Factors Affecting Animals Feed Intake

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Introduction

Animals feed consumption are of great interest because of the economic factors related to feed intake and cost of production.

Efficiency of production can be increased in animals if their feed intake can be maintained at a high level.

The net cost is usually less for high rate of production in intensive animal production systems.
Factors effect on feed intake

1- Palatability and Appetite:

**Palatability** may be defined as the degree of acceptability of a feed to the test to be eaten by an animal.

**Palatability** is determined by appearance, odor, taste, texture, temperature and other sensory properties of the feed.
These properties are affected by the physical and chemical nature of the feed.

**Palatability** can be measured by (?)..

**Appetite** generally refers to internal factors (physiological or psychological) that stimulate or inhibit hunger in the animal.

**Hunger** can be satisfied by calories; appetite is satisfied by palatability.
Taste:

The basic testes are described as sweet, sour, salty, and bitter.

Odor frequently has a pronounced effect on the taste.

Animals are able to taste chemicals that dissolve, on the tongue, different area are sensitive to different tastes.
The number of taste buds varies greatly among animal species.

Sheep and cattle prefer grasses with high organic acid content (silage).

Providing a flavor in dry feed for pigs may temporarily increase dry feed intake.
Odor:

It is conceded that most animals have a keener sense of smell than humans do.

A wide variety of odoriferous compounds may be objectionable to sheep at first, but they may eat the feed later on.

This suggests that odor may serve as an attractant but may not influence subsequent consumption.
Sight:

Sight in animals appears to be used more for orientation and location of feed.

Cattle and sheep shows no effect of coloring feed red, green, or blue on feed preference.
Physical Factors

**Particle** size of feedstuffs may influence acceptability.

**Most** animal species will readily accept pelleted feeds.

**Many** animals will adapt more readily to rolled or cracked grains than to whole grains.
Feed preparatory methods that reduced dustiness usually result in an increased feed intake.

This is one reason succulent feed are more readily consumed than dry feeds.

The bulk density of a diet may have a marked effect on feed consumption.
2-Variation in feeding behavior of animals:

**Feeding** behavior and digestive mechanisms of domestic animals are vary widely.

These physiological mechanisms use hormonal and neural pathways.

The cow and other ruminants as well as nonruminants herbivores have a different eating pattern.
3-Physiological stage of animals:

The point at which an animal will have satisfied its E demand varies considerably among species of animals and according to productive function.

For example, lactation is usually associated with a marked increase in feed intake.

This increase is mainly physiological in origin.
Thus, lactating cow will have a greater demand than a pregnant.

The absolute daily intake is greater for high-producing cows than for low producers.

Rapid growth is associated with a greater need for E.

Young animals consume more feed per unit body weight than older animals.
In pregnant animals, two opposing effects influence feed intake:

- The increased need for nutrients for foetal development causes intake to rise.

- In the later stages of pregnancy the effective volume of abdominal cavity is reduced as the foetus increases in size, as a result intake will be depressed.
4- Animal factors:

**Different** species of animals have a different level of feed intake, this may be related to:

- Body weight and metabolic size.
- Individuality of animals.
- Type and level of production.
- Type and size of the GI-tract.
For example, total feed intake of cattle is highly dependent on the quality of roughage being consumed.

Age is a factor also, as young lambs or calves are less able to handle high roughage diets than older animal.
5- Environment factors:

Regulation of body energy content is interfaced with:

- External factors (environmental conditions and diet composition).
- Internal (metabolic, hormonal) factors.

In most species, Feed intake is increased in cold and decreased in hot environments.

These factors are controlled short-term and long-term feed intake.
6- Nutritive / feeding values:

**Feed** preparation, such as pelleting, or proper supplementation of low-quality roughages may increase consumption.

**Silages** are only rarely consumed at a level approaching that of high-quality hay, while the digestibility of silage may be quite good.
In general, increased concentrate consumption will result in a gradual reduction in roughage (DM) intake.

For dairy cows, 35 to 55% concentrate in the total ration for optimum utilization of roughage and near-maximum energy intake.

Increasing caloric density of a diet would result in a reduced intake of DM.
A high-protein meals are tend to reduce feed intake, duo to high-heat increment resulting from the metabolism of AA.

The bulk density (weight per unit of volume) of a diet may have a marked effect on feed intake.

Note that volume of feed intake increased as the density decreased and E intake (TDN) decreased as density decreased.
7-Feed digestibility

*If* the diet is diluted with un-digestible, the animal will eat more.

**Factors such as:**

- Physical density of the feed.
- Particle size.
- Amount of indigestible residue.
- Solubility of feed DM.
- Rapidity of rumen fermentation.
- Level and frequency of feeding.
All above factors may influence rate of passage through GI-tract.

**Pelleting** of low-quality roughages will almost always increase consumption due to more rapid digestion and passage out of the rumen.

This, in turn, influences the amount of space in the GI-tract for next meal.
Inhibition of feed intake

Many compounds, such as amines (amphetamines) are used as stimulatory to the central nervous system but, result in some inhibition of appetite.
Feed intake for animals is more limited by:

- Caloric dilution of diets with feedstuffs of low digestibility.
- By restriction of daily feed allowance.
- Feed provided in a physical form that is not preferred (dusty meal).
• Unpalatable ingredients can be used such as (NH4)2SO4 or quinine.
• With ruminants, salt (NaCl) has been used successfully to restrict intake.
• Most feeds, which cause bloating, may effect on feed intake, such as clover and young green grass.
• Severe AAs deficiencies reduce feed intake.
General determinants of feed intake:

1- Animal body weight:

**body** weight is not itself always highly related to feed intake.

**Energy** requirements of adults are related to body weight raised to some power (wt. to 0.75 power).

**This** reflects that E need (feed intake) is related more nearly to lean body mass than total body weight.
2- Animals individuality:-

**Behavioral** or hormonal differences may result in hyperexcitable or phlegmatic animals.

This may be effects on activity and feed intake.
3- Type and level of production:-

All young animals have a so-called biological urge to grow.

Almost, those animals showing the most rapid growth rate have the best appetites.

Pregnancy and lactation result in an increased appetite.

With respect to lactating animals, feed intake is not correlated completely with production.
4- Other factors:-

• High ambient temperatures, along with high humidity, reduce feed intake.
• Most infectious diseases result in reduced FI.
• Intestinal parasites usually result in reduced FI.
• Metabolic diseases (ketosis, bloat, and diarrhea) result in restricted FI.
• All kinds of stresses contribute to reduced FI.
• Inadequate water supplies or that contaminated water result in reduced FI.