

SAVOLAB

**ORGANISATION & CONSTRUCTION OF
GUKAM'S EXPERIMENTAL LABORATORY
FOR THE DEVELOPMENT OF**

NATURAL SOAPS BASED ON JATROPHA OIL

**to be produced by
Small Ateliers of Tomoka's Women Groups and
GuKam's future Savonnerie (Soap Production Unit)**

GUKAM MANUAL NR 7

FIRST DRAFT FOR INTERNAL DISCUSSIONS & CONSULTANT FEEDBACK

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This is a translation of the original FRENCH document titled:

SAVOLAB :Organisation & Construction du Laboratoire Expérimental <Développement des Savons Naturels à Base de Huile Jatropha>

INTRODUCTION

The function and contributions of the Experimental Soap Laboratory within GuKam's Jatropha Jatropha Project are to a great extent similar to those of the Pilot Plantation: The Soap Laboratory is the place where we design, manufacture and test the **prototypes and best practices** for the small-scale industrial production of natural soaps based on ingredients produced in the Canton of Dawlotu Tutu. The knowledge & skills, the quality of the soaps, and the efficiency & cost of the procedures (protocols) coming out our Soap Lab will determine the amount of *added value* which we give to the agricultural products from the Jatropha Plantations and Ingredient Gardens which Tomoka Farmers and GuKam have started up – the latter with the help of its Pilot Plantation in Avégamé.

We have chosen the word **<experimental>** in the title of this document to indicate clearly that our Product Development Efforts are not just applications or variations of existing recipes and protocols. On the contrary, the existing literature on (small-scale) *industrial* fabrication of soaps based on Jatropha Oil is too scarce and too vague for that. We will have to examine the validity of the claims about quality and profitability first, although we can deduct from the sales of similar products in Mali, Tanzania and in Europe that Jatropha Soaps must be good, attractive and profitable. But to what extent do these qualifiers apply to our own situation? Only our own experience will tell. Moreover, our soap products have to find their **own niche in the market** by being *more* attractive or *otherwise* attractive than existing soaps. We will have to develop them ourselves. That is the second reason for constructing a specially equipped place for experimentation, research and testing (a laboratory) at this point.

This short manual describes our modest start of the Lab, keeping in mind that all efforts and materials will be the foundations for the future, more professional Lab which will be constructed in the Target Area of Dawlotu Tutu itself.

1 ABBREVIATION

GuKam's experimental laboratory will be called SAVOLAB. This acronym is formed from the French word <savon> (soap) and <laboratoire> (laboratory).

Savolab will be a *permanent* department of our future SAVONNERIE (soap factory). This Savonnerie is one of the Agro-industrial units which we intend to establish in the Canton of Dawlotu Tutu: the rural area where the ingredients for our soaps will be produced in the context of the Agricultural Program of Tomoka's sustainable rural development efforts.

2 LOCATION

In its early stages, Savolab is located on the Premises of GuKam in Lomé where Tomoka's Head Office is located until Tomoka will obtain its own office in the Target Area itself. The Savolab will be a separate unit of the Savonnerie when this will be built in the Canton itself.

3 PLACE IN THE JATROPHA VALUE CHAIN

The cultivation of Jatropha is part of Tomoka's Agricultural Program which aims at Food & Bio-energy. Jatropha Oil (=Pure Plant Oil / PPO) will be used for cooking, light, as fuel for diesel engines, and as <raw material> for agro-industrial purposes like the production of soaps, bio-diesel, glycerine etcetera.

Savolab is part of the Savonnerie which in its turn is part of the second branch of the Jatropha Enterprise which GuKam is setting up. To get the full picture, we bring to mind that Tomoka and GuKam have conceived three *major* branches of the Jatropha Enterprise

1) Agriculture

The cultivation of Jatropha seeds (= the feedstock for Jatropha oil) lies at the basis of the Savonnerie and several other agro-industrial departments. The Jatropha Seeds are produced on Gukam's Plantation (60% of ±550 ha), on 100 New "Tomoka Farms (60% of 500 ha), and on Hedges throughout the Canton with a minimal length of (300 farms x 800 metres) 240 km.

Several supplementary ingredients for the Soaps are produced by Tomoka Farmers and by GuKam's Plantation. Moreover, several ingredients are collected from existing plants and trees by Women Groups -- as is the case with shea trees. Important supplementary ingredients are: herbs, lemon, orange, avocado, papaya, shea, some scented woods, bamboos, and flowers. They will deliver natural colorants, fragrances and -- in some instances -- granularly components for luxury soaps and shrubs.

2) Agro-industries

There are several agro-industrial units which will *add value* to the raw materials (Jatropha seeds & ingredients) produced or collected within the context of Tomoka's agricultural projects. The most important Jatropha based industrial units are: Oil Mill, Savonnerie, Briquettes Press, Fertilizer Unit, and a future Bio-diesel Production Unit.

