

Global
Shea
Alliance



Industry Quality Standards for Shea Kernel Proposal to General Assembly

GSA 001: 2013

TABLE OF CONTENTS

FOREWORD	3
MEMBERS OF THE QUALITY WORKING GROUP OF GSA	4
QUALITY SPECIFICATIONS FOR SHEA NUTS	5
1. SCOPE	5
2. NORMATIVE REFERENCE	5
3. DEFINITIONS	6
3.1 SHEA NUT	6
3.2 SHEA KERNELS	6
3.3 DAMAGED NUTS/KERNELS	6
3.4 MOULDY/DECAYED KERNELS	6
3.5 BROKEN KERNELS	6
3.6 SPLIT KERNELS	6
3.7 FOREIGN/EXTRANEIOUS MATTER	6
3.8 FILTH	6
3.9 IMMATURE SHRIVELED NUTS/KERNEL	6
3.10 INSECT INFESTATION	6
4. INDUSTRY QUALITY REQUIREMENTS	7
4.1 SHEA NUTS	7
4.2 SHEA KERNELS	7
4.3 SHEA NUT QUALITY GRADING PARAMETERS	7
4.4 GOOD PRACTICES IN SHEA NUT PROCESSING AND TRADE	8
5. SAMPLING	9
6. TESTING	9
7. CRITERIA FOR CONFORMITY	9
ILLUSTRATED BEST PRACTICES TO OBTAIN HIGH QUALITY SHEA NUTS	10
IMPLEMENTATION PLAN	11
1. INTRODUCTION	11
2. REFERENTIAL DOCUMENTS	11
3. OVERVIEW	11
4. ASSUMPTIONS / CONSTRAINTS / RISKS	11
4.1 ASSUMPTIONS	11
4.2 CONSTRAINTS	11
4.3 RISKS	12
5. IMPLEMENTATION OVERVIEW	12
6. IMPLEMENTATION SCHEDULE	13
ILLUSTRATED QUALITY STANDARDS	14

FOREWORD

GSA (Global Shea Alliance) is a multi-stakeholder association promoting quality and sustainability in the shea industry.

Members are responsible for the development of quality standards, codes and implementation methods to guide the industry practices to promote quality production, women's empowerment, labour rights, environmental conservation and community development.

GSA Quality Standards GSA 001: 2013 specification for shea nuts establishes the quality requirements for trading of the whole nuts and kernels from the fruit *Vitellaria Paradoxa*.

These standards are based on the Draft Africa Regional Standard 1: 2006 for shea kernel, Ghana Standard GS 824:2007 for specification of shea nuts and Prokarite Shea quality parameters.

The Committee responsible for this standard is the Quality Working Group of GSA.

This is the first edition. Users of this standard should note that the standard may undergo revision from time to time and any references to it should be based on the latest edition.

MEMBERS OF THE QUALITY WORKING GROUP OF GSA

1. **MR. GILLES ROGER ADAMON**
NATURA SARL
COTONOU – BENIN
2. **MR. MAXWELL EDUSEI**
EARTH TONE
ACCRA – GHANA
3. **MR. ERIC BANYE**
SNV
GHANA
4. **MRS. RUTH WALLACE**
TECHNOSERVE
GHANA
5. **MR. SENYO KPELLE**
SEKAF GHANA LTD
TAMALE - GHANA
6. **MR. GEORGE NOYE**
AAK
GHANA
7. **MRS. SARA DIONY**
SIDO
MALI
8. **MR. ANTOINE TURPIN**
IOI LODERS CROKLAAN
NETHERLANDS
9. **MRS. RABITU ABUKARI**
WOMEN'S GROUP
TAMALE – GHANA

QUALITY SPECIFICATIONS FOR SHEA NUTS

1. Scope

This GSA Quality Standards specifies the requirements for fruits of the tree *Vitellaria Paradoxa* in the form of whole nut or kernel, which is traded and processed into fat/oil and other products.

2. Normative Reference

The following references contain provisions applicable to this Standard at the time of publication. All the references are subject to revision and users are advised to investigate the publications of recent editions of the standards indicated below.

