

# Threonine Requirement of High-Producing Lactating Sows

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Reproductive performance continues to increase within the pork industry. Logically, amino acid requirements need to be re-defined for sows with larger litters. The objective of this study was to determine the requirement of threonine, the second limiting amino acid in most practical swine diets, for the high-producing lactating sow.

A total of 418 PIC C-15 sows were assigned randomly to treatment within parity group (1, 2 and 3+) at day 110 of gestation. Lactation diets were formulated to contain either .80% total lysine (tLYS) with .30, .35, .40, .45, .50, .55, .60 or .65% total threonine (tTHR) or 1.06 % tLYS with .40, .45, .50, .55, .60, .65 or .70% tTHR. Sow ADFI exceeded expectation, averaging 6.9, 7.4 and 7.2 kg/d for parity 1, 2 and 3+. Sows gained an average of 4.8 kg in lactation. Plasma urea nitrogen levels were minimized at .54% tTHR (38.3 g tThr/d;  $P < .05$ ). Average piglet weight at weaning (5.6, 6.2 and 5.8 kg for parity 1, 2 and 3+, respectively) and litter weight gain (2.49, 2.53 and 2.44 kg/d for parity 1, 2 and 3+, respectively) were maximized at .53% tTHR (37.6 g tTHR/d) across all parity groups ( $P < .05$ ). The subsequent total piglets born (mean = 12.3) and the subsequent born alive (mean = 11.3) were not affected by threonine treatment ( $P > .10$ ) during the previous lactation. Culling percentage of sows after test (mean = 4.9%) was not affected by threonine treatment ( $P > .10$ ). To minimize sow tissue mobilization, the threonine requirement was found to be 37.3, 40.0 and 38.9 g tTHR/d (28.7, 30.8 and 30.0 g dTHR/d) for parity 1, 2 and 3+, respectively. The threonine requirement to maximize litter performance was 36.6, 39.2 and 38.2 g tTHR/d (28.2, 30.2, 29.5 g dTHR/d) for parity 1, 2 and 3+ sows, respectively.

## Implications:

The maintenance requirement for threonine in the sow is 41 mg tTHR/kg BW<sup>.75</sup>. The threonine requirement for litter growth is 14.3 g tTHR/kg litter growth. Using these requirements for maintenance and litter growth, pork producers are able to calculate the threonine requirement of lactating sows on their farms.