



## Introduction of Sweet Corn Cultivation as an Alternative Energy Source at Awaka, Imo State, Nigeria

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(Submitted: August 20, 2015; Accepted: October 24, 2015)

### Abstract

The corn grown and eaten at Awaka is the brand of corn called *field corn* in the USA and is mainly used as a feed for animals especially cattle and chicken. The one grown and eaten in the U.S is *sweet corn* (*Zea mays* convar. *saccharata* var. *rugosa*), which is higher in sugar content. It matures faster than field corn. Awaka is known for its production of good quality corn. Awaka people celebrate “Corn Day” annually. The objectives of this study were to establish the production of an alternative, more energy giving corn than the Awaka corn, to introduce a new variety of corn, and to eventually augment the recognition of Awaka as a corn producing Town, in Imo State. Packets of hybrid corn seeds containing 100 seeds each, were bought from the US and given to women from the three major villages in Awaka (Ndegbelu, Umuodu, and Amuzi) during the corn growing seasons in 2014. They were grown according to the producers’ directions. Some of the corn seeds germinated, grew and produced corn cobs and were eventually harvested and eaten. Of the three villages, Ndegbelu had the highest corn yield (40.5%) while Amuzi had the lowest with 2%. This study shows that the American sweet corn can grow at Awaka and should be continued. It is recommended that corn stalk be used as firewood (fuelwood) rather than be left to rot or waste away.

**Keywords:** Sweet Corn, Alternative energy source, Awaka, Nigeria.

### 1.0 Introduction

The corn grown and eaten at Awaka is the brand of corn called field corn in the USA and is mainly used as a feed for animals especially cattle and chicken. It is also called agronomic corn. (i.e. cultivation is in a holistic or elaborate manner). The one grown and eaten in the U.S. is *sweet corn* (*Zea mays* convar. *saccharata* var. *rugosa*), also called *sugar corn* and *pole corn*. It is a variety of maize with a high sugar content ([https://en.wikipedia.org/wiki/Sweet\\_corn](https://en.wikipedia.org/wiki/Sweet_corn)) It is a horticultural corn (i.e. growing in a limited manner such as cultivation of vegetables, ornamental plants or growing of fruits). It is a high energy food. It is sweeter than field corn and is soft. It is a good food for the elderly whose teeth are getting weak and for children. It matures faster than field corn. Awaka is a town located about 3 kilometers from Owerri City, the capital of Imo State and located on the Owerri-Umuahia Road, in Owerri North LGA (Figures 1 and 2). The town is known for its production of good quality corn (used to be called “Otula ukwu Awaka”) Awaka people celebrate “Corn Day” annually. They pride themselves with

the popular dictum: “We used corn to train doctors, lawyers, engineers, professors, etc.” and even use it as an emblem (Figure 3).



Figure 1: Map of Nigeria showing the location of Imo State.

### 2.0 Objectives

The objectives of this study were to introduce the cultivation of sweet corn at Awaka and establish the production of an alternative, more palatable and more energy giving corn than the original Awaka corn, to



Figure 2: Map of Owerri showing location of Awaka



Figure 3: Corn used as an emblem or symbol of a Club at Awaka as evidence of the importance of corn at the Town.

introduce a new variety of corn that matures faster than the native type; To increase corn yield at Awaka; To produce more edible corn for feeding the Awaka indigenes and to sell some to improve the Awaka economy or Revenue earner (i.e. produce it in commercial quantity). It uses eventually augment the recognition of Awaka as a corn producing town, in Imo State and Nigeria at large.

### 3.0 Materials and Methods

Packets of corn seeds containing 100 seeds each were bought from the US and given to women from the three major villages in Awaka, namely, Ndegbelu (sub-divided into Umukwe and Loboche), Amuzi and Umuodu, during the corn planting season in 2014 (March – April). As an incentive the women were

promised hundred thousand naira (N100,000) only through the Willey-Esther Foundations Inc. for the village with the greatest corn yield after harvesting. The seeds were grown according to the producer's directions and necessary precautionary and storage measures were taken.

