**LAWAL ATINUKE**

**18/ENG01/013**

**CHEMICAL ENGINEERING**

**FOOD SECURITY ASSIGNMENT**

**AFE202**

**QUESTION:** Prepare a business plan on a chosen agricultural enterprise following the guideline in the note spiral bind and submit upon resumption. Minimum of 5 pages, times new roman size 12 with double spacing.

**COCOA PRODUCTION INDUSTRY.**

During fermentation the cocoa pulp clinging to the beans matures and turns into a liquid, which drains away the true chocolate flavor starts to develop…..

While processing cocoa, or any agricultural produce, there are a ton of things to put into consideration. Which are:

* What to produce
* How to produce
* How much to produce
* The size of farm
* Machinery and labor program
* Construction of farm building
* Irrigation
* Conservation and reclamation program
* Financing the farm
* Supervision, accounting, adjusting the farm production program
* Buying and selling.

The process of production(transforming cocoa beans) goes as thus:

1. The cocoa beans are cleaned to remove all extraneous material.
2. To bring out the chocolate flavor and color, the beans are roasted. The temperature, time and degree of moisture involved in roasting depend on the type of beans used and the sort of chocolate or product required from the process.
3. A winnowing machine is used to remove the shells from the beans to leave just the cocoa ribs.
4. The cocoa ribs undergo alkalization, usually with potassium carbonate, to develop the flavor and color.
5. The ribs are then milled to create cocoa liquor(cocoa particles suspended in cocoa butter). The temperature and degree of milling varies according to the type of nib used and the product required
6. Manufacturers generally use more than one type of bean in their products and therefore the different beans have to be blended together to the required formula.
7. The cocoa liquor is pressed to extract the cocoa butter leaving a solid mass called cocoa press-cake, the amount of butter extracted from the liquor is controlled by the manufacturer to produce presscake with different proportions of fat.
8. The processing now takes two different directions. The cocoa butter is used in the manufacture of chocolate. The cocoa press-cake is broken into small pieces to form Press-cake which is then pulverized to form cocoa powder.
9. Cocoa liquor is used to produce chocolate through the addition of cocoa butter. Other ingredients such as sugar, milk, emulsifying agents and cocoa butter equivalents are also added and mixed. The proportions of the different ingredients depend on the type of chocolate being made.
10. The mixture then undergoes a refining process by travelling through a series of rollers until a smooth paste is formed. Refining improves the texture of the chocolate.
11. Then next process, conching, further develops flavor and texture. Conching is a kneading or smoothing process. The speed, duration and temperature of the kneading affect the flavor. An alternative to conching is an emulsifying process using a machine that works like an egg beater.
12. The mixture is then tempered or passed through a heating, cooling and reheating process. This prevents discolouration and fat bloom in the product by preventing certain crystalline formations of cocoa butter developing.
13. The mixture is then put into moulds or used for enrobing fillings and cooled in a cooling chamber.
14. The chocolate is then packaged for distribution to retail outlets.

After all these, the goal is to produce 242,000 tons of cocoa.

They grow under the canopy of tropical rainforests, seldom reaching more than 7.5m and each tree yields 20-30 pods per year.

the cocoa has broad dark leaves about 25cm long and pale-colored flowers from which bean pods grow.

