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To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online, from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by:

mail:
U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

fax:
(833) 256-1665 or (202) 690-7442;

email:
program.intake@usda.gov

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La información del programa puede estar disponible en otros idiomas además del inglés. Las personas con discapacidades que requieran medios de comunicación alternativos para obtener información sobre el programa (por ejemplo, Braille, letra agrandada, grabación de audio y lenguaje de señas americano) deben comunicarse con la agencia estatal o local responsable que administra el programa o con el TARGET Center del USDA al (202) 720-2600 (voz y TTY) o comunicarse con el USDA a través del Servicio Federal de Transmisión de Información al (800) 877-8339.

Para presentar una queja por discriminación en el programa, el reclamante debe completar un formulario AD-3027, Formulario de queja por discriminación del programa del USDA, que se puede obtener en línea, en cualquier oficina del USDA, llamando al (866) 632-9992, o escribiendo una carta dirigida al USDA. La carta debe contener el nombre, la dirección y el número de teléfono del reclamante, y una descripción escrita de la supuesta acción discriminatoria con suficiente detalle para informar al Subsecretario de Derechos Civiles (ASCR) por sus siglas en inglés sobre la naturaleza y la fecha de la presunta violación de los derechos civiles. La carta o el formulario AD-3027 completado debe enviarse al USDA por medio de:

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correo electrónico:
program.intake@usda.gov

Esta institución ofrece igualdad de oportunidades.

