

MSc Defence

Influence of bacterial fermentation on soybean meal nutritional value and early weaned pig growth performance

Joshua Milmine

Date: August 20th 2024 at 12:00pm

The MSc Defence for Joshua Milmine has been scheduled for August 20th, 2024 at 12:00pm. The defence will be held in room 141 and online via Teams: https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDVIN2FhNTMtODQ0Mi00ZDI3LTlhOGYtOWQwZTEwN2Y1Mjhi%40thread.v2/0?context=%7b%22Tid%22%3a%22be62a12b-2cad-49a1-a5fa-85f4f3156a7d%22%2c%22Oid%22%3a%22fbd28915-dda5-478f-8ecb-a3682dcf0c3a%22%7d

Examining Chair: Dr. Niel Karrow

Advisor: Dr. Julang Li

Advisory Committee Member: Dr. Elijah Kiarie

Additional Committee Member: Dr. Mike Steele

Abstract:

Soybean meal (SBM) is the primary protein source in swine diets. However, antinutritional factors (ANFs) such as glycinin, β -conglycinin, phytate phosphorus, and neutral detergent fiber (NDF) restrict its use in piglet feed. Our lab has previously isolated a thermophilic strain of *Bacillus licheniformis* (B4) that displays high enzymatic activity and probiotic potential. The aims of this study were to evaluate B4's ability to reduce ANFs in a lab-scale SBM fermentation and to assess B4 fermented SBM's (B4-FSBM) influence on piglet growth performance. Fermentation resulted in significant decreases in NDF and phytate phosphorus by 27.0% and 59.2%, respectively. Additionally, large antigenic proteins were broken down successfully, and crude protein increased by 4.4% ($P < 0.05$). A feeding trial showed that piglets fed B4-FSBM experienced significant improvements in the feed to gain ratio during week 4, and higher apparent digestibility of crude protein during weeks 3-4 when compared to the negative control.