

# **Dairy Skillathon**

## **2019**

# **Dairy Breeds**

# Aryshire



# Brown Swiss



# Guernsey



# Holstein



# Jersey



# Milking Shorthorn



# Red and White



# **Breed Descriptions**

# Aryshire

- Originated in Scotland
- Originally known as the Dunlop
- Color: red and white
- Good feet and legs
- Excels in udder conformation
- Medium-sized frame

# Brown Swiss

- Originated in Switzerland
- Because of foot and mouth disease, only 3 have been imported since 1906
- Good temperament and strong feet and legs
- Color: gray or light brown to dark brown

# Guernsey

- Originated from the Isle of Guernsey
- Known for high quality (high fat and protein content) milk while consuming less feed
- Intermediate frame
- Known for milk to have a golden color

# Holstein

- Originated in Europe
- Large frame
- Color: black and white
- Known for outstanding milk production

# Jersey

- Originated from the Isle of Jersey (small British isle)
- Color: very light gray to dark brown or almost black
- Known for high milk fat
- Wide-range of body weight; typically smaller-framed

# Milking Shorthorn

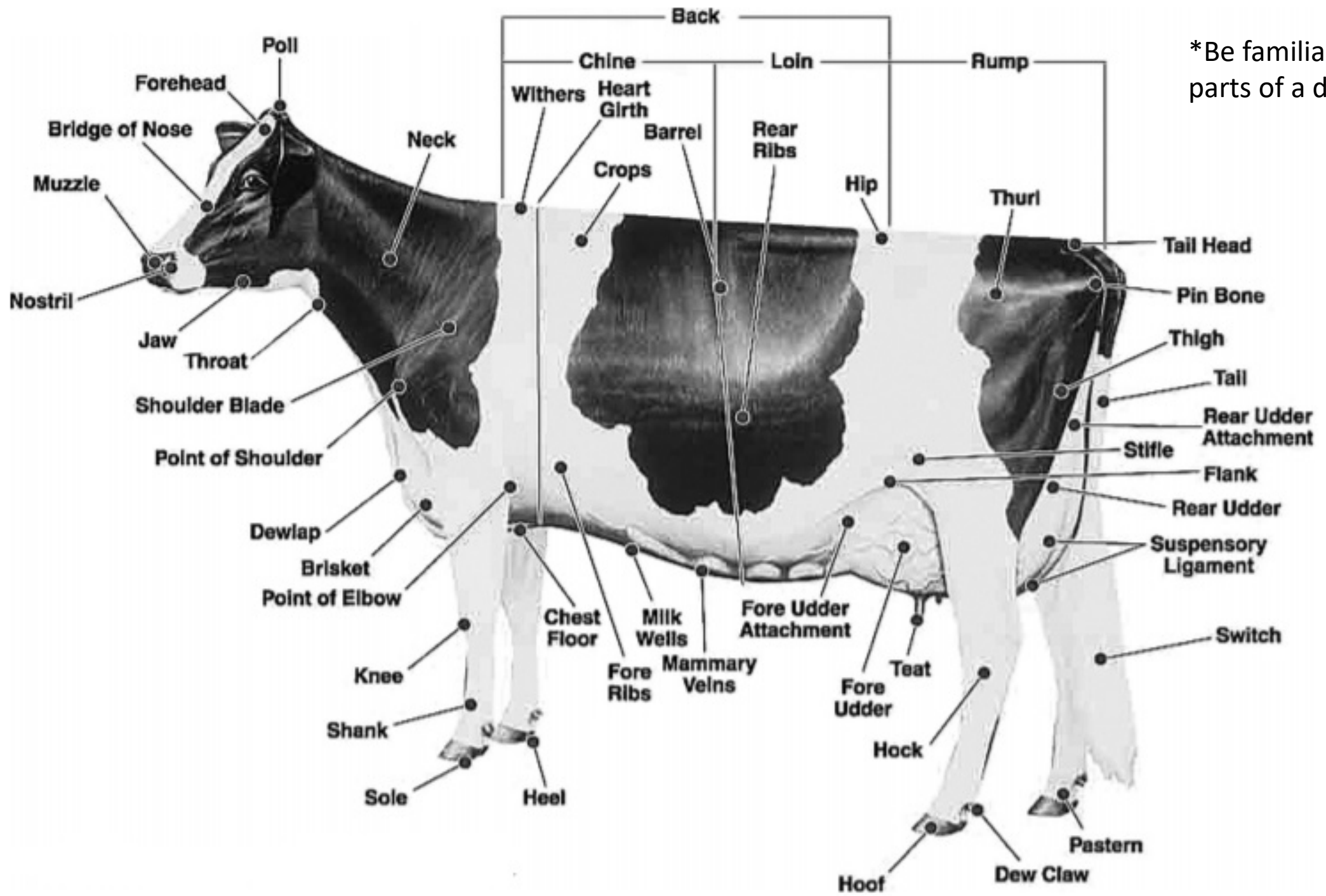
- Originated in England
- Color: red, white, red and white, roan
- Most versatile of all breeds: good producers, good temperament, good calves, good frame
- Dual breed- a breed in both dairy and beef

# Red and White

- Can have genetics from several different breeds- most are Holstein, but can have genetics from other cattle that have reddish coats (Milking Shorthorn or Ayrshire)
- The color red is a natural variation and caused by the expression of recessive genes
- Established in 1964 by a group of Shorthorn cattle breeders looking to make improvements to Shorthorn milk production

