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Nuts and Oil Crops industry — Code of practice

Part 2: Annual Nuts and Oil Crops (To also cover Bi-annual and Perennial Nut and Oil Crops)

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Agriculture and Food Authority — Nuts and Oil Crops Directorate
Agriquest
Competition Authority of Kenya
Jungle Nuts Company
Kenya Agricultural and Livestock Research Organization
Kenya Plant Health Inspectorate Service
Kenya Nut Company
Kakuzi Limited
Sagana Nuts
Tenseness Africa Limited

Kenya Bureau of Standards-Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

Foreword

This nut and oil crops Code of Practice was developed by the Technical committee on edible nuts and seeds under the guidance of the standards projects committee and it is in accordance with the Procedures of the Kenya Bureau of standards.

This code stipulates the hygienic and safety requirements during the production, handling, processing and marketing of nut and oil crops and their products. The standard also considers the safety provisions for consumers and workers in the industry. The recommendations made in the code target quality production and marketing of nut and oil crops under appropriate environmental conditions.

During the development, the code was harmonized with existing International Codes on good agricultural practices and guidelines. This is intended to enhance farm assurance systems, compliance to the relevant Laws of Kenya and strict adherence to safe use of chemicals.

This code of practice incorporates the modalities and provisions under which the list of approved pest control products under the relevant Kenya Legislation are applicable at any time to the provisions of this standard

In the preparation of this code of practice, reference was made to the following sources:

Guidelines for emergency measures in cases of pesticide poisoning — GIFAP/GCPF.

Guidelines for personal protection when using pesticides in hot climates — GIFAP/GCPF.

Guidelines for the avoidance, limitation and disposal of pesticide waste on the farm — GIFAP/GCPF.

World Health Organization (WHO) — Toxicology Ratings.

The Workmen's Compensation Act Chapter 236 of the Laws of Kenya.

Guidelines for The Safe and Effective use of Pesticides (GIFAP), 2003.

Crops Act 2013 - Laws of Kenya

Code of Hygienic practice for nuts and oil crops CAC/RCP 6-1972

Code of hygienic practice for groundnuts (peanuts) CAC/RCP 22-1979

Myanmar macadamia industry guide to orchard best management practices

Environmental management system -KS ISO 14001 2015

Cereals and pulses- code of practice KS 2754:2018

Horticulture industry- code of practice KS 1758-1: 2015 KS 1758-2: 2016,

Nuts and oil crops code of practice KS 2958: 2022- Part 1

Industry hand book on safe processing of nuts 3rd edition July 2020
Social accountability 8000 international standard SA 8000: 2014

Codex General Standard for contaminants and toxins in Food and Feed (CODEX STAN 193-1995)

Pre-requisite Programmes on Food Safety KS ISO 22002-part 1:2009

Code of practice on food allergen management for food business operator, CXC 80-2020

General standard for irradiated foods. Codex stan 106-1983, rev 1-2003

General principles of food hygiene, RCP 1 1969

Training manual on aflatoxins and aflatoxins management in groundnuts, macadamia nuts, maize, herbs and spices value chains, united nations industrial development organization-Markup project

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1 Scope and application

This Kenya Code of Practice for the Nuts and Oil Crops industry specifies the requirements for legal compliance, the responsible and safe production of nuts and oil crops. The code also applies to the procurement of inputs and placing in the market of nut and oil crop products. It applies to all players in the industry including but not limited to, breeders, nursery operators, growers, marketing agents, transporters, manufactures, shippers and cargo handlers.

2 Normative References

The following referenced documents are indispensable for the application of this document. For the quoted references, the latest edition of the referenced document (including any amendments) applies:

The Kenya Constitution 2010
The Employment Act Cap. 226
The Environmental Management and Co-ordination Act NO 8 of 1999
The Food, Drugs & Chemical Substances Act, Cap. 254
The National Hospital Insurance Fund Act Cap 255
The National Social Security Fund Act Cap. 258
The National Biosafety Act, No.2 of 2009
Seed and Plant Varieties Act Cap 326
The Pest Control Products Act 346
The Physical Planning Act 1996
The Standards Act Cap. 496
The Children's Act Cap 141
The Water Act Cap. 372
The Public Health Act Cap. 242
Drinking water -specification -KS 459
The Labour Institutions Act No. 12 of 2007
The Labour Relations Act No. 14 of 2007
Retirement Benefit Act No.3 1997
The Work Injury Benefits Act 2007
The Occupational Safety and Health Act 2007
Co-operative Societies Act Cap 490
Plant Protection Act Cap 324
The Agriculture and Food Authority Act 2013
The Crops Act No. 16 2013
The Crops (Nuts and oil crops) regulations,2020
Sexual offences Act, No.3 of 2006

3 Terms and definitions

For the purposes of this standard, the following definitions shall apply:

3.1 Accreditation: Third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks

3.2 Active ingredient: the substance that kills, or otherwise controls, target pests. Plant protection products are regulated primarily on the basis of active ingredients.

3.3 Audit: A systematic and functionally independent examination to determine whether quality and food safety activities and results comply with planned procedures and whether these procedures are implemented effectively and are suitable to achieve objectives.

3.4 Authorizing Officer: A person who issues accreditation

3.5 Benchmark: A measurable set of variables used as a baseline or reference in evaluating the performance of schemes

3.6 Certification system A certification system that outlines rules, procedures and management for carrying out certification and uses a third party to ensure fulfilment of specified requirements has been demonstrated

3.7 Biodiversity: The variability among living organisms from all sources, including, 'inter alia', terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems". Biodiversity is of main relevance during EIA and EMPs.

3.8 Breeder: Person or entity which commercially develops new varieties of plants using agricultural techniques from existing varieties or wild relatives

3.9 Bund: A barrier on the surface of the soil/ground/floor to prevent runoff, spillage and soil erosion

3.10 Calibration: Determination of the accuracy of an instrument, usually by measurement of its variation from a standard, to ascertain necessary correction factors

3.11 Certification: All those actions leading to the issuing of a certificate as guided by ISO/IEC 17065 or any other internally accredited certification scheme

3.12 Concentrate: The forms in which pesticides are usually sold, mostly requiring dilution before use

3.13 Concern: An expert judgment on the level of threat to the consumer or the product of a particular hazard

3.14 Marketing agent: entity / person collecting or receiving and aggregating and documenting produce, handling, repackaging where applicable and conveying of the produce to manufacturers or major aggregators.

3.15 Aggregators: Entity / person collecting or receiving and consolidating and documenting produce, handling, repackaging from farmers or marketing agents and conveying the produce to manufactures

3.16 Distributors: Entity / person collecting or receiving the product from the manufacturers and conveying it to consumers

3.18 Contaminant: Any substance not intentionally added to food, which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry and

veterinary medicine), manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or as a result of environmental contamination.

3.17 Contamination: introduction of a contaminant to a food product.

3.19 Cooling: Process of reducing temperature to well below ambient atmosphere

3.20 Cultivation: Any agricultural action or practice used by growers to allow and improve the growing conditions of nut and oil crops grown in the field (with or without cover).

3.21 Customer: Anyone who purchases products or services from a supplier

3.22 Dilution: The addition of water to reduce the concentration of a pesticide before use

3.23 Documentation: Is the collection, classification and dissemination of information relating to a process or procedure usually in written or electronic form

3.24 Erosion: Erosion is the mechanical movement of the land surface by wind, rain, running water or moving ice resulting in the wearing away of land or soil

3.25 Exporter: the person/entity who has the ownership of the produce being shipped to the determined destination

3.26 Food safety: The assurance that food will not cause harm to the consumer when it is prepared and consumed according to its intended use

3.27 Greenhouse: Light structure with the sides and roof mainly made of glass or transparent material for the growing of plants in a controlled environment

3.28 Genetically modified organisms (GMOs): Organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination.

3.29: Humidification: The process of increasing the water vapour content of a gas

3.30: Hazard: A biological, chemical, physical agent or any other property that may cause a product to be unsafe for consumption

3.31: Hazardous material: Any material which, at specific levels, has the potential to cause adverse health effects.

3.32: Integrated Pest Management (IPM): management of pests using a combination of different crop protection techniques

3.33 Manure: Decomposed or otherwise treated materials used to maintain or improve plant nutrition and soil properties.

3.34 Non-compliance: A control point in the checklist which is not fulfilled according to the compliance criteria

3.35 Operators: Individual producers of primary agricultural products including propagators and breeders; growers, associations and cooperatives; processors and packers; trading companies (including exporters), shippers, consolidators and cargo handlers

- 3.36 Organic waste:** a material that is biodegradable and comes from either a plant or an animal.
- 3.37 Out grower:** one who grows nut and oil crops under contract to a third party
- 3.38 Packaging:** the process of protecting the products by a wrapper, a container, box or other suitable device
- 3.39 Peeling/de husking:** means the removal of the outer covering.
- 3.40 Cracking/shelling:** the removal of the hard coat that covers the kernel
- 3.41 Pest:** Any injurious, noxious or troublesome insect, fungus, bacterial organism, virus, weed, rodent or other plant or animal.
- 3.42 Pest control products:** A product, device, organism, substance or thing that is manufactured, represented, sold or used as a means for directly or indirectly controlling, preventing, destroying, attracting or repelling any pest
- 3.43 Pre-harvesting intervals:** The period of time which must elapse between the application of a pesticide and the harvesting of a crop
- 3.44 Produce:** Shall mean nuts or any other yield from nuts and oil crops
- 3.45 Propagator:** Person or entity which multiplies plants while preserving their essential genetic characteristics.
- 3.46 Propagule:** a vegetative material that can become detached from a mother plant and give rise to a new plant, e.g. a bud, cuttings
- 3.47 Propagation material:** vegetative and reproductive material from mother plant that give rise to new plant
- 3.48 Personal protective equipment:** Clothing and items selected or designed to protect the wearer against contamination and injury
- 3.49 Potable water:** water which meets the quality standards of drinking water as Specified in relevant Kenya standards.
- 3.50 Risk:** Is the probability of a hazard occurring
- 3.51 Steaming:** means subjecting nuts to hot water vapor
- 3.52 Traceability:** Is the ability to track a product from any given point back through all stages to its origin
- 3.53 Visitor:** A person touring a farm or premises who is not an employee
- 3.54 Waste:** All items that organization no longer have any use for, which they either intend to get rid of or have already discarded.
- 3.55 Seed production:** All the operations leading up to and including final harvesting of seed from the seed crop field.

3.56 Good Agricultural Practices (GAP): A collection of principles to apply for own farm production and post-production practices resulting in self and healthy food and non-food agricultural products while taking into account economic, social and environmental sustainability.

4 Management system

This code of practice promotes the use of skill and experience in a sensible way to produce nut and oil crops of the highest quality under conditions that ensure a balance between operators and the safety of people, flora and fauna and of the natural environment. Simply following this code might not suffice in some cases. This code shall not be taken as providing justification for failure to comply with other legal requirements.

The code shall provide the basis for the certification and licensing of all players in the industry including but not limited to nursery operators, propagators, growers, manufacturers/processors and dealers.

4.1 Farm management responsibilities and documentation

The operators shall be responsible for the day to day management and implementation of the code of practice and the health and safety of all personnel, keep a check on the observance of the labour and safety regulations and evaluate suggestions for improvements and complaints. Farm audits will be conducted based on compliance with this code.

- 4.1.1** Ultimate responsibility for compliance with the code of practice rests with the owners or board of directors or operator
- 4.1.2** Operators shall ensure that employees are given information, instruction, training and guidance to carry out their work and to be aware of the risks to health from exposure to chemicals, pesticides, etc. and the precautions to be taken.
- 4.1.3** The operators shall demonstrate a commitment to continual improvement of standards in social responsibility towards all categories of workers.
- 4.1.4** The operators shall demonstrate a commitment to investigating non-compliance and to taking corrective action where necessary. Resources shall be allocated to this purpose as necessary and shall take measures to ensure that workers and out-growers who raise concerns about non-compliances are not discriminated against.
- 4.1.5** The operators shall provide access to third parties carrying out external verification of compliance to the requirements of this code of practice.
- 4.1.6** The operators shall make a commitment to employee and out-growers training to ensure that all persons are able to work in accordance with this code of practice.
- 4.1.7** The operators shall liaise with its customers to ensure compliance with specific customer policies regarding worker's welfare, out-grower relationships, environmental protection and food safety.
- 4.1.8** The operators shall develop an environmental management plan to cover all aspects of both positive and negative aspects of agricultural and social activities as guided by the Environmental Management and Co-ordination Act, 1999.

4.2 Input procurement

- 4.2.1** Procurement of inputs used in production, processing and packaging shall comply with legislative requirements and customer specifications. Procurement policy for propagation material, pesticides, cleaning and disinfecting agents, post-harvest treatments etc., shall be

understood and implemented by all staff involved in the procurement process. Procurement shall be done from registered suppliers only where applicable.

4.2.2 Where used, Genetically Modified Organisms (GMOs) shall be in accordance with the National Biosafety Act and the prevailing regulations.

