

BIHAR ANIMAL SCIENCES UNIVERSITY, PATNA

Animal Nutrition

UNIT-IV (NON-RUMINANT NUTRITION)

UG Lecture on

**Feeding of Equine (Foal, Yearling, Brood
Mare, Stallion & Race Horses)**

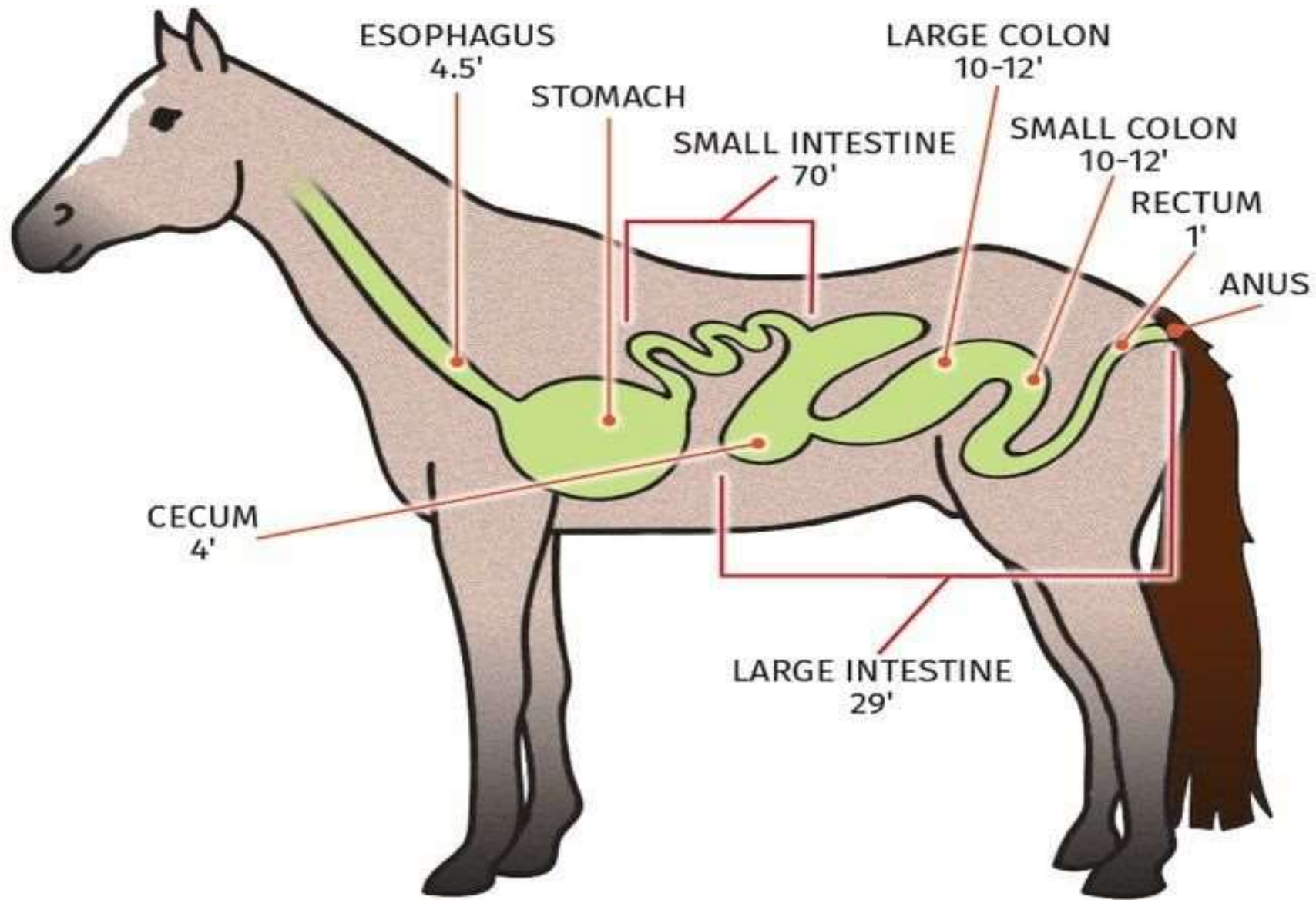
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UG Lecture: 1

Objective.....

