

ANIMAL SCIENCE

Title: Oxygen consumption and energy digestibility of soybean meal and corn or corn co-product diets fed to grow-finish swine – **NPB #06-001**

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Scientific Abstract

A study was conducted to evaluate the energy utilization of diets containing corn or co-products of corn processing. Forty-eight barrows were allocated to one of 4 dietary treatments and housed in closed chambers that allowed for measurement of oxygen consumption and carbon dioxide production. Gas measures were made continuously during the 4-month trial that represented the grow-finish period and contained 6 feeding phases (S1, beginning at 18 kg BW; G1, beginning at 27 kg BW; G2, beginning at 41 kg BW; F1, beginning at 58 kg BW; F2, beginning at 78 kg BW; and F3, beginning at 101 kg BW). The corn co-product diets contained increasing levels of the co-product; from 5 to 30% over the course of six feeding phases. Co-products used included distillers dried grains with solubles (DDGs), corn germ meal (CGM), and dehulled, degermed corn (DDC). Pigs were allocated to each chamber by weight in order to minimize body weight differences within each chamber. Barrows were provided ad libitum access to feed and water. New feed was offered daily between 06:00 and 09:00 h. Feed data were recorded daily and remaining feed was removed and weighed from the feeders at the end of each feeding phase from which average daily intake was calculated. Oxygen and carbon dioxide monitoring of the chambers occurred in a sequential manner, beginning first with incoming air, then sampling exhaust air from each of the eight chambers. Airflow rates into each chamber were measured continuously, allowing for calculation of gas emission rates when flow was multiplied by concentration. Pigs offered the DDGs diet consumed more oxygen and produced more carbon dioxide than pigs fed the remaining treatments. Apparent digestibility of energy was greater, across all feeding phases, in pigs offered the DDC diets. However; observed differences in energy utilization measures did not translate to performance differences.

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