# **Anatomy of a Dairy Cow**

\*Be familiar with all parts of a dairy cow



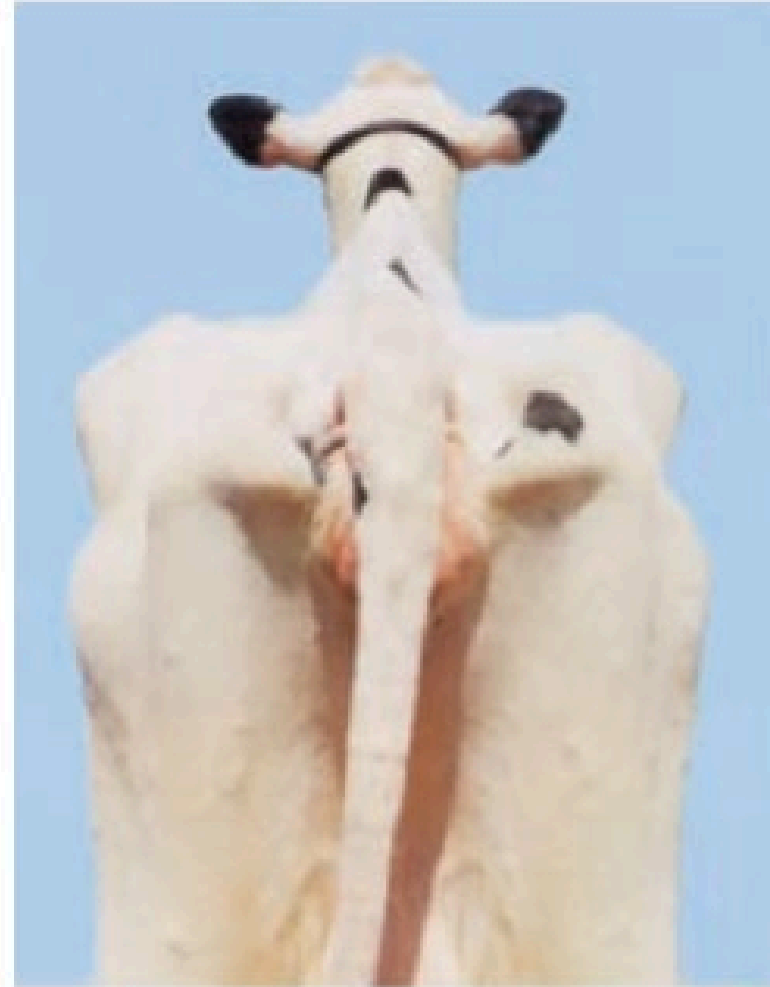
# **Body Condition Scoring**

# 5 Point Scale with .25 increments

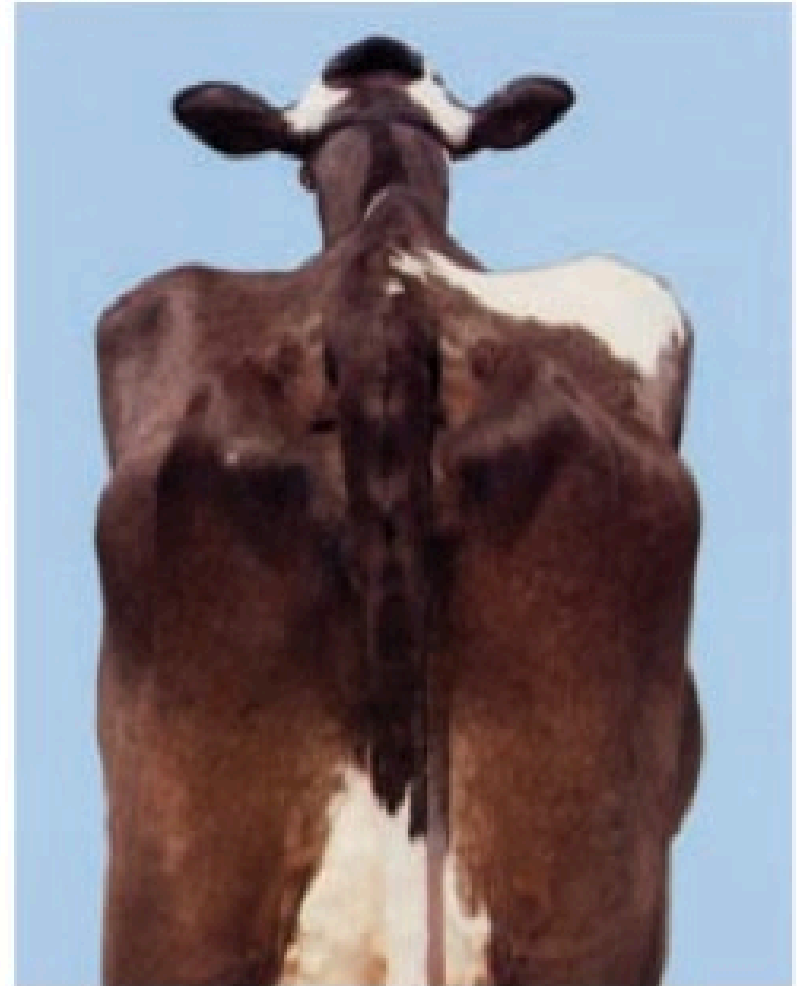
1. Backbone noticeable, hips and shoulder bones noticeable, ribs clearly visible, tail-head area sunken, skeletal body outline
2. Backbone visible, hips and shoulder bones visible, ribs visible faintly, tail-head area slightly sunken, body outline bony
3. Hip bones visible faintly, ribs generally not visible, tail head area not sunken, body outline almost smooth
4. Hip bones not visible, ribs well covered, tail head area slightly lumpy, body outline rounded
5. Hip bones showing fat deposits, ribs very well covered, tail head area very lumpy, body outline bulging due to fat