- **Learn about the feeding of horses according to their physiological status and work level.**



FEEDING OF HORSES

Some important points that are to be considered while feeding the horses:

- ❖ If horse is of **good breed, well managed, good health, lives in a suitable environment**, then **nutrition** will be **main factor influencing its performance**.
- ❖ Generally, horses undergoing only **limited activity or light work** are fully nourished by **good quality pasture**.
- ❖ However, **variable nutritional value of pasture**, horses might not get enough nutrition from grazing, and **need a supplement**.
- ❖ **Supplemental feed should be aimed to meet horse's nutritional needs that not available from the grazing**.

- ❖ When horses do not have access to grazing then balanced ration needs to be supplied.
- ❖ When grazing is adequate, the addition of minerals and vitamins to the diet is not usually necessary.
- ❖ However, mineral/vitamin supplement may be necessary, if roughage quality is poor.
- ❖ Salt should be supplied freely to working horses because considerable quantities are excreted in sweat.
- ❖ The provision of salt blocks or rock salt in feed boxes will help ensure adequate intake.

Feeds for horses

- **Roughage** (hay or grasses) and **concentrates** (grains, grain by-products and oil cakes) are common feed.



Dry Matter Intake

- The dry matter intake of horses is **1.5–2.5%** of their BW per day

Roughage and concentrate requirements of horses		
Type of work	Feed per 100 kg live weight	
	Roughage (kg)	Concentrate (kg)
Ideal	1.5	Nil
Light (2 hours/day)	1.25–1.5	0.5–0.75
Medium (2 hours/day)	1–1.5	1.0
Heavy (4 hours/day)	1.0	1.0–1.5

Feeding management of horse

- See the individual horse **feeding habits**, and adjust rations accordingly.
- **Working horse** total ration should be fed **thrice per day**.
- Feed a **quarter of concentrate** required at **morning & mid day**, remaining **half at night**.
- **Reduce** the amount of **concentrate by 50–70%** on **non-working days** of horse.
- Make any **changes in the ration gradually** over a period of **10–14 days**.
- Keep **feed and water troughs clean**, and remove leftovers.
- **Don't allow** a horses to **drink large quantities of water immediately after exercise**.
- Allow the horse to **drink only 2–4 L**, and then let it cool before allowing free access.
- **Avoid working** the horse on a **full stomach & allow at least 2 hrs for digestion**.

FEEDING FOALS

- Feeding of foals is according to its age.
- Mare milk can meet the requirement of foal up to the first 3 months age.
- Composition of mares milk:
Fat - 1.25, Crude protein - 2.1%, Lactose - 6.3%, Ash - 0.4% & Gross energy - 480 Kcal/kg.
- Colostrum feeding provides immunity to the foal.

Feeding orphan foal

- Foal can be injected with horse serum for immunity.
- Fostering or hand rearing by bottle or bucket feeding can be carried out.
- Modified cow milk - cow milk 600 ml + 150 ml lime water + 1 spoon sugar.
- Frequency of feeding once in 2 hours- first 2 weeks, once in 4 hours - next 2 weeks and 4 times a day feeding upto weaning.

Creep feed for foal

- **Beyond 1.5 month additional creep feed can be provided.**
- **Creep feed should provide 75 % TDN and 16 % crude protein with highly digestible ingredients.**
- **It can be fed @0.5 to 1 % of the foals body weight.**

Creep feed composition

Ingredient	Percent in feed
Oats groats rolled	15
Flaked oats	20
Flaked maize or sorghum	35.75
Soy bean meal	15
Skim milk powder	5
Molasses	5
Di-calcium phosphate	2
Ground limestone	0.75
Mineral mixture	1
Vitamin supplement	0.5

FEEDING OF YEARLINGS

The following is the feeding schedule for yearlings

- **3- 6 months:** 500 gm grain or concentrate mixture & 1 Kg good quality hay.
- **6-9 months:** 1 kg grain or concentrate mixture & 2-3 Kg good quality hay.
- **9-12 months:** 2 kg grain or concentrate mixture & 4-5 Kg good quality hay.

Concentrate mixture for yearlings

Ingredient	Percent inclusion
Crushed oats	25
Flaked maize or barley	30.8
Crushed sorghum	15
Soy bean meal	15
Alfa alfa meal	5
Molasses	5
Vitamin supplement	0.7
Dicalcium phosphate	2
Ground limestone	0.5
Mineral mixture	1

Discussions.....

