



UNIVERSITY OF GHANA
LEGON

**'SUSTAINABLE INDUSTRIAL MARKETS FOR
CASSAVA' PROJECT**
PROGRESS REPORT ON PROJECT OUTPUT L63

**INDUSTRIAL ALCOHOL FROM CASSAVA –
FIELD VISITS TO ATEBUBU**

By

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Summary: Cassava is one of the richest sources of fermentable substances for the production of industrial alcohol. About 400 - 420 litres of ethanol/tonne of cassava flour can be produced. The purpose of this work is to produce industrial alcohol from cassava as a means of improving rural-livelihoods at Atebubu district. Field trips were undertaken to locate, identify and interview major players (processors) in the fields of glucose syrup production and alcohol production. Initially, glucose syrup processors, "pito" brewers and "Akpeteshie" distillers were identified and inter-viewed. The types of processing equipment were also identified. The processors were prepared to do production trials, but the focus would be on the glucose syrup processors, and the "Akpeteshie" distillers during subsequent field trips.

Introduction:

Cassava (*Manihot esculanta* Crantz) is one of the staple crops produced in the country. It contributes about 20% to Ghana's gross domestic produce (GDP). The current Ghana's production leaves surpluses about 2 to 3 million metric tonnes Atebubu in the Brong Ahafo region of the republic of Ghana is a good cassava production area. The people in this area are involved in major crops such as yam and cassava. Cassava in this area is not processed industrially, therefore a lot of surpluses occur in this area. The surpluses need to be processed into industrial products.

This project seeks to solve this problem by transferring an appropriate technology to the people of Atebubu to process industrial alcohol from cassava.

Methodology:

Field trips were undertaken to locate and identify major players (processors) in the fields of glucose syrup production and alcohol production. Oral interviews were conducted on one-on-one and on group bases.

Results/Outcome:

The major players (processors) in the field identified are

- "Pito" brewers (at Atebubu)
- Glucose syrup producers (at Kokofu) and
- "Akpeteshie" distillers (at Atebubu).

(A) "Pito" brewers

Three (3) people were identified and interviewed, namely Kokomba (1), Dagarti (1) and Frafra (1). These brewers however have 2 or more people who help in the preparation of "Pito". The process used by these people is not far different from that used in the alcohol production from cassava, The main differences are:

- Cassava is not part of the process
- Sorghum is used as sources of starch and malt (enzymes) and
- Malting of sorghum takes shorter time as compared to paddy rice.

The equipment and materials used by "Pito" brewers involved:

- (i) Aluminium drums/truncated drums
- (ii) Long stirring stick
- (iii) Big pot
- (iv) Firewood

- (v) Baskets and jute sacks for sieving
- (vi) Calabash
- (vii) Tripod stoves
- (viii) Fermentation belt (for Kokombas)
- (ix) Stock yeast from previous production (Dagartis and Frafras)
- (x) Barrels/pots for the fermentation process
- (xi) Sorghum

(B) Glucose syrup processors and production of samples

The syrup processors are mostly women and some few men who have been trained in the production of glucose syrup from cassava flour. In order to avoid duplication of work, these people would be assisted both technically and financially to Increase the yield of fermentables from cassava which would be supplied to the distillers. During the trip to Kokofu (in Atebubu district) we supervised the production of about a gallon of the fermentables (of about 20 % solids) as a sample to be shown to distillers,

The equipment, materials and chemicals used by glucose syrup processors involved :

- (i) Aluminium pans (for mixing and heating.)
- (ii) Scale (for weighing)
- (iii) Graduated cup (for measuring)
- (iv) Stirring stick
- (v) Coal pot
- (vi) Charcoal
- (vii) Net/Mesh and "Khaki" cloth (for sieving)
- (viii) Bucket/bowl

- (ix) Ladle
- (x) Cassava flour
- (xi) Rice malt
- (xii) Sodium metabisulphite, $\text{Na}_2\text{S}_2\text{O}_5$ (for tightening the colour of the glucose syrup).

(C) **Meeting with Distillers**

These people are in a group. They are involved in the fermentation and distillation of alcohol ("Akpeteshie") using sucrose (common sugar) and bakers yeast. Two of them were met (One distiller and the chairman of the group. The fermentables prepared at Kokofu from cassava flour and rice malt were sent to them, and upon tasting the sample, they were convinced that really alcohol could be obtained from the sample. They were therefore ready at any time for trials, and to start with, about 24 gallons of the fermentables (thus about 40 kg- cassava flour + 13 kg rice malt) would be needed.

The equipment and materials used by distillers involve&

- (i) Drums/barrels
- (ii) Transparent polyethylene bag (for covering during fermentation process)
- (iii) Buckets
- (iv) Calabash
- (v) Distillation equipment (A drum with a metal tube dipped into it and then tube coiled through cold water tank and finally to the receiving container).
- (vi) Sucrose
- (vii) Bakers yeast

Conclusion:

Baseline information has been obtained and collated, and the following groups would be the point of focus

- Glucose syrup processors at Kokofu and
- Distillers at Atebubu.

Recommendation:

1. These 2 groups of processors as mentioned above should be motivated and encouraged to enable them perform their part of responsibility so that the cooperative purpose of this project could be achieved.
2. Since the processors have the basic equipment, we ("the alcohol from cassava team") intend to supply inputs (raw materials) and minor forms of assistance to the groups to achieve the production of higher quantities of the intermediate and end products.