- 2.1 GS 824: 2007 Nuts – Specification for shea nuts
- 2.2 CAC/GL 50 : 2004 General Guidelines on Sampling
- 2.3 SO 3657: 1988 Animal and vegetable fats and oils – Determination of unsaponifiable matter.
- 2.4 ISO 660: 1996 Animal and vegetable fats and oils – Determination of acid value and acidity.
- 2.5 ISO 662: 1998 Animal and vegetable fats and oils – Determination of moisture and volatile matter content.
- 2.6 ISO 3960: 2001 Animal and vegetable fats and oils – Determination of peroxide value.
- 2.7 ISO 8294: 1994 Animal and vegetable fats and oils – Determination of copper, iron, and nickel content.
- 2.8 ISO 12193: 2004 Animal and vegetable fats and oils – Determination of lead content.
- 2.9 AOAC 952.13 (1999) Determination of arsenic content.
- 2.10 CODEX CAC/RCP 6 (1972) Recommended International code of hygienic practice for tree nuts. CODEX CAC/RCP 6 (1972) Recommended International code of hygienic practice for tree nuts.
- 2.11 CODEX CAC/RCP 59 (2005) Code of practice for the prevention and reduction of Aflatoxin contamination in tree nuts.
- 2.12 CODEX STANDARD 228 (2001, revised 2004) General methods of Analysis for contaminants.
- 2.13 CODEX STANDARD 229 (1993, revised 2003) Analysis of pesticide residues – Recommended methods.
- 2.14 CODEX STAN 193-1995, (Revised 2-2006) Codex General Standard for Contaminants and Toxins in Foods.
- 2.15 CAC/MRL 1 Maximum Residue Limits (MRL's) for pesticides : 2001

3. Definitions

For the purposes of this Quality Standard, the following definitions shall apply:

3.1 Shea nut

De-pulped fruits of the tree *Vitellaria paradoxa* (C. F. Gaertner)

3.2 Shea Kernels

The decorticated (shelled) nut obtained from the de-pulped whole nut after water-boiling freshly harvested fruits of the shea tree, *Vitellaria paradoxa* C. F. Gaertner. The international trading name for shea kernels shall be “*shea nuts*”

3.3 Damaged nuts/kernels

Nuts/kernels that are damaged mechanically or by fungal or insects/pests. Characteristics of damaged kernels include showing of internal discoloration, germinated and hardened (blackened) kernels, which affect the quality. Damaged nuts could occur due to bad practices during boiling, shelling, drying, storage, packing and transportation.

3.4 Mouldy/decayed kernels

Kernels with evidence of mould particularly mould filaments and showing visible significant decomposition.

3.5 Broken kernels

Kernels from which more than a quarter has been broken off.

3.6 Split kernels

Kernels which have been split into halves.

3.7 Foreign/extraneous matter

All matter other than whole shea nuts/kernels. Foreign matter includes sand, stones, pebbles, dirt, lumps of earth, clay, mud, glass, metallic and plastic pieces, other vegetable materials such as grass, wood, bits of dry shea nuts/kernels or other seeds and filth. All these are undesirable impurities.

3.8 Filth

Filth includes impurities of animal origin including dead insects.

3.9 Immature shriveled nuts/kernel

Nuts/kernel which are imperfectly developed, shriveled over the entire surface.

3.10 Insect Infestation

Presence of live adult insects, or their eggs and / or other developed stages.

4. Industry Quality Requirements

4.1 Shea nuts

Shea nuts shall have the appearance and colour characteristics of the variety. They shall be clean and dark brownish in colour with variations from different regions. They shall be dry and reasonably uniform in size. The nuts shall be free from insect infestation.

4.2 Shea kernels

Shea kernels shall be obtained by shelling the nuts and they shall have the appearance and colour characteristics of the variety and origin. They shall be clean and reasonably uniform in size. Shea kernels shall be safe and suitable for processing for human use and shall be free from rancid odours and mouldiness. Shea kernels must be free from insect infestation.

4.3 Shea nut Quality Grading Parameters

Parameter #	Parameter	Grade A (1)	Grade B (2)	Grade C (3)	Analysis Type
1	Moisture Content	< 8%	8% - 10%	>10%	Moisture meter Filed testing
2	FFA	< 3%	3% - 8%	>8%	Lab Testing
3	Impurities	< 0.4%	0.4%- .5%	>0.5%	Weighing and Visual Inspection
4	Oil Content	> 50%	47% - 50%	<47%	Lab Testing

Note: For a sample to qualify for a specific Grade, all the results of the tested parameters must be satisfied.

