● ONLINE WEBINAR

Community of Practice on Food Loss and Waste (FLAW)

Flaw in the FLAW

30th of July, 2025

02.00 pm - 03:00 pm
(Bangkok time)

Topic: New strategies on handling waste in animal-agriculture systems for controlling GHG emissions

Renowned experts will serve as panelists.

OUR SPEAKER!

Prof. Pramod Pandey, Ph.D.

AES / University of California Cooperative Extension
Department of Population Health and Reproduction
School of Veterinary Medicine
University of California
USA

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Contact Us:
d.trivedi@apaari.org
ravi.khetarpal@apaari.org

www.apaari.org

Proceedings of the APAARI Community of Practice Session on Food Loss and Waste in New Strategies on Handling Waste in Animal-Agriculture System for Controlling GHG Emissions

Date: 30 July 2025

Time: 2:00 – 3:00 hrs (GMT+7)

Join Zoom Meeting

https://us06web.zoom.us/j/84917936690?pwd=8vwVjX3K3aUnfburKdz6yalHJjadVA.1

Meeting ID: 849 1793 6690

Passcode: 519858

Executive Summary

The Asia-Pacific Association of Agricultural Research Institutions (APAARI), through its Community of Practice on Food Loss and Waste (FLAW-CoP), hosted a dynamic Our 2nd virtual session titled “New Strategies on Handling Waste in Animal-Agriculture Systems for Controlling GHG Emissions.” This event brought together distinguished experts, researchers, practitioners, and government representatives from across the Asia-Pacific to explore sustainable, innovative, and cost-effective strategies for managing livestock waste and mitigating greenhouse gas (GHG) emissions.

The session was moderated by Dr. Paul Taylor, APAARI Technical Coordinator, and featured a compelling keynote presentation by Professor Pramod Pandey from the University of California, Davis, followed by a high-level panel discussion including Dr. Nitish Debnath (One Health Bangladesh) and Mr. Thumrongsak Phonbumrung (Thailand). Over 150 stakeholders registered, affirming the critical relevance of this issue in the Asia-Pacific region.

Introduction

The Asia Pacific Association of Agricultural Research Institutions (APAARI), through its Community of Practice (CoP) on Food Loss and Waste, convened a virtual session addressing the topic: "Strategies on Handling Waste in Animal Agricultural Systems for Controlling Greenhouse Gas Emissions." The session focused on current challenges, scientific approaches, national initiatives, and practical solutions for food loss, animal waste management, and climate mitigation in the Asia-Pacific livestock sector.

1. Background and Welcome (2:00 PM – 2:05 PM)

Welcome Remarks: Dipika Trivedi (Project Associate, APAARI)

Livestock production, while essential for food security and livelihoods, remains a major contributor to environmental degradation and GHG emissions, particularly methane and nitrous oxide. This session aimed to:

- Raise awareness on GHG emissions from animal-agriculture waste.
- Share science-based, field-tested waste handling technologies and policy models.
- Promote cross-sectoral dialogue among public health, animal health, and environmental experts.
- Identify scalable and context-sensitive solutions for smallholder and commercial farms in Asia-Pacific.

welcomed delegates and reflected on the community's previous impactful session, "The Silent Famine: Asia-Pacific Hidden Emergency of Food Loss and Waste." She Emphasized the urgent need for collective action on food loss, animal waste, and their under-acknowledged roles in food security, nutrition, and environmental sustainability.

Opening Remarks

Dr. Ravi Khetarpal (Executive Director, APAARI) provided a background on APAARI's ongoing Communities of Practice, noting successful initiatives in biopesticides and public-private partnerships. He highlighted staggering statistics: saving just 1% of global crop losses could feed 25 million people, while 5-7% reductions could potentially address hunger for 1.5 billion. Dr. Khetarpal set the stage for the event's focus on management of animal waste to control greenhouse gas (GHG) emissions the unique contribution of the FLAW-CoP led by Ms.Dipika Trivedi.

He shared APAARI's commitment to amplifying awareness and practical knowledge about waste reduction in agriculture, stressing the need for a shift from production-focused models to sustainability-integrated systems.