(The food production of the Agricultural Program will be processed in other units like a Maize Mill, a Baby Food Atelier and a Unit for the production of Easy-to-prepare Foods.)

As far as Jatropha is concerned, the value addition starts with an Oil Press. The SAVONNERIE will purchase Jatropha Oil from it, because this Pure Plant Oil (PPO) is the major base ingredient for the new soaps. By way of illustrating this value adding process we apply the known oil content percentages of Jatropha seeds (about 33 – 39%) to a Soap example from Mali¹:

About 39 kilos of Jatropha Seeds (worth at the time ± **F CFA 1.950**) delivered 13 litres of Jatropha Oil worth **F CFA 2.730** (F CFA 210 per litre). By adding caustic soda and water this oil was turned into 13.600 grams of Soap Powder (17 sachets à 800 grams) sold at a price of **F CFA 13.600**. After deducting cost of labour, ingredients (caustic soda and water) and packaging a profit of F CFA 8.770 had been realized.

3) Fuel Distribution - distribution of Pure Plant Oil (PPO)

Jatropha Pure Plant Oil (PPO) is a sustainable source of bio-energy. It will be sold via several outlets and channels: as oil for light and cooking, and as bio fuel for diesel powered engines in generators, trucks, minibuses and cars. Tomoka Women Groups which will produce and market several types of soaps, moreover, will also buy the Pure Plant Oil for their soap production.

4 SAVOLAB'S FUNCTIONS

Savolab has 3 major functions:

1) Product & Protocol Development

Savolab prepares new products: natural soaps based on non-edible oil². While doing so, it prepares also the Protocols for the production and packing process, for the marketing, and for the sales of those new soaps.

2) Quality Control

Moreover, Savolab is in charge of permanent quality control to ensure continuing client satisfaction. This function implies that quality tests will be carried out at regular intervals. The tests will also ensure that the products will continue to be allowed to use attractive marketing labels like ECOMARK and a NATURAL INGREDIENTS certificate.

3) Improvements

Savolab will advise all producers on improvements of products, production process, marketing and sales.

5 SAVOLAB'S START DATE

If GuKam is able to raise enough *external* capital³, the starting date for systematic *product development* should be 1 October 2010. That date implies that systematic *testing* could start on 30 October (because soaps have to <rest> some time before they are ready for use.)

The start date depends also on many other factors. Paragraph 9 below presents the most important ones. It is assumed that the construction of a simple Laboratory Facility in the Court Yard of GuKam's Head Office in Lomé and the Administrative preparations (see Paragraph 6) will be taken care of during the months of August and September.

The AVAILABILITY OF JATROPHA PPO (obtained via cold pressing) has not been mentioned so far. If the harvesting of Jatropha seeds during the Season October 2009 – January 2010 has not created enough stock to press oil with a Bieleberg Ram Press for one season (6 months), then the starting date has to move up to the end of next Harvesting Season.

6 PREPARATIONS

A small-scale start of the Savolab can only take place AFTER a series of preparations has reached minimum levels. First of all, GuKam's Head Office will make clear physical arrangements :

- 1) a shelf for administrative matters,
- 2) a store: space for ingredients, Pure Plant Oils and tools,
- 3) a work space (laboratory) where the trial soaps will be produced and tested,
- 4) and a store (some shelves) for the finished products.

These arrangements will grow while development works are progressing.

¹ VALUE ADDITIONS: Economic Studies by Dr Henning, one of the pioneers of the Jatropha System, and the Authorities in Mali show attractive figures. The example quoted is a pure Jatropha Powder Soap (number 11), semi-industrially produced in Mali .
See: Dr Reinhard Henning (responsable) et al. Etude économique sur les productions artisanale et semi industrielle de savon à base Pourghère. Ministère des Mines, de L'Énergie et de L'Hydraulique, Mali., 1994 / Mise à jour 10-05-2002

² PRODUCT DEVELOPMENT: The document <Product Development Considerations> (doc 30.20.567) provides a.o. an overview of decisive requirements for the production and the product itself, a description of the characteristics of GuKam's *Natural* soap lines, and the fact that the development of new, competitive soaps for the Home Markets and Export will take at least 18 months!

³EXTERNAL CAPITAL: GuKam has financed ALL preparations and starting up efforts of Tomoka's Sustainable Rural Development Programs until this moment of writing . External funding of Tomoka -- a non-profit organisation -- has to enable further progress. GuKam's modes reserves will be exhausted completely in the nearby future.....

