

Nonruminant Nutrition: Quantifying Feed Ingredient Quality

183 (Invited) Methodology for valuing quality of feedstuffs. H. H. Stein,* *University of Illinois, Urbana.*

The nutritional value of feed ingredients is usually assessed by using a 3-step procedure. The first step involves a chemical analysis of energy and nutrients in the ingredient. Energy is analyzed as GE and proximate analysis will yield values for CP, ether extract, ash, and moisture. The concentration of carbohydrates is usually calculated by subtracting concentrations of moisture, ash, ether extract, and CP from 100. In cereal grains and in by products of cereal grains, the concentration of starch is usually also analyzed and the concentration of fiber can then be calculated by subtracting the amount of starch from the total amount of carbohydrates in the ingredient. If the ingredient contains more than a few percent CP, an analysis for the concentration of AA is also required and the concentrations of Ca and P are usually also analyzed. The second step in the evaluation of the ingredient is to determine the digestibility of energy and nutrients. The standardized ileal digestibility of CP and AA is assessed using ileally cannulated pigs and the total tract digestibility of energy, DM, OM, ether extract, Ca, and P is also measured. The concentration of DE in the ingredient, and sometimes also ME, is then calculated and the concentration of NE may be calculated using the digestibility values for CP, ether extract, and OM and the concentration of starch in the ingredient. After determining energy and nutrient digestibility values, diets that contain graded levels of the ingredient can be formulated and fed to different categories of pigs. These diets are formulated to contain the same quantities of digestible energy and nutrients as a control diet, which is often a diet based on corn and soybean meal. Based on the results from these experiments, it is determined how much of the ingredient can be included in diets fed to pigs without compromising growth performance. If the ingredient is fed to finishing pigs, it may also be necessary to evaluate effects of the ingredient on the composition and the quality of the pork produced from pigs consuming diets that contain the ingredient.

Key Words: analyses, feed ingredients, ingredient evaluation, pigs