5 Traceability

In the nut and oil crops supply chain, consumers and other clients require: information on production of the produce/ product: where, when, how, with what components; respect for the technical specifications: adeptness, control, audits; crisis management: competence to find and withdraw defective or dangerous products from sales points; assurance that the company produces in a socially responsible way.

5.1 Ability to track a product

5.1.1 The operator shall put in place a traceability system by way of designing, implementing and monitoring a detailed process flow that addresses raw material procurement, production process and conditions; by-products generated; waste treatment; risk assessments; human resources; equipment employed; governing standards and regulations.

5.1.2 Traceability shall ensure that the consumer is informed correctly on produce specifications, origin and usage, while stimulating all stakeholders to act with respect to each other i.e. good corporate practice.

5.1.3 Produce sourcing: Traders shall procure/ produce as per the Nuts and Oil Crops Regulations and ensure the following;

- i) All growers, traders and processors shall be responsible for the safety of the produce and products.
- ii) All farm produce shall be labeled at source based on guidelines provided in this code.
- iii) All food products shall be labeled in accordance with East African standards, EAS 38 advertising and presentation should not mislead consumers.
- iv) All food products shall have a code indicating the Country code, farm location and block number and other parameters indicated in the national traceability system.
- v) Food produce traders and processors shall be able to identify the businesses from whom they obtained and the businesses they have supplied with food produce and products.
- vi) Unsafe food produce and products shall be withdrawn from sale or distribution chain or recalled from consumers if already sold.
- vii) The requirement for withdrawal or recall applies to all stages of production, processing and distribution of food produce and products.
- viii) Processors, traders, importers and exporters shall keep records from whom food produce is sourced and to whom is sold for a period, not less than six months and in consideration of the nature of the food and its shelf life.

ix) Food produce or products which are considered unsafe for human health shall not be presented for sale exported or imported. The produce or food products shall comply with the relevant requirements of national food law/s.

xii) The operator shall be responsible for withdrawing or recalling produce/ products from the market. They shall also notify the relevant competent authority and collaborate with the authority (ies) on any action they should take to avoid or reduce the risk posed by the food.

xiii) Where the operator has reason to believe the produce/ product has reached the consumer, the operator/ processor shall inform the consumer effectively and accurately of the reason for withdrawal of the produce and product.

5.2 Produce inspection

Every unit of produce shall be clearly and indelibly marked from source (farm) to the point of sale such that the identification marks are not altered, adulterated or obliterated.

5.3 Produce receipt

The operator shall have in place a detailed and precise process flow that ensures that every unit or batch of the produce received is clearly marked to enable the produce to be clearly traced from receipt through the handling process to dispatch point.

6 Record Keeping and Documentation

An Organized system of record-keeping shall be documented and implemented for all records pertinent to this code and shall remain legible, readily identifiable and retrievable. The operator should keep copies of the list of relevant international and national policies, laws and regulations where applicable.

Records and documentation to be kept by the operator in addition to those required by law, shall include;

a) crop diary showing seed quality, rooting rate, variety name, batch number, planting dates, germination dates, date of harvest and other records related to the plant life cycle;

b) agrochemical stock record;

c) a list of personnel who have access to pesticide stores, those responsible for transport, mixing and handling of pesticides and records of their relevant trainings;

d) a list of all the chemicals used in the farm;

e) a list of "Hazardous" and "Highly Hazardous" (WHO Class 1a and 1b) chemicals in use on the farm including source, application and disposal records

f) all pesticide applications, time and date, details of chemicals used, active ingredients and toxicology ratings location of the crop, weather conditions, names of spray operators and supervisors, equipment used, dosage rates, crops and reason for use and re-entry intervals to be tabulated

g) a list of spray operators indicating status, most recent attendance of a spray training course and records of the work rotation program, regular medical checks and blood cholinesterase tests

- h) maintenance of the spray supervisor log book to include record of filter cartridge replacement in respiratory protection equipment
- j) all machinery including spraying machines shall have a log book, showing maintenance regular calibration checks, dates of service etc.
- k) a record of daily amount of water consumption, all fertilizer usage, date, type, crop weather conditions
- l) an accident and incident diary shall record all accidents and emergency incidents such as spillage, poisoning cases, sickness, absence from work, etc and the remedial actions taken.
- m) Notices shall be posted giving emergency procedures in case of fire, spillages, contamination of humans or animals etc. is a guide on action to be taken;
- n) a list of first aiders and training given;
- p) a record of disposal of dilute pesticides, pesticide containers etc and a simple map of the entire disposal sites whether in use or not;
- q) a record of work contracts for permanent and seasonal workers;
- r) a record of all the daily roll call for all casual workers;
- s) a record of all the monetary receipts in accordance with the pay roll and any receipts of payment of kind.

Precise and up to date records shall be maintained on the following:

- a) origin, nature and quantities of inputs, ingredients, additives, preservatives etc. used;
- b) use of all inputs;
- c) field operations from soil preparation through to harvesting;
- d) chemicals usage particularly related to application rates, dates of usage and pre-harvest intervals;
- e) nature, quantities and consignees of all agricultural products sold.

The process control system shall also maintain records of pertinent issues separate from the farm records.

These include:

- a) labour and welfare records;
- b) management of agrochemicals;
- c) field handling, post harvest, pack house and packaging; and
- d) environmental issues.

6.2 Records shall be maintained for a period of at least two years or as required by law.

6.3 The operators shall ensure that employees charged with record keeping are trained to do so accurately and that they are adequately supervised.

- 6.4 Records shall be clearly written, dated and signed (including the name) by a responsible person.
- 6.5 Recording of data showing non-conformity with standards shall be followed up with a written corrective action to be taken.
- 6.6 All records shall be available for inspection by authorized persons.
- 6.7 The operators shall undertake at least one self-assessment per year which shall be documented.
- 6.8 All the non-conformities generated from the internal audit shall be documented and corrective actions taken.

7 Food safety/Quality policy

The operators shall have a food safety/quality policy and produce/products & services shall be aimed at meeting or surpassing the customers' specifications, safety and legal requirements.

8 Agronomic practices

8.1 Seed production:

- i. No person shall establish or operate a commercial nut and oil crops seed production farm in any area unless the farm is registered in accordance with relevant laws.

8.1.1 Sources of Seeds

- i. Every nut and oil crops seed producer shall procure propagation materials from approved sources.
- ii. nut and oil crops seed production shall be done according to the procedures of seed production and multiplication as laid down by the relevant competent authority.
- iii. The grower shall select varieties which have some level of tolerance or resistance to commercially important pests, diseases and toxins (Where applicable).
- iv. The operator shall procure registered varieties and seed stocks from licensed sources for purpose of traceability.
- v. The planting materials including propagules or seeds shall be certified in accordance with the seeds and Plant Varieties Act, Cap. 326 and if imported shall be accompanied with a phytosanitary certificate issued by a competent authority, at source, in accordance with the plant protection Act, Cap.324 of the Laws of Kenya.
- vi. Where sourced from own farm, the grower shall observe the good agricultural practices for the respective crop. The grower shall have a quality control system and a monitoring system that monitors any visible signs of pest and diseases to guarantee the quality of the seed stock produced.
- vii. When pesticides are used, the operator shall keep records indicating the product name, application dates and rates and the justification for use

- viii. The planting material shall be aimed at meeting the customers' specifications i.e. for growers who produce seed stock.
- ix. The operator should have a written agreement with the customers detailing the variety, volumes and quantity specifications.
- x. The firm through the management shall provide documentary evidence that the breeders' rights as per the requirements of the International Union of the Protection of new Varieties of plants (UPOV) are observed.
- i. The propagation materials shall be traceable to the registered/authorized dealer.

8.2 Seed treatments and dressings

- i. Where and when seed treatments are used there shall be justifications for their use.
- ii. Seed treatments shall only be used to prolong seed storage life, enhance germination, or reduce the subsequent application of pesticides after germination.
- iii. The products used shall be recorded giving name, active ingredient, the target pest and any other benefit, if stated.

8.3 Seed sourcing

- i. Purchased seed shall be from a certified and registered source and if imported shall be issued with a plant import permit by a competent authority prior to importation.
- ii. The seed and all propagules shall be free of any visible signs of disease and pests. Whenever there are visible signs of pests and diseases, there shall be a written justification and the corrective action raised. Instructions of quarantine, fumigation or destruction if given by the inspectors shall be complied with.
- iii. Suppliers of seed shall comply with the requirements of the relevant competent authority
- iv. Multiplication of seed for commercial purposes shall show proof of seed certification process in compliance with the seed and plant varieties act, Cap 326

8.4 Nut and Oil Crops establishment and management

8.4.1 Site selection

Farm plans and activities shall be, drawn and done in accordance with Environmental Impact Assessments (EIA) as per NEMA regulations. Crop production areas shall be indicated in relation to staff housing, toilets, drinking water points, waste disposal sites, waste water treatment points, utility stores and social facilities.

The EIA or risk assessments shall take into account potential contaminants, type of soil, erosion, quality and level of ground water, availability of sustainable water sources, prior use of land, nematodes, and impact on and of the adjacent areas among other factors as stipulated in the Environmental Management and Co-ordination Act Chapter 387 (2012).

- 8.4.1.1** The records and justifications showing the suitability of the site for the agricultural activity shall be available.
- 8.4.1.2** Selected site shall not be an area contaminated with industrial, non-biodegradable, faecal and non-decomposed organic wastes.

- 8.4.1.3** A recording system shall be established for each orchard such that each is uniquely identified with a code.
- 8.4.1.4** There shall be a farm plan showing the areas covered by each crop and all the agronomic activities in the areas.
- 8.4.1.5** There shall be unique identification or visual reference system for each production area and farm map prepared
- 8.4.1.6** Records of data showing non-conformity with the quality requirements specified in relevant standards shall be followed up with a written account of corrective measures taken. There shall be a corrective action plan giving strategies on how to deal with identified controllable risks in new agricultural sites.
- 8.4.1.7** The severity and probability of each identified risk shall be indicated as well as the measures to control them.
- 8.4.1.8** The site shall not be used for agricultural activities when the risk assessments identify non-controllable aspects that are critical to human health and the environment.

8.5 Soil and Substrate management

8.5.1 Mapping

The Operator may prepare soil maps for the entire farm. A soil survey may be done and a map developed on the basis of the soil profiles and soil analyses. Planning intercropping, growing plans and soil amendments may be on the basis of the soil maps.

8.5.2 Land preparation

A Good agricultural practice (GAP) policy covering all aspects of soil and water conservation shall be maintained where applicable. The method of tillage of choice shall be one that preserves soil structure and minimizes soil compaction. Use of machinery that minimize the formation of hard pans is particularly encouraged on the farm.

8.5.3 Soil erosion

The operator shall put in place measures and practices that minimize the risk of soil loss from the farm e.g. terracing, cultivation along the contours and use of cover crops i.e. good agricultural practices.

- i. Agricultural activities on steep slopes shall incorporate soil conservation measures. The operator shall demonstrate that they have carried out a programme of appropriate techniques for soil conservation with the view of reducing soil erosion.
- ii. There shall be no cultivation in gazzeted riparian lands and on slopes greater than 35%.
- iii. Soil drainage systems shall be developed, well-maintained and adequate enough to deal with rainfall and run offs.

8.5.4 Soil fumigation

- i. Alternatives to the use of fumigants shall be explored before resorting to their use.
- ii. Use of fumigants shall be minimized and when used there shall be evidence for use including location, date, active ingredients, doses, method of application, operator name and written justification for their use

- iii. Only chemicals registered by a competent authority shall be used in any production process. They shall be used in accordance with the prescription for purpose fit for use and will keep up to date with the most current list of acceptable chemicals locally and internationally.

8.5.5 Substrates

Substrates used shall be certified by a competent authority as fit for purpose and comply with substrate supplier specification. All delivered substrate shall be accompanied by a certificate of analysis from a recognized institution. The substrate shall be traceable to an acceptable source and shall not be obtained from conservation areas unless with express permission from the relevant authority.

- i. Operators who use substrates are advised to recycle them and there shall be documentation to show the suitability of such substrates.
- ii. Where substrates are used and recycled, there shall be documentation on quantities used and dates of recycling. If substrates are used but not recycled, justification shall be given.
- iii. Recycled substrates should be treated/sterilized before re-use. Substrates sterilization shall be done in an environmental friendly way.
- iv. Where substrate are used, steaming shall be preferred option for sterilization.
- v. Where chemicals are used to sterilize substrate for reuse, the following shall be recorded: location of sterilization, date, type of chemical used, method of sterilization and person performing sterilization.
- vi. There shall be documentation to show the location of the treatment, the method of treatment, dates of sterilization, the active ingredients if any and their application rates, the machinery, the operator etc. particularly where chemicals are used to sterilize.

8.5.6 Intercropping

nut and oil crops may be intercropped with compatible crops

8.5.7 Irrigation

- i. Operators must demonstrate an understanding of the physical concepts of soil-water relations, which enable water requirements to be accurately estimated.
- ii. There must be a documented irrigation plan to optimize water usage and minimize wastage.
- iii. Water management may be supported by documentation on calculations of crop water requirements, and supported by data records.
- iv. All operators shall maintain valid water abstraction permits where applicable and in accordance with the Water Act Cap. 372, 2002.
- v. Growers shall put in place measurement devices and maintain records of water consumption particularly of ground water.