Winter Horse Management Webinar Series

Feeding Grain and Supplements

12.30.20

NDSU

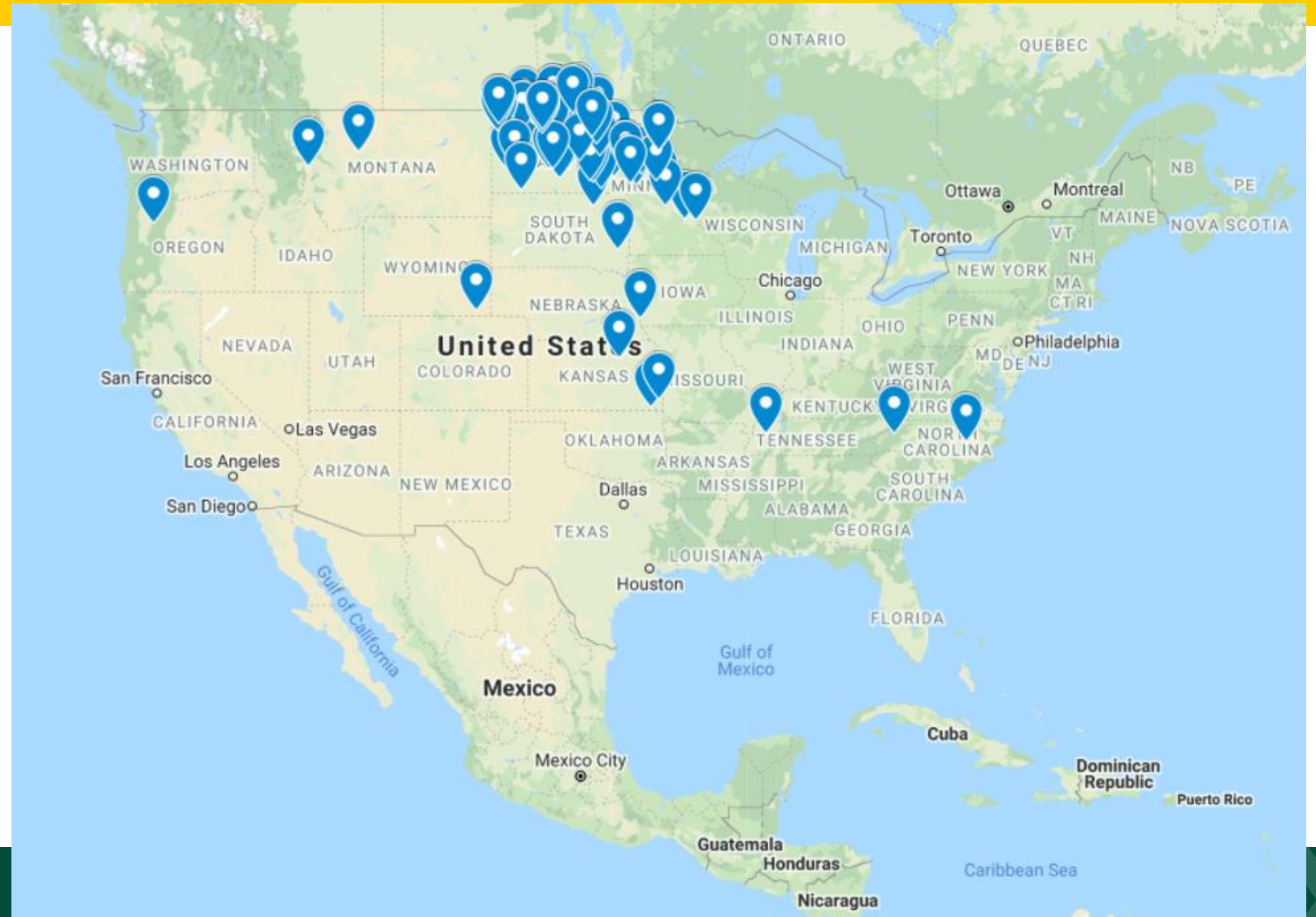
EXTENSION

Speakers

- **Carrie Hammer, DVM, PhD, carrie.hammer@ndsu.edu**
 - Grain vs. Supplement
- **Paige Brummund, paige.f.brummund@ndsu.edu**
 - Feed Grains Found in ND, Processing Options, Example Ration
- **Rachel Wald, r.wald@ndsu.edu**
 - Reading a Feed Label, Comparing cost by Nutrient, Feed by Weight not Volume

Locations and Numbers

- 76 registered
- Canada
- 1-5
- 12-15
- 50-75

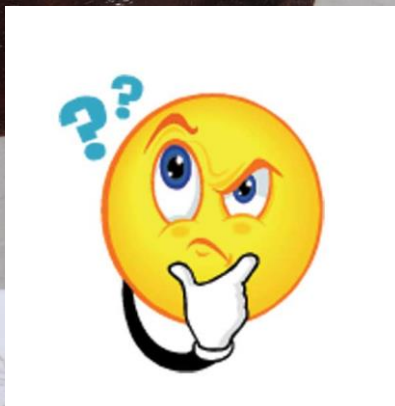


Does my horse even need grain?

Which supplement does my horse need?

How much grain should I feed?

Does my horse even need a supplement?



Grain (concentrate)

Energy
(calories)

- Supplied by carbohydrates & fats
- Weight gain/loss
- Various body functions

Protein

- Build muscle
- Growth
- Various body functions
- Can be used for energy

Vitamins &
Minerals

- Various body functions
- Immune system
- Reproduction
- Growth

Always a
combination of
ingredients

Supplement

Can be single or combination

Fat

- Increase energy in diet
- Add shine to hair/skin
- Modulate inflammation

Vitamin & Mineral

- Supply missing vitamins/minerals in diet
- Targeted (Vitamin E, selenium, B-vitamins, etc.)

Protein

- Improve protein in diet
- Supply missing amino acids

Health

- Hair, skin & hoof quality
- Joint
- Gut & ulcers

Know what you have and need

- Nutrient analysis
 - Lab analysis best
 - Estimates available
- Nutritional Research Council (NRC) guidelines
 - What nutrition class does your horse fall into?
 - What are the daily requirements?
- What is your horse's current body condition score
 - Underweight? Overweight?

