

Species – Horse

Module – Nutritional Requirements

Targeting Life Skills

Beginner

- Critical thinking
- Learning to Learn

Intermediate

- Critical Thinking
- Problem Solving

Senior

- Critical Thinking
- Problem Solving
- Service learning
- Leadership
- Communication
- Goal setting

Learning Objectives

Beginner

- Explain why horses in various situations – life stages or performance roles - have differing nutritional needs.

Intermediate

- List factors that influence nutrient requirements.

Seniors

- Search for and find correct references when formulating a horse’s diet.
- Create a feeding program for different classes of horses.

Learning Activities

Age Level	Learning Activities	Materials Needed	Source
Beginner	<ul style="list-style-type: none"> • Match the level of nutrients needed (Low, Medium, High) for horses in various situations. 	<ul style="list-style-type: none"> • Descriptions of horses in various situations • Three handout sheets per person containing the words “Low,” “Medium” or “High” 	KHVCR Manual
Intermediate	<ul style="list-style-type: none"> • Complete a word search of factors affecting nutrient requirements. • Using the terms found in the word search, discuss how each affects nutritional requirements. • Play “Nutrient Requirement Simon Says.” 	<ul style="list-style-type: none"> • Factors Affecting Nutrient Requirements word search • Discussion sheet • Game rules 	KHVCR Manual KLVCR Manual KHVCR Manual

Age Level	Learning Activities	Materials Needed	Source
Senior	<ul style="list-style-type: none"> • Download the nutrient requirements tables for horses. • Use nutrient concentrations tables to determine the current requirements for your project horse and report these findings to Beginners and Intermediates. • Develop a feeding program for several different classes of horses (broodmare from conception to birth; foal to maturity, etc.) • Write new situations and lead Nutrient Requirement Simon Says for younger members. 	<ul style="list-style-type: none"> • UK Publication (http://www.uky.edu/Ag/AnimalSciences/pubs/asc115.pdf) 	Internet Alberta Horse Ref. Manual, pp 151-166

Time Requirement

- Most activities will require 45 to 60 minutes.

Best Time to Teach

- After Feedstuff Identification and Classes of Nutrients.

Best Location

- Classroom

Evaluation

Beginners

- Score the ability to recognize High, Medium and Low nutritional needs.

Intermediate

- Score the completed word search.
- Create written test of factors that affect nutrient needs after discussion.

Senior

- Evaluate the written report comparing the animal's requirements with the ration being fed.
- Evaluate the feeding program developed.

References

- Horse Resource Handbook
- KHVCR Kit
- KHVCR Manual
- Alberta Horse Reference Manual
- Internet resources

Determining the Level of Nutrition Required

Beginner Group Activity

Part of Animal Sciences is “Animal Husbandry.” Animal Husbandry is the art of caring for animals, including the horse. Part of mastering that art is the ability to look at a horse, assess its situation, and make management decisions, even without any scientific data to review.

For example, if a horse owner were feeding a diet to 50 horses each day individually and picking up and measuring how much feed each horse left behind, the owner would have a lot of data telling him/her how to feed each horse. But none of us do all that. Instead, we use “rules of thumb” and guidelines based on scientific data to help us determine how to feed our horses. We would also use our eyes and experience to look at our horses and determine if they’re getting enough feed and if it is the right kind of feed.

In order to make decisions like that, you have to be able to look at a given horse and answer the questions “Is this horse getting enough feed?” “Are this horse’s nutritional requirements being met?” “If not, how do I fix the problem?”

Following this page are three sheets with the labels “High, Medium, and Low” written on them. Provide a copy of all three sheets to each club member.

Following that are several descriptions of horses in different situations or classes. Read each situation to the club and ask them to assess if that animal’s nutritional needs are high, medium, or low. Ask them to raise the sheet they think applies to that animal for quick polls. Then ask members to explain their reasoning and decide, as a group, what the nutrient needs for that animal are.

As a general rule:

- The younger the horse, the higher its nutritional needs.

- The more exercise the horse gets, the higher its nutritional needs.

- The further along in pregnancy, the higher its nutritional needs.

- The more milk produced, the higher the nutritional needs.

- The higher the level of production, reproduction or performance, the higher its nutritional needs.

HIGH

MEDIUM

LOW

Nutritional Situations to Evaluate - Beginner

Horses in each of these nutritional situations can be characterized as having high, medium, or low nutritional requirements. You can use these situations in your evaluation activity or you can make up your own.