8.5.7.1 Irrigation and fertigation method

- i. All operators shall demonstrate understanding of the most water efficient means of irrigation and fertigation for their particular types of crop production.
- ii. The most efficient and practical water delivery system shall be used to ensure the best utilization of water. Efficient irrigation systems shall be used to make rational use of water.
- iii. Field personnel shall be trained to recognize and rectify irrigation deficiencies such as pipe bursts to ensure remedial action is taken promptly to avoid water wastage.
- iv. Irrigation/fertigation water shall be abstracted only from sustainable sources. Abstraction shall be legal i.e. with the approval of the bodies mandated to take care of such natural resources.
- v. Operators will endeavor to harvest rainwater and recycle water used within their farms to reduce reliance on natural sources.

8.5.7.2 Quality of irrigation water

- i. There shall be a complete and regular risk assessment of irrigation water preferably annually and will encompass potential microbiological, chemical or physical contamination of the water sources.
- ii. The irrigation water analysis shall be performed by a competent laboratory. The results of such analyses shall be well documented and where corrective actions are recommended, the nature of the corrective actions must be stated, documented and acted upon.
- iii. The results of such analyses shall be compared with the relevant national or international standards.
- iv. Any adverse results obtained must be acted upon and the corrective actions well documented.
- v. The water quality analysis both at the intake and exit points shall be done on a regular basis (annually) and the quality records kept. Determination of the contaminants, types and amounts present in the water supply and, where applicable, in the runoff water shall be considered as a basic step in developing a management plan.
- vi. Water delivery systems shall be maintained and cleaned, as appropriate, to prevent microbial contamination of water.
- vii. Untreated sewage water and effluent shall not be used for irrigation purposes.
- viii. Construction and maintenance of artificial wetlands is encouraged as they provide very efficient and cost effective cleaning and decontamination of wastewater.
- ix. Where applicable dams shall be constructed so as to feed water to downstream users from their floors, not spillways.
- x. The operator shall provide training to managers and workers in the implementation of the Agricultural Production Plans, water quality management and water resource conservation protocols and procedures.
- xi. Records of risk evaluation of irrigation water on crop shall be kept.

8.5.7.3 Water use efficiency

The operator should apply irrigation systems that minimize water wastage.

9.0 Plant nutrition and fertilizer usage

The operator shall carry out periodic monitoring of soil nutrients.

- i. The application of fertilizers shall be based on nutrient requirements of crop, appropriate routine analysis of nutrients levels in the soil, plant parts or nutrient solution, knowledge of soil and/or on receipt of technical advice.
- ii. Records of Fertilizers stocked and used on the farm shall be maintained.
- iii. Operators shall demonstrate knowledge regarding quantities and type of fertilizers used.
- iv. The fertilizer application equipment shall be kept in good condition and calibrated to ensure accurate fertilizer application.
- v. Human sewage sludge shall not be used on cropping area.
- vi. Fertilizers shall be stored in a facility within a defined area that gives protection for stock, and where there is minimum risk to employees and environment with appropriate measures taken to avoid pollution of natural water bodies
- vii. Fertilizer stocks shall be stored separate from farm produce and stacked correctly.
- viii. Safe working conditions and practices shall be implemented in the fertilizer stores.
- ix. The use of organic manure is encouraged for maintenance and improvement of soil fertility. It must be composted and stored in a designated area and in an appropriate manner to contain the risk of contamination of the environment.
- x. No fertilizer organic or inorganic shall be applied within six meters of any water channel or source.
- xi. There shall be no direct drainage to any water source of runoff water from land where fertilizer has been applied.
- xii. The person in charge of fertilizer application and the operators shall demonstrate understanding on matters relating to fertilizers and fertilizer use.
- xiii. Trained and competent employees shall be responsible for fertilization programme.
- xiv. There shall be proof of that competence and where it is lacking, training shall be given by qualified personnel.

9.1 Records of application

9.1.1 Records of fertilizer application shall detail the geographical areas, name and reference of the field, greenhouse where the crop is located.

9.1.2 A recording system shall be established for each application of fertilizers: date, type (trade name), quantity, method, type of machinery used for the application, method of application and the name of the operator of each application shall be recorded.

9.1.3 The date of any application of soil/foliar/nutrient solution fertilizers shall be documented (recorded).

9.1.4 A work instruction for the fertilizer application shall be clearly written and signed by a competent person able to interpret the crop soil analysis. The instruction shall indicate who, when, where and how to apply.

9.1.5 Documents of the exact amounts applied shall be signed by a supervisor.

9.2 Application machinery

9.2.1 The fertilizer application machinery shall be well maintained and calibrated regularly to ensure accurate delivery.

9.2.2 All machinery, including spraying machines, shall have a log book, showing maintenance, regular calibration checks, dates of service.

9.3 Nutrient requirements

9.3.1 A cropping care plan shall be developed to ensure minimum nutrient loss.

9.3.2 The grower shall, based on the risk assessments and soil analyses, make a cropping plan and fertilization program that aims at minimizing nutrient loss.

9.3.3 Plant and soil analysis shall be regularly conducted to evaluate the fertilization plan.

9.3.4 The application of fertilizer shall be based on a calculation of the crop nutrient requirement.

9.3.5 The fertilizer application shall meet the needs of the crop and maintain fertility and the quantities shall comply with the fertilizer crop plan.

9.4 Timing and frequency

9.4.1 The quantity of fertilizer applied shall be calculated to optimize benefits and minimize nutrient losses and shall be based on analysis.

9.4.2 The grower shall take into consideration the stage of growth of the crop as well as the weather conditions prevailing at the time of the intended application.

9.4.3 A nitrogen management plan shall be established and nitrogen quantities calculated and applied on the basis of the plan. The plan established shall fall within the national limits where they exist and or international limits

9.4.4 Growers should understand that establishment of a healthy crop reduces the need for spray and that excessive application of nitrogen can render crops more susceptible to diseases and pests.

9.5 Fertilizer storage

9.5.1 Fertilizer store shall be covered and bunded. The fertilizer shall not be placed directly on the floor. The store shall be located away from water source and be rodent proof.

9.5.2 There shall be a well-managed fertilizer stock inventory indicating the contents of the store, types and amounts. The inventory shall be regularly updated.

9.5.3 Fertilizers shall be stored separately from pesticides, produce, food & feedstuffs, seed and living quarters. They shall be adequately protected from weather elements in a clean and dry area.

9.5.4 Where stored together with pesticides, they shall be in separate compartments and be well labelled.

9.5.5 Fertilizers shall be stored away from concentrated acids, such acids should be stored separately in lockable rooms.

9.5.6 All hazard and risk areas shall be clearly indicated and correct hazard warnings posted in clear and understandable language. The warning signs shall be prominently displayed both inside and outside at the entrance to the store.

9.6 Organic fertilizers

9.6.1 The use of organic manure is encouraged for maintenance and improvement of soil fertility. It shall be composted and stored in an appropriate manner to contain the risk of contamination of the environment. This shall be in a designated area away from water sources.

9.6.2 Where organic fertilizer is used, a documented risk assessment shall be carried out before use and shall consider the source and characteristics of the fertilizer risks of microbiological contamination, disease transmission, weed seed, and method of composting.

9.6.3 Where organic fertilizer is used a documented risk assessment shall be carried out before use and shall consider the source and characteristics of the fertilizer, risks of disease weed and seed transmission and method of composting.

9.6.4 There shall also be records on site, crop and date of application.

9.6.5 No raw or untreated human sludge shall be used on the farm.

9.6.6 The application of such organic manures shall take cognizance of their nutrient contribution and be based on the nutrient management plan.

9.6.7 The analysis shall be carried out by a competent laboratory to determine the content of NPK in the organic manure/fertilizer.

10 Crop protection

Pest and disease

The operator shall monitor the pest and diseases in the farm to ensure that the plants receive appropriate treatment.

Where alternatives exist the grower shall select varieties which have some level of tolerance or resistance to commercially important pests, diseases and harmful toxins (Where applicable).

The following principles shall be observed for propagation materials:

10.1 Pest and disease management

10.1.1 Management strategies to keep pest levels below economically damaging thresholds through scouting shall be devised using the most appropriate combination of biological (use of natural enemies), cultural, mechanical/physical, and chemical (plant protection products) methods.

10.1.2 Management methods shall be based on a thorough evaluation of the situation, taking into account integrated pest management systems, the implementation of the Integrated Pest Management on a preventative basis, where technically feasible and economically viable, shall be supervised by a technically competent person.

10.1.3 The presence of pest is predictable and control shall be achieved by an integrated strategy. Consequently, as part of a responsible approach, a long term strategy for control shall be drawn up for each crop including:

- a) Past history of infestation;
- b) Indication of main threats;
- c) Understanding and implementation, where possible, on non-chemical options; including, crop hygiene, resistant varieties, cultural and biological control.
- d) Avoid production of Nut and Oil Crops under stresses (insufficient moisture, extreme temperature etc.) as some diseases and harmful toxins (Aflatoxin) become severe in stressed plants.

10.1.4 An effective crop protection programme shall be implemented.

10.1.5 The implementation of the Integrated Pest Management on a preventative basis, where technically feasible and economically viable, shall be supervised by a technically competent person.

10.2 Pest control products use

10.2.1 Soil fumigation

- i. Alternatives to chemical soil fumigants shall be explored before resorting to their use.
- ii. Use of fumigants shall be minimized and when used there shall be documented records for use including location, date, active ingredients, doses, method of application and operators name and written justification for their use
- iii. Only pest control products registered by a competent authority shall be used in any production process. They shall be used in accordance with the prescription for purpose fit for use. Operators shall keep up to date with the most current list of acceptable pest control products.

10.2.2 Resistance management

Products shall be chosen to avoid over reliance or continued use of any single chemical grouping, thus reducing the emergence of pesticide resistance.

10.2.3 Application conditions

Pesticides shall not be applied in adverse weather conditions such as wind, rain or during overhead irrigation. Spraying during high mid-day temperatures should be avoided.

10.2.4 Procurement of pesticides

Purchasing shall only be done for pesticides that are:

- a. Registered as per the Pest Control Act, Cap. 346. Current list of approved pesticides registered by the PCPB can be obtained on request and is also available from the PCPB
- b. From licensed distributors;
- c. Labelled by the manufacture as per the Pest Control Products Act, Cap. 346;
- d. Accompanied with material safety data sheet;
- e. Purchase receipts of all pest control products shall be maintained for at least 12 months.

A register of the types and characteristics of all pesticides used on the farm shall be maintained.

10.3 Transport of pesticides and hazardous chemicals

- i. A written procedure for transport of pesticides shall be developed and communicated to all involved in the transport whether on the farm or on transit.
- ii. Drivers and turn-boys shall be provided with appropriate protective clothing and trained in emergency procedures in the event of accident, fire, spillage and direct contact with persons. Proof of training is required.
- iii. Pesticides shall not be transported together with food, animal feed or general consumer goods. They shall be transported in a suitable, self-contained box or container.
- iv. Vehicles used to transport pesticides shall be furnished with suitable equipment and materials such as fire extinguisher, sand, shovel, emergency contact number/s, among others, to deal with emergencies.

10.4 Storage of pest control products,

- i. Pest control products stores shall be licenced by the competent authority.
- ii. Chemicals shall be stored in suitably constructed stores of sound structure, enclosed/secured/locked and well ventilated which meet minimum technical requirements and conditions.
- iii. Only approved pesticides in original labelled containers shall be held in the store. No other commodities shall be stored with pesticides.

- iv. Pesticides shall be kept in a separate room and shall be kept secure from children and animals, foodstuffs, fires, stoves or lamps. In the case of the cupboards, the shelf shall have a front lip to prevent containers from falling out on opening the doors. Access shall be limited to suitably trained and authorized personnel.
- v. Large quantities of pesticides shall be kept in a purpose built store, separate from other buildings or section in a building that can be securely locked. Plans of an approved pesticide store may be obtained from authorized institution.
- vi. Understandable language where applicable shall be placed on the outside of the pesticide store. Warnings and/or symbols such as— no smoking, no naked flames among others, shall be displayed both inside and outside the pesticide store.
- vii. Stock shall be inspected regularly and stock records maintained.
- viii. Storekeepers and all other personnel working in pesticide store shall receive training regarding the toxicity of pesticides, their storage, handling and dispensing
- ix. Written procedures shall be developed for handling events such as accidents, fire, spillage or poisoning of personnel. These should be displayed in languages understood by users in accessible areas.
- x. Stores shall be equipped with adequate and appropriate firefighting equipment.
Maintenance records on fire extinguishers shall be kept.
- xi. Stores shall be made of non-absorbent and non-flammable material. Liquid pesticides shall be stored at the bottom shelves. Materials to deal with leakage and spillage shall be available in the store. These may include sand, shovel, broom and empty disposal bin.
- xii. There shall be adequate washing facilities near the store.
- xiii. The store shall be banded to contain any spillages and contaminated water used for cleaning or firefighting.
- xiv. Drainage shall be to a sump or adequate waste water treatment facility which shall be guided by a competent authority. The drainage shall be adequately marked and situated far from all water sources and/or riparian land/s.
- xv. All personnel working in pesticide stores shall be adequately trained, have access to suitable Personal Protective Equipment and work under supervision
- xvi. Pesticides and fertilizers shall be stored separately, and away from detergents or disinfectants.
- xvii. Pesticide stores shall be located away from water sources.