2. Technical Session of the CoP (2:05 PM – 2:35 PM)

Moderator: Dr. Paul Taylor, Technical Coordinator, APAARI

Speakers:

Prof. Pramod Pandey, University of California, Davis

Key Points:

- Global animal agriculture produces an estimated 18.2 billion tons of waste annually, compared to 1.5 billion tons from humans. While human waste is mostly treated, animal waste management lags significantly.
- Animal waste is commonly used as fertilizer, posing risks of groundwater and surface water contamination due to persistent residues, antibiotics, and pathogens.

- In large-scale dairy operations (ex: California, USA), manure waste far exceeds urban human sewage in volume, with a single county's livestock waste comparable to metropolitan cities.
- Confined animal feeding operations (CAFOs) amplify manure concentration, presenting environmental and management challenges, yet remain essential for economic viability and food demand.
- GHG emissions are primarily released from anaerobic manure lagoons, where organic waste ferments and releases methane and nitrous oxide.

Mitigation strategies:

- Dairy digesters and solid-liquid separators, supported by state policy and grant funding, can capture biogas and reduce volatile solids, thus lowering direct emissions.
- California's state programs (post-2017) provided significant funding to farmers for adopting digesters and alternative manure management, reaching over 130 digesters and nearly 200 management projects.
- Smaller-scale, affordable technologies for resource-poor farmers are needed, especially in regions like South Asia.

Policy Context:

Incentives, government support, and rigorous monitoring systems are critical for widespread adoption of waste minimization and GHG control technologies on farms of various sizes.

3. Panel Discussion (2:35 PM – 2:45 PM)

Moderator: Dipika Trivedi (APAARI)

Panelist Contributions:

1. **Dr. Nitis Debnath (National Coordinator, One Health Bangladesh Program & Professor, Chittagong Veterinary and Animal Sciences University)**

   Dr. Nitis Debnath the Bangladesh has revised its One Health Strategic Framework, elevating environmental and animal waste management.Under the World Bank-supported Livestock Dairy Development Project (LDDP), targets include 50% GHG emission reductions by 2025 through improved management and market-led manure handling.The program supports productivity gains, low animal density, improved feeding efficiency, and manure value-chain adoption. Assessment tools from FAO are being used for emissions monitoring.Integration with grassroots extension efforts is boosting awareness, though financial and policy support remains crucial for long-term impact.

2. **Dr. Thumrongsakd Phonbumrung (Farm Management Specialist, Thailand)**

Thailand's dairy sector is dominated by smallholders (average 20 cows/farm). Manure is widely viewed as a resource, not waste. The "3-in-1 Model" encourages integration of manure and urine into inexpensive biogas systems, providing farm energy and fertilizer, demonstrating a practical approach to circular livestock farming. Larger farms invest in manure separation and digester technology, with incentives like premium milk pricing for environmentally responsible practices.

Nutritional management (balancing energy/protein in feed) is linked to lower methane emissions per unit of milk/meat, reinforcing a systems-based approach to both productivity and sustainability.

4. **Open Discussion Q&A and Audience Reflections (2:45 PM-3:05 PM)**

A key question was raised by Mr. Majadur, from Bangladesh's Green Dairy Partnership Project, about affordable and practical waste management solutions for smallholder farmers. Both Prof. Pandey and Dr. Debnath emphasized:

- The importance of government and donor support.
- Context-appropriate low-cost technologies.
- Need for international collaboration and knowledge exchange.

Prof. Pandey cautioned about relying solely on carbon credit systems due to market volatility.

Open Forum

Participants from Bangladesh shared challenges in applying digesters and solid separators at the smallholder level due to high cost and lack of electricity. Experts agreed on the necessity of state and donor funding, noting limited commercial viability of such technology for small-scale farmers. Attention was called to emerging opportunities through carbon credits and climate funds, yet volatility in carbon markets raises caution about financial sustainability.

Closing Remarks (3:05 PM-3.10 PM)

Ms. Dipika Trivedi closed the session by thanking the speakers, panelists, and over 150 registered participants for their engagement. She reiterated the importance of collective effort, knowledge sharing, and innovation in tackling GHG emissions from animal agriculture in the Asia-Pacific.

Outcomes & Recommendations

- Urgent need for policy frameworks to support climate-smart livestock systems.

- Capacity building and incentives for smallholder farmers to adopt eco-friendly technologies.
- Promote cross-sector collaboration under One Health frameworks.
- Document and scale successful case studies (e.g., California, Thailand, Bangladesh).

Prepared by: Dipika Trivedi, Project Associate, APAARI
Approved by: Ravi Khetarpal, Executive Director, APAARI