An Affiliate of Cumberland Valley Analytical Services

Form:		Copies to:		Lab ID:
Desc:	#1 Round bale			11/03/2020
Submitter:	STEARNS DHIA LABORATORIES-NIR ACC. STEARNS			Arrived: 11/04/2020
Account:	STEARNS DHIA LABORATORIES-NIR ACCT			Completed: 11/04/2020
				Reported: 11/04/2020
#1 Round bale				
SAMPLE INFORMATION				
Lab ID:	29482 127	Version:	1.0	
Crop Year:		Series:		
Feed Type:	GRASS FORAGE	Cutting:		
Package:	BASIC NCR			
MOISTURE & SOLIDS				
Moisture	8.7			
Dry Matter	91.3			
PROTEIN				
	% CP	% CP	% DM	
Crude Protein	6.7			
Adjusted Protein	6.9			
Soluble Protein	30.7	2.1		
Ammonia (CPE)	22.3	6.8	0.47	
ADF Protein (ADICP)	13.1	0.90		
NDF Protein (NDICP)	28.5	2.03		
NDF Protein (NDFICP)	65.4	4.5		
Rumen Degr. Protein				
Amino Acid Protein, Total				
FIBER				
	% NDF	% DM		
ADF	66.0	40.1		
ADFCR		60.1		
ANKDFom		37.3		
NDF (NDF w/o sulfit)				
Crude Fiber				
Lignin	9.54	5.73		
NDF Digestibility (12 hr)				
NDF Digestibility (24 hr)				
NDF Digestibility (30 hr)				
NDF Digestibility (72 hr)				
NDF Digestibility (120 hr)				
NDF Digestibility (240 hr)				
UNDF (12 hr)				
UNDF (24 hr)				
UNDF (120 hr)				
UNDF (240 hr)				
CARBOHYDRATES				
	% Starch	% NPC	% DM	
Ethanol Soluble CHO (ESC-Sugar)	32.8	7.1		
Water Soluble CHO (WSC-Sugar)		11.9		
Starch	5.9	1.3		
Soluble Starch				
Soluble Fiber				
Starch Dig. (7 hr, 4 mm)				
Crude Fat				
Fatty Acids, Total		3.99		
C16:0				
C18:0				
C18:1				
C18:2				
C18:3				
Unsaturated Fatty Acids (MUFA)				
Fatty Acids (HFA)				
Values in bold were analyzed by wet chemistry methods.				
Stearns DHIA Laboratories, a CVAS affiliate				
PO Box 227, Slick Centre, NY 16378 800-369-2997 www.stearnsdhiab.com				

Does my horse need grain?

Does my horse need a supplement?

Is he losing weight?

Is my hay low quality?

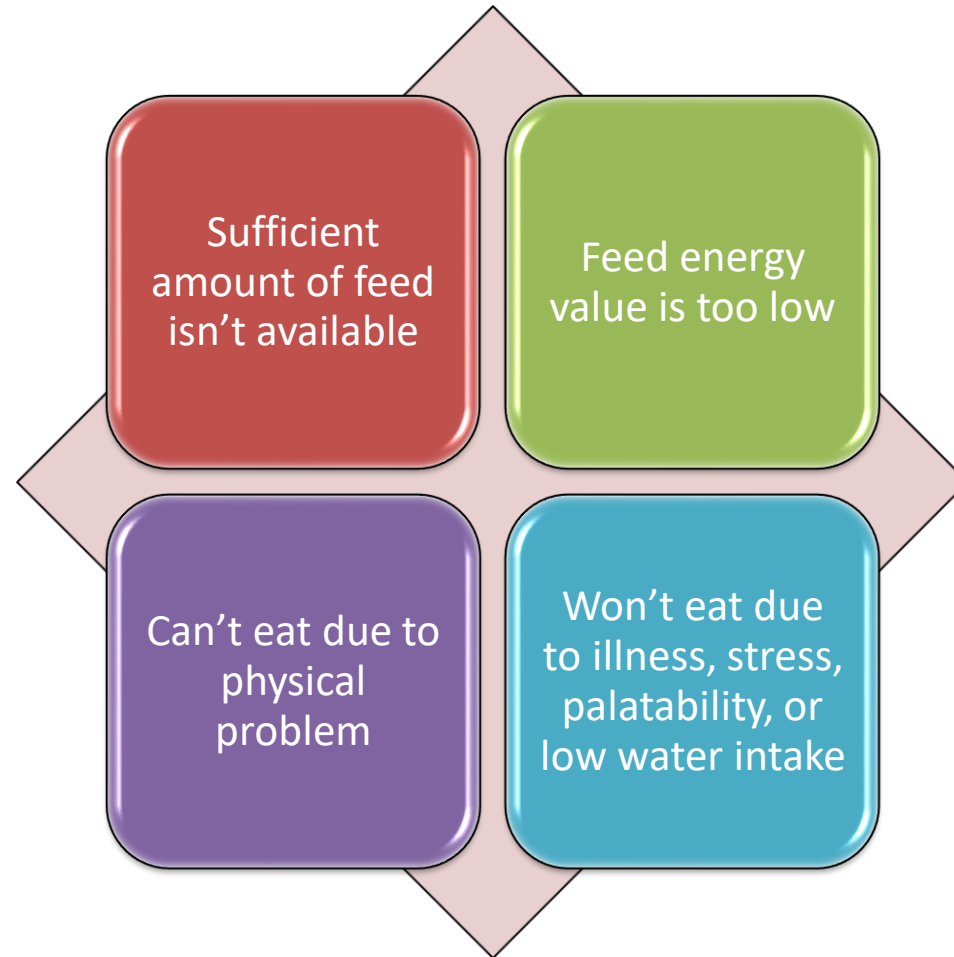
Is my hay missing nutrients?

