

ACTIVITIES IN INDUSTRIAL PROCESSING OF CASSAVA

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A report submitted to  
JT. ECA/UNIDO Industry Division

June 1983

As per contract SSA No. 099

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### INTRODUCTION

In Africa, the processing of cassava into traditional feeds is largely carried out by small-scale rural operations which are beset with a number of problems. The main deficiencies inherent in these rural operations are inefficient use of labour and fuel, variable quality, poor shelf-life and <sup>un</sup>hygienic handling of products.

With the mechanisation of the various traditional process, products with good keeping qualities (low moisture content) and of standardised quality are now produced in various commercial plants. Output of gari per person per unit time has also increased.

### THE SMALL-SCALE RURAL INDUSTRY

#### The impact of mechanical graters

The introduction of mechanical cassava grater has contributed greatly to the expansion of the cassava processing industry in West Africa. This machine has replaced in most places the laborious process of hand grating with the result of increased throughput. An interesting feature of these developments is that the graters are mostly locally fabricated with the motors or engines being imported. Some graters may be found sharing an engine with a maize mill or bread dough-mixing machine. Capacities of the graters range from 400 - 1000kg tubers/hr.

Mobile graters have been reported on in Nigeria. They are moved on vehicles from one village to another to provide service to cassava processors for a fee . (8)

Integrated rural project in Ghana

In a rural development programme in Ghana, the Mafi-Kumasi Common Services Centre for Cassava Processing has been set up in South East Ghana.

The project was established in 1980 by the National Council on Women and Development, a government department, with technical and financial assistance from the United States Agency for International Development (US.AID). It is located in a cassava producing area where the villagers, especially women, have been engaged in cassava production and processing for decades.

The centre presently provides services to cassava farmers, and processors from villages within a radius, of 7 kilometers. Services provided include tractor facilities to cassava farmers and facilities for the processing of cassava into gari or cassava dough. The centre is equipped with a grating machine, a hydraulic press, a sieving machine for the pressed cake, a smokeless roaster, a grading machine, and a mill for grinding large lumps of gari. Other activities include purchasing and rebagging of gari. At the peak of operation, the centre's output of gari is reported to be 400kg per day.

Milling of dried tubers in Cameroun (4)

In Cameroun a processing plant for milling dried cassava tubers has been set up at Bombourang, in the savanna belt. This plant buys dried cassava tubers, grinds, sieves and packs the resulting flour which is sold in the large towns. 600 tons of cassava flour is produced per year by this plant.

### LARGE SCALE OPERATIONS

Gari is the most widely known and consumed traditional staple food among the countries of West Africa. In the past fifteen years or so, a lot of developments have taken place in industrial processing of cassava into gari in this region.

In the 1950s, the Federal Institute of Industrial Research (F.I.I.R.) in Oshodi, Nigeria, carried out a lot of work aimed at the development of techniques required for efficient mechanisation of the village process for gari making. These efforts led to the establishment of a pilot plant for the production of 1 ton gari per 8 hours at the F.I.I.R. (1) (5)

Investigations carried out jointly by the institute and equipment manufactures on this pilot<sup>plant</sup> have resulted in the development of a fully mechanised system for gari production on commercial basis. Since 1969, a number of such plants have been installed in various West African countries. (7)

The first of such plants was established in 1969 in Banjul in the Gambia. Installed capacity of the plant is 440kg gari/hour. After 5 years of operation, this plant had to be closed down due to management problems.

A fully mechanised gari plant was set up in 1975 in Ilaaju near Ibadan in Nigeria. This factory which has the same rate of installed capacity as the first one is reported to be currently operating on a daily basis dictated by raw material supply.

Ghana is the next country in which a gari plant was installed in 1976 in Assin-Fosu. This factory has been seriously affected by the acute raw material shortage in the country. To the best of the author's knowledge, operations have recently ceased at this plant which used to produce gari with starch as a by-product.



Also installed in 1976 is a gari plant located in Opeji near Abeokuta in Nigeria. (7) This project is supported by a cassava plantation which supplies raw material to the gari plant. (9) The land for the plantation has been leased from landowners/farmers who have shares in the gari plant and who are hired to grow the cassava. Leasing the land has proved to be the key to organising raw material supply. The processing plant was reported in 1981 to be in full operation, employing about 100 persons, operating 24 hours daily with 4 shifts working 300 days annually, Output of about 7700kg of gari per day is declared.

In 1981 a contract was awarded to establish a gari plant (capacity 440kg/hr.) in Balianin in the Republic of Guinea. (7) The contract includes the provision of advisory management services for the development of a nursery farm and a 200 ha nucleus farm to supply the factory with cassava tubers.

In another development, there have been negotiations since 1981 to establish a gari plant of the same capacity as the others mentioned above in Ondo in Nigeria.

#### Cassava starch

Gosh (1968) (6) described the starch factory at Lira in Uganda. The plant is designed to produce approximately 5 tons of cassava starch daily, working on a two-shift basis of 16 hours per day. The plant can also be operated on a continuous three shifts per day basis thus increasing the output to 7.5 tons per day.

The Cameroon government has awarded a \$8.10 million contract for the establishment of a 3000 ha cassava plantation and a processing plant to produce 4000t of starch, glucose and tapioca a year. The plantation is expected to produce a minimum of 20,000t of cassava per year. (3)

#### Breadmaking

A legislation permitting the addition of up to 10% cassava flour to wheat flour for breadmaking has been enacted in the Central African Republic. (4)

In Ghana, the use of non-wheat flours as partial substitutes for wheat flour in breadmaking has been known to the bread industry since World War II. Levels of 5-20% non-wheat flour including cassava flour and gari are reported to be used as diluents of wheat flour in breadmaking by the large scale bakeries. (2) These products are seen on the market during periods when wheat flour is scarce but the locally cultivated crops which are used as diluents are readily available.

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