Mitigating the Spread of Antimicrobials and Resistant Microbes through Treatment of Manure

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Abstract

While intensive poultry farming is on the rise to meet the increased demand for animal-derived protein and income, there is a parallel increase in the use of antimicrobials for the prevention and control of diseases in Tanzania (Sangeda et al., 2021). It is estimated that 70 – 90% of antimicrobials are excreted in manure, leading to environmental contamination with antimicrobial residues, resistant pathogens and associated genes (Yan Xu et al., 2020). This project intends to adapt poultry manure processing technology to reduce the spread of antimicrobials in the environment. Evidence for manure business will also be assessed. To achieve that KAP study on antimicrobial use manure management and the economics of the manure business is being conducted to establish baseline information for the suitability of the intervention.

Introduction

In April 2017 the country launched the first version National Action Plan (NAP) with a revised version which will end in 2028 to guide mitigation strategies in line with the Global Action Plan on AMR using the One Health Approach.

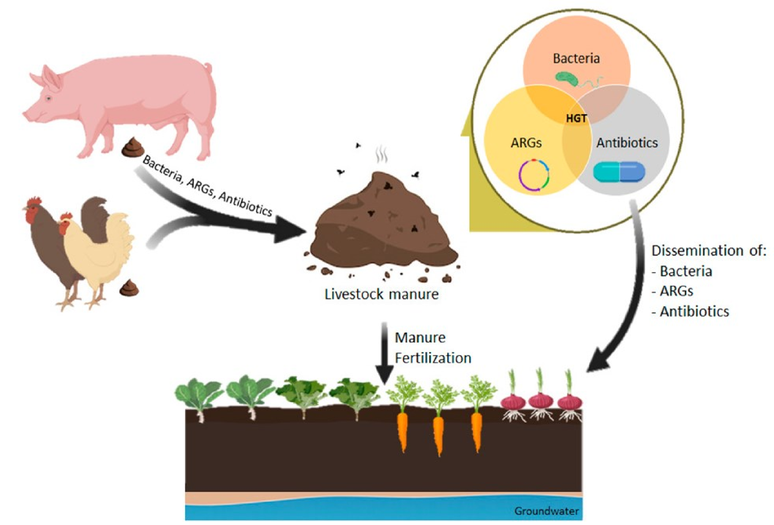
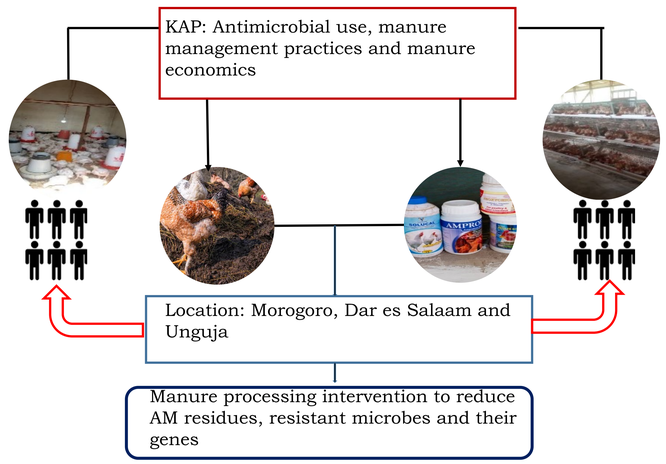


Figure 1. Schematic representation of the problem

On-farm manure processing may provide a practical and economical option for reducing antimicrobial concentrations and resistant pathogens in manure by 50-99% (Schueler et al., 2021).

Methods and Materials



Achievements made

- In its One(1) year of implementation, this project has achieved the following;
- KAP and manure processing protocols have already been developed
- Data collection tools; questionnaires for a baseline study on AMU, manure management practices and economics, checklists for focus group discussion, and in-depth interviews have been also developed
- Data collection for KAP has been finished in Morogoro and analysis is underway

Figure 2. Data collection training conducted at SUA

Lesson learnt

- Data collection tool development is very rigorous and time-consuming.
- Perfecting these tools through pre-testing before actual work is a very important activity.

Expected Results

- Knowledge, attitude and practices towards the use of poultry manure and associated risks established
- Policy and regulatory frameworks toward the use and disposal of commercial poultry manure reviewed
- Fully optimized manure processing technology implemented
- Evidence case for processed manure will be established

Approach for Large Scale Implementation

This project will answer two questions that will enable large-scale implementation and adoption of research findings emanating from the study area:

- How will the research findings facilitate the adoption of the technology, and dissemination to a large population?
- How sustainable will the manure processing technology be in terms of acceptability, appropriateness, cost-effectiveness and feasibility?
- The project envisages producing results that will facilitate policy and regulatory changes.
- The participating farms to continue serve as field schools under the closer support of extension officers.

Contribution to Impact

- Revision of policies and regulatory frameworks with recommendations regarding the safe use of poultry manure in short-cycle horticultural crops.
- Linking the trained poultry manure processors with sound and potential financial institutions upon positive buy-in of the poultry manure business.

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