6.1 Administrative Provisions for management

The future Savonnerie can only function when Savolab functions well and efficiently. The Administrative System makes this possible. There will be a small section in GuKam's or Tomoka's Office where Savolab's Files will be kept. Savolab will start with at least four digital and physical files (Fr classeurs). The following sections will be introduced:

1. PROFESSIONAL DOCUMENTATION:

- 1.1 Recipes
- 1.2 Ingredients (natural oils, granular and other additives, colorants, fragrances,)
- 1.3 Production tools (molds, buckets, machines, and other implements)
- 1.4 Production processes (protocols) & production costs (= time and money)
- 1.5 Markets for natural soaps (shops and clients in Togo and Abroad; advertisements and all kinds of information produced by existing firms)

2. SAVOLAB'S NEW SOAPS

- 2.1 Products
This section contains the folders of Each Individual Soap. Each (numbered) Folder contains
 - a) The Recipe & Production Sheet,
 - b) The Testing Reports of 4 standard Tests spread over a period of 12 months
- 2.2 Test Panels
The organisation of the Three Panels, names, Test program, Test Forms

3. STORE & STOCK CONTROL

- 3.1 Ingredients –stocks and procurements of:
 - a) Jatropha Seeds
 - b) Jatropha Pure Plant Oil (PPO) – cold pressing
 - c) Other Plant Oils and similar ingredients like shea or cacao butter
 - d) Natural Colorants
 - e) Natural Fragrances
 - f) Granular Additives like herbs, lavender, and camomile
 - g) Other Additives like honey, flour,
 - h) Caustic soda
 - i) Water
- 3.2 Packing & Sealing Materials
In the beginning Savolab only needs some paper wrappings and plastic foil (for sealing the soaps which are destined for a long lasting shelf life with a view to export). Moreover about 30 small plastic containers (250 ml) are needed for shrubs. Cartons and labels for wholesale packing are not yet needed.
- 3.3 Soaps which have been produced
Paragraph 11.2 explains that there will be at least 72 different Trial Soaps. In total these varieties will deliver 2.520 small pieces or sachets of soap (100 grams each). All of them have to be stored somewhere, and their movements have to be recorded.
- 3.4 Tools and Equipment

4. ACCOUNTS

A simple Journal keeps track of all expenditures and incomes from experimental sales. Receipts and other proofs of payment are kept here as well.

6.2 Store for Ingredients, PPO, Packaging Materials, and Tools

Savolab will get a couple of shelves and Cupboards for the storage of Ingredients, Packing & Sealing Materials, and Tools. One major tank will contain Jatropha PPO (Pure Plant Oil) and some jerry cans will store other plant oils.

GuKam is aware of the fact that it is of utmost importance to get into the habit of giving all things their proper place – even during this simple starting up phase. That is also the reason why implements will *only* be used for the soap production (and not borrowed from private kitchens and so on). Savolab has to get its own identity right from the start!

6.3 Workshop & Tools for production and testing

A special place in the Courtyard of the Office in Lomé will be designated for <soap production>

Basically, we only need a sun shaded work table near the boys' quarters, with easy access to water and refuse.

In accordance with GuKam's Core Values – in particular ecological and environmental awareness – and its self imposed role in social economic development, GuKam will avoid the use of chemicals, charcoal and traditional work methods (like pounding) which exhaust our women. That is why a simple hand oil press, grinders, mixers and other tools will be used. In anticipation of a better equipped lab and factory, we also will avoid working in bent positions while pots and other implements stand on the ground.

The Testing of experimental soaps takes place on two locations:

In the laboratory and in the homes of those who make up our Test Panels. There they will use the new soaps while showering, washing clothes etcetera.

6.4 Store for soaps – supplies

The shelves and cupboard with experimental soaps will find a separate place – probably in the Store for Ingredients, Packaging Materials, and Tools. The temperature in that store room has to be suitable for the final products.

The items belonging to ONE type of soap will be called <TRIAL SOAPS> (TS). The French equivalent will be <SAVON EXPERIMENTAL> (SE). Each TS will get a number and a name. This will facilitate administration, testing and storage control because the whereabouts of the Trial Soaps are indicated with these numbers and names.

7 CHARACTERISTICS OF GUKAM'S NATURAL SOAP LINES

7.1 Seven characteristics

Keeping in mind that our Soap Production is an important part in *a sustainable* rural development process, we will try to obtain as soon as possible labels which make clear that all producers receive a FAIR financial reward, that there is no ECOLOGICAL abuse involved in any of the production steps, and that we only use NATURAL ingredients. We will apply as soon as possible to the proper European authorities to obtain their certifications: Fair Trade, Ecomark, Natural Ingredients.

