

NUTRIENT REQUIREMENT IN EQUINES

As in other categories of livestock the horse also has a requirement of various nutrients as discussed below.

- Energy - Is what horses use to do work.
 - Energy requirements are influenced by age and by the work's degree and duration.
 - Mature, idle horses and mares in the first 2 trimesters of pregnancy require less energy.
 - Young, rapidly growing horses, horses at work and lactating should be supplemented with concentrated energy sources to meet their energy requirements
- Protein - Horses use protein to synthesize various body tissues, such as muscle. Proteins are composed of amino acids and will vary in amino acid composition.
 - Protein requirements vary for different classes of horses.
 - Young, growing horses have a higher requirement for protein because they are growing body tissues like muscle and bone.
 - Mature horses have a much lower requirement for protein than do young horses since mature horses need protein for maintenance of body tissue rather than growing new tissue.
- Minerals - Are needed by the horse's body for various purposes, ranging from serving as components of the horses skeletal system to maintaining nerve conductivity, muscle contraction and electrolyte balance.
- Vitamins - Vitamins A, D and E are the most common vitamins added to horse diets. Although B complex vitamins are synthesized in the large intestine of horses supplemented, including them in performance horse diets may be necessary.

Factors influencing nutrient requirements in horses

- Body weight of the horse or its size.
- Breed of the horse
- Age of the horse
- Physiological status of the horse - gestation, lactation, rate of growth

- Nature and intensity of work
- Temperament of the horse
- Temperament of the horse
- Hair coat of the horse
- Fat insulation
- Environment– temperature, wind velocity and relative humidity
- Health status of the horse
- Vices of the horse

NUTRIENT REQUIREMENT IN EQUINES AS PER NRC

- The following table gives the nutrient requirements for sedentary, mature horses of different body weight.

Energy, Protein, Calcium and phosphorus requirements for Sedentary, Mature Horses of Different Body Weight

Size of Horse	Digestible Energy (Mcal/day)	Crude Protein (grams)	Calcium (grams)	Phosphorus (grams)
Maintenance (500 Kg)	15	600	18	13
Maintenance (550 Kg)	16.5	700	20	14
Maintenance (600 Kg)	18	750	22	15

- The following table gives the nutrient requirements of horses for growth and for different production stages.

Energy, Protein, Calcium and Phosphorus requirements for growth and different Production Stages (body weights of 550 Kg)

Age of Horse (Weight/growth)	Digestible Energy (Mcal/day)	Crude Protein (grams)	Calcium (grams)	Phosphorus (grams)
6 months				
240 Kg/1000 g per	15.5	750	39	22

day				
12 months				
350 Kg/500 g per day	19	900	38	21
24 months				
470 Kg/200 g per day	19	850	37	20
Class of Horse				
Breeding Stallion	22	850	20	14
<i>Broodmare</i>				
Early Pregnancy	17	700	20	14
8 months pregnancy	18.5	850	28	20
11 months pregnancy	21	1000	36	26
Lactation (1st month)	32	1700	59	38
Lactation (3rd month)	31	1600	56	36
Lactation (5th month)	28	1450	40	25

- The following graphs illustrate the variations in energy and protein requirements in mare at different stages of pregnancy
- The following table gives the nutrient requirements for different working horses

Energy, Protein, Calcium and Phosphorus requirements for different working horses

Working Horse	Digestible Energy (Mcal/day)	Crude Protein (grams)	Calcium (grams)	Phosphorus (grams)
Light exercise	20	750	30	18
Moderate exercise	23	850	35	21
Heavy	27	950	40	29

exercise				
----------	--	--	--	--

NUTRIENT REQUIREMENTS OF EQUINE AS PER BIS

Nutrient Requirements of Horses (% of ration)

- The nutrient requirement of different categories of horses as per Indian standards is given below:

Class	TDN (Kg/day)	Crude Protein %	Calcium %	Phosphorus %	Feed intake %, Bwt
Adult horses at rest	3.7	8.0	0.30	0.2	1.5
Pregnant mare (last 3 months of pregnancy)	4.2	10.0	0.45	0.35	1.75
Lactation (First 3 months)	6.4	12.5	0.45	0.35	2.75
Nursing Foal (3-5 months) Requirements in addition to milk	1.6	16	0.8	0.55	0.75
18-24 months	3.9	10.0	0.40	0.35	2.0
12-18 months	3.8	12.0	0.50	0.35	2.5
2 year old to maturity	3.7	9.0	0.40	0.35	1.75

- The following table gives the energy requirement of horses for various types of physical activity

Energy Requirement for Physical Activity (In addition to Maintenance Requirement)

Physical Activity	M cal / Hour / 45 Kg Body weight	TDN / hour / 45 Kg Body weight
Walking	0.02	4.53
Slow Trot	0.23	54.36
Fast Trot and Cantering	0.57	99.66
Cantering and Galloping	1.05	240

Strenuous effort	1.77	403.17
------------------	------	--------