\*Follow the link for more information: [https://www.youtube.com/watch?v=FZJat\\_LIB6c](https://www.youtube.com/watch?v=FZJat_LIB6c)

# BCS 1

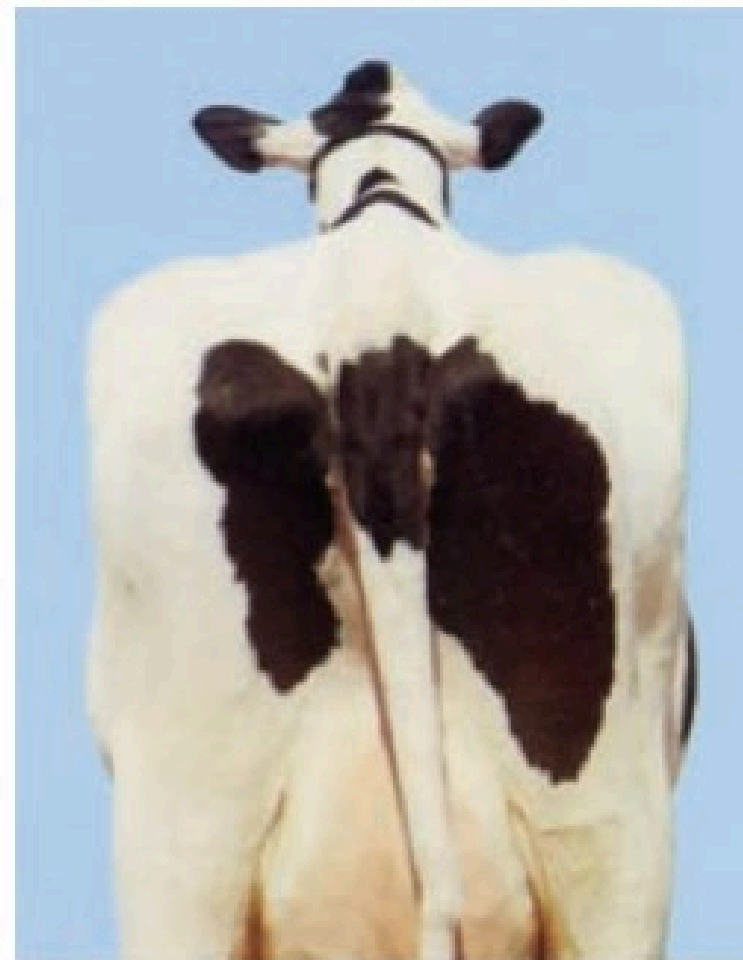


BCS 2



\*3.0 ideal for Mid Lactation Cows  
\*3.25- 3.75 Late Lactation Cows

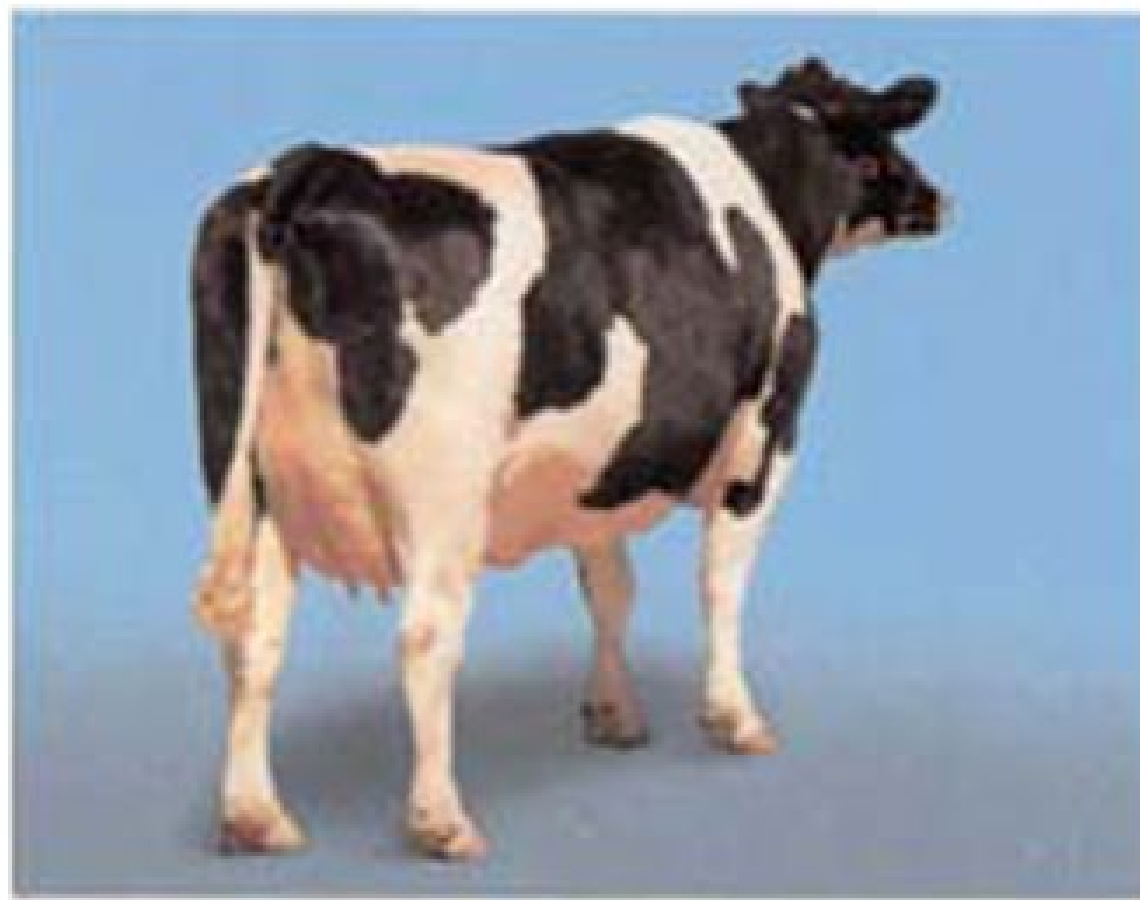
## BCS 3



BCS 4



Score 5



# **Locomotion Scoring**

# 3 point scoring system

1. Sound with a healthy gait
2. Favors a limb while walking
3. Severely lame, trying to avoid bearing weight on limb

\*Follow link to learn more about locomotion scoring:  
<https://www.youtube.com/watch?v=WVqFeLZcZ48>

# **DHIA Records**

Somatic Cell Score  
Milk Weight  
% Protein  
%Fat  
For previous test  
days

# DHIA Records

- Complete lactation days in milk: target around 300; extremely short = left herd early; extremely long = difficulty breeding
- Milk production and components: higher is generally better, but look at overall animal performance
- Yield Deviation and Estimated Producing Ability: + (positive) values are better than herdmates, - (negative) values are worse than herdmates
- Avg SCCS for lactation: lower is better
- Days Open: as close to 60 as possible
- # Br: lower is better
- Test day data: each category follows similar rules as shown above