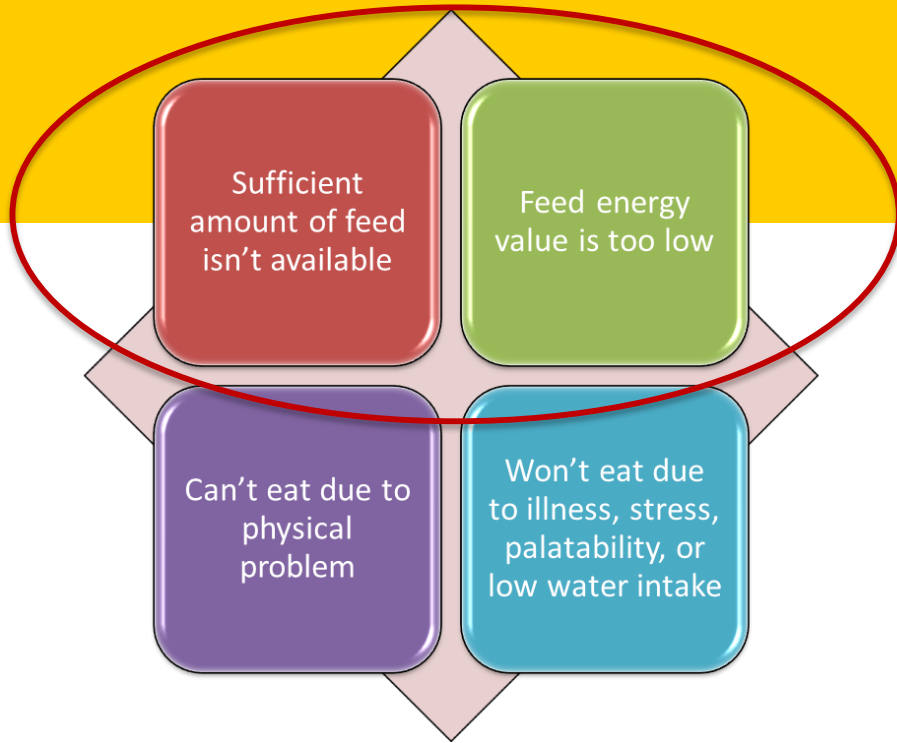
Is he a senior horse?