10.5 Selection of pest control products

- i. Pesticides used shall comply with national and international regulations.
- ii. The operator shall consult regularly and be aware of any restrictions on pesticides used and shall have documentation on such restrictions (Such as the approved list of pesticides/ chemicals by relevant competent authority).
- iii. Pesticides classified as —Extremely Hazardous and —Highly Hazardous (WHO Class Ia and Ib) shall only be used in justified circumstances and where no viable, economic alternative exists and shall be used by competent/licensed spray operator
- iv. The technical person responsible for pesticide choice and application shall be competent by training.

- v. There shall be written justification to show that the choice of pesticide is appropriate for the intended purpose.
- vi. continuous use of pesticides with a similar mode of action shall be avoided where repetitive applications are required to eliminate pest resistance.
- vii. The application rate of pesticides per given area and the dilution rates shall comply with recommendations on the product label. Where a choice exists, a product that is safer to handle and has less environmental impact shall be chosen.
- viii. There shall be documentation to show that the correct dosage of the pesticide for the intended crop has been followed in line with label instructions on calculations and preparation.
- ix. Selection, timing and the use of a pesticide shall be such that non-target organisms such as bees are not harmed.

10.6 Dispensing of pesticides and hazardous chemicals

There shall be a separate area for dispensing of pesticides and hazardous chemicals fitted with:

- a) workbench;
- b) Running water supply shall be within at least 5 meters from the dispensing areas;
- c) Wash basin plus eyebath;
- d) Accurate measuring equipment;
- e) Suitable containers for pre-mixing of pesticides/chemicals; and
- f) Clear marking on all equipment to indicate they are for use with pesticides/chemicals only.

Suitable personal protective equipment shall be worn by those persons doing the dispensing as directed in the product label.

10.7 Advice on quantity of pesticide application

10.7.1 Recommendations on application of the pest control products shall be given by persons of demonstrable competence attained through training and the relevant documentation availed.

10.7.2 Determination of the quantities shall factor in the velocity of application, the surface area to be applied, pressure of the application system and the speed of application. The related documentations shall be done.

10.8 Application of pesticides and protection of workers

The following requirements are to be implemented by growers/operators:

- a) Employers shall ensure that employees are given information, instructions, training and guidance to carry out their work and to be aware of the risks to health from exposure to pesticides and the precautions to be taken.
- b) Signs to restrict personnel access to areas under pesticide application or treated with pesticides shall be displayed.
- c) All spray operators and supervisors shall be suitably trained on the application and risks of pesticides. A training Schedule for the operators and supervisors shall be established.

- d) All spray operators shall wear personal protective clothing and equipment suitable for the task at hand and this shall be provided by the employer without charge. Spray operators shall not wear personal home clothing when spraying. Provision of secure well-ventilated storage shall be provided for personal clothing. PPEs shall have designated area for washing, drying and storing. Appropriate dressing rooms and double individual lockers for each worker shall be provided.
- e) All workers involved in application and handling of pesticides shall be provided with waterproof overalls as well as appropriate respirators, which shall be changed regularly according to manufacturers' recommendations. Application shall be timed so as to avoid the hottest hours of the day. Minimum safety band to natural water bodies/employees shall be observed.
- f) After applying pesticides, spray operators shall remove all protective clothing and take a shower. Facilities for this including soap, towel and water shall be made available.
- g) All waterproof personnel protective clothing and equipment shall be rinsed immediately after use in an area where the rinsing water can be channeled to chemical waste water treatment facility. Protective overalls if continuously used shall be laundered after use and stored in a hygienic well-ventilated location on the farm.
- h) All staff involved in the use and application of organo-phosphate and carbamate pesticides shall have a medical check-up at least twice per year but preferably every three months.
- i) All equipment used for spraying shall be regularly inspected, well maintained, calibrated and serviced. Any defective equipment shall be repaired and/or replaced immediately and be verified by a competent person.
- j) Each application shall be accompanied by clear instructions on the specific crop location, where the crop protection application is to be done, the requisite rate and the application technique signed by the authorizing officer.
- k) All workers within the vicinity to be sprayed and not wearing protective clothing shall leave the area. Warning signs shall be displayed at farm entry/exit points and field gates stating time and date of application, pesticide being used and indicating when entry will be safe without the use of protective clothing
- l) Material safety data sheets of all pesticides used shall be kept in file.
- m) Spray mixing and application shall only be carried out by trained personnel. No expectant and nursing mothers or persons under the age of 18 years shall handle, mix or apply pesticides. Female workers are discouraged from handling pesticides.
- n) Partly used containers shall be returned to the store with caps and lids properly replaced. All returns shall be documented.
- o) Pesticides with a high leaching potential or high aquatic toxicity shall not be used within 200 metres of open water sources, dams, lakes, rivers.
- p) Documented re-entry policy and procedure shall be put in place as a preventive measure to avoid employees health risks.
- q) The pre-harvest interval shall be stated for all the crop protection products applied and the first harvestable date indicated/recorded.

10.9 Pre-harvest intervals

- a) The pre-harvest intervals shall be observed for the respective nut and oil crop as per the guideline of chemical used.
- b) Regular audits and training shall be conducted to check consistency in the observance of pre-harvest interval

10.10 Records of application

Pest control products application records shall specify the name of the crop treated, the geographical area, name and or reference of the farm, the block where the crop is located as well as the trade name, active ingredients of the applied products, amount, the date and time of application, toxicology ratings and weather conditions and the pre-harvest intervals. The records shall also include the name of the spray operators and supervisors, equipment used, rates, and reason/justification for use and re-entry intervals and signed by an authorized technical person.

10.11 Application equipment

Measuring equipment and facilities shall be adequate for mixing of the pest control products so that the correct handling and filling procedures as is stated on the label can be followed. Where possible application equipment should be dedicated to the intended use for the purpose of controlling pesticide cross-contamination. In case of multiple uses of spray equipment, they should be thoroughly cleaned before reuse. Separate spraying equipment for use in animal farming is highly recommended.

10.12 Disposal of surplus pesticides

- a) Written procedures for safe disposal of diluted pesticides and empty containers should be developed, approved and communicated to all those handling such products. The procedures shall include fail-safe measures to prevent pollution of ground water and soil from leakage or spillage.
- b) Disposal of concentrates, obsolete and expired pest control products shall be done through approved NEMA agents and records kept. Obsolete and expired pest control products shall be clearly segregated and marked "obsolete and expired pest control products"
- c) The distance of disposal sites from surface water and from boreholes shall comply with NEMA Regulations.
- d) Disposal sites shall be securely fenced, locked, covered and labelled with warning signs.
- e) If surplus mix is sprayed on the untreated part of the crop, the recommended rate shall not be exceeded and the treatment recorded appropriately.
- f) Personal protective gear shall be available for all staff involved in pesticide disposal.
- g) A record of the disposal of expired pesticides, excess pesticides, and pesticide containers shall be kept.
- h) Where disposal services are outsourced, the disposal agent shall be approved by NEMA and the waste disposal record shall be kept.

10.13 Empty pest control products containers

- a) All pest control products containers shall not be reused.

- b) There shall be a secure storage point for empty containers and safe handling system to ensure non-exposure to persons and animals. All containers shall be clearly and adequately labelled.
- c) The disposal system shall respect the legislation governing the same and shall take due regard to the safety of flora and fauna.
- d) All empty pesticide containers shall be triple rinsed and the rinsate shall be poured into the spray tank and the container punctured and crushed. Plastic containers shall be disposed as per NEMA regulations

10.14 Unwanted pest control products

There shall be documentation regarding redundant products which may be accepted back by the supplier if in good condition and in sealed original packing. They shall be labelled and separated securely within the store. Where unaccepted they shall be disposed of as per NEMA regulations.

10.15 Application of pesticides by shippers/cargo handlers

Where shippers/cargo handlers and consolidators to use pesticides in their operations for pest management the provisions of **Clause 7** of this code of practice shall apply to them with the necessary amendments.

10.16 Pesticide residue monitoring

- a) There shall be a deliberate effort based on risk assessment to minimize pesticide residues through periodical residue analysis. Pre-harvest and post-harvest sampling and analysis is highly recommended. Operators shall be in possession of up to date National or Internationally set Maximum Residue Levels (MRLs) or as set by the importing country
- b) The processor/manufacturer shall be able to provide objective evidence/records kept of such residue testing done by an accredited laboratory. Residue test records shall be traceable back to the batch/consignments, grower and to produce production site.
- c) The processor/manufacturer shall be able to produce evidence of residue testing and document the results of such analysis for at least 12 months.
- d) The processor/manufacturer shall establish a written action plan in the event of the Maximum Residue Level (MRLs) being exceeded.

11. Harvest and post-harvest handling of produce

- i. Workers shall be trained and supervised closely to ensure that the produce is harvested in the right way and at the correct maturity. Training and supervision procedures shall be documented.
- ii. Smoking, eating, chewing and drinking shall only be permitted in designated areas away from the immediate vicinity of harvesting, grading, packing, or storage operations. Signs shall be displayed to this effect.
- iii. Animals and children shall be excluded from all produce handling areas

11.1 Product Integrity

Operators shall ensure the integrity of product consignment throughout the handling phases including storage, transportation, repackaging where necessary, and loading into a freight vessel.

11.2 Machinery

Machinery that comes into contact with produce shall be of a design that prevent contamination of the product, be readily cleaned and well maintained.

11.3 Harvesting hygiene

11.3.1 The firm/grower shall have a documented hygiene procedure for handling of produce premised on the basis of a risk assessment.

11.3.2 There shall be a regular risk assessment of the hygiene aspect of the harvesting procedures/operations.

11.3.3 The containers, harvesting tools and other harvesting equipment that are continuously used shall be appropriately cleaned, disinfected and maintained in tandem with the risk assessments. Produce handling containers shall be strictly for the produce and not any other use e.g. chemicals, plant debris, etc. Colour codes, symbols or any other means may be used to distinguish containers for various uses.

11.3.4 A planned washing program shall ensure that, harvesting containers such as plastic field buckets or crates that can be easily cleaned are used and are free from contamination.

11.3.5 Cleaning water shall be free from microbial and chemical contaminants and other foreign matter.

11.3.6 Supervision procedures and training programs shall ensure that all workers involved in handling of produce observe personal hygiene. Personal hygiene facilities including field toilets with hand washing facilities shall be provided and kept clean.

11.3.7 To avoid contamination of produce, the operator shall ensure that field workers involved in handling of harvested produce are in good health and that field workers with communicable diseases are not knowingly assigned duties in fields operations. Employees shall be instructed to report to the supervisor if they are suffering from any illness either on arrival for work or during working hours.

11.4 Field holding facility

11.4.1 Temporary or mobile holding or grading facilities shall ensure that the produce is handled hygienically. Thorough inspection shall ensure that such areas are well maintained, kept clean and only used for harvested produce. Records of inspection shall be maintained.

11.4.2 Procedures of handling, storage and stock control of produce and packaging materials shall be done in a manner that will sustain a high status of hygiene and cleanliness. Produce and Packaging materials shall be held in areas protected from rodent, insect and other pest ingress. The facility shall be designed to protect the produce and the packaging material from any adverse weather.

11.4.3 Secondary packaging material shall be of such a design as to protect the produce from any contamination or compromise integrity of the produce.

11.5 On farm primary processing

- 11.5.1** In the case of shelled/ podded/ husked nut and oil crops the produce shall be stored in a container with adequate ventilation or spread out in thin layers to allow sufficient air flow between the produce. This storage shall continue until the time the nut are being transported to the collection centers/processing facility.
- 11.5.2** Sorting shall be done immediately after shelling/ threshing to separate/remove partially shelled, mouldy nuts, insect damaged, cracked nuts e.t.c

11.6 Buying/Collection Centers

- 11.6.1** In the case of small holders, harvested produce may be marketed through collection centers where the produce may be aggregated/temporarily stored before being delivered to the processing facility/market.
- 11.6.2** The collection center shall—
- (a) be accessible to both buyers and farmers;
 - (b) be designed to allow for a store, an office, working area and an appropriate drying facility where applicable;
 - (c) have floors, doors, wall surfaces and roof made of impervious, non-toxic, washable materials, which are easy to clean and disinfect;
 - (d) be constructed to allow for adequate ventilation, lighting, effective produce inspection and made of acceptable materials
 - (e) adequate water and toilet facilities;
 - (f) All bulbs covered with shatter proof material
 - (f) have waste disposal facilities; and
 - (g) have clear documentation procedures and document control systems.

