

**COMPARATIVE
ANALYSIS IN THE
UTILISATION OF
CASSAVA FLOUR AND
WHEAT FLOUR IN THE
PRODUCTION OF
DIFFERENT BAKERY
PRODUCTS**

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EXECUTIVE SUMMARY

In this report a comparative analysis is made on the use of cassava flour and wheat flour in the production of popular bakery products. Based on the recipes from Food Research Institute (FRI) the usage of main raw materials was analysed. It was found out that the cost of a kilogram of cassava flour is higher than that of wheat flour (¢3,500/kg against ¢3,000/kg).

It was also found that ingredients like margarine, baking powder, flavours and nutmeg were more widely used in the preparation of cassava flour based products than in wheat flour based products.

On the question of which of these two raw material-based bakery products will earn more income. It was realised from analysis of the inputs of the various recipes that cassava flour based products could compete favourably with that of wheat flour. It will therefore be more rewarding to produce more cassava based flour bakery products given effective product promotion.

In conclusion bakers or entrepreneurs who want to engage in the production of cassava flour based products will get good returns for their efforts.

1.0 INTRODUCTION

Bread especially and other bakery products like doughnuts, pies, cakes, etc. have become important items in the diet of many Ghanaians living in towns and cities. The major raw material used in these bakery products is wheat flour, which has become increasingly expensive because it is imported. Under the on-going collaborative research on the "Expanded Markets for Cassava" by the Food Research Institute (FRI) Ministry of Food and Agriculture (MOFA) National Board for Small Scale Industries (NBSSI) the Natural Resources Institute (NRI) of UK and others it has been proved that High Quality Cassava Flour (HQCF) can partially be substituted (at least 30%) for wheat flour in bread and wholly (100%) in some pastry products.

In this report a comparative cost analysis in the production of popular bakery products using cassava flour and wheat flour is made.

2.0 PRODUCTION PROCESSES

Some of the production processes in using High Quality Cassava Flour (HQCF) or Wheat Flour (W F) for bakery products are stated below:

(a) Wheat–cassava flour bread is produced by the following processes:-

- i. Procure raw materials
- ii. Weigh all ingredients except yeast, salt and water into a bowl
- iii. Dilute quantities of salt and yeast separately
- iv. Mix thoroughly to get a stiff dough
- v. Machine kneading into smooth dough
- vi. Cut dough into required sizes and put into baking pans
- vii. Allow to rise until size doubles
- viii. Bake in pre-heated oven.
- ix. Remove and allow to cool and wrap.

(b) Cassava-flour doughnuts are produced as follows:

- i. Pour 2 cups cassava flour in 2 cups of boiling water
- ii. Remove from fire and turn 4-5 times
- iii. Mix the remaining cassava flour with margarine, sugar, nutmeg and baking powder
- iv. Add boiled cassava flour and mix together until mixture resembles breadcrumbs.
- v. Whisk eggs until light and add to mixture.

- vi. Mix into stiff dough, which leaves the sides of the bowl clean.
- vii. Mould into doughnut shapes
- viii. Fry in oil

c. Wheat-cassava flour (Bofrot)

- i. Pour water into a bowl, add salt and water, and stir till dissolved.
- ii. Add soda powder, yeast, flavours, grated nutmeg and margarine systematically.
- iii. Add cassava flour and stir gradually till you have light smooth paste
- iv. Add wheat flour gradually until paste looks thicker.
- v. Let it stand for 15 minutes
- vi. Fry in oil.

3.0 COMPARATIVE BASIC RAW MATERIAL COSTS AND OUTPUTS IN THE PRODUCTION OF CASSAVA-FLOUR AND WHEAT FLOUR BASED BAKERY PRODUCTS

The tables below show the comparative costs of the raw materials used in the preparation of some popular bakery products from High Quality Cassava Flour and Wheat Flour (Tables 1-13).

4.0 ANALYSIS OF DIRECT RAW MATERIALS COSTS IN CASSAVA FLOUR AND WHEAT FLOUR PRODUCTS

In reference to the ingredients used in the recipes for the bakery/pastry products derived from cassava and wheat flours there are differences in the quantities used in similar products. Some ingredients are not used at all and these definitely affect the cost of raw materials used.

In the first place the cost of the basic or main raw materials are not the same. Wheat flour, which is imported, is cheaper than cassava flour at the moment. Currently, One (1) kilogram of wheat flour is ₺3000 and One (1) kilogram of cassava flour is priced at ₺3,500. It is expected that with the present initiatives on the promotion of cassava growing and processing into flour the current price of cassava flour will go down and be competitive. There is great potential for High Quality Cassava Flour production as industrialists or entrepreneurs have shown considerable interest in this project.

Another ingredient, which is used in both cassava flour and wheat flour products, is margarine. More margarine is used in products like 30% cassava flour bread than in wheat flour bread (150g against 100g respectively in two recipes). In cassava flour pancake 450g of margarine is used while no margarine is used in wheat flour pancake. Less margarine is used in the preparation of cassava flour pie and 50% cassava flour 'bofrot' as against similar wheat flour products – 50g and 100 g against 100g and 150g respectively.

More quantities of milk are used in the preparation of wheat flour pancake than cassava flour pancake, one tin of milk (170g) and two tins (340g) respectively.

In the case of ingredients like baking powder, vanilla essence, and nutmeg, relatively more are used in cassava flour products than in wheat flour products.

On the whole the use of more or less ingredients in the preparation of cassava flour products will have effect on the cost of direct raw materials.

5.0 Bakery and pastry production using cassava flour or wheat flour – which one brings more income?

Appendix 1 shows the gross profit from producing High Quality Cassava Flour (HQCF) based products and wheat flour (WF) based products using the recipes in this report. (See Appendix 1)

On assumptions that production costs like labour, utilities, transport, and others for the HQCF-based and wheat flour-based products are the same, it is clear from the table that:

- a. It is more profitable to produce 30% and 50% cassava flour based than 100% wheat flour bread on economic scale.
- b. One gets more profit from 30% and 100% cassava flour cakes than those from 100% wheat flour.
- c. Production of pancake and sweet bud using 100% wheat flour are better alternatives than using 100% cassava flour.
- d. Togbee (drop yeast doughnut) and cookies from cassava flour are relatively profitable than similar products using wholly wheat flour.

6.0 CONCLUSION

From the above analysis on the recipes for cassava-flour-based products it can be said that production of cassava-flour based products are competitive to wheat flour based products. Bakers or entrepreneurs in the bakery industry using cassava flour will get good returns from their efforts by producing on economic scale.