Weight loss

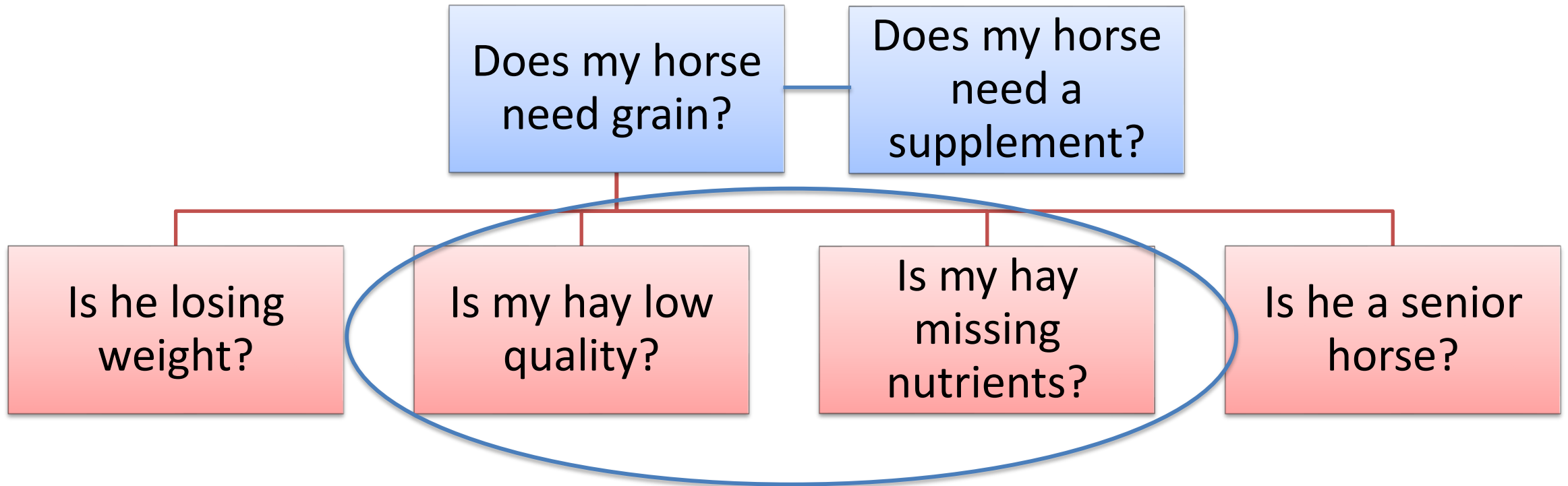
- Medical illness
- Heavy parasite burden
- Not consuming enough energy (calories)

Reasons Horse's Don't Consume Enough Energy (calories)





- Feed more
 - 3.5% BW maximum
- Add grain
 - Individual grains (oats, corn, etc.)
 - Commercial mix
- Add fat
 - Oil
 - Commercial fat supplement



How do I know?

- Low quality
 - Over mature (can get an idea visually)
 - Low protein and energy
 - Increased indigestible fiber = more waste
- Might meet energy needs of some horses
- May not meet protein or vitamin/mineral needs
 - Supplement

Ration balancer vs lick tub

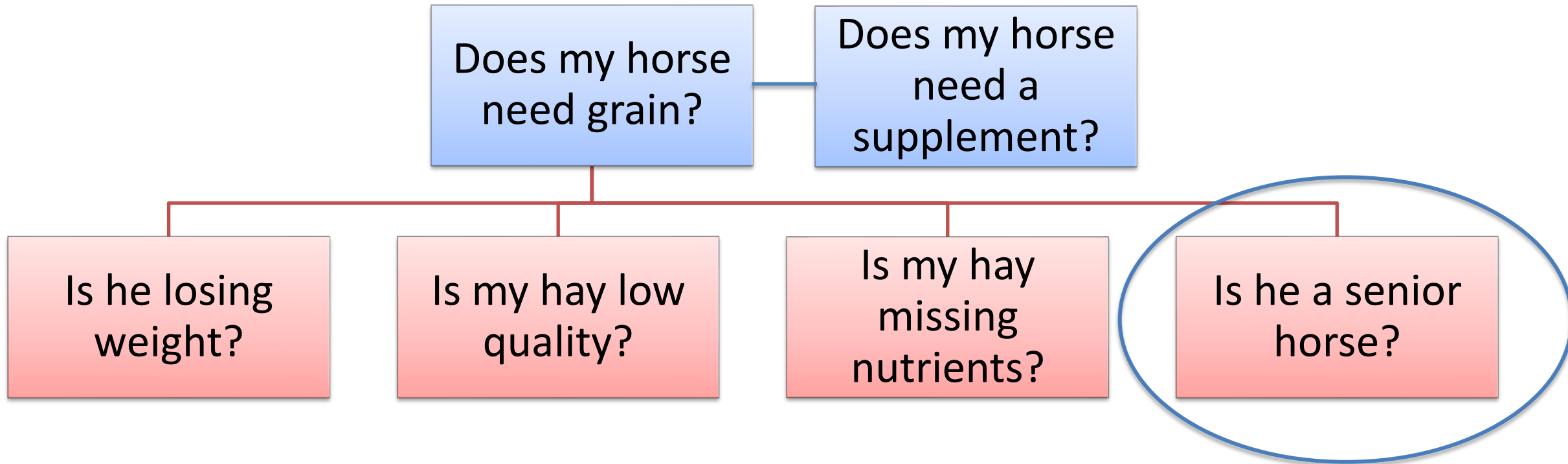
Neither one really designed to provide extra energy!

