Field application of the Cornell Net Carbohydrate and Protein System model in a progressive dairy herd

The Cornell Net Carbohydrate and Protein System (CNCPS) was designed to predict animal requirements and the supply of nutrients needed to meet these requirements.

To determine its effectiveness under practical conditions, the CNCPS model was utilized on a 280-cow central New York Holstein dairy farm with an RHA of 24, 057 pounds of milk. Diets were evaluated in June 1991 to establish baselines for milk production and feed costs per hundred weight of milk. Then CNCPS was used monthly to evaluate and reformulate rations from August 1991 through July 1992 based on cow performance, body condition score, feed analysis, feed cost, manure and feed appearance, and feed inventory.

Based on he CNCPS evaluation, the initial ration was reformulated with the animal fat, protein concentrates, and whole cottonseed being removed or reduced and replaced with more corn silage, corn, soybean meal, and SoyPLUS®. While SoyPLUS was not a part of the initial ration, in the 12 months that followed, using CNCPS evaluation, SoyPLUS was included in the ration at an average rate of 11.6% of the total diet dry matter. The ration changes were made to decrease cost and increase rumen microbial output.

Milk production increased from 95.7 pounds per day on the initial ration to an average of 100.2 pounds per day for the following 12 months. In addition, the changes in rations created a significant savings in total herd feed costs. (Feed ingredient prices were held constant when these calculations were made.)

In summary, the CNCPS model can provide an accurate and complete accounting of a cow's nutritional requirements and how various feeds can be

used to meet those requirements economically and efficiently.

The fact that the CNCPS model included SoyPLUS in the rations is further evidence that SoyPLUS is a cost-effective, high quality protein ingredient for dairy cows.

Stone, W. C., L. E. Chase, And D. G. Fox. 1993. Field application of the Cornell Net Carbohydrate and Protein System model in a progressive dairy herd. Department of Animal Science, Cornell University, Ithaca, New York 14853.