Questions, if any.....??

THANKS

UG Lecture: 2

Objective.....

- **Learn about the feeding of Stallion, Mares and Race horses of different physiological activity & work conditions.**

FEEDING OF STALLION

The feeding of stallion is critical for its breeding performance.

- Amount of energy required by the stallion during the act of mating is quite small, but for additional physical activity & psychological response to breeding, increases the dietary energy needs.
- During the breeding season, more energy-dense feeds (grains) to be included in the ration to meet the stallion energy requirements.
- Vegetable oil can also be used to provide extra energy which can reduce the inclusion of large amounts of grain.
- Stallion should be fed high quality hay at a minimum level of 1.0 % of BW.

- **Stallions, used to mate many number of mares will require energy-dense grains @0.75 kg/100 kg BW.**
- **Other nutrient requirements also increase during the breeding season.**
- **Providing a suitable vitamin/mineral supplement.**
- **If stallion already receiving balanced diet then adding extra feed or supplements to the diet will not enhance fertility.**
- **Stallions that exercised regularly should be fed as per their level of work.**
- **After breeding season, maintain on maintenance ration by increasing the hay portion and decreasing the grain portion of the ration.**

FEEDING OF MARE

Feeding of mares should be carried out according to its physiological status.

- . Nutrients such as energy, protein, minerals (Ca, P, Mn, Cu, Zn & I) and vitamins (A, D & E) are important for the pregnant and lactating mare.**
- . Good quality pastures or hays can meet the nutrient requirement of mares.**
- . Grain can be supplemented when more energy requires or poor hay quality.**

Feeding of pregnant mares

- In early to mid-gestation, nutrient demands for developing fetus are minimal.
- Growth of the foal ranges 90 to 220 g per day, therefore, the mare's nutrient requirements in early to mid-gestation are similar to maintenance ration.
- During late gestation the foal is growing @350 to 450 g/day so, to support this growth, the mare's energy & protein requirements increase.
- Foetal uptake of minerals is enhanced during the last trimester, so, dietary Ca & P requirement increased substantially.
- Elevated energy & protein requirements of a mare in late gestation can be met by increasing the amount of mixed hay of leguminous species & grass.
- Adequate intakes of minerals and vitamins are also provided.

Feeding of lactating mares

- Mare at the time of lactation should have a good body condition.
- Under feeding mares during lactation can lower milk production, ultimately affecting the growth of foal.
- A thin body condition will also decrease the mare's ability to be re-bred.
- In addition to its own needs, mare produce 2 to 3% of her BW/day as milk.
- The energy and protein requirement increase 75 to 100 per cent.
- Lactating mare needs 3 times more calcium & 2.5 times more phosphorus as needed in early gestation.
- When fed grass hay alone then supplements the protein, energy & MM.
- The mare's nutrient requirements decline in the 4th, 5th & 6th months of lactation, as milk production declines.

FEEDING OF RACE HORSES

- Horse performing **light work** for **2-3 hrs/day**, their **energy** requirements **increases 50% above maintenance**.
- Horse performs **moderate work** such as fast trotting, cantering, jumping, etc. for **4-5 hrs/day**, **energy** requirement **increased by 70% above maintenance**.
- It is **not possible to meet the energy needs by feeding roughage alone** in above conditions.
- Further, horses **after several hours of work do not eat enough**, hence, the **energy density of the ration has to be increased by supplementing grains**.
- **Addition of fat to the ration upto 10%** also increases the energy density.

Ration for 500 kg horses performing light work

- 1. Alfa alfa / grass hay – 7 Kg**
- 2. Crushed oats / barley – 2 Kg**
- 3. Mineral mixture – 30 g**
- 4. Iodised salt – free choice**

Ration for 500 kg horses performing moderate work

- 1. Alfa alfa / grass hay – 8 Kg**
- 2. Crushed oats / barley – 3 Kg**
- 3. Mineral mixture – 30 g**
- 4. Iodised salt – free choice**

Ration for 500 kg horses performing intense work

- 1. Alfa alfa / grass hay – 9 Kg**
- 2. Crushed oats / barley – 4.5 Kg**
- 3. Oil – 500 g**
- 4. Mineral mixture – 30 g**
- 5. Iodised salt – free choice**

