

Evaluation of Supermarket Food Waste as a partial replacement of commercial feed in Mozambique tilapia, *Oreochromis mossambicus* culture

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Introduction

Current global human consumption of fish is estimated to be 20 kg of fish annually per capita, of which approximately half is supplied by aquaculture.

Fish meal is considered the best ingredient in aquafeed, due to its compatibility with the protein requirement of fish.

However, wild fish extraction for feed has threatened ocean stocks.

Due to limited fish meal and fish oil resources and their high costs for the aquaculture industry, it is necessary to find alternative sustainable sources of feed ingredients.

FW has also become a global concern in recent years, especially at the retail and household level, which is generated in large quantities and disposed of in landfills.

Accordingly, exploring solutions to mitigate the detrimental impacts of supermarket FW is necessary.

Recently, the United Nations reported that 820 million people experience food and nutrition insecurity in 2019.

It is also estimated that the global human population will grow to 9.7 billion people by 2050 putting further pressure on food production.

Justification

The high demand for agricultural products due to the exponential human population growth and the associated expansion of farming systems in emerging economies such as S. Africa is likely to contribute to a significant increase in agricultural waste, agricultural crop residue, and agrochemical industries.

Mitigation measures may be implemented to prevent or reduce waste, however, there will always be an amount of food waste that will not be possible to prevent, mostly the inedible food parts.

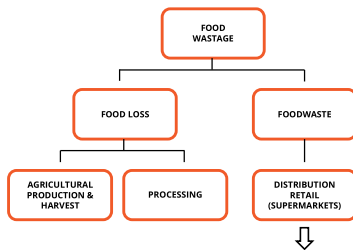
Since FW is emerging as a global environmental and societal problem, it provides an opportunity for its conversion into various value-added products such as animal feed.

In so doing we will be trying to achieve the United Nations Sustainable Development - Zero Hunger Goal (SDG2) and the good health and wellness Goal (SDG3), increasing food production.

Project Aims

The purpose of the project is the production of a feed that embodies an anti-food waste and food loss campaign that encourages one to reduce one's footprint through Valorizing supermarket FW and also to reducing carbon emission through landfilling of FW.

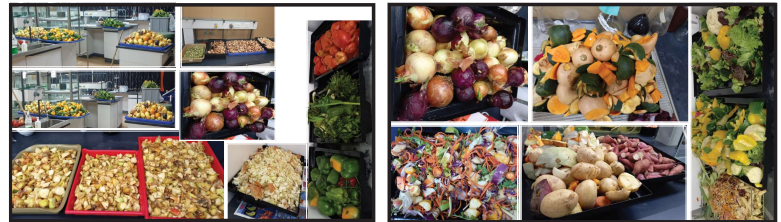
The Food Supply Chain



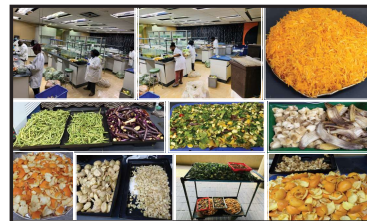
Operational Plan

| | |
|-----------------------|---|
| Primary Production | • Food waste collection, sorting and weighing |
| Processing | • Food Waste, Drying; Milling; Packaging |
| Biosefaty Analysis | • Sample preparation for composite nutrient and mineral • Metabolomic analysis of extracts |
| Feed Formulation | • Accurate feed formulations; Feeding rial; Fish fillet quality assessment |
| Prototype Development | • Prior art searches, IP protection applications • Design and optimization of prototype and upscaling of the prototype; • Prototype lab testing for safety & functionality, colour size and texture |
| Certification | • Application for certification |

FW Sorting



Preparation For Drying



Food Waste Milling



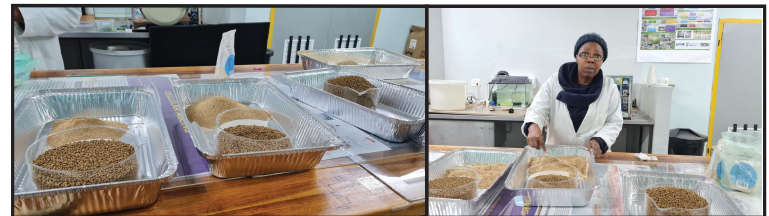
Ground SFW



Ready For Dispatch For Biosafety/Biosecurity Risks



Feed Formulation



Feeding Trial



The Team