11.7 Quality of the produce

The produce delivered at a collection center shall meet the minimum national standards and the buyer's quality specifications.

11.8 Cross contamination

All items which may contaminate the produce or emit undesirable smell should be stored separately in designated areas to prevent cross-contamination, rancidity, taint and off flavours. Such items include but are not limited to; cleaning agents, lubricants, onions, paints, perfumes among others.

12 Transport

- 12.1** Suitable precautions should be taken to prevent contamination of nut and oil crops during transit. Transport vessels/containers shall be clean and should not introduce contaminants to the produce.
- 12.2** Inspection of the transport vessels should be done before loading to ensure it is clean to avoid exposure to biological, physical and chemical contamination.

- 12.3** Minimize the time in transit of the nut and oil crops to the processor once they have been removed from storage with air circulation. Delivery delays can lead to a reduction in produce quality and shelf life.
- 12.4** For long distance, secure and cover the produce but special attention should be given to ventilation measures.

13 Packhouse premises

- i. Pack houses shall comply with all relevant national laws relating to working conditions including environmental, fire, electrical, mechanical and structural safety. Pack houses shall be in good structural condition. The area around the packhouse shall be free from rubbish, unserviceable equipment, weeds etc.
- ii. The packhouse shall not be used for activities not related to packing of produce.
- iii. The operator shall, process and pack produce in premises registered by the relevant competent authority. Growers packing and processing their own produce may do so as part of the licensed production process, where such processes are limited to their own produce.
- iv. Access to premises shall be restricted to authorized personnel only and signs shall be displayed to that effect.

13.1 Design and Construction of pack house

13.1.1 Construction of the packhouse shall be such as to prevent the entry of domestic animals, insects, birds, rodents, among others. Effective control measures shall be in operation and be fully documented.

13.1.2 Floors, doors and wall surfaces shall be made of impervious, non-absorbent, non-toxic, washable materials, which are easy to clean and disinfect. Floors shall be durable and allow easy drainage without leaving wet areas. Windows and doors shall open and close easily.

13.1.3 Ceiling and overhead fixtures shall be designed, constructed and finished to prevent the accumulation of dirt, growth of undesirable moulds, shedding of paint flakes or particles and also reduce condensation.

13.1.4 Windows and other openings shall be constructed and finished to prevent the accumulation of dirt. Those that can be opened to the outside environment shall be fitted with insect proof screens of appropriate mesh size.

13.1.5 There shall be a glass and hard plastics handling policy to govern their use within the premises whenever they are used.

13.1.6 Where glass is used, there shall be a form of screening to prevent any broken glass from contaminating the produce. All use of glass (windows, lights etc.) shall be recorded and a system of inspection implemented to ensure that any breakages are rectified.

13.1.7 Lighting over inspection, grading and cold store areas shall be adequate to allow effective inspection of produce. All fixtures shall be protected to prevent the risk of broken glass contaminating the produce.

13.1.8 The pack house shall have adequate ventilation in order to provide adequate air circulation and temperature control.

13.1.9 The height of grading tables and other facilities for work shall be appropriate for the comfort of the workers.

13.1.10 Loading and dispatch areas shall be roofed and proofed so as to prevent the nesting of birds.

13.2 Forklift

Forklifts with internal combustion engines shall not be used in restricted spaces holding produce as they can result in taint of produce. Electric forklifts shall be preferred. Only fully trained operators shall use forklifts.

13.3 Incompatible goods

All non-food items e.g. cleaning agents, lubricants etc. shall be stored in designated secure areas away from the produce and outside the packhouse.

13.4 Risk assessment in the packhouse process

A risk assessment or audit shall be done along the produce process flow and its associated systems. This assessment shall consider not only areas where food safety hazards may occur but also areas where quality aspects of the produce are likely to be affected. This shall include preventing contamination from foreign bodies such as pieces of string, glass, metal, hair, nails, knives, other produce.

These assessments shall be documented and periodically reviewed. The operator shall have in place a detailed and precise process flow that ensures that every unit or batch of the produce received is clearly marked in a manner that enables the produce to be easily traced from receipt through handling process to dispatch point. Such a system shall be monitored and reviewed periodically for effectiveness.

13.5 Packhouse hygiene

13.5.1 Packhouse operations shall be geared towards implementing quality management systems and good hygiene practices (GHP).

13.5.2 Routine and general cleaning procedures for the facilities and equipments shall be documented, monitored and evaluated for effectiveness.

13.5.3 Pack house cleaning equipment shall be designated for that purpose and coded.

13.5.4 There shall be a documented and up to date risk assessments that covers the hygiene aspects of the produce handling operation.

13.5.5 A hygiene procedure shall be implemented on the basis of the risk assessments.

13.5.6 The pack house shall have provision for clean toilets, appropriate waste disposal bins and hand washing facilities in the vicinity of their place of work.

13.5.7 Work tabletops shall be of stainless metal and/or non-chipping plastic construction only. These shall be maintained in sound condition and kept clean at all times.

13.5.8 Basic instructions on hygiene shall be appropriately displayed in the pack house.

14 Produce handling

- i. Produce at different stages of preparation shall be kept separate. The floor layout shall allow for a smooth flow of produce from reception to finishing area, with adequate separation of raw materials from finished products. Waste materials shall be removed regularly and placed in a designated area. Produce shall be handled in specially designed and equipped facilities of appropriate and recognized standard. Products that are to be consumed raw shall be handled with high care to avoid any contamination
- ii. Produce shall normally be processed on a "First In, First Out" (FIFO) basis unless there are quality, maturity or hygiene attributes identified for particular batches on receipt that indicate otherwise. Where produce is processed on a non-FIFO basis, the reasons for it shall be documented. Produce traceability shall be ensured throughout the process chain and records maintained

14.1 Produce receipt

14.1.1 The produce shall be received by trained and competent personnel capable of carrying out independent inspection of it and deciding on whether to accept or reject (with a reason), or, accept with a provision for further sorting. The condition of produce at the time of receipt and delivery shall be documented to indicate unconditional acceptance, further sorting or rejection.

14.1.2 Every unit of produce shall be clearly and indelibly marked to identify its source, such that its identification marks cannot be altered, adulterated or obliterated.

14.1.3 Operators receiving nut and oil crops from out growers shall periodically collect samples for analysis to verify the produce pesticide residue and/ or toxin status at receipt stage.

14.1.4 Records of such analyses shall be maintained confidentially and the necessary authority will take appropriate action where the MRLs are exceeded.

14.1.5 The receiving room for the produce shall be adequately lit and equipped with facilities for produce inspection.

14.2 Produce inspection

14.2.1 Although inspection of produce for quality is a continuous process in certain designated areas, inspection shall be mandatory at:

- a) reception at the packhouse
- b) quality-control during processing;
- c) final quality check when ready for dispatch;
- d) loading area.

14.2.2 Final product check shall involve the following:

- a) identity of product, lot/batch number, grower and/or packhouse identity, date and packing code;
- b) essential information such as class, variety and post-harvest treatment;
- c) actual quality code and weight or counts of individual pack units.
- d) Operators shall provide documented traceability for produce and operations.

14.3 Quality control

The operator shall demonstrate due diligence to ensure produce quality and safeguard consumer health.

14.3.1 The operator shall have a quality assurance system. Quality control unit shall be within the vicinity of the pack house and shall be equipped with quality control facilities, equipment, procedures, standards and records as required.

14.3.2 All measuring devices shall have the necessary accuracy as required for inspection purposes. All equipment used for weighing, sizing, temperature monitoring or any other measuring devices shall be calibrated regularly and records maintained.

14.3.3 For each daily shipment, quality records shall be kept for at least 12 months beyond the anticipated shelf life of the product.

14.3.4 Quality systems shall be audited at least annually or more frequently based on risk assessment. The audit shall be documented and made available for inspection by recognized institutions when required.

14.3.5 The policy and procedure of addressing customer complaints shall be documented and implemented. All customer complaints shall be investigated and action taken as appropriate, to prevent recurrence.

14.3.6 Records of data showing non-compliance with the quality requirements specified in the quality system shall be followed up with a written account of corrective measures taken.

14.3.7 Operators shall ensure personal hygiene of produce handlers.

15 Processing

15.1 Raw Material Receiving

15.1.1 Produce from every unit or batch shall be received in clearly tagged bags in a manner to enable the produce to be easily traced from receipt through handling process to dispatch point. Such a system shall be monitored and reviewed periodically for effectiveness.

15.1.2 The produce shall be received by trained and competent personnel capable of carrying out quality checks and deciding on whether to accept or reject or, accept with a provision for further sorting or other uses.

15.1.3 The accepted produce shall be weighed using scales which have been calibrated and checked.

15.1.4 All the above processes shall be documented and records kept.

15.2 Nut and Oil crops produce sorting

15.2.1 Prior to introduction into the processing line, or at a convenient point within it, raw materials should be inspected, sorted and culled to remove all foreign matter and unfit material for processing. Foreign matter may include stones, twigs, leaves, husks, strings, etc and produce unfit for processing may include visible mouldy nuts, immature nuts, insect damaged, unshelled nuts, un-threshed etc. Only clean and sound produce should be used for further processing.

15.2.2 Such operations should be carried out in a clean and sanitary manner.

15.2.3 Foreign matter and unfit material removed shall be disposed off in an appropriate manner

15.3 Cleaning of Nuts and oil crops

15.3.1 The produce shall be cleaned to remove physical and microbial contaminants.

15.3.3 Where applicable, food grade sanitizers may be used to control microbial contaminants.

15.4 Drying of nut and oil crops

15.4.1 In the case of drying, applicable produce shall be done to the appropriate moisture content to enable safe storage and protection against quality deterioration from insects, moulds and other microorganisms during storage

15.4.3 The final product shall be dried to appropriate moisture content as per the respective product standard. Hot air used for drying of the final product should be free from any contamination.

15.4.4 Humidification may be undertaken where appropriate. It is important to ensure that the drying temperatures are uniform and not too high as this would cause roasting and discoloration.

15.5 Shelling/ threshing of nut and oil crops

15.5.1 For efficient shelling or threshing, the produce should be properly dried to ensure high percentage recovery, less sorting time and less energy usage.

15.5.2 Shelling or threshing machinery and equipment shall be designed and located in a place that facilitates ease of access, cleaning, maintenance and monitoring.

15.5.3 Where applicable the dried produce may be pre-graded based on size, to facilitate efficient shelling.

15.5.4 Personnel involved in shelling or threshing shall be well trained and have appropriate personal protective equipment.

15.5.5 The shelling or threshing area, machinery and equipment shall be kept clean

15.5.6 Fast moving parts of shelling or threshing machinery should be well guarded to avoid accidents

15.6 Sorting and Grading of nut and oil crops

- 15.6.1** Sorting is the final step for removing debris and defective produce. It can be done by hand picking or photo-electric sorting machines or a combination of both.
- 15.6.2** In the case of hand picking where conveyor belts are used, there should be adequate lighting, loaded no more than one layer deep, and operated at a speed and with adequate number of sorters to assure effective removal of foreign material and defective kernels.
- 15.6.3** In the case of hand picking where sorting tables are used, there should be adequate lighting, each sorter to have adequate space on the table to assure effective removal of foreign material and defective kernels.
- 15.6.4** Photo-electric sorting machines should be adjusted as often as practicable against standards selected to assure removal of foreign material and defective kernels. Adjustment should be checked frequently and regularly.
- 15.6.5** Foreign material, defective produce (mouldy, rancid, decayed) should be bagged separately and tagged as unsuitable for human or animal consumption.
- 15.6.6** Containers of defective produce should be removed as soon as practicable from the processing room. Materials which carry the danger of contamination by aflatoxin, or which are contaminated, should be destroyed.

15.7 Packaging

- 15.7.1** The packaging material should be appropriate for the product and meet the expected conditions of storage. The material shall ensure product quality, safety and integrity and should be sound and provide appropriate protection from contamination. It should not transmit to the product objectionable substances beyond the acceptable limits and shall conform to the Kenya Standards for Packaging of Produce.
- 15.7.2** Containers used should be inspected immediately before use to ensure that they are in satisfactory condition and where necessary cleaned, sterilized and/or disinfected. When washed they should be well drained and dried before filling.
- 15.7.3** All packaging material should be stored in a clean and sanitary manner separate from the packing area. Only packaging material required for immediate use should be kept in the packing or filling area.
- 15.7.4** All packaging materials where applicable shall comply to the provisions of the Environmental Management and Coordination (Amendment) Act, 2015 and regulations on plastic packaging materials
- 15.7.5** Pasteurization and vacuum packaging may be done to ensure food safety and increase shelf life. Where vacuum packed, nitrogen/carbon dioxide may be flushed for longer shelf life.
- 15.7.6** Packing should be done under conditions that preclude the introduction of contamination into the product and where possible it should be done in a separate clean room.

15.7.7 Precautions such as the use of magnets or metal detectors should be taken to eliminate any metallic contamination.