# **Identification of Feeds and Forages**

# Shelled Corn



# Ground Shelled Corn



# Cracked Shelled Corn



# Ground Ear Corn



# Oats



# Barley



# Wheat



# Soybeans



# Ground Limestone



# Dicalcium Phosphate (Dical)



# Salt (Sodium Chloride)



# Trace-Mineralized Salt



# Soybean Meal



# Cottonseed Hulls



# Beet Pulp



# Distillers Dried Grains



# Milo (Sorghum)



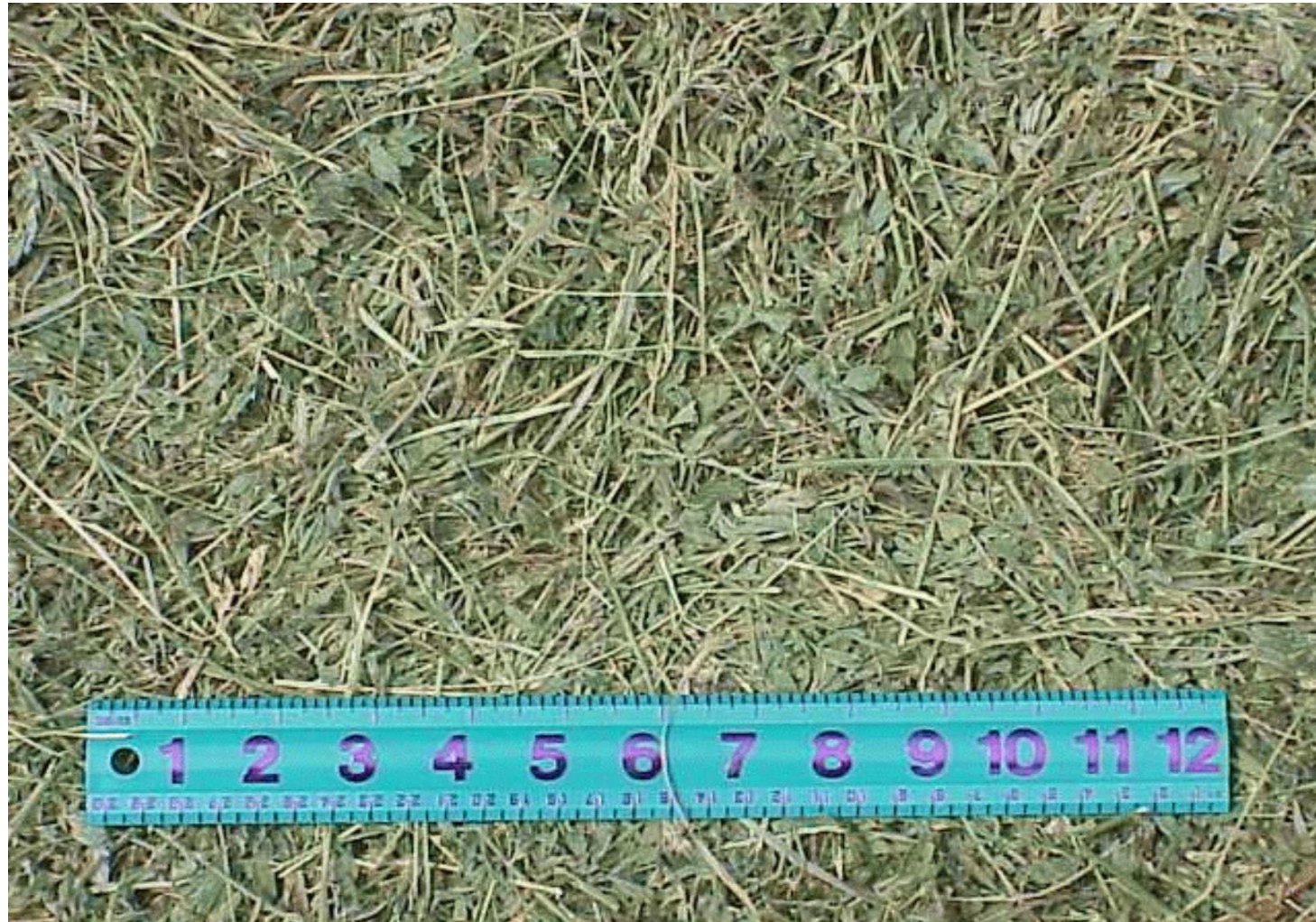
# Wheat Bran



# Urea



# Alfalfa Hay



# Fescue Hay



# Orchardgrass Hay



# Timothy Hay



# Red Clover Hay



# White Clover Hay



# Categorization of Feeds

## 1. Forages

- a. Wet/ensiled: silage, haylage
- b. Dry: grass legume hays, alfalfa hay, peanut hays


## 2. Concentrates

- a. Energy: corn, barley, oats, wheat, molasses, milo (sorghum)
- b. Protein: soybean meal, cottonseed meal, corn gluten feed, brewer's grains, dried distillers grains
- c. Vitamins/Minerals: limestone, dicalcium phosphate, trace-mineralized salt

# **Quality Assurance**

# Medication Insert

\*Be familiar with all areas on a medication insert

<i>Name of Drug</i> <b>OMNIBIOTIC</b>		<i>Active Ingredients</i>										
(Hydrocillin in Aqueous Suspension)		<i>Species and Animal Class</i>										
For use in Beef Cattle, Lactating and Non-Lactating Dairy Cattle, Swine and Sheep												
Read Entire Brochure Carefully Before Using This Product												
<b>For Intramuscular Use Only</b>												
<i>Approved Uses</i>	<b>Active Ingredients:</b> Omnibiotic is an effective antimicrobial preparation containing hydrocillin hydrochloride. Each ml of this suspension contains 200,000 units of hydrocillin hydrochloride in an aqueous base.											
<i>Indications:</i>	<b>Cattle</b> - bronchitis, foot rot, leptospirosis, mastitis, metritis, pneumonia, wound infections. <b>Swine</b> - erysipelas, pneumonia. <b>Sheep</b> - foot rot, pneumonia, mastitis; and other infections in these species caused by or associated with hydrocillin-susceptible organisms.											
<b>Recommended Daily Dosage</b> The usual dose is 2 ml per 100 lb of body weight given once daily. Maximum dose is 15 ml/day.												
