Modeling the economic value of soybean meal in swine diets: development of a digital dynamic calculator for market conditions

Bart Borg, PhD, Vice President of Feed and Nutrition, Passel Farms, Ames, IA and David Rosero, PhD, Assistant Professor, Iowa State University, Ames, IA

2026 ASAS Midwest Section Meeting Abstract

Our objective was to develop a digital calculator that forecasts income over feed cost (IOFC) to estimate the economic value of soybean meal (SBM)–based nutritional strategies for grow-finish pigs under dynamic market conditions. Traditional economic evaluations of nutritional programs often rely on feed cost or feed cost per unit of gain; however, these metrics can be misleading when nutritional programs alter both growth rate and feed efficiency. A more accurate assessment is provided when calculating IOFC because it accounts for changes in carcass weight, feed efficiency, and revenue relative to feed cost. To capture these interactions, we developed a digital calculator that integrates user-defined diet composition, growth performance expectations, and an engine capable of forecasting IOFC using projected ingredient and hog prices. To evaluate this digital calculator, we compared the financial outcomes of two nutritional strategies designed to mitigate the seasonal decline in carcass weight observed in pigs marketed during summer months. These strategies included a high energy reference diet containing added lipids and corn distillers dried grains with solubles (DDGS) and a strategy utilizing elevated SBM levels (30%, 22%, 16.5%, and 13.5% in phases 1, 2, 3, and 4, respectively) while excluding corn DDGS. We previously reported that pigs fed high SBM diets achieved greater early growth (carcasses were 1.45 kg heavier at harvest) and improved caloric efficiency (9.47 vs. 10.10 Mcal/kg gain), compared with pigs fed the high energy reference diet (Boyd et al., 2022). When incorporating these biological responses with ingredient and hog prices from the summer of 2024, high-SBM diets were USD 13.50 per ton less expensive, reduced feed cost per unit of gain by 4.6%, and generated USD 4.04 greater IOFC than the high-energy diet. These results illustrate that integrating diet composition and biological performance responses with dynamic market forecasts provides a more accurate estimation of the possible financial outcomes of nutritional strategies than diet cost or feed cost per unit of gain alone. The digital calculator is expected to facilitate more informed decision-making for nutritionists and producers operating in variable market conditions.