15.8 Labelling

Labelling for food products derived from nut and oil crops shall be done in accordance to the requirement stipulated in KS EAS 38 or the labeling guidelines in the country of sale. For non edible nut and oil crop produce/products, refer to specific product standards.

15.9 Final Product Traceability

15.9.1 Product coding

15.9.1.1 The operator should have a system for assigning codes or lot numbers to incoming materials, packaging materials and finished products, etc. This will help to identify recalled products.

15.9.1.2 Codes or lot numbers provided on packaging should be legible and durable for the lifespan of the product.

15.9.1.3 The operator should record the amount of product manufactured for each code.

15.9.1.4 The operator should have records of processing, inventory and distribution for each lot.

15.9.1.5 Distribution records should contain sufficient information to permit a recall of a particular code or lot number, such as:

- a) the product identification and size;
- b) the code or lot number;
- c) the quantity; and
- d) customer names, addresses, and phone numbers to the initial level of product distribution.

15.9.2 Recall/withdrawal

15.9.2.1 A recall/withdrawal procedure shall be in place and should be tested at least once a year through appropriate means (for example, a mock recall). It should be tested to verify the ability to rapidly identify, control and recall/withdraw all the potentially affected products.

15.9.2.2 The operator should identify and correct any deficiencies in the recall/withdrawal procedure.

15.9.2.3 The recall/withdrawal program should identify the contact information of those who are responsible for implementing a recall, as well as their roles and responsibilities

15.9.2.4 Recalled products should be separated from other products and access controlled until the appropriate disposition of the product has been determined. This can be done by using hold tape, tags or a designated storage area.

15.10 Storage/Warehousing

15.10.1 The store/warehouse should be of sound construction, well maintained and built and equipped so that it can provide suitable and adequate protection for produce/products.

- 15.10.2** Raw materials stored within the plant premises should be maintained under conditions that shall protect against contamination and infestation and minimize deterioration.
- 15.10.3** The finished product should be stored and transported under such conditions as will preclude contamination with or development of pathogenic or toxigenic microorganisms and protect against deterioration of the product or of the container.
- 15.10.4** All finished products should be stored in clean, dry stores, protected from insects, mites (and other arthropods), vermin, birds, chemical or microbiological contaminants, debris and dust.
- 15.10.5** Where products are stored under conditions in which they may become infested by insects and/or mites, appropriate methods of protection should be used regularly. Products should be stored in such a manner that they can be fumigated *in situ* or that they can be removed elsewhere for fumigation in special facilities (e.g. fumigation chambers, steel barges, etc.). Cold storage can be used, either to prevent infestation in localities where insects are likely to be present in ordinary storage or to prevent insects damaging the products.
- 15.10.6** Products that affect storage life, quality or flavor of the produce should not be stored in the same room or compartment. e.g. fertilizers, pesticides, gasoline, lubricating oils, or some fruits and vegetables which have objectionable odours or flavors. Gasoline- or diesel-powered fork-lift trucks shall not be used in food ingredient or product storage areas.
- 15.10.7** A separate, secure (locked or otherwise access-controlled) storage area shall be provided for cleaning materials, chemicals and other hazardous substances.
- 15.10.8** Storage areas shall be designed or arranged to allow segregation of raw materials, work in progress and finished products, products not conforming to specifications and allergenic products.
- 15.10.9** All materials and products shall be stored off the floor and with sufficient space between the material and the walls to allow inspection and pest control activities to be carried out.
- 15.10.10** Specified stock rotation systems using the principle of First in First out (FIFO) and First Expired First Out (FEFO) shall be observed.

15.11 Food fraud and defense

15.11.1 The operator shall have a documented procedure in place to mitigate the risks of food fraud and food defence which should be integrated in the organizations food safety management systems.

16 Genetically modified organisms

- i. Where Genetically modified organisms are used they shall conform strictly to the laws of the country of production and sale. The environmental concerns and safety issues raised in the country of origin and/or country of production shall be thoroughly addressed.
- ii. The grower shall have copies of appropriate legislation governing the growing and use of GMO in both the country of production and that of the final consumer.

- iii. The operator shall provide adequate and satisfactory documentation on measures taken to prevent mixing of GMO and conventional materials both at production, storage, processing and packaging.

17 Product irradiation exposure

- i. The processor shall observe the recommendations of the general standard for irradiated foods (Codex Stan 106-83 rev 1-2003 or any further revisions) or Kenyan or importing country guidelines on irradiated foods.

18 Toxins

This is part of contaminants and it implicitly includes naturally occurring toxicants including toxic metabolites of certain microfungi that are not intentionally added to food and feed (mycotoxins). Mycotoxins and phycotoxins are both subclasses of contaminants. Mycotoxins are a group of chemically diverse secondary metabolites produced by fungi and exhibit a wide array of biological effects. Individual mycotoxins can be mutagenic, carcinogenic, embryo-toxic, teratogenic, oestrogenic or immunosuppressive. Mycotoxins that frequently occur in food and animal feeds include: deoxynivalenol, fumonisins (B1, B2 and B3), aflatoxins (B1, B2, G1 and G2), zearalenones and ochratoxins (A, B and C). Other common mycotoxins include citrinins, patulin and ergot alkaloids.

18.1 Compliance with toxin management

Operator shall have documented and detailed toxin management policies and procedures specific to their value chain activity if they are dealing with a crop where naturally occurring harmful toxins are prevalent.

18.2 Management of aflatoxin contamination in the various value chains

Management of toxins (aflatoxin) in the various value chains requires interventions at the pre-harvest, post-harvest stage. The interventions should therefore address all aspects of the food continuum from farm to plate. In principle, effective toxin management should focus on the following:

18.2.1 Crop health

It is important to maintain a healthy crop during production, which requires the following practices:

- i. Planting of high quality/certified seed of improved varieties
- ii. Proper selection of the production sites (well-drained fields that are not prone to flooding)
- iii. Good agricultural practices (GAP) - Early planting; improving soil fertility; timely weeding; effective and timely pest control; irrigation at critical growth stages where necessary; timely harvesting at physiological maturity under dry weather conditions; avoiding mechanical damage during cultivation and harvesting for nut crops

18.2.2 Proper and timely drying after harvest

High moisture in plant tissues favours the proliferation of fungal pathogens posing a risk of toxin (aflatoxin) contamination. It is therefore important to adequately dry the produce immediately after harvest. Since toxin-producing fungi reside in the soil and in plant debris, the drying should not be done directly on the ground to avoid further exposure of the produce to fungal inoculum. For safe storage of most of the grains (such as groundnuts), they should be dried to less than 13% moisture content. Storage of the produce at greater than 13% moisture content would favour proliferation of fungal pathogens and pre-dispose the produce to toxin (aflatoxin) contamination.

18.2.3 Storage temperature and relative humidity

Although the initial infection of crops with aflatoxin producing fungi occurs in the field, *Aspergillus* species proliferate during storage. Their growth during storage is favoured by high temperature and relative humidity (RH). There is therefore need to control temperatures and RH during storage to arrest fungal growth. This can be achieved by ensuring the following:

- i. Proper drying of the produce before storage
- ii. Ensuring the store is dry without leaking roofs
- iii. Proper aeration of the store – As agricultural respire, they release moisture which should not accumulate in the store
- iv. Use of recommended storage materials – where the produce is stored in bags or containers, it is important to use the recommended material. The polypropylene (nylon) bags which are commonly used by farmers and traders should be avoided since they hold and promote the accumulation of moisture. Sisal and hermetic containers are recommended for storage of properly dried produce.
- v. Controlling insects in the store. These at times injure the seeds and provide an entry point to the growth of the fungal spores.
- vi. At the processors' level, proper toxin management can be done through;
 - a) Sorting before shelling
 - b) Grading after shelling
 - c) Avoid using grade-outs
 - d) Practice good manufacturing practices
 - e) Have a Hazard Analysis Critical Control Point (HACCP) system in place

19 Allergens

Food allergies, an immune-mediated food hypersensitivity, are an increasing food safety issue globally and have emerged as a major public and personal health burden. While food allergies may affect a relatively small proportion of the population, an allergic reaction can be severe or potentially fatal. Furthermore, it is increasingly apparent that people with food allergies experience a very significant reduction in quality of life, some of which could be mitigated by a harmonized approach to the management of allergens in the food chain. While many different foods can cause allergic reactions in susceptible individuals, the majority of

food allergies on a global basis are caused by a variety of proteins in eight foods/ food groups (and derived products). These are cereals containing gluten (i.e. wheat, rye, barley, oats, spelt or their hybridized strains) , crustaceans, eggs, fish, milk, peanuts, soybeans and nuts and oil crops. While the allergens previously are the most common, other food allergens such as sesame seeds, buckwheat, celery, mustard, molluscs and lupin are recognised as important in many countries.

19.1 Compliance with allergen management

19.1.1 Operator shall have documented and detailed allergen management policies and procedures specific to the food business. Implementing allergen management policies and procedures, and compliance with these:

- i. Allows a business to demonstrate it is taking all necessary steps to eliminate or reduce the likelihood of an allergen being unintentionally present in a food
- ii. Increases accuracy of allergenic ingredient declarations
- iii. Provides an opportunity for businesses to demonstrate adequate skills and knowledge in allergen management
- iv. Reduces the risk to the consumer with a food allergy from the presence of an unintended allergen.

19.1.2 The operator shall have an internal or external audit on the allergen management procedures annually or on a risk basis.

19.2 Factors contributing to exposure

A variety of situations may result in the exposure of individuals with a food allergy to undeclared allergens. These include (but are not limited to) the following:

19.2.1 For harvesting, handling, storage and transportation:

- i. Inadequate or ineffective cleaning of containers, including reusable bags, and transport vehicles
- ii. Inadvertent inclusion of foreign particulates (e.g. Grains, nuts or seeds)
- iii. Inadequate physical separation or storage of commodities with different allergen profiles
- iv. Inadequate or a lack of employee training and awareness on managing food allergens including lack of understanding of the serious nature of food allergies.

19.2.2 For packaged food manufacturing facilities:

- i. Labelling errors (e.g. Mistakes during label development, label misprints, outdated labels, lost labels, wrong label applied to package, incorrectly translated labels or omitting the declaration of an allergen, product in the wrong package)
- ii. Unintentional presence of an allergen due to in-process or post-process allergen cross-contact
- iii. Inappropriate design of the establishment in terms of separation of areas, location of equipment, traffic patterns, and the ventilation system, among others
- iv. Errors in handling of rework
- v. Production sequences (scheduling) that result in the unintentional presence of an allergen from a product produced earlier
- vi. Inadequate or ineffective equipment cleaning/sanitation procedures at product changeover
- vii. Lack of change management for changes in formulation, ingredient supply and documentation processes

- viii. Improper use or handling of an allergen-containing ingredient.
- ix. undeclared allergen in a supplier ingredient
- x. inadequate or lack of employee training/education on managing food allergens.

19.2.3 For retail and food service establishments:

- i. Failure of the establishment to receive accurate information from supply chain or lack of allergen information with ingredients or foods received
- ii. Failure of the supplier to provide timely notification of ingredient changes
- iii. Labelling errors for allergenic foods
- iv. Lack of adequate storage or preparation areas to prevent or minimise the potential for allergen crosscontact
- v. Inappropriate flow or separation of operations or improper equipment lay-out or utensils
- vi. Absence of, or inadequate, food preparation and service procedures to avoid allergen cross-contact
- vii. Inadequate or lack of employee training/education on managing food allergens, including lack of understanding of the serious nature of food allergies
- viii. Inability of Food Business Operators to clearly communicate allergen information to customers
- ix. Food delivery websites which fail to communicate allergen presence in food items to the consumer, as well failure of a delivery service to communicate a consumer's dietary requirements, with respect to allergens, to the Food Business Operators preparing the food
- x. Individuals with a food allergy not making their allergies known to food service personnel

20 Personnel hygiene and employee facilities

Requirements for personal hygiene and behaviors proportional to the hazard posed to the process area or product shall be established and documented. All personnel, visitors and contractors shall be required to comply with the documented requirements.

20.1 Personnel hygiene facilities

20.1.1 Personnel hygiene facilities shall be available to ensure that the degree of personal hygiene required by the organization can be maintained.

20.1.2 The facilities shall be located close to the points where hygiene requirements apply and shall be clearly designated.

Establishments shall:

- i. provide adequate numbers, locations and means of hygienically washing, drying and sanitizing hands (including wash-basins, supply of hot and cold or temperature-controlled water, and soap and/or sanitizer);

- ii. have sinks designated for handwashing, whose taps should not be hand-operated, separate from sinks for food use and equipment-cleaning stations; Sanitary facilities shall have hand washing area with potable water, soap, hot air or paper (not cotton) towels.
- iii. provide an adequate number of toilets of appropriate hygienic design, each with hand-washing, drying and sanitizing facilities;
- iv. have employee hygiene facilities that do not open directly on to production, packing or storage areas;
- v. have adequate changing facilities for personnel;
- vi. have changing facilities sited to enable personnel handling food to move to the production area in such a way that risk to the cleanliness of their workwear is minimized.

