

# Dairy Pipeline

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Microbial protein is a very high quality protein, and a major source of protein for the cow. You might say that it is a form of by-pass protein which is digested after it leaves the rumen.

To "milk" the maximum amount of microbial protein from the rumen, the rumen must be functioning at full capacity -- continually. Throughput or dry matter intake is also important. The greater the amount of feed and the faster it moves through the rumen, the greater is the number of microbes that become available for the cow to digest. When microbes move out of the rumen the rumen produces more microbes in an effort to maintain a high level of rumen activity. As a result of this, total microbial protein yield increases. It's similar to milking cows' udders; the more you milk a cow the more room -- and incentive -- you give the cow for making milk and the more you discourage her from drying off.

### Flat Milk Production

How do we get maximum microbial population in the

rumen, good feed throughput and maximum microbial yield? Provide the microbes the nutrients and the environment they need, and provide the right amount of digestibility to move a lot of feed through the rumen while being careful it doesn't escape digestion by moving too rapidly.

This is hard to accomplish by feeding forages of inferior quality, and by feeding insufficient quantities of good quality forage. Needless to say, this is a big problem on

many dairy farms this winter. Consequently, production is flat. As long as cows lack good quality forage in the ration they'll never be able to attain and sustain high levels of milk production. Feeding more grain can help recover some of this lost production, but don't expect it to fully make up for the loss of good quality forage.

Rumen microbes, like animals and people, need nutrients to grow and work well. They need a soluble or rumen degradable supply of protein or non-protein nitrogen (NPN), PLUS a readily available supply of energy, vitamins and minerals to match up with the protein and NPN -- in proper amounts and at the right time.

Without an adequate supply plus a proper balance and proper match-up of nutrients, microbial activity will decline. Digestion will be incomplete, more long fibrous particles and whole kernels may start appearing in the manure, dry matter intake will be lower and milk production will suffer.

Excesses and imbalances of nutrients available to rumen microbes can create other problems too. If sufficient energy is not available to match up with the soluble protein or NPN, the soluble protein or NPN will not be fully utilized. It'll be absorbed into the blood stream and excreted, which is poor use of the protein you fed. Or if the levels are excessive, toxic situations may develop; blood urea nitrogen levels may rise and reproductive problems may develop. On the other hand, excessive levels of readily available energy may cause acidosis, which reduces dry matter intakes, depresses fat tests, predisposes cows to displaced abomasums, foot problems, etc.

### Soluble vs. Insoluble-- This Year

In recent years much focus has been placed on increasing the amount of insoluble, by-pass, or rumen undegradable nutrients in the ration in an effort to support higher levels of milk production. This is good as long as we do not overlook the cow's need for soluble or rumen degradable nutrients to keep the rumen functioning at a high plane of activity. This may be particularly important on many farms this year.

Many of this year's forage crops were weathered excessively, and a lot of the very valuable soluble nutrients were leached out. Because of this, some farmers may need to include more soluble protein in the ration. This could be in the form of soybean oil meal, NPN, etc. Then, be sure you have enough readily available energy, vitamins and minerals to match up with the protein. That may require feeding more barley or corn, more oil seeds, more fats and oils -- and feeding it close to the time the soluble protein is fed. Feeding more of these energy feeds may also increase the need for buffers.

In many cases, poor weather conditions delayed harvests. Crops were more mature and more