<i>Dosage</i>	{ <table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <th style="text-align: left; padding: 2px;">Body Weight</th> <th style="text-align: left; padding: 2px;">Dosage</th> </tr> <tr> <td style="padding: 2px;">100 lb</td> <td style="padding: 2px;">2 ml</td> </tr> <tr> <td style="padding: 2px;">300 lb</td> <td style="padding: 2px;">6 ml</td> </tr> <tr> <td style="padding: 2px;">500 lb</td> <td style="padding: 2px;">10 ml</td> </tr> <tr> <td style="padding: 2px;">750 lb or more</td> <td style="padding: 2px;">15 ml</td> </tr> </table>	Body Weight	Dosage	100 lb	2 ml	300 lb	6 ml	500 lb	10 ml	750 lb or more	15 ml	
Body Weight	Dosage											
100 lb	2 ml											
300 lb	6 ml											
500 lb	10 ml											
750 lb or more	15 ml											
Continue treatment for 1 to 2 days after symptoms disappear.												
<i>Cautions and Warnings</i>	<b>Caution:</b> 1. Omnibiotic should be injected deep within the fleshy muscle of the neck or thigh. Do not inject this material in the hip or rump, subcutaneously, into a blood vessel, or near a major nerve because it may cause tissue damage. 2. If improvement does not occur within 48 hours, the diagnosis should be reconsidered and appropriate treatment initiated. 3. Treated animals should be closely observed for at least 30 minutes. Should a reaction occur, discontinue treatment and immediately administer epinephrine and antihistamines. 4. Omnibiotic must be stored between 2° and 8° C (36° to 46° F). Warm to room temperature and shake well before using. Keep refrigerated when not in use.											
<i>Sizes Available</i>	<b>Warning:</b> Milk that has been taken from animals during treatment and for 48 hours (4 milkings) after the last treatment must not be used for food. The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food.											
<b>How Supplied:</b> Omnibiotic is available in vials of 100 ml.		<i>Route of Administration</i>  <i>Storage Requirements</i>  <i>Withholding Times</i>										
		<b>TAKE TIME</b>  <b>OBSERVE LABEL DIRECTIONS</b>										

# Medication Label

\*Be familiar with all areas on a medication label

Name of Drug

**OMNIBIOTIC**

(hydrocillin)

Active Ingredients

**Directions for use: See package insert**

Cautions  
and Warnings

**Warning:** The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food. Exceeding the highest recommended dosage level may result in antibiotic residues in meat or milk beyond the withdrawal time.