4.3.1 Moisture Content

The moisture content of a sample shall be determined by a calibrated GSA accredited hand-held moisture meter capable of accuracy to a minimum $\pm 0.1\%$ when greater than 2% moisture content is measured. For Grade A, the moisture content shall be less than 8%. The moisture content for Grade B shall be between 8% and 10% and for Grade C, it shall be more than 10%. Buyers, traders and producer groups should be encouraged to acquire moisture meters.

4.3.2 FFA

The Free Fatty Acid (FFA) shall be analyzed using analytical methods at a Laboratory recognized by GSA. The FFA for Grade A shall be less than 3%. For Grade B, it shall be between 3% and 8% and for Grade C, it shall be more than 8%.

4.3.3 Impurities

The impurities in a sample of shea nuts/kernels constitute all the foreign matter. The impurities can be assessed visually but for accurate results, a calibrated digital weighing machine approved by GSA should be used in the field. The machine should have an accuracy of $\pm 0.05\%$ of total sample weight. For Grade A, the impurities shall be less than 0.4%. The impurities for Grade B shall be between 0.4% and 0.5%. For Grade C, impurities shall be more than 0.5%.

4.3.4 Oil Content

The oil content shall be analyzed at a laboratory recognized by GSA. The oil content for Grade A shall be more than 50% and that of Grade B shall be between 47% and 50%. For Grade C, the oil content shall be less than 47%.

4.3.5 Heavy Metal and Pesticide Residues

Shea kernels traded shall not contain heavy metals in amounts that may present a hazard to human health and shall not exceed the limits determined by the Commission of the Codex Alimentarius. Pesticide residues in shea nuts shall conform to the permissible limits in accordance with CAC/MRL 1 Maximum Residue Limits (MRLs) for pesticides: 2001.

4.4 Good Practices in Shea nut Processing and Trade

4.4.1 Nut Collection

The shea nuts shall be collected from under the trees as quickly as they drop. It shall not be allowed to remain on the ground for more than 3 days. You must allow the fruit to drop on the ground before picking. Do not shake the tree or use sticks to plug fruits from the tree.

4.4.2 Par – Boiling and drying of the nuts

The harvested nuts shall not be stored for periods not more than 7 days before par-boiling. Water shall be used for the par boiling and the time for par-boiling shall not exceed 40 minutes. Used water can be recycled for par-boiling. The boiled nuts may be dried in the sun for 1 -3 days and must be protected from rain. It should be dried on a clean pavement or platform to avoid contamination.

4.4.3 Drying of kernels

The nuts should be cracked gently to avoid breaks. The kernels should be dried immediately after cracking. The recommended method is sun-drying on a pavement floor or on a raised platform for a minimum period of 5-7 days. The kernels must be protected from rains at all times.

4.4.4 Packaging and Labeling

Jute sacks that are clean, sound, free from insects, sufficiently strong and properly sewn shall be used for packaging.

Each bag of shea kernel shall be marked clearly with a non-toxic ink or paint with the following information:

- (a) The name of the product
- (b) Registered name, trade mark or GSA membership number of seller
- (c) Net weight (kg)
- (d) Country of origin
- (e) Year and month of harvest
- (f) Packaging date
- (g) Batch code for traceability
- (h) Certification (if required)

4.4.5 Storage

The kernels in jute sacks shall be stored above ground on pallets in a well-ventilated roofed room or a ventilated warehouse. The sacks should not be put on floors. There should be no pesticides, fertilizers, fuels and other harmful substances in storage room.

4.4.6 Commencement of Harvesting Season

All national associations in collaboration with appropriate government agencies shall establish and announce the starting date for purchasing of kernels in each country.

4.4.7 Contract Specifications

Buyers and suppliers shall establish written contracts to guide trading. At the least, the contract shall specify the Grade, the Price, the Validity periods, penalties and premium if any.

4.4.8 Training and Education

GSA shall collaborate with members to develop training programs to educate women groups, warehouse operators, transporters and other shea value chain actors to employ best practices in the shea industry.

4.4.9 Incentives for High Grades

For suppliers to receive premium price, high volumes of Grade A must be supplied to the buyers. Buyers will be able to pay premium or other incentives for Grade A if the volumes are large enough and acceptable by both parties. Poor quality below Grade C may be rejected by buyers.

5. Sampling

Sampling shall be done in accordance with the provision of CAC/GL 50: 2004 General Guidelines on Sampling and other appropriate methods.

6. Testing

The samples drawn shall be tested for compliance with the requirements of this specification according to the appropriate methods of test.