* 1. HOW THEY GROW: A native of the central and south American rainforest, cocoa trees are now cultivated in many tropical locations around the world. Two methods are generally used to establish cocoa tree plantation. Cocoa trees are now cultivated in many tropical locations around the world. Young trees are interspersed with new permanent or temporary shade trees such as coconut, plantains and bananas, following the clear-felling of the forest. In large plantations, cocoa trees are planted and harvested commercially.
	2. SIZE OF FARM: The average size should be 20 hectares which should produce one or two tonnes of cocoa beans a year(16 sacs).
	3. MACHINERY AND LABOR REQUIRED: Cocoa bean roasting machine, cocoa bean peeling machine, cocoa bean grinder, hydraulic oil press, power grinder and powder packaging machine. Rubber trees and forest trees are also used for shade. Once established, however cocoa trees can grow in full sunlight provided there are fertile soil conditions and intensive husbandry. Cocoa plantations usually in valley’s or coastal plain, must have evenly distributed rainfall and rich, well drained soil.
	4. IRRIGATION, CONSERVATION, AND RECLAMATION PROGRAM; The water relations of cocoa are reviewed in the context of drought mitigation and irrigation need. Background information on the center of production of the cocoa tree and the role of water in crop development and growth process is reviewed by the effect of water stress on stomatal conductance, leaf water status and gas exchange together with drought tolerance, crop water use and water productivity, leaf and shoot growth occur in a series of flushes which are synchronized by the start of the rains following a dry season (or increase in temperature) alternating with period of dormancy. Flowering is inhibited by water stress but synchronous flowering occurs soon after the dry season ends. Roots too grow in a rhythmic pattern similar to those of leaf flushes. Roots can reach depth of 1.5-2.0m, but with a mass of roots in the top 0.2-0.4m and spread laterally> 5m from the stem. Stomata open to low light intensities and remain fully open in full sunlight and in well watered plants. Partial stomata closure begins at a leaf water potential of about -1.5Mpa. Stomatal conductance is sensitive to dry air declining as the saturation deficit increases from about 1.0kPa. Net photosynthesis and transpiration both consequently decline over a similar range of values.
	5. ACCOUNT AND FINANCE FOR THE FARM; As commonly said, cocoa farmers don’t earn as much, systemic risks linked to cocoa production, low financial literacy, weak agricultural practices at farmer level and high transaction costs remain major. From research, fair trade found average ivorian cocoa farmer household income was $2707 per year with around $2000 of income coming from cocoa according to it’s survey, 3202 fair trade certified farmers. This equates to total income of $0.93 per person daily. Overall, cocoa farmer lack training and guidance on sustainable and diversified agriculture to improve productivity to increase the quality of their cocoa beans and practice agriculture in ways which are not harmful to the environment. Agricultural financing is a provision of multiple types of service dedicated to supporting both on and off farm agricultural activities and businesses including input provision, production and distribution, wholesale, processing and marketing. In the past, an ex ante analysis finances of the technology was undertaken to access it’s economic viability. Input and output data were collected from farmer experiment over three seasons and supplemented with data over from traditional cocoa fields of varying rotation ages and secondary data on production in later years of an eighty year cocoa rotation. A discounted cash flow rotation was carried out to estimate. The age of maximum LEV for the various scenarios suggest that the optimum economic rotation for the hybrid cocoa is between 18 and 29 years, much less than the traditional system.
	6. MARKETING AND MANAGEMENT DECISION…BUYING AND SELLING: eBay, ECPlaza can be used to market cocoa. Many distributors use websites such as these to sell their products, and many sell items such as cocoa beans to manufacturer that need them. Nearly all cocoa coming from origin countries is sold through the physical market. Small traders buy cocoa beans regularly from the farmers visiting them one by one. In the second stage, small buyers sell the beans to wholesalers, who in turn resell them to exporters.
	7. SELLING: Between 2016 and 2019, the monthly price of cocoa worldwide peaked in mid 2016 at about 3,122 US dollars per metric ton and has since declined to around 2,134 US dollars per metric ton as of October 2018. Global cocoa production is expected to reach 4.95million tons in the 2017,2018 crop yield.

**With all that said, the business plan will be like:,**

**Overview:** TEE’S cocoa farm is a new farm involved in production, sales and distribution of highly nutritious disease free cocoa beans, processing into cocoa liquor, cocoa butter, cocoa powder, etc, targeting consumers in Nigeria and the international market

**The company:** TEE’S cocoa farm is established as a limited liability company owned by ATINUKE HEPHZIBAH LAWAL, and other investors. The farm is managed and directed by Atinuke Lawal, a veteran in business industry with 12 years experience.

**Vision:** to be among the three largest cocoa producer/distributer in the world by the year 2022.

**Mission:** \*To give customers the very best products and provide excellent customer service so we may earn their trust and ensure continued business transaction.

To provide an excellent, top-notch and safe environment for cocoa production and processing, storage and distribution.

 **Objectives: -** Increase revenue from the sales of cocoa beans and its derivative products to 3mil over 2years.

To maintain profit margins at 20-25% through close attention to expensed and cost of cocoa production and processing

**Keys to success:** financial stability for payment of labor and other variable inputs, low operating cost and efficient processing technique, ensuring an efficient and highly motivated distribution team, maintenance of good working condition and effective remuneration.

**Products and services;** TEE’S cocoa farm will sell healthy disease free and highly nutritious cocoa beans. Other products and services include cocoa powder, cocoa tea, cocoa butter, etc. we produce processed and packaged to meet standard organization of Nigeria and international standard. We are concerned about providing products that suit the many use of cocoa bean(edible/industrial uses).

The market: today, chocolate is a highly demanded luxury product and impulsive treat for millions of people around the world. No wonder the global market for chocolate and cocoa beverages is now worth over $100billion every year

Although the developed countries and fast developing countries( especially in Europe, Asia and North America consume over 90% of the chocolate produced every year, chocolate largely exists because of Africa. This is because 70% of cocoa, the major ingredient for chocolate is grown and harvested in Africa.

COMPETITION: Competitors for TEE’S cocoa farm includes renown agricultural produce marketer in and around Nigeria.