At this point we are already able to conclude that GuKam and Tomoka Soaps for the Home market in Togo and for the Export markets in Europe should have a couple of elements in common:

- a). The major ingredients are **non edible**. This is a major characteristic: almost all oils are non-edible. This way, they do *not* drive up the consumer food prices for edible oils.
- b). The major feedstock for non edible oil (Jatropha) and other ingredients are **home grown** by GuKams Project in Dawlotu Tutu. If not produced or collected in the project Target Area, they are being produced in Togo or in its neighbouring developing countries.
- c). Oils, Colours, and Fragrance ingredients are **natural**. Hardly any (petro) chemical additives are used.
- d). All workers (including service providers like transporters) **receive fair financial rewards** for their efforts.
- e). Each <product line> has a **clear and recognizable image** in order to be marketable. If Fair trade, Ecomark and other certifications have been obtained, then they will be printed on the wrapping material. The same is the case with the GuKam and/or Tomoka Logo.
- f). The production process, the wrapping and the packaging materials which are being used are not damaging to the natural **environment**.
- g). The names and shapes of export oriented soaps will project an **African image**. At this moment we think of recognizable soap bar shapes or imprints and names. Consultations with our future Western Importers will help us to decide.

7.2 Three Product Lines

GUKAM & TOMOKA SOAP LINES should not contain too many different variations / items. GuKam suggest sticking to 4 or 6 per Product Line. Just to give the reader an idea of the Final Collection of Soaps that will be sold:

LINE 1 <BASIC SOAPS FOR RURAL MARKETS> :

- 1.1 laundry bars or powders (length? weight?) – one lemon scented, and one without any scent
- 1.2 toilet soaps: small rectangular bars ofgrams : one with flower fragrance, and one with a fruit (orange?) scent

LINE 2 <BASIC SOAPS FOR URBAN MIDDLE CLASS MARKET SEGMENTS>

- 2.1 toilet soaps with flower fragrance and colours : 2 different ones (bars? ball-shaped? other?)
- 2.2 toilet soaps with fruit fragrance and colours : 2 different ones
- 2.3 laundry soap bars? (If they can really compete with the imported laundry washing powders)

LINE 3 <EXPORT ORIENTED LUXURY SOAPS>

- 3.1 toilet soaps – cakes and blocs to be cut by stores in Europe and sold by their weight:
 - pure variations of different natural scents and colours,
 - mixed variations (=with hard core herbs, different colours in one bar), layer-over-layer
- 3.2 toilet soaps – sizes and shapes which are consumer-ready
 - balls on a rope & cubicles on a rope (shower soaps)
 - African shapes (animals?) with different colours and scents
- 3.3 toilet shrubs – in large containers for wholesalers and shops, and in small containers for the end user
 - pure shrubs -- white – 2 fragrances
 - mixed shrubs – white -- with African herbs mixed through

8 START OF SYSTEMATIC TRIALS & COMMERCIAL SOAP FABRICATION

8.1 Duration of the Soap development process

GuKam is counting on at least 18 months of (part time) work before suitable Product Lines for the Home Markets and the Export Market have been established. Experimental production and testing will take about 12 months. Moreover, the preparation of the Export Process – with the help of Fair Trade, for example – will take another 6 months at least.

8.2 Start of commercial production

If GuKam starts its SYSTEMATIC Experimentation on 1 October 2010, then the FIRST, SMALL-SCALE COMMERCIAL PRODUCTION could start in May 2012. However, this date not only depends on GuKam's skills and knowledge about soap fabrication, or on the availability of enough starting capital.! The list of decisive production factors is much longer. See next point.

9 DECISIVE PRODUCTION REQUIREMENTS

We just list the most obvious ones:

9.1 Prerequisite 1: establish the markets

The development of the PRODUCT LINE and the STUDY OF POTENTIAL MARKETS go hand in hand. The pre-feasibility orientations which GuKam has undertaken so far have limited themselves to some European markets only.

FOREIGN MARKETS:

We know that there is a clearly defined EXPORT MARKET FOR LUXURY NATURAL SOAPS. European friends have reported on this and have sent pictures of such soaps being sold in Amsterdam, New York and other Western Cities. Moreover, we have established the involvement of Fair Trade expertise and support in that domain. An Ecomark label and a Natural Ingredient Certification appear to boost the sales of products which are allowed to carry such distinctions.

HOME MARKETS:

GuKam still has to undertake systematic orientations in Togo and in the Region in order to know:

- a). quality requirements of rural and urban consumers for different kinds of soaps (for personal hygiene and laundry),
- b). prices and size of existing soaps in Togo (and / or its neighbouring developing countries).
- c). distribution channels in existence (producers, importers, wholesalers, retailers, revendeuses, supermarkets...)
- d). the packaging materials used (of individual soaps & of <badges> like cartons)
- e). the weight and volume of individual soaps (bars, tablets, containers with shrubs) sold to urban and rural consumers
- f). turnover speed (and shelf life) of the existing soaps
- g). the <good quality> life span = the number of months that the soap keeps its saponification, fragrance and other characteristics
- h). the advertisements used (mouth to mouth, media, demonstrations, advises by medical clinics, & rural health workers, hygiene classes in schools and in women groups etcetera)

