**Hay as animal feed — Specification**

**Part 2: Legume Hay**

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**TECHNICAL COMMITTEE REPRESENTATION**

The following organizations were represented on the Technical Committee:

Ministry of Agriculture and Irrigation — State Department of Livestock

Kenyatta University—Department of Animal Science

Kenya Agriculture and Livestock Research Organization (KALRO) – Dairy Research Institute

Unga Farm Care EA Ltd.

Modern Ways Ltd.

Department of Veterinary Services

Association of Kenya Feed Manufacturers (AKEFEMA)

Government Chemist Department

Pioneer Feeds Ltd.

University of Embu Department of Agricultural Economics and Extension

University of Nairobi – Center For Environmental Law and Policy

Accelerating Agriculture and Livestock Enterprises Ltd (AALE)

Global Space Africa Agribusiness Ltd (GLOSAA)

Pembe Flour Mills Ltd.

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Kenya Bureau of Standards — Secretariat

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**Foreword**

This Kenya Standard was prepared by the Animal Feeds Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Though over 70 percent of feed for domestic animals comes from forage materials, institutional and regulatory framework governing their production, processing and marketing including private sector support is underdeveloped. Market analysis allude to the existence of significant market opportunities for fodder farmers provided they increase productivity, reduce cost of production, improve quality and safety, and enhance efficiency in marketing. In order to achieve quantity and quality pasture and fodder, promote fair trade and allow customer choice of type of hay, development of standards need to be prioritized. The Standard seeks to guard against hay adulteration, enhance traceability, and ensure feed quality and safety under commercial hay production and marketing. The hay standard provides guidelines for minimum nutritional, weight and safety requirements of commercial hay in order to facilitate trade.

It is anticipated that this standard will facilitate both hay producers, traders, transporters and animal feeds millers to maintain quality and exercise proper control during, harvesting, transport, processing and storage.

In the preparation of this standard, reference was made to:

* Fertilizers and Animal Feedstuffs Act, Cap 345.
* Directive **2002/32/EC** on undesirable substances on animal feed.
* Typical nutrient composition of some common grasses and legumes in Kenya. <https://www.livestockkenya.com/index.php/blog/feeds-and-feeding/134-typical-nutrient-composition-of-some-common-grasses-and-legumes-in-kenya>
* FAO, (2006) Kenyan pastures. *Country Pasture/Forage Resource Profiles*
* [Heuzé V.](https://www.feedipedia.org/user/3), [Tran G.](https://www.feedipedia.org/user/4), [Boval M.](https://www.feedipedia.org/user/15), [Noblet J.](https://www.feedipedia.org/user/12), [Renaudeau D.](https://www.feedipedia.org/user/8), [Lessire M.](https://www.feedipedia.org/user/16), [Lebas F.](https://www.feedipedia.org/user/14), 2016. Alfalfa (Medicago sativa). Feedipedia, a programme by INRA, CIRAD, AFZ and FAO.

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**Part 2: Legume Hay**

**1 Scope**

This Kenya Standard specifies the requirements and test methods for Legume hay used as animal feed.

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**2 Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

KS 63, *Methods of test for animal feedstuffs*

KS 2543, *The animal feed industry — Code of practice*

**3 Definitions**

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

**3.1 Hay**

Hay is grass, legumes, or other herbaceous plants that have been cut and dried for use as animal feed.

**3.2 Lucerne (Alfalfa) Hay**

A perennial legume of the species *Medicago sativa* that has been cut, dried and baled for use as feed

**4 Requirements**

**4.1 General requirements**

Lucerne hay shall be;

1. Presented in form of bales weighing a minimum of 18 kgs;
2. Free from harmful constituents including weeds, glass, stones and soil, metallic objects and other adulterants;
3. Free from moulds, or insect infestation;
4. Free from musty, rancid or uncharacteristic odour.
5. Free from rain damage
6. Free from poisonous plants and seeds
7. Free from plant pests and diseases
8. Free from animal pests and disease causing agents
9. Shall be free from pesticide and herbicide residues

**4.2 Specific requirements for Lucerne Hay**

Hay shall also comply with the nutritional requirements prescribed in Table 1.

**Table 1 — Nutritional requirements for lucerne hay**

|  |  |  |  |
| --- | --- | --- | --- |
| **SL No** | **Parameters (%DM)** | **Limits** | **Test method** |
| i) | Moisture content (max.) | 18.0 | KS -63 |
| iii) | Crude protein (Min) | 18.0 |
| iv) | Methionine (Min) | 0.23 |
| v) | Lysine (Min) | 0.77 |
| vi) | Crude Fiber (Max) | 30.0 |
| vii) | Neutral Detergent Fibre (NDF), (Max) | 50.0 |
| viii) | Acid Detergent Fibre (ADF) (Max) | 35.0 |
| ix) | Total ash (max.) | 10 |
| x) | Calcium (min.) | 0.2 |
| xi) | Phosphorous (min.) | 0.1 |

**5.Heavy metals and pesticide residues**

**5.1 Heavy metal Contaminants**

Hay shall comply with the maximum limits of heavy metals as specified in the table 2

**Table 2: Limits of heavy metals**

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Heavy metal Limits** | **Maximum limit (mg/kg)** | **Test method** |
| i | Arsenic | 4.0 | ISO 27085 |
| ii | Lead | 30 |
| iii | Cadmium | 1.0 |
| iv | Mercury | 0.1 |

**5.2 Pesticide residues**

Shall not exceed the limits established by the Codex Alimentarius CODEX STAN 193-1995 on Contaminants

**6 Aflatoxins**

Total aflatoxin level shall not exceed 100 ppb while aflatoxin B1 shall not exceed 5ppb.

**7 Packaging and labeling**

**7.1 Packaging**

**7.1.1** Hay for sale shall be baled using sufficiently strong twines so as to withstand reasonable handling without tearing, or falling open during transportation and storage.

**7.1.2 Hay** should be transported in clean vehicles and the hay should be covered.

**7.2 Labeling**

Hay bales shall be labeled. The following particulars shall be legibly and indelibly displayed on the label.

1. Type of hay (Lucerne)
2. Name and the physical address of the producer.
3. Net weight.
4. Batch number
5. Date of harvest /production
6. Expiry date
7. Instruction for storage
8. Nutritional information.( Moisture ,Crude protein(CP) and Crude fibre(CF)