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**SEASONAL RURAL HOUSEHOLD FOOD INSECURITY IN ZAMBIA:  
A CASE STUDY OF MUTANDA**

A thesis submitted in partial fulfilment of the requirements for the degree  
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## ABSTRACT

Sub-Saharan Africa is recognised as having a high proportion of food insecure people, most of whom live in rural areas and are dependent on subsistence agricultural production. Mutanda, a rural locality in Zambia, was studied to identify the seasonal characteristics of rural household food security. Two surveys (Food Consumption (n = 102) and Farm Systems (n = 42)) were undertaken using both objective and subjective methods.

Household food security was assessed using daily meals as a proxy indicator, supported by perception of hunger data. Both the relative size ( $p < 0.001$ ) and frequencies ( $p < 0.001$ ) of the daily meals were significantly lower at minimum food consumption (mid December) compared to maximum food consumption (late May). On average, the effective quantity of daily meals at minimum food consumption was reduced to 32% of the intake at maximum food consumption ( $p < 0.001$ ). During food shortages, 63% of households considered they suffered from a degree of hunger, although no household indicated hunger was a serious issue when food is plentiful. These findings strongly support a conclusion that the Mutanda area suffers from transitory (seasonal) food insecurity.

The rationalisation of food consumption is attributed to the vulnerability of being dependent on seasonal agricultural production and the limited opportunities to augment the food supply using other sources. The primary source of food for 98% of households was from their farm/garden. Maize is the dominant crop with only 30% of farmers investing in some form of agricultural inputs. As a secondary source of food, 36% of households use income as a means of food acquisition.

The survey results highlight households using income to purchase food had a greater quantity of meals at minimum food consumption ( $p < 0.001$ ), although the use of improved storage did not show a significant increase in food consumption during food shortages ( $p = 0.227$ ). The results also present qualified support that seasonal variation in food consumption can be reduced through an increase in farm area, diversification of crops and the increased use of agricultural inputs.

As the study concludes that no single intervention eliminated the seasonal variation in food security, multiple strategies are presented to reduce the seasonal dependence of agricultural production. These include establishing a formalised local food market, increasing agricultural production and improving storage utilisation through education. The implications of these strategies on policy, both for governments and development organisations, are briefly discussed.

**Keywords:** Food security, food insecurity, daily meals, food consumption, seasonality, agricultural production, Zambia

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A. <http://www.sim.org.nz>

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“Do not work for food that spoils, but food that endures to eternal life which the Son of Man will give you” (*John 6 v 27*)

Jesus said: “I am the bread of life. He who comes to me will never be hungry and he who believes in me will never be thirsty” (*John 6 v 35*)

This is true eternal food security.

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## UNITS AND ABBREVIATIONS

### Units

<b>hectare</b>	Conventional measurement of area at the farm level. One hectare (ha) is equal to 10,000 square metres.
<b>joule</b>	The SI unit of energy. Normally given as kilojoule (kJ) = 1,000 joules or megajoule (MJ) = 1,000,000 joules
<b>lima</b>	The common measure of land area in Zambia. One lima = ¼ hectare.

### Abbreviations

<b>BMI</b>	Body Mass Index
<b>BMR</b>	Basal Metabolic Rate
<b>ECZ</b>	Evangelical Church of Zambia
<b>DER</b>	Dietary Energy Requirement
<b>FAO</b>	Food and Agricultural Organisation of the United Nations
<b>IFAD</b>	International Fund for Agricultural Development
<b>IFPRI</b>	International Food Policy Research Institute
<b>MAFF</b>	Ministry of Agriculture, Food and Fisheries (Zambia)
<b>MARS</b>	Mutanda Agricultural Research Station
<b>PEM</b>	Protein-Energy Malnutrition
<b>SIM</b>	Serving In Missions
<b>UNU</b>	United Nations University (Tokyo)
<b>WHO</b>	World Health Organisation of the United Nations
<b>WFP</b>	World Food Programme

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**Note:** The notation used in Survey and Conceptual Model are given in Appendix 1