9.2 Prerequisite 2 : define the product lines

In addition to what has been stated in Paragraph 7, GuKam has to design characteristics which <define> the IDENTITY AND IMAGE of the product lines and the individual soaps in each line. THE FUNCTIONAL requirements of the intended consumers are playing a role with all of the aspects mentioned below. Small soap bars, for example, are not practical for rural women who do their laundry in the river.... Moreover, one has to think of the PACKAGING AND TRANSPORT requirements before making final decisions on shapes and weights! For example: Oval, star and ball-shaped luxury soaps take a lot of packaging space in cartons and crates! This drives up packaging cost and transportation fees!

Aspects which determine the (AFRICAN) IDENTITY AND IMAGE of the new (export oriented) soap lines:

1. INGREDIENTS – allowing the producer to call them <100 natural>
2. SHAPES
3. FLAGRANCES
4. COLOURS
5. WEIGHTS
6. PACKAGING
7. NAMES
8. LOGO
9. PRICE

9.3 Prerequisite 3: establish the soap evaluation criteria & testing panels

The <saponification> characteristics which are used by Consumer Panels can be traced on the Internet, and will be a part of GuKam's Professional Documentation In many markets, the aspects <foam> and <not dehydrating the skin> are of crucial

importance. Moreover, we all know that <fragrance, colour, shape and sensuous contact> are factors which seduce consumers the most.....!

The establishment of Test Panels which are representative for the Targeted Markets will be studied carefully. There will be ONE TEST PANEL PER PRODUCT LINE. Each of them will consist of 7 MEN & WOMEN who judge the technical (saponification) aspects, the soap quality in general, and the price-quality ratio. Testing Sessions are scheduled at the end of every month. One to three Trial Soaps will be tested per session. The Chart in Paragraph 12 illustrates this. After each Session the panel members will take home one NEW specimen to be used in their daily life. A standard Questionnaire will take stock of their experiences and opinions. If more than one new Trial Soap has been developed during a particular month, then these new specimens will be divided amongst the members of each Panel in order to avoid that their judgements about soaps are getting confused.

An EXIT TEST PANEL will test the Trial Soaps after 12 months in order to determine their quality and *maximum* shelf life. We did not work out the details of this Panel yet. This will be done after having worked with test Panels for quite a while.

9.4 Prerequisite 4: keep detailed records of all experiments in order to determine costs & profit margins

Standard forms RECORD all steps and activities of the fabrication & storage of each Trial Soap: time investments, production techniques, time lapse between production and sales, costs, know how, ingredients, test results. This is the only way of making sure that the most attractive and profitable Soaps will be selected for the *commercial* production of the 3 Product Lines indicated in paragraph 7.

By analysing the Records of the Trials and Test Results we will be able to edit PROTOCOLS which will be used:

- 1 during the Ingredient Procurement phase
- 2 during the production process in the Factory
- 3 during the packaging phase
- 4 during the storage phase
- 5 during the marketing phase
- 6 during the sales & distribution phase

10 ORGANISATION

10.1 Staffing and responsibilities during Savolab's starting-up period

Experiments will be carried out by and under supervision of Ms Efua NAMYALO GU-KONU (Secretary of both Tomoka's and GuKam's Head Office in Lomé). She will keep all records, check the stores, direct the Tests, and is in charge of Ingredient Planning & Procurement.

Production assistance will be provided by a fully employed Soap Maker – preferably a woman -- who has experience with artisan and semi-industrial production processes. We intend to trace such a lady with the help of local organizations like CIV and Community Workers / Social Assistants.

A male Oil Press Assistant will be employed during a limited number of months (see the Chart in paragraph 12). His duty will be to press about 3000 kilos of Jatropha Seeds with a hand operated Bieleberg Ram Press. He will furthermore filter and store the Oil recuperated this way, and handle the press residues (the press cake). If finances allow, GuKam will use this opportunity to experiment with the press cake and filtering sediments by pressing them into <briquettes> which can replace charcoal..

The General Manager will coordinate all activities and he will be responsible for the contacts with external experts, certification agencies in Europe, and for Savolab's funding (donations and commercial loans).

10.2 Production Session and Frequency

Keeping in mind that some ingredients are seasonal, the planning of a Production Session will have to be ready long before the actual Experimental Production Session will take place.

Each Production Session will deliver at least:

- A) 4 to 6 different NEW Trial Soaps (TS) in sufficient quantities for repeated testing over a period of 12 months.
- B) one IMPROVED version of a previously produced and tested Trial Soap. For example, a soap whose scent was considered too weak but otherwise very attractive and profitable.

Production Frequency:

There will be at least 12 production sessions: one per month..