Feeding of horses before riding

- **High intensity work**
 - **Remove hay 4 hours** prior to competition.
 - **Feed grain 4 hours** before competition.
- **Light to moderate intensity work**
 - **Remove hay 4 hours** before riding.
 - **Adapt horse to eating smaller quantity of ration by** spread throughout the day.
 - **Feed grain 4 or more hours** before riding.
- **Long distance races**
 - **Allow free access to hay right up to the competition or even during the ride.**
 - **Feed large quantity of grains/CM 4 hours** before the ride.
 - **Feed smaller quantity of grain throughout the ride.**

GUIDELINES FOR FORMULATION OF RATIONS OF EQUINES

Feed intake & Forage : Concentrate Ratio for different categories of Horses

Factor		Feed Intake	
		% of Body Weight	Forage:Concentrate Ratio
Maintenance		1.5	100:0
Pregnancy		2.2	75:25
Lactation		2.2	55:45
Work	Mild	1.5	65:35
	Hard	1.5	30:70
3-month foal		3 - 4	0:100
6-month foal		2 - 2.5	25:75
12-month yearling		2.0	35:65

Some common nutrition associated problems in equines

Nutritional Secondary Hyperparathyroidism/
Big Head Disease

Colic

Laminitis



EQUINE COLIC
KNOW THE SIGNS

PAWING
A horse with colic will paw at the ground with one or both front legs. This is a sign of abdominal pain.

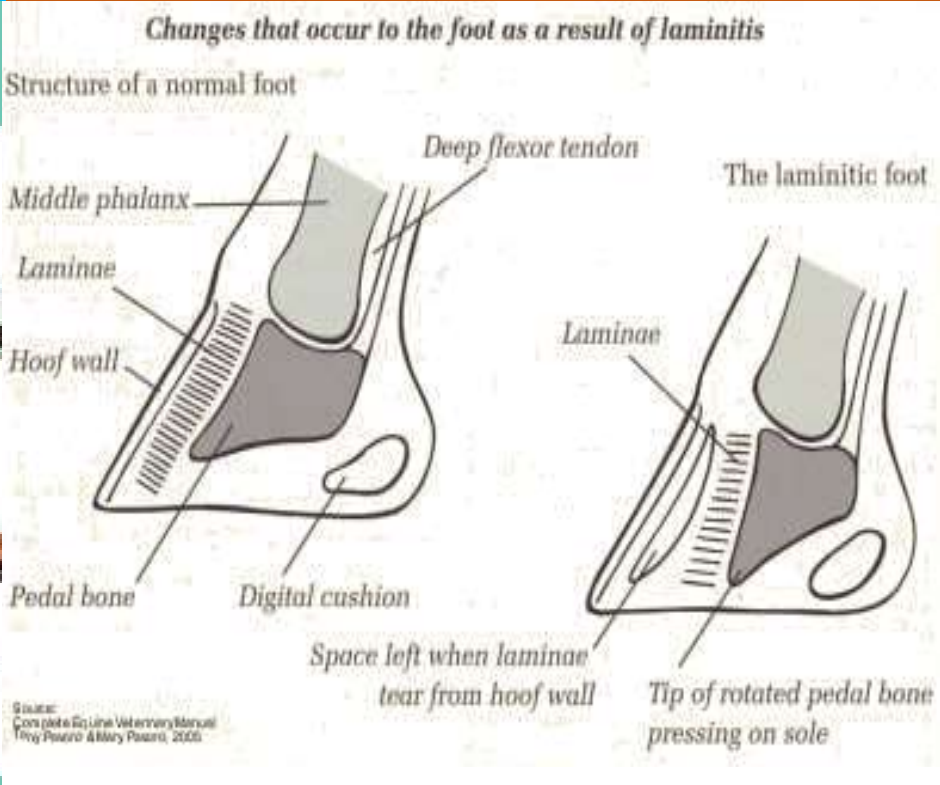
STRETCHING
A horse with colic will stretch out its body, arching its back and pulling its head and neck far back. This is a sign of abdominal pain.

ROLLING
A horse with colic will roll on the ground. This is a sign of severe abdominal pain.

SWEATING
A horse with colic will sweat, especially on its forehead and neck. This is a sign of abdominal pain.

LOOKING OR KICKING AT BELLY
A horse with colic will look at its belly or kick at it. This is a sign of abdominal pain.

www.equinecolic.com



Discussions.....

Questions, if any.....??

THANKS