Level of Nutrition Required	Production Situation
High	1 week old newborn foal
High	Dam of a nursing foal
Low	Mature horse not being used to ride
Medium	Stallion being used during the breeding season
Medium	Broodmare in early gestation
High	Broodmare in late gestation
Low	Open Broodmare (not in foal)
Low	Horses being used for monthly trail rides
Medium	Lactating mare close to weaning
High	Weanling filly (6 months of age)
High	3 Year Old colt racing in the Kentucky Derby
Medium	Mature gelding competing in barrel racing
Medium	Yearling colt
Low	Stallion outside of the breeding season
Medium	2 year old filly starting training
High	Skinny horse that needs to gain weight
Low	Fat horse that needs to lose weight
High	Standardbred pacer on the racetrack

Factors Affecting Nutrient Requirements Word Search - Intermediate

I	O	C	F	P	N	R	Q	T	G	A	M	O	A	T
U	S	W	J	H	L	B	H	N	G	L	T	V	A	A
T	K	E	V	E	B	T	I	E	Z	A	I	N	C	A
I	H	I	L	A	C	T	A	T	I	O	N	O	T	F
I	N	G	Q	L	T	P	R	A	X	I	G	S	I	L
K	O	H	I	T	S	F	E	R	I	S	O	A	V	H
Y	I	T	F	H	K	D	H	E	A	W	C	E	I	O
U	T	A	V	I	E	Z	T	D	P	F	O	S	T	Q
X	I	Q	L	V	A	S	A	O	C	A	N	E	Y	I
B	D	F	C	V	X	S	E	M	V	C	N	A	B	N
H	N	I	Z	C	H	T	W	O	R	G	F	Y	T	T
H	O	G	Z	P	R	E	G	N	A	N	C	Y	C	E
Y	C	D	S	T	Z	C	W	Q	F	X	Y	O	T	N
F	B	R	E	E	D	I	N	G	X	Q	W	Y	T	S
S	E	C	N	A	N	E	T	N	I	A	M	W	V	E

ACTIVITY

HEALTH

MODERATE

AGE

INTENSE

PREGNANCY

BREEDING

LACTATION

SEASON

CONDITION

LIGHT

WEATHER

GROWTH

MAINTENANCE

WEIGHT

Factors Affecting Nutrient Requirements Word Search - Intermediate *Answer Key*

I	O	C	F	P	N	R	Q	T	G	A	M	O	A	T
U	S	W	J	H	L	B	H	N	G	L	T	V	A	A
T	K	E	V	E	B	T	I	E	Z	A	I	N	C	A
I	H	I	L	A	C	T	A	T	I	O	N	O	T	F
I	N	G	Q	L	T	P	R	A	X	I	G	S	I	L
K	O	H	I	T	S	F	E	R	I	S	O	A	V	H
Y	I	T	F	H	K	D	H	E	A	W	C	E	I	O
U	T	A	V	I	E	Z	T	D	P	F	O	S	T	Q
X	I	Q	L	V	A	S	A	O	C	A	N	E	Y	I
B	D	F	C	V	X	S	E	M	V	C	N	A	B	N
H	N	I	Z	C	H	T	W	O	R	G	F	Y	T	T
H	O	G	Z	P	R	E	G	N	A	N	C	Y	C	E
Y	C	D	S	T	Z	C	W	Q	F	X	Y	O	T	N
F	B	R	E	E	D	I	N	G	X	Q	W	Y	T	S
S	E	C	N	A	N	E	T	N	I	A	M	W	V	E

ACTIVITY

HEALTH

MODERATE

AGE

INTENSE

PREGNANCY

BREEDING

LACTATION

SEASON

CONDITION

LIGHT

WEATHER

GROWTH

MAINTENANCE

WEIGHT

Factors Affecting Nutrient Requirements

Discussion Sheet

Using the terms youth find in the Factors Affecting Nutrient Requirements word search, lead a discussion about how each of these factors impacts the nutritional needs of animals.

Factor	How it affects nutritional requirements
Activity	The higher an animal's activity level (trail riding, racing, jumping), the more nutrients are needed to perform.
Age	The younger the horse, the higher its nutrient needs. Young horses are growing at a high rate, so they need diets that are high in protein, energy, vitamins, and minerals to meet the demands of growth. Mature horses, those who have reached an age where they have finished growing, do not need such high nutrient levels.
Breeding	A stallion does not need any extra nutrients in its diet until the active breeding season. Breeding increases the stallions needs for energy and protein.
Condition	A very thin horse has greater nutrient requirements than a fat horse. A fat horse can mobilize and utilize energy from its fat stores instead of from its diet, whereas a thin horse does not have the fat stores to utilize for energy.
Growth	The rate of growth will influence the young horse's nutritional needs. The faster a young horse is growing, the higher its nutritional needs.
Health	A horse's health can affect how you feed the horse and its nutritional needs. Respiratory or digestive health problems can increase or decrease the amount or type of feed you will use in your program.