Withholding  
Times

**Store between 2° and 8° C (36° and 46° F)**

Storage

**Keep dry and keep away from light**

Quantity  
of Contents

Net Contents: 100 ml

TAKE TIME



OBSERVE LABEL  
DIRECTIONS

Distributed by

**USA Animal Health, Inc.**

Name of Distributor

# Diseases

# Coccidiosis

- Commonly a disease of young cattle (1-2 months to 1 year)
- Usually sporadic during the wet seasons of the year
- Most characteristic sign is watery feces
- Infected calves should be removed from the rest

# Cryptosporidiosis

- Caused by infection with a single-celled parasite
- Symptoms: diarrhea (watery and loose), colic, depression, loss of appetite and weight loss
- Treatment: none; Fluid therapy and nutritional support
- Prevention: separate infected calves from healthy calves, good sanitation practices

# Acidosis

- Metabolic disease
- pH of rumen falls to less than 5.5 (normal is 6.5 to 7.0)
- When pH falls: rumen stops moving (depresses appetite and production) and acid-producing bacteria take over the rumen
- Causes: feeding a high level of rapidly digestible carbohydrate (feeding increased concentrates compared to forage)
- Symptoms: reduced feed intake, diarrhea, lethargy
- Prevention: reduce amount of readily fermentable carbohydrate consumed at each meal

# Metritis

- Inflammation of the uterus
- Caused by a bacterial infection
- Usually occurs after calvings complicated by dystocia, retained fetal membranes, twins or stillbirths
- Symptoms: fever, vaginal discharge, uterus contains extra fluid, cow goes off feed

# Ketosis

- Metabolic disorder that occurs when energy demands exceed energy intake and result in negative energy balance
- Low blood glucose concentrations
- Most common in first few weeks of lactation
- Symptoms: reduced milk yield, weight loss, reduced appetite, acetone smell on breath
- Prevention: adequate feeding practices

# Milk Fever

- Metabolic disease caused by a low blood calcium level
- Symptoms: dry muzzle, cold legs and ears, constipation, drowsiness
- Treatment: replenish cow with calcium solution
- Prevention: adequate feeding practices; feeding lower amounts of calcium during the dry period; feeding a negative anion diet (DCAD diet) during the dry period.

# Lameness

- Due to injury or disease in the foot or leg (laminitis, claw disease, digital dermatitis, and foot rot)
- Symptoms: pain and discomfort, lowered milk yields
- Prevention: hoof trimming, nutrition, housing and environment

# Pneumonia

- One of the most common diseases in dairy calves from birth to weaning
- Symptoms: fever (rectal temperature over 103 degrees Fahrenheit), rapid respiratory rate, coughing, nasal discharge
- Prevention: Colostrum management, ventilation, vaccination, nutrition

# Pinkeye

- Inflammation of clear outer layer of eye (cornea) and the pink membrane lining the eyelids
- Highest during the summer
- Symptoms: sensitivity to light, redness of eye, reduced feed intake
- Prevention: fly control, providing shade, reduce overcrowding

# Bloat

- Increase in the gas pressure within the rumen
- Cause: consumption of lush legume pasture species in the spring
- Symptoms: off feed, reluctant to move, appear distressed, rapid breathing
- Prevention: pasture management

# Mastitis

- Inflammation or infection of the mammary gland
- Symptoms: udder is swollen, hot, hard, red, and painful. Milk is watery and has flakes or clots present. Reduced milk yield, increase in body temperature, lack of appetite
- Prevention: good housing management, effective teat preparation and disinfection, regular testing and maintenance of milking machine, vaccination for environmental mastitis

# Equipment

# Vacuum Gauge



Measures the vacuum level of milking system

# Inflation



Made from flexible materials; attaches to cow's teat during milking;  
normally surrounded by a rigid shell

# Teat Dip Cup



Teat dip fills the top compartment; teat dip is applied to teat by inserting it into top compartment

# Pulsator



Controls when vacuum pressure is applied inside the shell

# Milking Claw



Collects milk from individual teats, then milk moves through tubing into main pipeline; attaches to shell/inflation and air tubes

# CMT Paddle



Used in mastitis detection; milk is placed into each section and a reagent is added that helps identify cases of mastitis

# Uterine Infusion/Insemination Tubes/ A.I. Sheaths



# Insemination Rod



Used with semen straws; places semen inside cow during artificial insemination

# Artificial Insemination Glove



# Calf Nursing Bottle



# Ear Tagger



Attaches tags to ear of cattle

# Electric Dehorner



Used for dehorning calves

# Bucket Milker



# OB Chain



Used to assist cows when having difficulty birthing their calf

Follow link for proper attachment to calf:  
[https://www.youtube.com/watch?v=vJRDv\\_hb8QUQ](https://www.youtube.com/watch?v=vJRDv_hb8QUQ)

# Support Arm



Supports milk/vacuum tubing while the milking unit is attached to the cow

# Vacuum Regulator



Maintains vacuum levels in  
milking system

# Jetter Distributer



Distributes water/cleaning solution to milking unit during CIP cleaning



CIP cup

duckbill drain

Clean In Place (CIP)  
System

# Elastrator



Used to castrate bull calves

# Syringe



Used to give injections to cattle

# Paint Stick



Used for marking cattle

# Weaning Ring



Inserted into nose of calves that are not completely weaned;  
prevents calf from nursing