7. Criteria for Conformity

A lot shall be declared as conforming to this specification if the final sample satisfied all the requirements given in the standard.

ILLUSTRATED BEST PRACTICES TO OBTAIN HIGH QUALITY SHEA NUTS

QUALITY SHEANUTS

best practices for production



1 Collect ripe fruit from ground
DON'T SHAKE OR KNOCK FROM TREES



2 De-pulp quickly – by hand or feed animals
DON'T USE ROTTEN OR GERMINATED NUTS



3 Boil nuts in water within 7 days for 40 minutes maximum
DON'T OVERBOIL – SAVE WATER AND FIREWOOD



4 Dry quickly on clean surfaces, mats or drying racks
DON'T EXPOSE TO RAIN OR DIRT



5 De-husk within 3-4 days



6 Remove bad nuts and impurities
DON'T MIX WITH SAND, STICKS, STONES, ETC



7 Continue to dry on clean surfaces still removing all bad nuts
MOISTURE SHOULD BE UNDER 7% BY WEIGHT



8 Test for dryness
DON'T STORE SOFT OR MOIST NUTS



9 Store dry nuts in jute sacks off the floor in dry airy conditions
DON'T STORE IN PLASTIC, FERTILISER OR PP-SACKS

IMPLEMENTATION PLAN

1. Introduction

This Implementation Plan has been developed to guide GSA's program of disseminating the quality standards to make it useful to the industry, producer groups and other stakeholders. The implementation of the quality standards will help improve the quality of kernels purchased by traders and buyers. This in turn will lead to increased quality of shea butter processed from the kernels.

2. Referential Documents

The Implementation Plan is based on the Quality Standards and Illustrated Quality Standards of Shea Nuts/Kernels developed by the Working Group of GSA. In the documents, major quality problems have been identified which must be addressed.

3. Overview

In the shea industry, the quality of shea nuts and the shea butter are critical to the sustainability of the industry. As quality falls, the image of the industry goes down, profitability decreases resulting in reduction in competitiveness of the industry. As part of its strategy to improve the quality of shea nuts and kernels, Global Shea Alliance (GSA) decided to establish quality standards that are simple, user friendly, industry specific and can be used by members during daily transactions. A grading system has also been established with the aim of rewarding women collectors who sell high quality nuts. In addition to the quality standards, an illustrated (pictorial) quality standards has also been developed to be used by the industry. Using the pictures, the women collectors will be able to adopt correct methods for post harvest handling and treatment.

4. Assumptions / Constraints / Risks

4.1 Assumptions

- Women groups will participate in the training program
- Shea nuts/kernel traders and buyers from women collectors will work with the quality standards
- Pre-financing will be available for women groups to enable them adopt the best practices for post-harvest handling.
- GSA will have all the needed resources to implement the standards in all the member countries.

4.2 Constraints

- Individual member countries may have their own country programmes which can affect coordination.

- Low literacy level among the women collectors can negatively affect the training programmes.

4.3 Risks

- GSA may have to work with government agencies, local governments and traditional authorities, which can cause delays due to bureaucracy.
- Insecurity in some parts of West Africa can impede the implementation process.

5. Implementation Overview

The implementation of the quality standards for the stakeholders is about dissemination of the quality standards through various training programs. GSA secretariat will be the unit responsible for coordinating the implementation process. During the development of quality standards, it came out clearly that the women collectors are key to quality improvement of the nuts/kernels. They are responsible for collection and most of the post harvest handling and treatment. Other players are the buyers, transporters and warehouse operators. All of them have to be trained on the standards.

When the women collectors are put together as women groups, it is easier to train and enforce standards among members. In the francophone countries most of the collectors have formed women groups already and they work together. However in Ghana and Nigeria, the women groups are not well organized and so for effective implementation, effort must be focused on organizing the women into functioning groups. For effective implementation, some of the women collectors may require pre-financing to ensure that all the best practices after harvesting can be undertaken before selling of the kernels. One form of financing that is gaining grounds in Ghana and other West African countries is the VSLA (Village Savings and Loans Associations). VSLA operates mostly in the rural areas by women groups. Members contribute every week by buying shares and also can borrow from the fund. It has proven to be an effective way of financing micro businesses and farming activities, which are mostly found in the rural communities. Collectors can be grouped and linked to implementing organizations such as CARE International for VSLA formation. Other financing source could be micro-finance institutions and rural banks.