In other words: There will be (12 production sessions X 6 Trial Soaps =) 72 experimental soaps to be tested over a period of 12 months with the help of 3 Test Panels.

11 COST & REVENUE ESTIMATES

The total cost of our Product Development efforts during 18 months are estimated to be F CFA 4.400.000
The Investments & the Operational costs for 12 months are presented below:

11.1 Investments

At this point we restrict ourselves to the most important items.

Prices are in F CFA:

1	ADMINISTRATIVE MATERIALS	
	See paragraph 6.1	10.000
	Logo development (to be printed on wrappings)	5.000
2	STORE FOR INGREDIENTS AND SOAPS	
	See paragraphs 6.2 and 6.4	
	2.1 shelves	25.000
	2.2 cupboard	35.000
	2.3 oil containers & plastic boxes for herbs, colorants and fragrant ingredients	50.000
3	WORKSHOP & TOOLS	
	See paragraph 6.3	
	3.1 BIELEBERG RAM PRESS -- a hand operated press delivering Jatropha Oil	700.000
	3.2 SMALL MACHINES like a mixer and grinder	50.000
	3.3 BOWLS, MOLDS and other containers	30.000
	3.4 LADLES, gloves and miscellaneous implements	20.000
4	SUPPLIES OF RAW MATERIALS / INGREDIENTS FOR SOAP PRODUCTION	
	4.1 Jatropha Seeds ⁴ : 3000 kg x F CFA 70 (average price level 2009)	210.000
	4.2 Natural colorants – no details available yet	100.000
	4.3 Natural fragrances – no details available yet	100.000
	4.4 Other natural additives (granular, honey etcetera)	PM
5	WRAPPING MATERIALS for 2.520 Trial Soaps (bars and/or sachets of 100 grams)	100.000
6	MARKET STUDIES (one per Target group / Production Line)	
	Labour, reports, photocopies, documentation -- lump sum of F CFA 50.000 per Study	150.000
7	EXPERIMENTAL SALES	
	7.1 Labour & Transport (free of charge via revendeuses)	PM
	7.2 Publicity (small portable billboard for revendeuses)	25.000
8	LABORATORY SPACE (store, office, workshop)	PM +
	Sub total	1.610.000
9	MISCELLANEOUS & UNFORESEEN: 5%	80.000+
	TOTAL	1.690.000
10	ROUNDED OFF <TOTAL OF INVESTMENTS>	1.700.000

AD 4.1: PRELIMINARY ESTIMATE OF REQUIRED KILOS OF JATROPHA SEEDS

Two Recipes for the semi-industrial production of Pure Jatropha Soap (recipes 11 and 12) presented in the Malinese Study mentioned in Footnote 1, show that about 3 kilos of Seeds will ultimately provide 1 litre of PPO, and that such a litre of Jatropha Oil can be turned into 348 grams of soap.

We take these Malinese facts as a basis for our calculation of the required minimal quantities of Jatropha Oil and Seeds:

- 1 There are 3 Product Lines
- 2 Savolab intends to produce 6 Trial Soaps (TS) per Experimental Production Session.
- 3 There will be 12 Production Sessions: 4 sessions per Product Line
- 4 So, we will produce in total 72 different Trial Soaps which have to be tested: (6 Trial Soaps x 12 Sessions).
- 5 Each Trial Soap will be tested 4 times in the normal way + 1 time in an Exit Test = 5 Tests per Trial Soap
- 6 So, there will be 360 Tests: (72 Trial Soaps x 5 Tests)
- 7 There are 3 Testing Panels: one Panel per Product Line. Each Panel has 7 members.
- 8 We need <1 soap bar or sachet - per panel member - per test>.
- 9 **SO WE NEED 2.520 SOAP BARS / SACHETS:** (72 Trial Soaps x 360 Tests x 7 Soap Bars/Sachets)
- 10 The weight of one soap bar (for toiletry / personal hygiene) or sachet of laundry powder is set at 100 grams.
- 11 **SO WE HAVE TO PRODUCE 252 KG OF SOAP:** (2.520 soap bars or sachets x 100 grams)
- 12 One litre of Jatropha PPO produces 348 grams of pure Jatropha Soap (as shown in the Malinese Study)
- 13 **SO, WE HAVE TO PRESS 724 LITRES OF JATROPHA OIL:** (2.520 kg of soap : 348 grams = 724,14 litres)
- 14 Three kilos of Jatropha Seeds produce 1 litre of Jatropha Oil by using the Bieleberg Ram Press
- 15 **SO WE HAVE TO BUY AT LEAST 2.172 KG OF JATROPHA SEEDS:** (3 kg of Seeds x 721 litres of oil)
- 16 Experimental Sales of Rural and Urban Soaps are a Part of the Product Development Process. Some Cost for labour and simple publicity (flyers, posters or mini billboards with clear and promising pictures) have to be made.
- 17 We intend to sell about 400 bars or sachets which belong to Product Lines 1 and 2. So, we will sell 800 bars/sachets in total. At a later point we will decide whether experimental sales of exportable items will take place or not.

