
بسم الله الرحمن الرحيم

Feed preparation(feed processing)

Aim (objectives):

1) Increase palatability.
2) Increase nutritive value.
3) Make feedstuffs more safer for livestock.

Methods:

1) Cleaning.
2) Grinding and crushing.
3) Cutting or chaffing.
4) Soaking or damping.
5) Heat treatment.

1. Cleaning

- Feeds should be free from dirt, foreign bodies (metal &glass), weevils and toxic plants.
- The dirt should not increase more than **1%** in the ration.

2-Grinding and crushing

- Hard feeds such as corn and wheat
- Suitable for young animals, sick or old animals.
- Fine grinding is undesirable as it makes feed less palatable and more liable to deteriorate on keeping.

3-Cutting or chaffing

- long hay or green fodders.
- Cuts should not be less than 1 inch (2.52 cm) to prevent their escape from mastication and their package in the stomach and rumen.

Feed preparation(feed processing)

4-Soaking or damping:

- Hard feeds such as corn, wheat or barley.
- Not suitable for poultry.
- Suitable for Young animals, sick or old animals.
- Soaked feed should not kept for long period to prevent souring.

5-Heat treatment:

- Inactivation of toxic substances and Makes feedstuffs more safer for livestock.

Grinding and crushing

Cutting or chaffing

Soaking or damping

Storage of grains

If store room:

- Well ventilated.
- Well lighted.
- With impervious floors.
- Free of dampness.
- we able to preserve grains a year or more without significant change.
- Beans ……. if stored after crushing……. are not attacked by weevils.

Storage of grains

To protect stored grains against weevils, mix before storage with:

1) Katel souss.
2) Gammaxane.
3) Both.

Storage of grains

Katel souss:

- A mixture composed of **5** parts rock phosphate and **1** part of flour of sulfur by weight.
- **1.5 kg** to each *ardab* grain.

Gammaxane:

- **1.5-2 gm** of gammaxane to one **ardab** of grains.

Both:

- **1.5 gm** of gammaxane + **1.5 kg** of Katel souss to each **ardab** grain.

Storage of grains

- اردب القمح = 150 كجم
- اردب الشعير = 120 كجم
- اردب الذرة الشامية =140 كجم
- اردب الذرة الرفيعة = 140 كجم
- اردب النخالة = 67.5 كجم

Mineral supplements

Supplementation of minerals to animal's diets will vary according to:

1. Animal species.
2. Age.
3. Production.
4. Diet.
5. Mineral content of soils and crop.

Mineral supplements

Generally, those minerals of concern include:

- Ca, P, Mg & Common salt (Nacl).
- Cu, Fe, I, Mn, Zn and in some places, Co and Se

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Mineral supplements

Common salt:

- 0.25-0.50% of the ration.
- Ad-libitum especially for ruminant and horse but not for poultry to avoid toxicity.
- Used as a carrier for some of the trace elements.

Phosphorus:

1) **Organic form (plant):** less available for simple stomached animal (availability: 50%).
2) **Inorganic form:** completely available.

Mineral sources

Macro-minerals (%)

Mineral sources	Ca	P	Mg	Na
Steamed bone meal	38.5	13.5	+++	+++
Dicalcium phosphate	+++	+++	---	---
Tricalcium phosphate	+++	+++	---	---
Oyster shell	38	---	---	---
Ground limestone	38	---	---	---
Monosodium phosphate	---	+++	---	+++
Calcined magnesite	---	---	+++	---
Common salt	---	---	---	39

Macro-minerals

Steamed bone meal:

Macro-minerals

Dicalcium phosphate:

Tricalcium phosphate:

Macro-minerals

Oyster shell:

Ground limestone:

Macro-minerals

Monosodium phosphate:

Calcined magnesite:

Mineral sources

Some common micro-minerals supplements:

Minerals	Sources
Manganese	**Manganese sulphate** **Manganese carbonate**
Zinc	**Zinc sulphate** **Zinc oxide**
Cobalt	**Cobalt sulphate** **Cobalt oxide**
Copper	**Copper sulphate**

Micro-minerals

Manganese sulphate:

Manganese carbonate:

Micro-minerals

Zinc sulphate:

Zinc oxide:

Micro-minerals

Cobalt sulphate:

Cobalt oxide:

Micro-minerals

Copper sulphate:

Vitamin supplement

Vitamin contents of feedingstuffs affected by:

1. Harvesting, processing and storage condition.
2. Plant species
3. Plant part (seed, leaf and stalk)

- **Vitamins are destroyed quickly by heat and sunlight.**

Vitamin supplement

1. Fat-soluble vitamins:

Carotene and vitamin A:

- Whole milk, green-fodders, yellow corn, fish liver oil & cod liver oil.

Vitamin E:

- Cereal grains.

Vitamin D:

- High quality forages.

2. Water-soluble vitamins:

- Animal and fish products, green forages, yeast & oil seed meal.

Manural value of feedingstuffs

- Maintains soil fertility.
- Valued chiefly on the basis of nitrogen, phosphorus (phosphoric acid) and potassium (potash)it contains.

Factors affect fertilizing value of manure

1. kind and age of animal:

- Mature, young
- Producing, nonproducing

2. kind of the feed:

- Feed rich in nitrogen , phosphoric acid and potash yield rich manure

3. Methods of preservation of manure:

- Farm animals return in manure about **80 %** of the total fertilizing value.
- adding superphosphate to the manure greatly decreases the losses of nitrogen.

Poultry manure

The chemical composition of the droppings will vary according to:

1) The diet fed.
2) The age of the stock.
3) The rate of growth or egg production.

Composition of poultry manure

- **Nitrogen: 3.5-6%** (equivalent to 21.9-37.5% CP).
- Phosphorus: 1.4-1.8%
- Wastes from caged layers has a lower fiber content than broiler litter.
- Metabolizable energy value about **1/2-1/3** that of common feed grains.

Feeding animal wastes

- Animal wastes are high in non-protein nitrogen, fiber and minerals and low to fair in energy.
- High energy diets can utilize up to **10-20 %waste.**
- 15 day withdrawal period.
- The feeding of animal waste does not affect the quality of the food produced.