

Cereal grains

- Nitrogen free extract

Starch

Small amount sugar

Starch digestibility of cereal grains in ruminants from the fastest to the slowest

oat>wheat>barley>corn>sorghum

Cereal grains

Utilized in all of the animal nutrition

Given as

crushed

broken

In the determination of feed value of grains:

Grain weight, moisture content, foreign matter, foreign seed rate, broken, amount of damaged grain, colour changes in grains

Wheat (*Triticum vulgare*, buğday)

- Human food, animal feed, DM: 90%
- High in digestibility
- CP: 12% (13-15), Low in essential amino acids
poor in lysine (2.9% of CP)

has viscous gluten that improves pellet quality
reducing the need for a pellet binder (10% or more
in the pellet).

- 70% of protein in endosperm, gluten
- * Gluten→ contain gliadin and glutenin
- Because of high gluten, when it is given in excess amount in fine form,
 - dough balls occur, blocking digestion,
 - lead to digestive upsets.
- Wheat albumins have an anti-amylase, anti-tryptic and anti-lipase activity in some animal species.

Wheat

- EE: 2%
- CF: 2%
- Dehulled wheat Digestibility ↑↑↑
- Crude Ash: 2% Ca↓ P↑ phytate form
- NSP, especially arabinoxylans
- Pentosans (especially arabinoxylans) are polymers of pentose sugars
(diet viscosity ↑)

- Starch: 68-70%

fermented more rapidly than the starch of maize,

Result

digestive upsets

(including acidosis, bloat, laminitis)

- The fermentation of large amounts of starch in the rumen
 - lowers rumen pH,
 - resulting in rumen stasis,
 - a decrease in forage digestion,
 - diarrhoea,
 - dehydration
 - metabolic acidosis.

- wheat grain in combination with hay is fed:
 - no particular problems occur even at high inclusion levels.

Wheat grain usage in ruminants

- Used in ruminant diets as an energy source
- can replace maize as a high energy ingredient

requires less protein supplementation than maize due to its higher protein content

Dairy cattle

- up to 30-50% in the diet of cows,
- Dairy cows cannot utilize efficiently whole wheat grains
- processing, such as grinding, rolling and pelleting ↑ digestibility
- generally fed dry and rolled or ground.