20.2 Staff canteens and designated areas

20.2.1 Staff canteens and designated areas for food storage and consumption shall be situated so that the potential for cross-contamination of production areas is minimized.

20.2.2 Staff canteens shall be managed to ensure hygienic storage of ingredients and preparation, storage and serving of prepared foods. Storage conditions, cooking and holding temperatures and time limitations shall be specified.

20.2.3 Employees' own food shall be stored and consumed in designated areas only.

20.3 Work wear and Protective Clothing

20.3.1 Personnel who work in, or enter into, areas where exposed products and/or materials are handled shall wear work clothing that is fit for purpose, clean and in good condition (e.g. free from rips, tears or fraying material).

20.3.2 Each employee is issued with uniforms colour coded based on different department.

20.3.3 Clothing mandated for food protection or hygiene purposes shall not be used for any other purpose.

20.3.4 Work wear shall not have buttons, outside pockets above waist level.

20.3.5 Work wear shall be laundered to standards and at intervals suitable for the intended use of the garments.

20.3.6 Work wear shall provide adequate coverage to ensure that hair, perspiration, etc. cannot contaminate the product.

20.3.7 Hair, beards, and moustaches shall be protected (i.e. completely enclosed) by restraints unless hazard analysis indicates otherwise.

20.3.8 Where gloves are used for product contact, they shall be of distinct colour, clean and in good condition. Use of latex gloves should be avoided where possible.

20.3.9 Shoes for use in processing areas shall be fully enclosed and made from non-absorbent materials.

20.3.10 Personal protective equipment, where required, shall be designed to prevent product contamination and maintained in hygienic condition.

20.4 Personnel Health

20.4.1 Personnel working in processing facility shall undergo medical examination prior to employment and once every six months while in employment. Records of examination shall be well documented.

20.4.2 Employees who are suffering from any of the symptoms stipulated, shall not be permitted to enter the processing or packaging facility. These symptoms include:

- i) jaundice;
- ii) diarrhoea;
- iii) vomiting;
- iv) fever;
- v) sore throat with fever;
- vi) visibly infected skin lesions (boils, cuts, etc.); and
- vii) discharges from the ear, eye or nose

20.4.3. Changing lobbies shall carry instruction to all employees on duty to fully report and advise their immediate area supervisor of their current health status.

20.4.4 Cuts and wounds, where personnel are permitted to continue working, should be covered by suitable, distinct waterproof dressings. Any lost dressings shall be reported to the supervisor immediately.

20.5 Personal cleanliness

20.5.1 Food handlers should maintain a high degree of personal cleanliness and, where appropriate, wear suitable protective clothing, head covering, and footwear.

20.5.2 Supervisors/Quality Controller shall be responsible for carrying out daily hygiene checks for all employees entering their respective changing lobby and work areas.

20.5.3 Personnel should always wash their hands to ensure that handlers and other people entering the processing unit do not contaminate products which may affect produce safety, for example:

- i) at the start of produce handling activities;
- ii) immediately after using the toilet; and
- iii) after handling raw produce or any contaminated material, where this could result in contamination of other produce items; they should avoid handling ready-to-eat produce.

20.5.4 The organization shall ensure all visitors entering the processing and packing areas read and complete the visitors health questionnaire.

20.5.5 Visitors shall be reminded that they will be prevented from entering the processing and packaging facility if the organization has reason to believe that they may be suffering from any symptoms as stipulated on the questionnaire

20.5.6 Protective clothing shall be issued to each employee and visitor, whereby dust coats, scarves, hats, closed low heeled shoes and when necessary, beard snoods, are a pre requisite for entry into the processing and packing areas and shall adhere to the other personal hygiene provisions in this section

20.6 Personal behavior

People engaged in produce/product handling activities should refrain from behaviour which could result in contamination of produce/product, for example:

- a) smoking;
- b) spitting;
- c) chewing or eating; and
- d) sneezing or coughing over unprotected produce/product.
- e) Having long or false nails, eye lashes or hair pieces and nail varnish.

Ornaments such as jewellery, watches, pins or other items should not be worn or brought into food handling areas if they pose a threat to the safety and suitability of produce with the exception of medical alert jewellery.

21 Cleaning and sanitizing

Cleaning and sanitizing programmes shall be established to ensure that the food-processing equipment and environment are maintained in a hygienic condition. Programmes shall be monitored for continuing suitability and effectiveness.

21.1 Cleaning and sanitizing agents and tools

21.1.1 Facilities and equipment shall be maintained in a condition which facilitates wet or dry cleaning and/or sanitation.

21.1.2 Cleaning and sanitizing agents and chemicals shall be clearly identified, food grade, stored separately and used only in accordance with the manufacturer's instructions.

21.1.3 Tools and equipment shall be of hygienic design and maintained in a condition which does not present a potential source of extraneous matter.

21.2 Cleaning and sanitizing programmes

Cleaning and sanitizing programmes shall be established and validated by the organization to ensure that all parts of the establishment and equipment are cleaned and/or sanitized to a defined schedule, including the cleaning of cleaning equipment.

Cleaning and/or sanitizing programmes shall specify at a minimum:

- a) areas, items of equipment and utensils to be cleaned and/or sanitized;
- b) responsibility for the tasks specified;

- c) cleaning/sanitizing method and frequency;
- d) monitoring and verification arrangements;
- e) post-clean inspections;
- f) pre-start-up inspections.

21.3 Cleaning in place (CIP) systems

CIP systems shall be separated from active product lines.

Parameters for CIP systems shall be defined and monitored (including type, concentration, contact time and temperature of any chemicals used).

21.4 Monitoring sanitation effectiveness

To ensure effective cleaning is done according to cleaning requirements laid down, cleaning and sanitation programs shall be monitored at frequencies specified by the organization to ensure their continuing suitability and effectiveness.

22 Product Quality control

22.1 Laboratory facilities

22.1.1 In-line and on-line test facilities shall be controlled to minimize risk of product contamination.

22.1.2 Microbiology laboratories shall be designed, located and operated so as to prevent contamination of people, plant and products. They shall not open directly on to a production area.

22.2 Quality assurance system.

22.2.1 Quality control unit shall be within the vicinity of the processing facility and shall be equipped with quality control facilities, equipment, procedures, standards and records as required.

22.2.2 All devices shall have the necessary accuracy as required for inspection purposes. All equipment used for weighing, temperature monitoring or any other measuring devices shall be calibrated regularly and records maintained.

22.2.3 records of the product shall be kept for at least 1 year beyond anticipated shelf life of the product. Samples may be kept for a minimum period of 6 months

22.2.4 Quality systems shall be internally audited at least bi-annually based on risk assessment. The internal audit shall be documented and made available for inspection by competent institutions when required.

- 22.2.5** Records of data showing non-compliance with the quality requirements specified in the quality system shall be followed up with a written account of corrective measures taken.
- 22.2.6** HACCP principles shall be used to set up a system of managing product quality. A risk assessment or own farm/processing facility inspection shall be done when determining the process flow and its associated systems. This assessment shall consider areas where food safety hazards to the produce may occur and also areas where quality aspects of the produce are likely to be affected. This shall include preventing contamination from foreign bodies such as pieces of string, glass, metal, hair, nails, knives, other produce etc. These assessments shall be documented and periodically assessed.

23 Construction of the processing facility

- 23.1** Buildings shall be designed, constructed and maintained in a manner appropriate to the nature of the processing operations to be carried out, the food safety hazards associated with those operations and the potential sources of contamination from the plant environs.
- 23.2** Buildings shall be of durable construction which presents no hazard to the product. An example of “durable construction” is self-draining roofs which do not leak.
- 23.3** Consideration shall be given to potential sources of contamination from the local environment.
- 23.4** Food production should not be carried out in areas where potentially harmful substances could enter the product.
- 23.5** The effectiveness of measures taken to protect against potential contaminants shall be periodically reviewed
- 23.6** The premise site boundaries shall be clearly identified and access to the site controlled.
- 23.7** The site shall be maintained in good order. Vegetation shall be tended or removed. Roads, yards and parking areas shall be drained to prevent standing water and shall be maintained.

24 Layout of premises and workspace

- 24.1** Internal layouts shall be designed, constructed and maintained to facilitate good hygiene and manufacturing practices.
- 24.2** The movement patterns of materials, products and people, and the layout of equipment, shall be designed to protect against potential contamination sources.
- 24.3** The building shall provide adequate space, with a logical flow of materials, products and personnel, and physical separation of raw from processed areas. Examples of physical separation include walls, barriers or partitions, or sufficient distance to minimize risk.
- 24.4** Openings intended for transfer of materials shall be designed to minimize entry of foreign matter and pests.

- 24.5** Process area walls and floors shall be washable or cleanable, as appropriate for the process or product hazard. Materials of construction shall be resistant to the cleaning system applied.
- 24.6** Wall floor junctions and corners shall be designed to facilitate cleaning. It is recommended that wall floor junctions be rounded in processing areas.
- 24.7** Floors shall be designed to avoid stagnant water. In wet process areas, floors shall be free from cracks and well drained. Drains shall be trapped and covered.
- 24.8** Ceilings and overhead fixtures shall be designed to minimize build-up of dirt and condensation
- 24.9** External opening windows, roof vents or fan, where present, shall be insect screened. External opening doors shall be closed or screened when not in use.
- 24.10** Equipment shall be designed and located so as to facilitate good hygiene practices and monitoring and shall be located to permit access for operation, cleaning and maintenance.

25 Machinery and equipment

- 25.1** Food contact equipment shall:
 - a) be designed and constructed to facilitate easy cleaning, disinfection and maintenance
 - b) not affect, or be affected by, the intended product or cleaning system.
 - c) be constructed of durable materials able to resist repeated cleaning.
- 25.2** Equipment shall be able to meet established principles of hygienic design, including:
 - a) smooth, accessible, cleanable surfaces, self-draining in wet process areas;
 - b) use of materials compatible with intended products and cleaning or flushing agents;
 - c) framework not penetrated by holes or nuts and bolts.
 - d) design that minimizes contact between the operator's hands and the products.
 - e) being cleanable, drainable, and with no dead ends for piping and ductwork
- 25.3** Product contact surfaces shall be constructed from materials designed for food use. They shall be impermeable and rust or corrosion free.
- 25.4** Equipment used for thermal processes shall be able to meet the temperature gradient and holding conditions given in relevant product specifications and provide for the monitoring and control of the temperature
- 25.5** Wet and dry cleaning programmes shall be documented to ensure that all plant, utensils and equipment are cleaned at defined frequencies.
- 25.6** The programmes shall specify what is to be cleaned (including drains), the responsibility, the method of cleaning (e.g. Cleaning in place (CIP), cleaning out of place (COP)), the use of dedicated cleaning tools, removal or disassembly requirements and methods for verifying the effectiveness of the cleaning.
- 25.7** A preventive maintenance programme shall be in place and shall include all devices used to monitor and/or control food safety hazards. Examples of such devices include screens and filters (including air filters), magnets, metal detectors and X-ray

26 Health, safety and hygiene

There are many areas along the value chain where risks to health and safety can occur. Operators are responsible for ensuring that their businesses do not cause a risk to the health and safety of themselves, their employees and other persons in the workplace or members of the public.

26.1 Health and Hygiene

Health requirements should be followed to ensure that personnel who come directly into contact with produce or final product are not likely to contaminate them. Visitors should, where appropriate, wear protective clothing and adhere to other hygiene provisions in conformance with the existing Public Health Act.

26.1.1 Potable water that complies with relevant Kenya standards shall be available to staff at all times. Containers or outlets of water unsuitable for drinking shall be appropriately marked.

26.1.2 The operator shall have and implement a health policy.

26.1.3 The operator shall promote a safe and hygienic work culture that establishes controls to address and minimize risks identified.

26.1.4 Staff suffering from any communicable diseases shall report to their immediate supervisor. They shall not be allowed to work on a product until a medical officer clears their condition and certifies them as fit to resume duty.

26.1.5 Access to post-harvest handling areas shall be restricted. No unauthorized person/visitor shall be allowed access to the handling areas. Authorized visitors entering the processing area shall only be allowed in after briefing on the importance of hygiene and shall be provided with appropriate personal protective equipment. A record of all visitors to the processing area shall be maintained.

26.1.6 The operator shall guarantee hygiene facilities and/or sanitary units. Workers shall have ready access to toilets/latrines which shall be separate for both gender and adequate to their numbers and as specified in the Public Health Act Cap 242.

26.1.7 Where possible a canteen with cooking, eating and storage facilities may be provided by the employer. The eating and storage facilities shall be separated from the working areas.

26.1.8 The operator shall ensure that food provided to workers meets public and hygiene regulations.

26.1.9 The operator shall provide hygiene information on the use of common areas such as canteen, bathroom, changing room, parking lots among others

26.2 Safety measures

Workers' Representatives and Management shall establish and implement a coherent policy together for occupational Safety, Health and Working Environment that conforms to the National and County legislations. This policy should also include issues relating to the proper handling of pesticides and chemicals.

26.2.1 Operators may provide occupational health and safety training to the workers in addition to, first aid, accident prevention, safe use of chemicals and equipment. Training records shall be kept and made available for audit.