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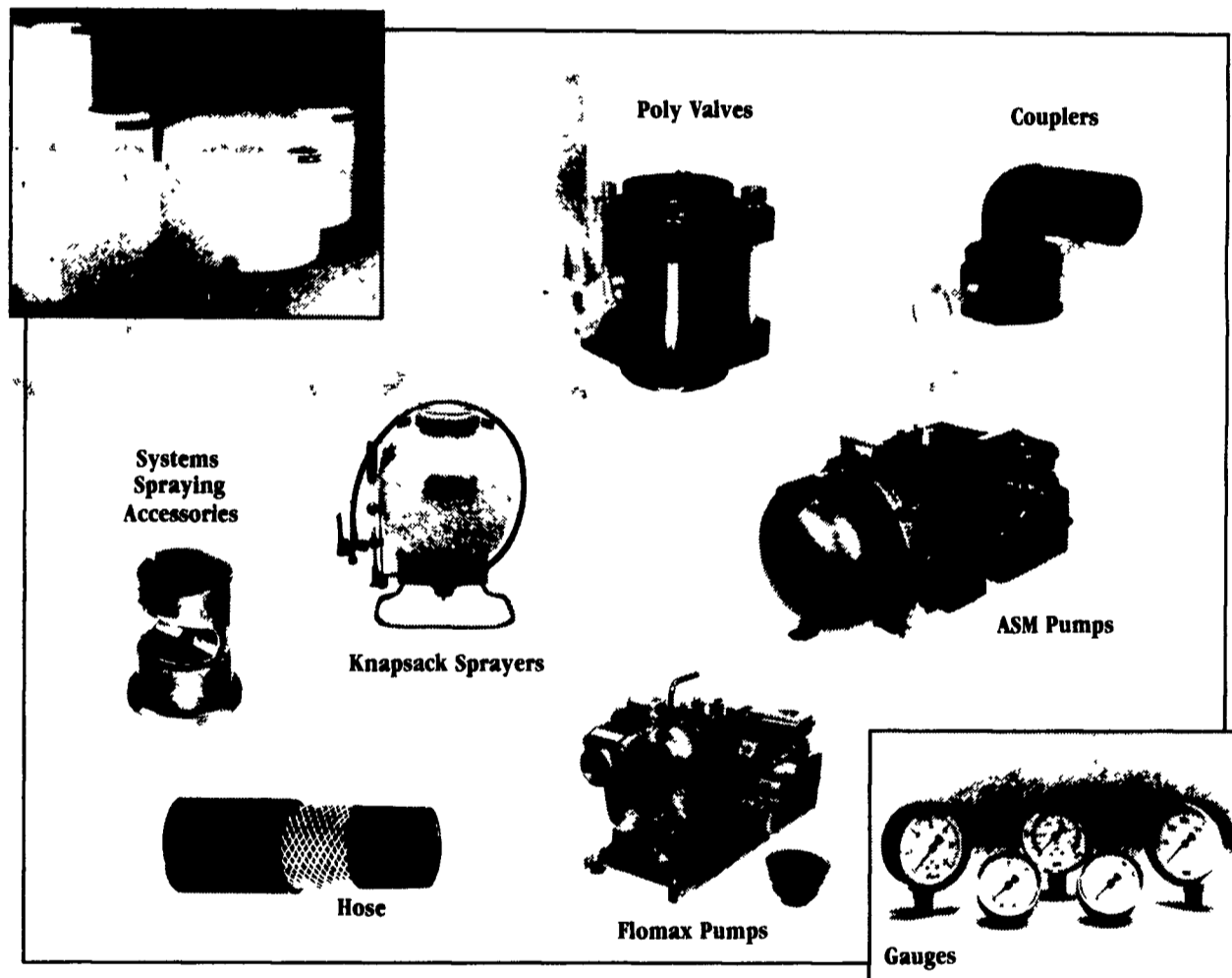
(Continued from Page D18)

Amos W Breneman							
134	GrH	3-9	305	21,104	4.0	854	
Alvin Z Zeiset							
92	GrH	5-9	305	22,539	3.7	852	
Ess-Creek Farm							
Sandy	RH	4-7	305	22,117	3.8	851	
Neil Good							
Gem	RH	3-6	305	21,665	3.9	851	
John J Speicher							
60	GrH	6-7	301	21,428	3.9	851	
Ivan K Horst							
32	GrH	2-5	305	18,429	4.6	850	

**Milking the Cow's Rumen**  
Most dairymen are very familiar with milking and recognize the benefits of doing the job well. What they may not fully appreciate nor understand is that in order to get good milk production, they must also become skillful at "milking" the cow's rumen. What do I mean by this?

In addition to breaking down feed and releasing nutrients for absorption into the blood stream, one of the main functions of the rumen is to produce large, active populations of microbes for digesting feed. As these microbes move out of the rumen, along with the feed, they become a very valuable source of protein for the cow.

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