

ATTACHMENT: Photographs of non-ruminating and ruminating calves

Formula Fed Veal (a NON-RUMINATING calf)

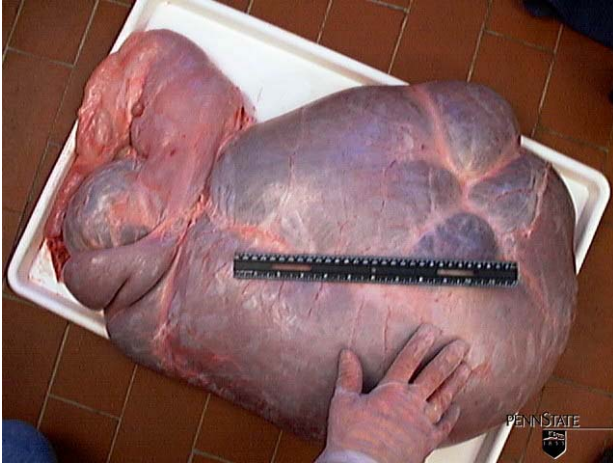
- Formula fed veal calves consume a liquid milk based diet.
- Formula fed veal calves **do not** have a functioning rumen. The rumen is the largest of the four stomach chambers and is connected to the esophagus. In image below, the ruler is lying across the rumen.
- The rumen of a formula fed veal calf is considerably smaller than the rumen of a non-formula fed veal calf. The rumen of a formula fed veal calf has much lighter coloration and lacks the rugae (folds) and papillae (fingerlike projections) development found inside the rumen in a non-formula fed veal calf.
- **When palpated, the rumen of a formula fed veal calf will be soft, limp, thin, and pliable because the rumen is undeveloped. The contents will be fluid. You should not feel solid material within the rumen.**
- Skeletal muscle is pale in color, almost gray in some animals, and very moist.



Rumen and reticulum of a 6 week old formula fed veal calf

Non-formula Fed Veal (a RUMINATING calf)

- Non-formula feed veal calves consume a diet containing hay, grain and/or milk. Non-formula fed veal calves **do** have a functioning rumen.
- A functioning rumen has undergone a physiological change and is capable of digesting hay, and/or grain.
- The rumen of a non-formula feed veal calf is larger with a darker coloration and visible rugae (folds) and papillae (fingerlike projections) on the inside of the rumen.
- In image below the ruler is lying across the rumen.



Rumen and reticulum of a 12 week old non-formula fed veal calf consuming milk, grain, and hay

- **When palpated, the wall of the rumen in a non-formula feed veal calf will be firmer, thicker, and not as pliable because of the greater rumen development. In some calves it is possible to palpate from the outside, the rugae (folds) on the inside surface of the rumen. The contents will be firm and doughy. You may feel grain and solid feed material within the rumen.**
- Skeletal muscle is pink

NOTE: FSIS does not intend for inspection personnel to make incisions into the rumen and reticulum.