations, 2001 (No.7), published in Statutory Instrument 29 of 2001, corrected by Statutory Instrument 68 of 2001.

SEVENTH SCHEDULE (*Section17*)

INSPECTIONS:

Inspections are to be conducted in two ways:

(a) Farm Feed Plant Inspections.

(b) Routine Farm Feed product inspections.

A Plant Inspection Certificate of conformance is to be issued on merit of inspection report satisfying the registrar of Farm Feeds. Inspectors shall be empowered as in accordance to Section 14 of the Fertilizers, Farm Feeds and Remedies Act [*Chapter 18:12*].

EIGHTH SCHEDULE (*Sections 18 and 19*)

FEES AND FINES FOR STOCKFEEDS

FEES

	Fee
Registration of Stockfeeds	$150,00
Registration of Stockfeed manufacturing plant	$200,00
Full Feed Analysis (Proximate)	$ 80,00
Late Registration	$200,00
Premix Registration	$50,00
Export Registration	$100,00
Import Registration	$150,00
Inspection fee for all imports of stock feeds	$20,00
Inspection fee of FFR material for local products	$10,00

FINES

	Fine
Selling unregistered stock feeds	$100,00
Use of unregistered stockfeed manufacturing plant	$100,00
Selling unlabelled, improperly labeled or foreign labeled stock feeds	$100,00
Illegal use of trade names	$100,00
Illegal repackaging of stock feeds	$100,00
Selling fraudulent or adulterated stock feeds	$100,00/ Cancellation of Registration
Misleading statements or false information in an application for registration	$100,00
Smuggling or illegal trafficking of stockfeeds	$100,00
Hindering or impeding an inspection or assaulting an inspector on duty	$100,00