⁴ See the Source mentioned in Footnote 1

- 18 In order to produce 800 supplementary units (= 80 kg of soap), we need 230 litres of Jatropha Oil: (80kg : 348)
 19 We need (3 kg of seeds x 230 litres=) 690 kilos of Jatropha Seeds for the production of the required 230 litres of PPO
 20 Our Total Need for Jatropha seeds = 2.172 kg (see point 15) + 690 kg (see point 19) = 2.862 kg. Rounded off: 3000 kg
 21 **WE WILL BUY A TOTAL OF 3000 KG OF JATROPHA SEEDS**

11.2 Operational Cost during 12 months (at the GuKam premises in Lomé)

Much work will be carried out by members of GuKam's Project Team. They do not receive any salaries or compensations. Moreover, there will be no rent to pay during this starting up phase in the life of Savolab.

1	BUILDING (provided by GuKam)	PM
2	ENERGY (electricity – provided by GuKam)	PM
3	WATER ([provided by GuKam)	PM
4	RAW MATERIALS / INGREDIENTS (see the Investments above)	PM
5	PACKAGING MATERIALS	PM
6	SALARIES:	
	3.1 Head of Department – ¼ job X F CFA 140.000/month (Ms Efua Namyalo)	420.000
	3.2 One full time Experienced Soap Maker (to be recruited via CIV) F CFA 50.000/month	600.000
	3.3 Part time Oil Press Assistant (4 months in total) F CFA 35.000/month	150.000
	3.4 Members of 3 Test Panels – free use of several test soaps	PM
7	TRANSPORTATION & TELECOMMUNICATION	
	4.1 related to the procurement of raw materials (ingredients)	200.000
	4.2 related to attendance of members of the Panels - CFA 1000per person/test – lump sum	120.000
8	TELECOMMUNICATION	
	Telephone & Internet café -- In particular related to contacts with members of the Test Panels and for the & purchase of tools	150.000
9	TEST PANELS -- COMPENSATIONS	
	Token rewards for taking part in the monthly testing procedures (3 panels X 7 members X F CFA 3000)	63.000+
	Sub total	1.703.000
10	MISCELLANEOUS & UNFORESEEN: 5%	85.150+
11	TOTAL	1.788.150
12	ROUNDED OFF <TOTAL OF OPERATIONAL COST IN YEAR ONE>	1.800.000

The Operational cost for 18 months will be about (1,5 x 1.800.000=) F CFA 2.700.000

11.3 Income from Experimental Sales

If GuKam is going to sell 800 specimens of Trial Soaps (weighing 100 grams each) at an average price of 150 CFA, then the revenues from this endeavour will be F CFA 120.000

The income from the above experimental sales is very modest. However, the principal objective of Experimental Sales is not to earn money, but to investigate *how much the targeted clients are willing and able to pay*. Details of this Sales Programme will be worked out later.

12 PLANNING AUG 2010 – JULY 2011

Chart: Major Activities of Savolab during one year

nr	ACTIVITY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MA	APR	MAY	JUN	JUL
1	Documentation & study												
2	Calculate PPO needs												
3	Construct Store												
4	Construct Admin. System												
5	Purchase Bieleberg Press												
6	Purchase Tools												
7	Select & Buy Additives												
8	Purchase Jatropha Seeds												
9	Press Jatropha PPO												
10	Purchase Raw Materials Ingredients & wraps												
11	Study the Market												
12	Produce Trial Soaps TS			1	2	3	4	5	6	7	8	9	10
13	TESTS of TS-1 (3 x)			1-a		1-b		1-c					
14	TESTS of TS-2 (3 x)				2-a		2-b		2-c				
15	TESTS of TS-3 (3 x)					3-a		3-b		3-c			
16	TESTS of TS-4 (3 x)						4-a		4-b		4-c		
17	TESTS of TS-5 (4 x)							5-a		5-b		5-c	
18	TESTS of TS-6 (4 x)								6-a		6-b		6-c
19	TESTS of TS-7 (4 x)									7-a		7-b	
20	TESTS of TS-8 (4 x)										8-a		8-b
21	TESTS of TS-9 (2 x)											9-a	
22	TESTS of TS-10 (2 x)												10-a
23	TESTS of TS-11 (2 x)												
24	TESTS of TS-12 (2 x)												
25	Experimental Sales TS												
26	Revise this Plan												
27	Design Exit Tests												
28	PRODUCT LINE and production period			Line 1-basic rural soaps				Line 3-export luxury soaps				Line 2-basic urban soaps	

