



MSc. Defence

**The effects of fermented soybean meal on the growth performance of weaning piglets and further optimization of the solid-state soybean meal fermentation system using a novel *Bacillus* strain**

**Serena Dingle**

Date: December 2nd 2022 at 9:30am

The MSc Defence for Serena Dingle has been scheduled for December 2nd, 2022 at 9:30am. The defence will be held online via Teams and in 141: [https://teams.microsoft.com/l/meetup-join/19%3ameeting\\_NTlxZjdkMDUtZjdkNi00MjE0LWJhNzYtZDA1MDZmMDVkOTE4%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](https://teams.microsoft.com/l/meetup-join/19%3ameeting_NTlxZjdkMDUtZjdkNi00MjE0LWJhNzYtZDA1MDZmMDVkOTE4%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)

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**The exam committee will consist of:**

Examining Chair: Dr. Wendy Pearson

Advisor: Dr. Julang Li

Adv. Committee Member: Dr. Elijah Kiarie

Additional Graduate Member: Dr. David Huyben

**Abstract:**

The nutritive value of soybean meal (SBM) in piglets can be increased through bacterial fermentation as antinutritional factors, such as antigenic proteins, that pose challenges while weaning are degraded. *Bacillus subtilis* BS9 and B5 ferment SBM with high efficiencies, decreasing antigenic high-molecular weight proteins and increasing soluble proteins, under conditions that reduce fermentation costs. In early weaning piglets, BS9 fermented SBM meal did not improve the ADG, ADFI, and FCR from day 1-14, however, FCR improved significantly from day 15-28. Fecal characteristics improved in week 1-2, while *E.coli* and coliform fecal counts decreased at 3-4 weeks. Since B5 fermented SBM with similar efficiencies to BS9, the economic feasibility of B5 fermented SBM was improved by reducing the moisture content to 40%, without agitation. Gram-negative bacterial growth was deterred in B5 fermentations. Although the beneficial effects of improved fecal scores and microbial shedding from fermented SBM are encouraging, future improvement are aimed to improve animal growth performance.