# Colostrum instruments

- Colostrumeter



- Refractometer



# Colostrum instruments

## Colostrometer

- Measures specific gravity
- Placed in a cylinder containing colostrum and floats freely
- **Green**= >50 mg/mL of immunoglobulins
- **Yellow**= 20 to 50 mg/mL of immunoglobulins
- **Red**= <20 mg/mL of immunoglobulins

Follow link on how to use:

[https://www.youtube.com/watch?v=bL59AxJP\\_fA](https://www.youtube.com/watch?v=bL59AxJP_fA)

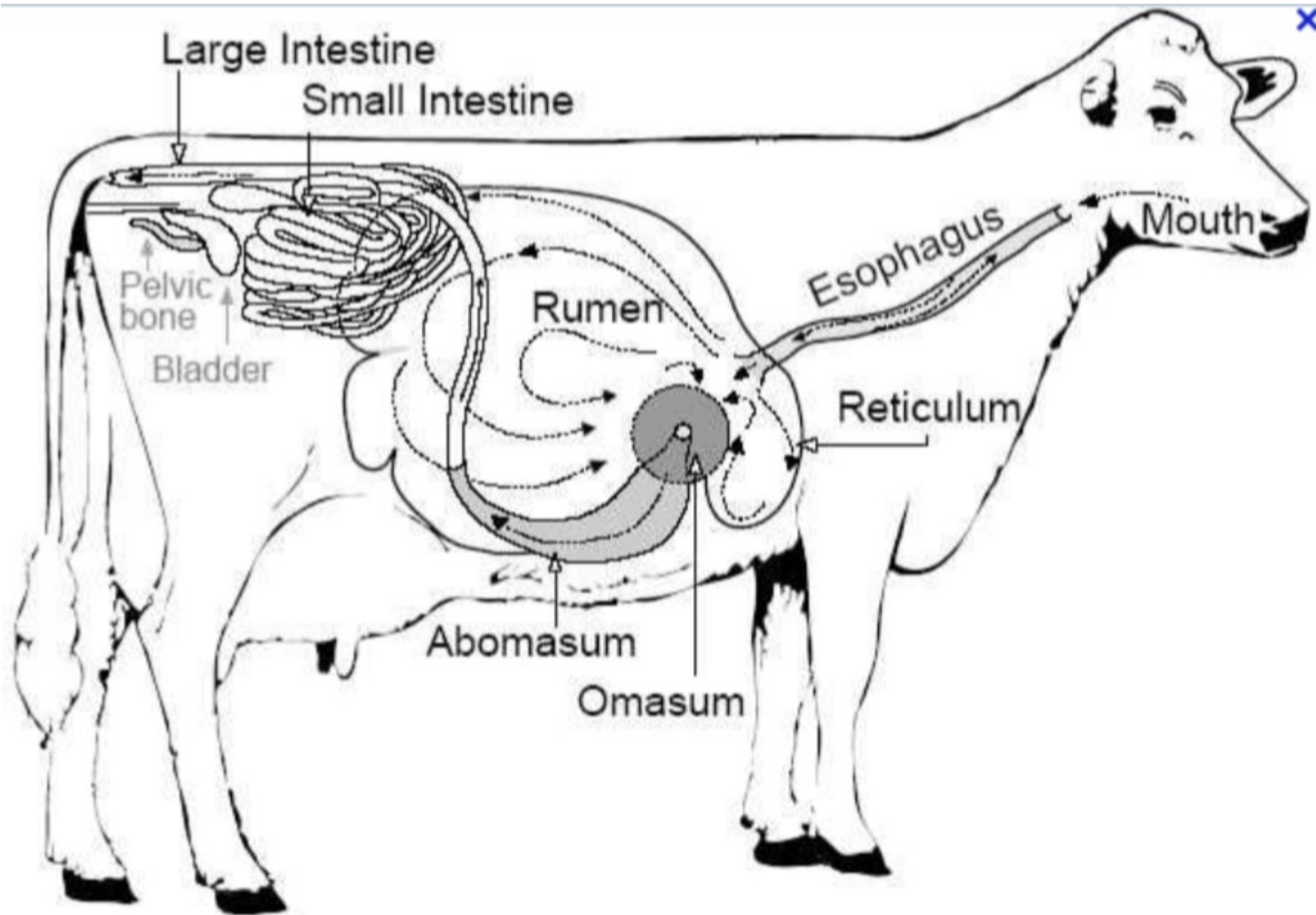
## Refractometer

- Few drops of colostrum placed on prism and sample covered lowered
- Hold up to light source
- Value is read at the line between the light and dark areas that appear on the scale

Follow link on how to use:

<https://www.youtube.com/watch?v=uMZ5hsl6qws>

# Nutrition



\*Be familiar with parts of a ruminant digestive system and flow of feed through system