The colour of a cell indicates to which Product Line an activity belongs:

- BLACK = Technical and Administrative Preparations
- YELLOW = Activities belonging to Product Line 1 <Basic Rural Soaps>
- BLUE = Activities belonging to Product Line 2 <Basic Urban Soaps>
- GREEN = Activities belonging to Product Line 3 <Export oriented Luxury Soaps>

TRIAL SOAPS (TS)

For the time being, GuKam plans to develop 4 sets of Trial Soaps (TS) in each Product Line. In other words: there will be 12 sets of Trial Soaps. Not all of them could be shown in the above Chart because it only spans the period until July 2011. This is not needed either because the Plan will be adjusted every 4 months after having started production. This is shown in line 26 of the above chart.

TESTING

The following points have to be kept in mind:

- 1) The turnover speed (sales speed) determines the required duration of good quality .
Turnover speed is expected to be the lowest in rural areas.
- 2) Testing rhythm: GuKam intends to check / test each Trial Soap regularly: one time per month or per two months
- 3) Testing program: Each soap will be tested on a series of saponification aspects, marketability and profitability.
- 4) Extended Testing: Rural soaps will be tested on their resistance to light and heat. That is why they will be stored in two store conditions: a) cool and dark & b) warm and sunny
GuKam assumes that rural soaps will endure much sunshine before they are finally sold by the <revendeuses>.
- 5) Exit Test: In month 12 each product will be tested again. This EXIT Test intends to determine whether a product has spoiled during its first year . This is important to know with a view to quality guarantees expected from the producer.

TEST PANEL ACTIVITY

The system presented in the Chart is very simple. We explain it with two examples.

We first bring to mind that each Production Session produces about 6 specimens. Taken together, we call them a TRIAL.

EXAMPLE 1 – in December 2010:

In December 2010, two TRIALS (numbered 1 and 3) will be tested by the Test Panel for Product Line 1

The six items of TRIAL 1 of Product Line 1 are being tested for the second time. That is indicated as 1-b

The six items of TRIAL 3 of Product Line 1 are being tested for the first time. This is indicated as 3-a

EXAMPLE 2 – in February 2011:

In February 2011, the testing is carried out by 2 Panels; one for Product Line 1 (yellow) and one for product Line 3 (green).

The six items of TRIAL 1 of Product Line 1 are being tested for the third time. That is indicated as 1-c

The six items of TRIAL 3 of Product Line 1 are being tested for the second time. This is indicated as 3- b.

The six items of TRIAL 5 of Product Line 3 are being tested for the first time. This is indicated as 5-a

AD PANELS

There will be one Panel per Product Line.

Each Panel has 7 external members: 3 men and 4 women. Their age has not been decided yet.

All members of a panel have in common that they represent the future clients of one Product Line.

PANEL 1 is testing Product Line 1 – basic rural soaps

Each soap is tested 4 times with the same routines & will get one Exit Test in month 12 of its life cycle.

Perfect Quality will be established in month 5.

The Panel will be routinely active from October 2010 to May 2011 = 8 routine sessions.

Exit Tests indicate the maximum life span of each TS. It will take place in month 12. The first one is scheduled for September 2011

PANEL 2 is testing Product Line 2 – basic urban soaps

Each soap is tested 2 times with the same routines & will get one Exit Test in month 12 of its life cycle.

Perfect Quality will be established in month 3. It is assumed that the turn over (sales) of urban soaps is faster than of rural soaps.

The Panel will be routinely active from June 2011 to November 2011 = 6 sessions

Exit Tests will indicate the maximum life span of each TS. It will take place in month 12. The first one is scheduled for May 2012

PANEL 3 is testing Product Line 3 – export luxury soaps

Each soap is tested 5 times

Perfect Quality will be established in month 9. It is assumed that export, distribution and retail in Europe will take many months.

The Panel will be routinely active from February 2010 to January 2011 = 12 sessions

Exit Tests will indicate the maximum life span of each TS. It will take place in month 12. The first one is scheduled for January 2011

ATTACHMENTS

The details of most attachments are not suited for publication on the internet.

A good cook does not always publicize his kitchen secrets....smile.

The files concerned are:

- A Testing forms: one for each Product Line (evaluation criteria for soap quality and market appropriateness)
- B Exit Test Form for all Product Lines (determination of maximum shelf life)
- C Test Protocols (Panel, Instructions for testing and scoring)
- D Preliminary choice of natural colorants
- E Preliminary choice of natural fragrances
- F Preliminary choice of supplementary oils
- G Preliminary choice of granularly additives for export oriented Product Line 3
- H European Norms and Regulations
- I Relevant information on Fair Trade support
- J Natural ingredient Certification
- K Ecomark – criteria & Certification
- L Fair Trade – criteria & Certification