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111 Current and future usage of soybean meal in swine diets in China. Shuai Zhang, Junjun Wang, Defa Li. China Agricultural University

Abstract: The objective of this presentation was to introduce the utilization tendency and research progress of soybean meal (SBM) in swine diets in China. As for the utilization tendency of SBM in China, it not only brings great pressure to the food security of China, but also directly pushes the high production cost of animal products. In 2022, 117 million tons of protein feed was consumed by the animal husbandry in China, accounting for nearly 1/3 of the total protein feed consumption in the world. Thus, the application of low-protein diet has been promoted with the strong support of the Ministry of Agriculture and Rural Affairs in China since 2018. With the related techniques, including popularizing low protein diet, developing new protein feed resources, promoting precise nutrition, and feeding technology, even though the compound feed output has increased by more than 84 million tons in 2022 in China, the SBM consumption in feed has reduced 6%. Recently, the geopolitical challenges, regional unrest and climate change tendency have increased the great uncertainty of protein feed supply, which requires us to deeply understand the significance of SBM reduction and substitution in animal feed. As for the research progress, the available energy contents of SBM were determined on growing pigs. Barrows [n = 24; initial body weight (BW) = 36 ± 1.4 kg] were randomly allotted to 4 diets containing SBM with either corn basal or corn-soybean meal basal, and total feces and urine collection method and indirect calorimetry method were used to determine the available energy of SBM. The results showed that the average digestible energy (DE), metabolizable energy (ME), net energy (NE), and retained energy (RE) values in SBM [17.36, 16.52, 10.62, and 5.06 MJ/kg dry matter (DM), respectively] determined using the corn-SBM-basal diet were not different from the those determined using the corn-basal diet. Moreover, the best fitted prediction equations developed based on 22 SBM samples produced from soybeans from China (n = 6), USA (n = 6), Brazil (n = 7) or Argentina (n = 3) were: DE = 38.44 - 0.43 CF - 0.98 GE + 0.11 ADF (R² = 0.67, P < 0.01) and ME = 2.74 + 0.97 DE - 0.06 CP (R² = 0.79, P < 0.01). The in vitro digestion kinetics of SBM from different sources showed that the release of amino acids in the 0-10 min time interval was significantly negatively correlated with the NE of SBM (R² = -0.34).