

Microbes keep cows alive

Rumen microbes (bacteria, protozoa, and fungi) could be considered a cow's best friend. Without microbes, a cow's digestive system would shut down and she would starve.

Cows and microbes have a mutually beneficial relationship. Microbes give cows:

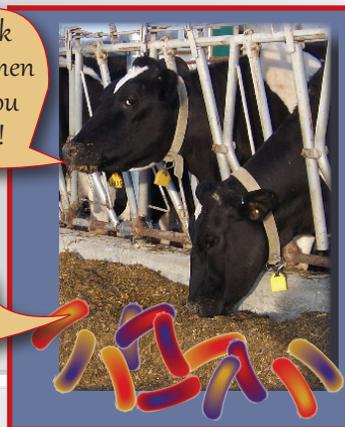
- labor to digest feed
- a source of protein
- the ability to digest forage.

On the other hand, cows provide microbes with:

- water and warmth
- grinding (cud chewing) of feed
- anaerobic (no oxygen) conditions.

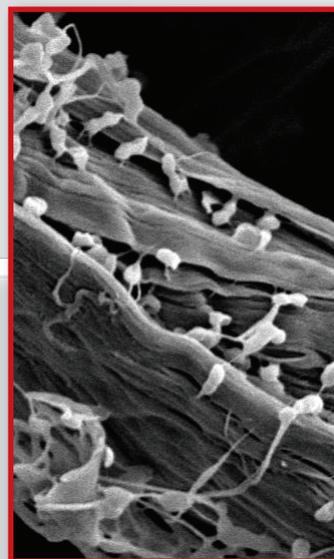
Get back
in the rumen
where you
belong!

We get the
food first!



You're not feeding the cow

When you feed a cow you're really feeding the microbes in her rumen. The cow relies on rumen microbes to convert feeds to volatile fatty acids (VFAs) that the cow absorbs and uses to make energy and milk. About two-thirds of feed digestion and 90 percent of fiber digestion takes place in the rumen – all with the aid of microbes.



Bacteria breaking down a strand of fiber in the rumen.

While rumen microbes help cows digest feed, they're also an important source of feed for cows. They're typically about 55 percent protein, and they have an almost perfect mixture of amino acids, the "building blocks" of protein.

Microbes allow cows to make use of feeds, like alfalfa and grasses, that people can't eat. Many of these plants are grown on land that isn't suitable for other crops. Thus, cattle produce food from land that might otherwise not be able to grow food.

New microbes
are constantly
being produced
in the rumen.

All rumen
microbes are
anaerobic (can't
be exposed to
oxygen).

There are
1 trillion+
microbes in 1 oz.
of rumen fluid.

May
copy for
educational
purposes.