The Illustrated Quality Standards will be the main training tool. GSA will identify trainers in each country. Major tasks that are to be performed during implementation include the following:

- GSA will provide overall planning and coordination for the implementation in all member countries
- Obtaining personnel for the implementation team
- Working with buyers and NGOs to form women collector groups
- Identifying all stakeholders in the shea value chain who require training on quality standards
- Providing appropriate training for personnel
- Ensuring all documentation applicable to the implementation are available when needed
- Providing all needed technical assistance, moisture testing equipment and financial resources for the training program

- Establishing the benefits of the training program to stakeholders and farmer groups in particular
- Establishing training coordinators for each country to be responsible for in-country programs
- Hold stakeholder sensitization workshops in each country and communities before implementation of the training programmes
- Developing incentive scheme for women collector groups who sell Grade A kernels and a specified minimum tonnage to buyers
- Establishing a performance-monitoring tool to monitor the effectiveness of the training program.

6. Implementation Schedule

The Table below indicates the implementation plan for practical application of the quality standards developed by GSA Quality Working Group.

Task #	Task Description	Begin Date	End Date	Key Responsible Person	Milestone
1	Planning and Coordination of quality standards project, including members approval	October 2013	March 2014	GSA	Develop standards for members approval
6	Organizing of resources	Oct 2013	Continuous	GSA	Resources made available
3	Identification of training beneficiaries	April 2014	Continuous	GSA, buyers and traders	Beneficiaries documented
8	Stakeholders sensitization in each countries on standards	May 2013	Continuous	GSA, field coordinators, national associations	Stakeholders sensitized on the training activities
7	Training of trainers	May 2014	May 2014	GSA	Trainers trained
10	Organize community level trainings for beneficiaries	June 2014	July 2013	GSA	Beneficiaries trained
2	Organize partnerships for formation of women groups	April 2014	May 2014	GSA, National Associations, buyers and NGOs	Women groups formed
	Develop linkages with NGOs and government agencies supporting the shea industry	June 2014	October 2014	GSA	Established linkages
9	Develop a performance monitoring system	July 2014	July 2014	GSA	Performance monitoring system developed
11	Monitor field application of the quality standards in the day to day trading	August 2014	August 2014	GSA, buyers, traders and national associations	Field trading activities monitored against quality standards
12	Reporting of training activities and field application by stakeholders	December 2014	December 2014	GSA	Reports submitted to GSA Board

QUALITY STANDARDS FOR SHEA NUTS/KERNELS

THE NUT/KERNEL MUST BE:

- Have the shape, pattern, appearance and smell characteristics of the variety
- Clean and dark brown in colour
- Free from insects, mites and rodents infestation
- Well dried (max moisture of 10%) and reasonably uniform in colour
- Free from foreign matter (dirt, wood pieces, clay, etc)
- Safe, suitable for processing for human use and free from foreign and rancid odours and mustiness
- Of Min Fat content of 47% and Max FFA of 8%.

Global
Shea
Alliance



COLOUR

KEY

✔ Correct

✘ Wrong

✔ Matured Fruit



Not colour that becomes when dry

✔ Colour uniformity



✘ Mixed colours



✘ Black Nut



MATURITY

✔ Matured Fruit



Fruit green/yellow, fresh, plump, under the tree and hand-picked by women.

✔ Dried Nut



With shell, not sticky, not drying

✔ Dried Kernel



Well dried kernel, no fat, shiny

✘ Shriveled Kernel



Nuts imperfectly formed and shriveled over the entire surface

INFESTATIONS

✔ Clean Nuts



No foreign matter, no insects, no mold, no odor

✘ Decayed Kernel



✘ Mouldy Kernel



Dark, slimy, mold, fibrous and white signs of rotting

✘ Insect Infestation



Presence of live or dead beetles



CONDITION

✘ Smoked Nuts



✘ Broken Kernels



✘ Nuts with Foreign Matter



✘ Germinated Nuts



HARVESTING

✔ Good Method



Fruit must be allowed to ripen fully from the tree at maturity before collection by the women

✘ Bad Method



PACKAGING

✔ Good Packaging



Nuts must be packed in bags with flaps clean, sealed, free from insects, dust and foreign matter

✘ Poor Packaging



STORAGE

✔ Good Storage



Nuts must be stored in a cool, dry, well-ventilated area, away from moisture and sunlight

✘ Poor Storage