Ration Balancer

- High protein, low fat/fiber
- Vitamins/mineral
- Probiotics (most)
- Fed daily (similar to grain) but in very small amounts (< 2 lbs/day)

Lick Tub

- Incredibly variable
 - Protein, fat, fiber
 - Vitamins/minerals
 - Molasses
 - Probiotics
 - Gut health
 - Fly regulation
- Rely on horse consuming adequate amount on their own



Senior horses in the winter

Medical Issues

- Arthritis
- Kidney/liver function

Forage

- Teeth can't properly chew hay
- Alternative fiber sources
 - Beet pulp, hay cubes, pellets

Thermoregulation

- Reduced ability to keep warm
- Require more energy
 - Increase grain, add fat

Take home message

- No easy answer
- Know what you have and what your horse needs
- Monitor body condition frequently
- Provide protein or other supplements if needed
 - Balancing act, add one thing it can change the relationship of others
- Manage unique needs of senior horses

Reading a Feed Label

- Product Name and Purpose
- Commercial Feed Class
- Guaranteed Analysis
- Ingredient List
- Directions for Use
- Net Weight
- Manufacturer's Name & Address

Resource: NebGuide-UNL Publication G1403

(A) JOHNSON'S 12% TEXTURED HORSE FEED

(B) For Maintenance of Mature Horses

(C) Guaranteed Analysis

Crude Protein (Min)	12.0%
Crude Fat (Min)	3.0%
Crude Fiber (Max)	12.0%
Calcium (Min)	1.0%
Calcium (Max)	1.5%
Phosphorus (Min)	1.0%
Copper (Min)	20 ppm
Selenium (Min)	0.20 ppm
Zinc (Min)	40 ppm
Vitamin A (Min)	2,000 IU/lb

(D) Ingredient Statement

Grain Products, Plant Protein Products, Processed Grain By-Products, Molasses Products, Roughage Products, Vitamin A Supplement, Vitamin D3 Supplement, Vitamin E Supplement, Vitamin B12 Supplement, Riboflavin Supplement, Pyridoxine Hydrochloride, Folic Acid, Biotin, Thiamine, Calcium Carbonate, Salt, Dicalcium Phosphate, Manganous Oxide, Ferrous Sulfate, Copper Sulfate, Magnesium Oxide, Ethylenediamine Dihydriodide, Cobalt Carbonate, Potassium Chloride, Sodium Selenite.

(E) Feeding Directions:

Feed ½ to 1 lb. of feed per 100 lbs. of body weight for the maintenance of mature horses. Feed good quality hay at the rate of 1 to 2 lbs. per 100 lbs. body weight daily. Provide fresh, clean water at all times.

Important: Feed hay along with this ration, as per directions.

(F) Manufactured By:

JOHNSON'S FEED MILL
HORSEVILLE, KY 55555

(G) NET WT 50 LB (22.67kg)

Comparing Costs of Feed by Nutrients

<u>Feed</u>	<u>Cost</u>	<u>% CP 'as fed'</u>	<u>Cost / lb Protein (CP)</u>
Corn	\$3.50 / bu	10	\$.625
Whole Oats	\$14.99 / 50lbs	13.6	\$2.20
Flax	\$35.49 / 50lbs	22.8	\$3.11
Beet Pulp -Dried	\$140 / ton	9.1	\$.769
Alfalfa hay	\$73 / ton	15.5	\$.235
Grass hay	\$67 / ton	7	\$.478
Pelleted Soybean Meal	\$31.85 / 50lbs	49	\$1.30

Comparing Costs of Feed by Nutrients

Cost per lb of Protein = \$14.99 / 50 lbs / 13.6% CP

Cost per lb of Protein = \$0.2998 / lb / .136 CP

Cost per lb of Protein = \$2.20

Feed by Weight, Not Volume

Feed Weight

Food	Weight of 1 quart coffee can (lbs)
Whole Barley	1.5
Dried Beet Pulp	0.6
Whole Corn, Dent	1.7
Oats	1.0
Whole Wheat	1.9

Why is it important to feed by weight?