### 4.0 Results

We summarize our results thus:

- i. Some corn seeds germinated, grew and produced corn cobs and eventually were harvested and eaten.
- ii. A total of 1500 sweet corn seeds were planted by the three villages, namely Ndegbelu (Umukwe and Loboche), Umodu and Amuzi.
- iii. Of the 1500 seeds planted, 460 (31.0%) germinated. Of this number, 220 (48.0%) yielded corn cobs and seeds and were harvested and eaten.
- iv. The examination of the harvested corn cobs showed that the yield from the Umukwe village subdivision was highest in terms of number harvested as compared with number planted (40%), and they were given the N100,000.00 (one hundred thousand naira) only and Ndegbelu village on the whole (30%).
- v. The least was Amuzi with 2.0% (see Table 1).

### 5.0 Some Facts About Sweet Corn Production

- Sweet corn is a warm season crop
- Temperatures between 65 and 80°F are ideal with 50°F being the minimum for development. Temperatures above 89°F often result in inferior quality corn.
- Adequate moisture is necessary for high quality sweet corn. A minimum of 20 inches of rain or irrigation is necessary to prevent reductions in quality

Table 1: Corn yield by villages

Villages	Number of corn Seeds planted	Number of corn seed germinated	Percentage of corn seed germinated (%)	Number of corn harvested	Percentage of corn harvested %
Ndegbelu	500	370	74.0	150	40.5
Umukwe	250	250	100.0	100	40.0
Loboche	250	120	48.0	50	100.0
Umodu	500	60	12.0	60	100.0
Amuzi	500	30	6.0	10	33.3
Total	1500	460	31.0	220	48.0

and yield.

- Sweet corn requires a shorter growing season than other types of corn that are harvested at the mature stage.
- Minimum of soil temperature of 60 degrees is necessary.
- Spacing: Row spacing may range from 30 to 42 inches apart with 8 to 10 inches between seeds (Figures 4, 5 and 6).
- Three-ft rows, with 10 inches between seeds, will provide about 17,000 plants per acre.
- Corn will be ready for harvest approximately 18 to 22 days after silking.
- Place sweet corn in cold storage or refrigerator after harvesting to avoid spoilage. Unlike field corn, harvested when the kernels (or seed) are dry, and mature (dent stage), sweet corn must be picked when immature (milk stage) and prepared and eaten as a vegetable, rather than a grain. It stores poorly and must be eaten fresh, canned or frozen ([https://en.wikipedia.org/wiki/Sweet\\_corn](https://en.wikipedia.org/wiki/Sweet_corn))
- Weed management is critical for sweet corn yields to be realized.



Figure 4: Field corn in Belzoni, Humphreys County, MS showing corn rows and the spacing.



Figure 5: Close – up photo showing field corn planted in rows with Dr. Alex Acholonu.



Figure 6: Dr. Alex Acholonu pointing at a well (bore hole) supplying water (ground water) to the corn plants. This shows the importance of water for the sweet corn to grow. Well water is connected to perforated hose that facilitates the provision of adequate water to the plants.

## 6.0 Discussion and Conclusion

Historically, sweet corn is believed to have occurred spontaneously as a mutation in field corn and was grown by several Native American tribes, especially the Sam Crystal tribe. The Iroquois are believed to have given the first recorded sweet corn (called ‘Papoon’) to European settlers in 1779 (loc. cit.). It is hoped that the cultivation of this very nutritious corn will succeed in Awaka and subsequently in Nigeria as a whole to help feed the poor and the needy most especially among others.

The present study is encouraging. The yield is considerable and shows that the American sweet corn can grow at Awaka and should be continued as long as the recommended procedures are followed and precautionary measures carried out. It is strongly recommended that the sweet corn project participants who did not get good yield consider getting a soil scientist to examine the nature of the soil and find out the nutrient materials lacking in the soil. They and the subsequent interested investigators should review the stated facts above about sweet corn production and follow them to ensure increased yield. The Awaka people and other towns that grow corn are encouraged to use the corn stalk as a biomass conversion source; to use it to produce energy like firewood instead of letting them rot away after harvesting the corn especially now that firewood (fuelwood) is becoming scarce because of deforestation in many areas.

**Acknowledgment**

Evan Peter Chima, President Awaka Go Forward, Inc., Mr. Basil Acholonu and Mr. Alphonsus Onyeberi, a retired Imo State Agriculturist served as Coordinators of this corn project. The author wishes to thank them immensely. A total of 20 women from the three villages of Awaka, participated in the sweet corn project and are hereby acknowledged. Special thanks go to Dr. Patrick Igbokwe and Dr. Girish Panicker of the Department of Agriculture, Alcorn State University for their technical and expert information during the course of this project. The financial input of the Willy-Esther Foundation of which the author is the President and Founder is greatly appreciated.

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