Factors Affecting Nutrient Requirements

Discussion Sheet

Factor	How it affects nutritional requirements
Intense	This is the highest level of work. Race horses, endurance horses and polo ponies are all examples of intense work. These horses usually require larger amounts of nutrients in their diet, mainly energy. A horse may not be capable of physically eating the large amount of hay or grain needed to meet their requirements, so a fat source, such as corn oil, can help to increase the energy without increasing the amount of feed.
Lactation	A lactating mare needs more nutrients than those mares that are not lactating. Lactation is the single most physiologically demanding function any animal can perform. The more milk a female is producing, the greater her nutrient needs.
Light	Horses at light work are usually being ridden for pleasure or worked lightly a few days a week. You can often meet this horse's nutritional requirements by simply increasing the amount of feed, particularly the hay, in the horse's diet.
Maintenance	Horses that are not performing any work, or expending any energy, are called maintenance. This is the lowest level of nutritional requirements needed to sustain life and maintain proper body condition. These horses can meet their needs with a good quality fiber source and usually do not need grain.
Moderate	Horses who participate in events such as barrel racing, ranch work, and jumping are working at a moderate level. These horses usually require additional nutrients in the diet because of their level of activity. Moderate is higher than light, but not as high as intense work.
Pregnancy	Pregnant mares have a higher nutritional requirement than a mare that is not pregnant (an open mare). In the first two-thirds of pregnancy, the mare does not need as much extra nutrition. However, in the last third of pregnancy when the fetus is growing at the fastest rate, all pregnant mares need a higher level of nutrition to meet their requirements.

Factors Affecting Nutrient Requirements

Discussion Sheet

Factor	How it affects nutritional requirements
Season	Spring, summer, fall and winter can all have an affect on a horse's nutritional needs. With increasing temperatures, horses sweat more, especially when accompanied by exercise. This increases a horse's need for water and electrolytes. Colder weather and shivering increases a horse's nutritional needs for energy to stay warm.
Weather	Temperature, wind, and precipitation can all affect a horse's nutritional needs by increasing or decreasing their body temperature.
Weight	A large horse needs more feed to operate and maintain its weight compared to a smaller horse. However, larger horses are also usually older horses and therefore have lower nutrient requirements than a younger, growing horse. For example, a mature horse eats more total pounds of protein each day than her foal, but the protein she eats can be a much lower percentage in her diet.

Factors Affecting Nutrient Requirements

Simon Says

Using the rules of the game “Simon Says”, members get practice with the concepts of how factors affecting nutrient requirements raise and lower a horse’s nutritional needs.

Have all members stand in a circle, facing outwards, so they can only see their neighbors, not the whole group. Blindfolds could also be used. The leader (Simon) should stand in the center of the circle.

Based on the factors affecting nutrient requirements, Simon calls out a given situation. Members should **STAND** if the situation causes nutrient requirements to **INCREASE**. They should **SIT** if it causes nutrient requirements to **DECREASE**. Decisions should be made within a few seconds of the announcement. When an individual guesses incorrectly, he or she leaves the circle. The last person left in the circle is the winner.

Following are some situations the leader may call out and the appropriate action. Leaders can make up more situations to make the game more difficult.

Situation to Call Out:	Appropriate Action:
Very low body condition	Stand
Very hot and humid day	Stand
6 month old filly who was just weaned	Stand
Obesity	Sit
A mature horse at maintenance	Sit
Last 2 weeks of pregnancy	Stand
A Thoroughbred preparing for a race	Stand
A dry, comfortable fall day	Sit
An 8 year old Quarter Horse	Sit
Temperatures below freezing	Stand
A 3 year old Arabian in training	Stand
Very high body condition	Sit
A horse in a 100 mile Endurance race	Stand
A stallion after the breeding season	Sit
A horse being retired from showing	Sit
A 3-Day Event horse at Rolex	Stand
A stallion during the breeding season	Stand
A mare after lactation	Sit
A Quarter Horse barrel racing	Stand
A windy and cold day	Stand