



Balanced Essential Amino Acids

## What Makes Gemini Protein the Ideal By-Pass Protein?

**Consistency** – All incoming ingredients, along with each load of finished product, are sampled and analyzed. (See Attached) Gemini runs at 85% CP, as fed, with a guarantee of 84% CP and maintaining a standard deviation of 1.39% and coefficient of variation of 1.69%.

**Balance** - When developing Gemini, Bob Patterson and Dr. Essi Evans considered both the need to balance for the mammary gland AA uptake and the variability of bypass protein. This multi-angled approach resulted in a formula that is nearly bullet proof. We believe that consistency along with the proper AA balance is why Gemini consistently improves production and efficiency.

**Amino Acids** - It is very difficult to correctly balance for all essential amino acids, especially arginine and valine. Our research and trial work has shown that small changes in the amino acid inclusion rates translate into large increases in production. Our research and background work has also revealed that the amount of arginine microbial protein delivered in the CPM model is incorrect. We recommend that it should be dropped from 6.96% to a maximum of 6.00%. In addition, the tissue requirement for arginine should also be increased from 3.3% to 5.7%.

**Inventory** - It is often too expensive and impractical (bin space, etc.) to inventory every ingredient that may be required to balance a ration. Gemini, at a rate of .8 lb/hd/day provides nearly 11% of the required metabolizable bypass protein. It is a very efficient way to deliver the required AA to make milk and smoothes out the variability of the other sources of bypass protein.

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