

# OPTIMIZATION OF MATERIAL UTILIZATION FOR VERNACULAR ARCHITECTURE

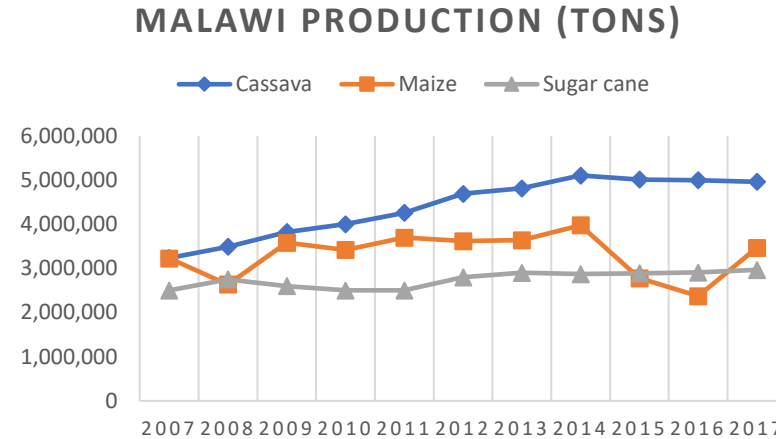
## Mechanical Performance of Adobe Brick with Agricultural Waste Material Fibres

### INTRODUCTION

- Use of locally available materials to construct low-cost housing.
- Improve low-cost housing quality and condition.
- Agricultural residue used as inputs.
- Aid in tackling issue of agricultural waste management creating environmental and visual pollution.

### BACKGROUND

- Current adobe brick structures are susceptible to failure due to failure.
- With increasing demand for this cheap material, improvements are required.



Selection criteria used for selection of materials include lignocellulosic properties, accessibility of the materials to locals and agricultural production quantity.

### MATERIALS SELECTED

- Clayey Soil
- Sugarcane bagasse
- Cassava (peels, fibres, flour)
- Maize (cob, stalk, leaf)

### LAB EQUIPMENT TO USE

- Soyokaze Oven
- Ball Mill Retsch MM301
- Shimadzu  $\mu$ EDX-1300
- Rigaku Miniflex XRD
- Shimadzu Autograph AGS-X 5kN

### TESTS ON BRICK

- Flexural Strength
- Compressive Strength
- Water Absorption

### TESTS ON FIBRES

- Water Content & Absorption
- Bulk Density
- Tensile Strength
- Microscopical Description