# Rumen



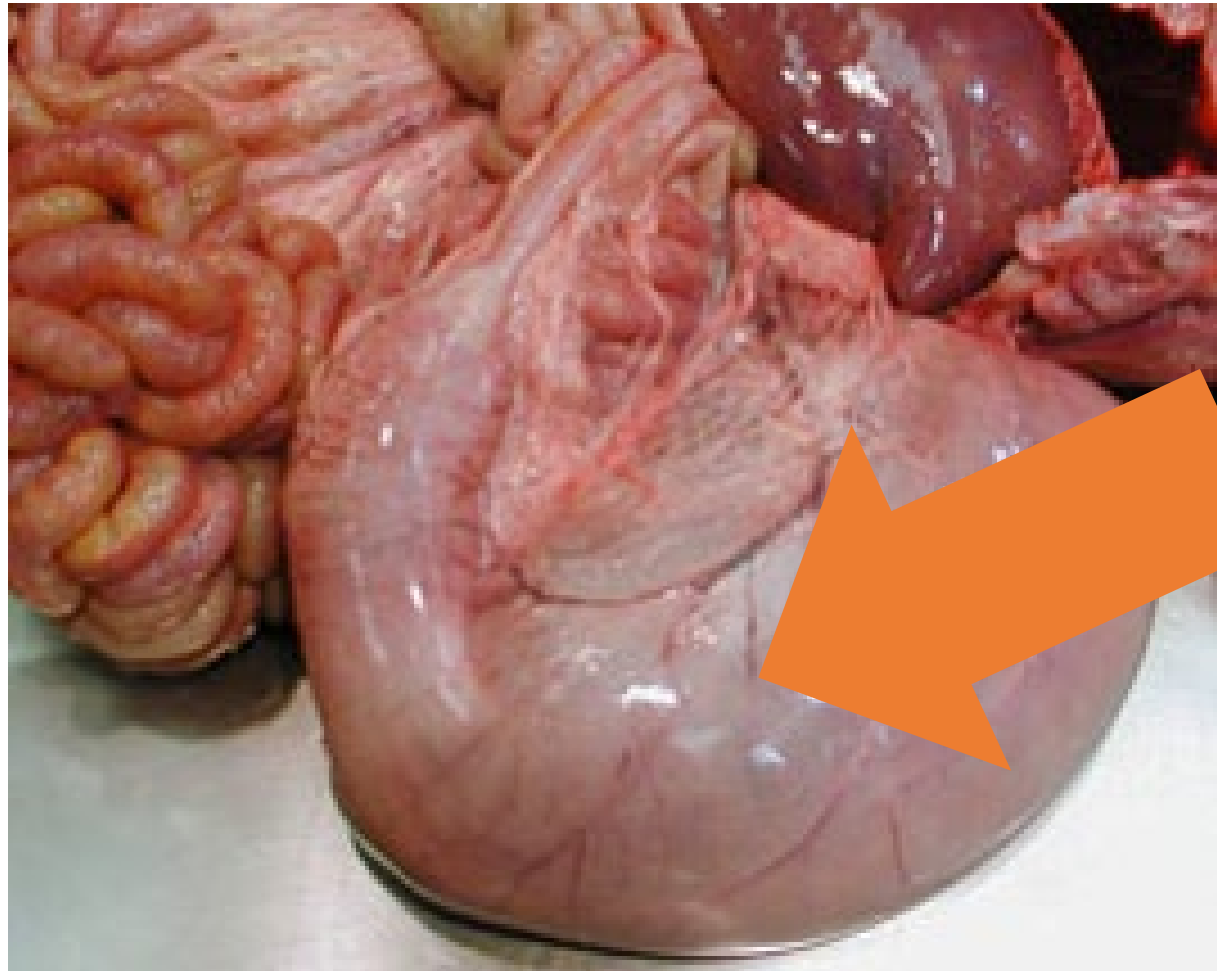
# Reticulum



# Omasum



# Abomasum



# TMR (Total Mixed Ration)

- Most forage particles in silage and haylage should range from  $\frac{3}{8}$  to  $\frac{3}{4}$  in length
- Forage particles that are very fine or grain that is too whole or coarse should be avoided
- Cows sort against long particles and sort for finer particles



# TMR

Very long particle size – can lead to sorting and inefficient feed intake



Good mixture of particle length – difficult to pick out individual feed types which limits sorting



# Penn State Shaker Box

2017 Guidelines

## Recommended distribution of particle size (percent remaining on each screen) for corn silage, haylage, and TMR samples

Screen	Pore Size (inches)	Particle Size (inches)	Corn Silage	Haylage	TMR
Upper Sieve (19 mm)	0.75	> 0.75	3 to 8%	10 to 20%	2 to 8%
Middle Sieve (8 mm)	0.31	0.31 to 0.75	45 to 65%	45 to 75%	30 to 50%
Lower Sieve (4 mm)	0.16	0.16 to 0.31	20 to 30%	30 to 40%	10 to 20%
Bottom Pan		< 0.16	< 10%	< 10%	30 to 40%



[https://extension.psu.edu/downloadable/download/sample/sample\\_id/963/](https://extension.psu.edu/downloadable/download/sample/sample_id/963/)

# Penn State Shaker Box

Check out these YouTube videos for examples of how to take and use a Penn State Shaker Box

<https://www.youtube.com/watch?v=RKu34pg-zaU>

<https://www.youtube.com/watch?v=d-vPe8QuE34>

2019 recommendations for Total Mixed Ration only

Table 2. Miner Institute's PSPS recommendations*			
	Sieve (mm)	% retained	Comments
Top	19	less than 5	Sortable material, too long, increases time needed for eating; especially if greater than 10 percent.
Mid 1	8	greater than 50	Still long and physically effective, more so than 4-mm material. Maximize amount on this sieve 50 to 60 percent.
Mid 2	4	10 to 20	Functions as physical effectiveness factor (pef) sieve, no recommendation for amount to retain here other than total on the top three sieves equal pef.
Pan	—	25 to 30	A 40 to 50 percent grain diet results in at least 25 to 30 percent in the pan.
*PSPS (Penn State Particle Separator)			

<https://hoards.com/article-25887-its-time-to-rethink-particle-size.html>