



Rumen Development

The key to rearing healthy calves

“The key to rapid rumen development and a functional rumen in time for weaning is to offer grain to calves early and ensure that grain is consumed early”

Jud Heinrichs and Keith Lesmeister
Dairy and animal science - Penn State University

Rumen development at 6 weeks



Milk & grain



Milk & hay



Milk only

A healthy rumen has a dark colouration, which is caused by increased tissue mass and large blood vessels (vascularization).

The papillae in a healthy rumen are numerous and visible without magnification.

Differences in the number and size of papillae and the colour of the rumen wall can be seen easily in these three calves.

Rumen development at 12 weeks



Milk, grain & hay



Milk & hay

Look at the dramatic difference in the number and length of papillae between these two calves. Also, note the healthy, dark colouration of the calf fed grain.

The calf fed milk and hay has stunted rumen development, with light colour and very little papillae growth.

• Pictures courtesy of Penn State University



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