Graduate School of Integrated Sciences for Life

Doctoral Thesis Defense

博士学位審査会

Nutritional Studies on Nitrate as a Nitrogen Source and Methane Inhibitor in Sheep

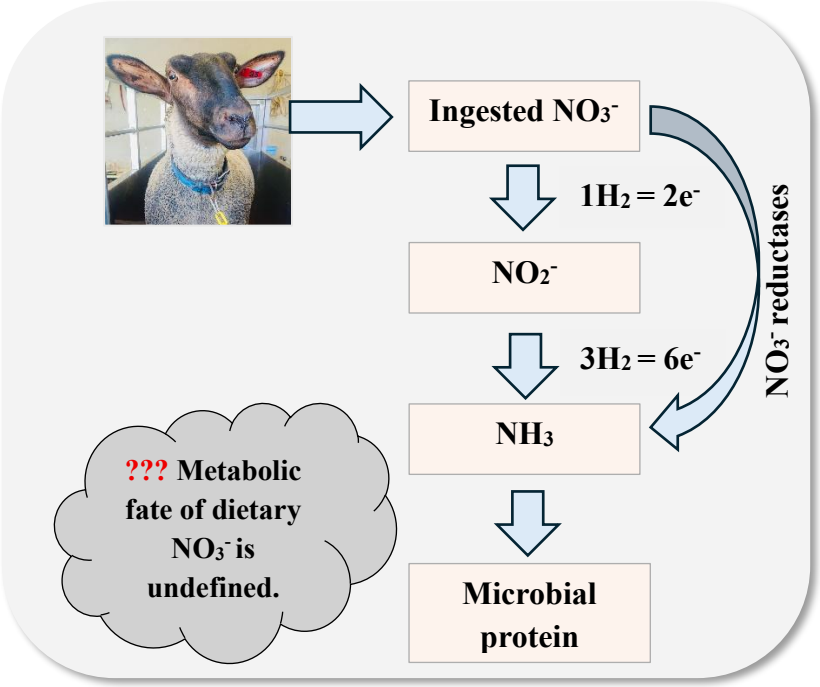
ヒツジにおける飼料窒素源およびメタン削減資材としての硝酸塩に関する栄養学的研究

Presentation by: NTOKOME KELETSO

Bioresource Science

Animal Nutrition and Feeding laboratory

Dietary nitrate (NO_3^-) has emerged as a promising alternative nitrogen (N) source and an effective enteric methane inhibitor in ruminants. In the rumen, NO_3^- is reduced to nitrite (NO_2^-) and subsequently to ammonia (NH_3), a reductive process that consumes metabolic hydrogen (H_2), and competes directly with methanogenesis for reducing equivalents. This redirection of H_2 toward NO_3^- reduction lowers methane formation. Ammonia derived from NO_3^- reduction can be assimilated by rumen microbes and incorporated into microbial protein synthesis. However, the metabolic fate of NO_3^--N, particularly its incorporation into whole-body N pools, remains less understood. Therefore, this study investigates dietary NO_3^- as an alternative N source in sheep, with focus on N utilisation and methane mitigation, to clarify the nutritional and environmental implications of NO_3^- supplementation.



Date: February 18, 2026

Time: 15:00-16:00

Venue: Room C301
Applied Biological Science

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This thesis presentation will be recognized as a joint seminar of the Graduate School of Integrated Sciences for Life

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