- Different feeds = different amounts/diets
- Weights change with different types of processing
- Weights can change when new formulations come out
 - Have a scale in your feeding area to weigh when you open a new bag to ensure it is the same.

Common Grains and By-Products Available in ND

- Energy Feeds/Cereal Grains:
 - Oats: 40% starch
 - Corn: 70% starch
 - Barley: 60% starch
 - Wheat: 60% starch (not recommended)
- Protein Feeds: 15-44% CP
 - Soybean Meal
 - Canola Meal
 - Distillers Grains
 - Flax
 - Wheat Middling Pellets
 - Pea Splits/Pea Chips
 - Sunflower Meal



BARLEY



OATS



WHEAT

- Others:
 - Beet Pulp: \$40-60/ton dried shreds
- NDSU Co-Products Pricing List
 - Local Elevator for Grain Prices

Processing Options

- Whole
- Cracked
- Crimped
- Steam Flaked
- Ground
- Textured
- Pelleted
 - Size differences
- Extruded



Cracked Corn



Crimped Oats



Steam Flaked Barley



Example Grain Ration

Growing Horse/Late Pregnancy/Lactation

1 Ton Mix (2000 lbs)

- 880 lbs oats (crimped)
- 680 lbs corn (cracked)
- 260 lbs canola meal pellets
- 10 lbs dicalcium phosphate
- 20 lbs limestone
- 10 lbs Trace Mineral Mix
- 2 lbs Vitamin Mix
- Binding Agent

Small Batch Mix (200 lbs)

- 88 lbs oats
- 68 lbs corn
- 26 lbs canola meal
- 1 lb DiCal
- 2 lb Limestone
- 1 lb Trace Mineral Mix
- 0.2 lb Vitamin Mix
- Binding Agent

Calculating Cost of Your Grain Ration



- Oats \$3.10/bushel
 - $\frac{1}{32}\text{lbs/bu} = .09/\text{lb} \times 880\text{lbs} = \mathbf{\$85.25}$
- Corn \$3.50/bushel
 - $\frac{1}{56}\text{lbs/bu} = .06/\text{lb} \times 680\text{lbs} = \mathbf{\$42.50}$
- Canola Meal Pelleted \$250/ton
 - $\frac{250}{2000} = .12/\text{lb} \times 260\text{lbs} = \mathbf{\$32.50}$
- DiCal \$20/50lbs = 0.40/lb x 10lbs = **\$4.00**
- Limestone \$12/50lbs = .24/lb x 20lbs = **\$4.80**
- Trace Mineral \$35/25lbs = .71/lb x 10lbs = **\$7.10**
- Vitamin Mix \$35/50lbs = .70/lb x 2lbs = **\$1.40**
- Ration Cost: **~\$180/ton**
 - Or around .10/lb as fed to equal around \$5 per 50lb "bag"
 - Fed at 6 lbs/day would be a grain cost of \$.60/day

Homemade Grain Ration Hidden Costs



- Remember to figure in:
 - "Leftover" ingredients not used
 - Shipping/Transportation Costs
 - Mixing and Processing Costs
 - Feed Mixer, Feed Wagon, Roller Mill, Hammer Mill
 - Storage Costs
 - Available Space
 - Totes/Grain Cart/Gravity Wagon/Small Feed Bin
 - Will you use it before it spoils

Grain Feeding Tips

- Feed forage first
- Divide into multiple smaller meals (max of 5lbs/feeding)
- Feed according to needs of the individual horse
- Feed horses separately
- Store feed securely
- Check for spoilage
- Place in a feeder
- Options for fast eaters
- Change feeds gradually
- Monitor weight and BCS regularly
- Utilize research based resources



Resources

- Determine Horse Nutrient Requirements
 - <https://nrc88.nas.edu/nrh/>
- Sampling Feed for Analysis
 - <https://www.ag.ndsu.edu/publications/livestock/sampling-feed-for-analysis/as1064.pdf>
- CoProduct Sources and Pricing in ND
 - <https://www.ag.ndsu.edu/livestockextension/documents/coproduct-pricing-2021-22#section-13>
- NebGuide-UNL Publication G1403
 - <https://extensionpubs.unl.edu/publication/9000016360347/basics-of-feeding-horses/>
- Extension Horses: Feeds
 - <https://horses.extension.org/category/feeds/>