26.2.2 There shall be clearly marked emergency exits, which shall be fitted with fire safety break locks or remain unlocked during working hours.

26.2.3 Relevant safety rules and precautionary safety measures shall be clearly displayed. The emergency plan and accident procedures shall be available to all employees and displayed in common noticeboards. Sign posts for risk-prone areas shall be displayed appropriately.

26.2.4 Employees working with machinery or processes likely to cause bodily injury must be fully instructed as to the possible dangers and the precautions to be observed.

26.2.5 All machinery shall be fully guarded where applicable and well maintained. Records shall be kept of all machinery maintenance and servicing.

26.2.6 Precautions shall include safe installation and use of electricity and gas, special instructions on smoking and the disposal of cigarette butts, provision and regular servicing of firefighting equipment and regular fire drills for employees.

26.2.7 Readily available fire extinguishers and other appropriate firefighting equipment shall be easily accessible, regularly checked and maintained. There shall be evidence of fire assembly points and evacuation drills.

26.2.8 The workstation shall be provided with sufficiently well-stocked first aid kits and have personnel trained in first aid on hand to deal with emergencies.

26.2.9 Written accident and emergency procedures on how to deal with serious injuries requiring medical attention shall be displayed clearly, permanently and prominently with the contact person's telephone number or institution. It shall include basic steps of primary accidents.

26.2.10 Employees whose work entails standing for long periods should be provided with facilities for sitting to enable them to take periods of rest.

26.2.11 Operators may provide training on family planning, basic health care, hygiene, preventative medicine, security, HIV/AIDS awareness and other emerging health concerns.

27. Labour, employment and social issues

Documentation that demonstrates that a clearly identified, named member of management has the responsibility for ensuring compliance with existing and relevant national regulations and the implementation of the policy on worker welfare must be available.

27.1 Wages

27.1.1 All employees shall be paid at the agreed time and in full and by some mutually acceptable monetary means. Information regarding wages shall be made available to employees in a detailed and understandable form. The wages shall meet the legal or industry minimum whichever is higher.

27.1.2 To ensure the welfare of workers, all operators shall abide by the regulation of wages and conditions of Employment Act, and any other laws which affect the welfare of workers.

27.1.3 The organization shall not make any deductions from wages for disciplinary purposes except as permitted by the existing national laws.

27.1.4 Workers shall be selected for a particular job and paid in accordance with their ability to carry out specific tasks. All workers shall receive equal pay for equal work. Hiring, compensation and access to benefits shall be on the basis of ability and job responsibilities.

27.1.5 There shall be clear and fair guidelines on payments of bonuses and incentives and these shall be administered fairly and communicated transparently to all staff concerned.

27.1.6 Where overtime is required due to seasonal demands, payment shall be made as per the legal requirement. Agreed and stipulated mid-day and work breaks shall be observed.

27.1.7 The employer may provide reasonable housing accommodation with adequate clean water, washing and toilet facilities for each of his employees within easy access; or the employer may pay to the employee such a sum as housing allowance in addition to wages or salary as per legal and industry minimum as per relevant gazette notice.

27.2 Staff recruitment and promotions

27.2.1 Staff shall be recruited and promoted based on their ability to perform work.

27.2.2 Interns and apprentices shall not be employed in areas identified as hazardous as per the farm/company risk assessment. Interns and apprentices shall be supervised.

27.3 Induction and training

27.3.1 All new personnel shall receive basic and relevant induction, training and orientation.

27.3.2 All personnel shall receive job specific training to allow them to work safely and fulfill their roles and responsibilities.

27.4 Work contracts

27.4.1 All employees, including those sub-contracted, shall be given a written, legally binding employment contract signed by both parties detailing their obligations, rights and entitlements. Employees shall be given their individual job descriptions, terms and conditions. Subsequent changes in terms and conditions shall be negotiated and communicated to employees.

27.4.2 Work contracts may be executed for a fixed term, for a period of time to complete a task or for an indefinite period to accomplish an occasional task. Tasks allocated per day shall be based on what can be reasonably completed by an averagely experienced worker on a standard working day.

27.4.3 Use of fixed-term contracts or "casual labour" to evade labour or NSSF laws shall be avoided.

27.5 Work hours and leave days

27.5.1 Employers shall provide transport or transport allowance when employees work outside normal working hours or when public transport is not available and the employee does not live within reasonable or safe walking distance of the workplace as mutually agreed.

27.5.2 In every period of seven (7) days a period of rest comprising at least one rest day (paid) shall be provided.

27.5.3 All permanent and contract staff shall be entitled to minimum 21 leave days as per the Employment Act Cap 226. The leave above is in addition to all public holidays, weekly rest days and any sick leave taken by an employee. The leave shall be taken at times mutually agreed between the employer and employee.

27.5.4 All seasonal workers/sub-contractors shall be entitled to leave on a pro-rata basis.

27.5.5 An employee shall be entitled to sick leave and this is only to be granted on production of a certified letter of incapacity signed by a recognized medical practitioner as per the Employment Act, Cap. 226

27.5.6 The employees shall be entitled to the statutory maternity/paternity leave on full pay or as provided for by a collective bargaining agreement. The employee will not incur any loss of privileges for the reason of being on such leave.

27.6 Expecting and nursing mothers

27.6.1 Women shall not be discriminated against during ante or post-natal periods with regard to recruitment, selection, promotion or termination of a particular job.

27.6.2 Expectant mothers shall be given due consideration and be assigned duties appropriate to their physical condition. Where risk is identified, action shall be taken to minimize or eliminate the danger; In particular, pregnant women shall not come into contact with pesticides or dangerous chemicals.

27.6.3 Employers may provide safe facilities for nursing mothers to feed infants and a caretaker to keep the children while mothers are working. Extra time shall be given to nursing mothers to feed their infants.

27.7 Termination

27.7.1 Each farm /company should have legally validated internal regulations of working and labour conditions, which should include, among others, proper regulation of warnings and procedure for dismissals.

27.7.2 Gross misconduct as set out in the Employment Act, shall be grounds for summary dismissal. The termination of work contract shall be formalized in accordance with the law.

27.8 Workman's compensation

27.8.1 Any member of the workforce who is injured in the course of his work shall be entitled to Compensation in accordance with the Work Injury Benefit Act 2007.

27.8.2 Compensation claimed shall be disallowed if it is proved that the injury was attributable to the serious and willful misconduct of the employee.

27.9 Freedom of association and participation

27.9.1 Workers have the right with regard to the national law to establish and to join labour unions of their own choice, without prior permission. Where no unions are in place workers have a right to form a workers' welfare committee.

27.9.2 Workers representatives will not be subjected to discrimination and will have access to all Workplaces necessary to carry out their representation functions.

27.9.3. The operator shall provide assistance to facilitate workers' committees /unions

27.9.4 Workers committee/union shall participate in collective bargaining.

27.9.5 Where a collective bargaining is negotiated it shall be in accordance with the Labour Institutions Act, 2007 and Labour Relations Act, 2007.

27.10 Grievance and disciplinary procedures

27.10.1 All workers shall have the right to be heard on matters relating to contractual terms, dismissals and general welfare. The management in collaboration with the workers' representatives shall be required to establish and implement a coherent policy with regard to labour and social issues.

27.10.2 Clear written firm rules, grievance and disciplinary procedures shall be developed; implemented, communicated, explained to the workers and be accepted by all parties involved.

27.10.3 Complaints regarding labour and working conditions shall be handled as per the firm grievance handling procedure.

27.10.4 Employers shall provide a formal procedure for solving disputes in the workplace within a specific time frame.

27.11 Forced labour

27.11.1 The operator shall not make use of forced labour or coerce anyone to work against his/her will.

27.11.2 Workers shall not be required to lodge or deposit their original identity and/or academic papers with their employer.

27.11.3 The workers shall decide to join and leave the company on personal and voluntary basis.

27.12 Discrimination/harassment

27.12.1. The operator shall not engage in or support discrimination, intimidation or coercion in any form based on ethnic origin, religion, gender, union membership or political affiliation.

27.12.2 Physical harassment, corporal punishment and/or mental/psychological oppression or torture, sexual harassment and verbal abuse, shall not be tolerated and the operator shall ensure that measures are in place to prevent such practices.

27.12.3 Workers shall be selected and hired in accordance with their ability to carry out their tasks. No distinction shall be made on the basis of race, gender, age, religion, nationality, physical disability, ethnic and social origin, marital status, union membership or political opinion or affiliation. Policy on harassment and "equal opportunity" in the work place shall be developed and implemented.

27.12.4 Employees shall also have access to training, hiring, transfer, remuneration, promotion, termination or retirement on equal terms and opportunity.

27.13 Child labor/minors

27.13.1 No children (persons under 18 years of age) shall be engaged for any duty or task whether gainfully or otherwise in the workplace. Exceptions may be made in smallholder operations where young family members may help out on the family farm. Work that is likely to jeopardize the health, physical or mental development shall not be carried out by persons less than 18 years of age.

27.13.2 Work shall not restrict educational opportunities for children.

27.14 Out-growers/out-grower associations/subcontractors

27.14.1 Manufacturer/processor shall formulate and implement a fair purchasing policy with their out growers.

27.14.2 There shall be written, legally binding agreements between the Manufacture/processor and all out-growers covering product, volumes, frequencies of collection, pricing, grades and obligations.

27.14.3 The manufacturer/processor shall take responsibility for providing full technical advice where such need is perceived to out-growers prior to starting crop production.

27.14.4 Arrangements for deductions from final payments made for training and supply of other inputs shall be clearly specified in written form before these services are provided.

27.14.5 The manufacture/processor shall ensure that out-growers are aware of, and implement the relevant principles and requirements of this code of practice.

27.14.6 The buyer shall be able to justify the pricing policy regarding the out-growers/Associations.

27.14.7 All out-growers shall be paid promptly through a mutually agreed monetary arrangement and be supported with proper and adequate documentation.

27.14.8 A firm shall be responsible for its operations including contracted activities conducted by its subcontractors.

27.14.9 Subcontractors working on farm / company site shall be briefed on farm occupational safety and health procedures.

27.14.10 The grower shall sell their produce through a collection centre

27.15 Visitors

27.15.1 All visits by non-company personnel shall be recorded in a visitor's book or similar register.

27.15.2 Visitors shall be accompanied at all times by a company representative.

27.15.3 Visitors shall be provided with suitable personal protective equipment when entering areas where they might be exposed to hazardous or injurious conditions.

27.16 Records

- 27.16.1** Records and documentation to be kept in addition to those required by the laws shall include:
- a) A record of work contracts for permanent and seasonal workers;
 - b) A record of all the daily rolls for all casual workers; and
 - c) A record of all the monetary receipts in accordance with the pay roll and any receipts of payment of any kind.

28 Environmental management

The operator shall develop an environmental management plan to cover all aspects both positive and negative impacts of the operations as required by the Environmental Management and Co-ordination Act, 1999. Complaints pertaining to the environment shall be addressed to the public complaints committee under NEMA.

28.1 Environmental impact assessment

28.1.1 Environmental impact assessment and licensing to determine the impact of the intended operations on the environment shall precede the activity, where applicable.

28.1.2 The operator shall have demonstrable competence with regard to minimizing the potential negative impacts such as nutrient loss and pesticide management in the farming activity to the environment.

28.1.3 There shall be visible and documented initiatives to support environmental conservation schemes.

28.1.4 The operator shall safeguard soil, water and air and ensure general conservation of the environment. Written policy, practice and procedures to support this shall be maintained.

28.1.5 The operator shall put in place a system for monitoring and evaluation of use of water, pesticides, fertilizers and energy.

28.2 Pesticides use and disposal

The operator shall have sufficient environmental protection procedures in place to demonstrate that there are no pesticide residues disposed into the environment.

28.3 Packaging resource minimization

28.3.1 The Operator shall provide a description of all materials used for product packaging and shipping in the Environment management plan

28.3.2 The Operator shall provide auditable records of materials used in product packaging and shipping, including the type and quantities of materials used.

- 28.3.3** The Operator shall assess the potential for:
- a) Reducing the volume of packaging per unit of product delivered;
 - b) Increasing the use of certified recycled or compostable materials;
 - c) Obtaining materials from certified sustainable sources; or
 - d) Re-using packaging materials.

Based on this assessment, the Operator shall develop a plan of action to minimize packaging and packaging-related waste, with auditable timelines and performance benchmarks.

28.4 Energy resource use and management

28.4.1 The Operator shall have a written policy, practice and procedures in place describing action to improve and optimize energy uses and to ensure that hydrocarbon fuels and electricity are used efficiently. Renewable energy sources are recommended.

28.4.2 The Operator shall provide in the environment management plan a summary of electricity and fuel consumption activities associated with its agricultural production processes.

28.4.3 The Operator shall provide a description of any on-site electricity or fuel generation activities, and describe conservation measures and methods employed to optimize efficiency.

28.4.4 The Operator shall provide auditable records of fuel and electricity used in agricultural production processes, storage operations and administrative support facilities, including electricity and fuels used in applications such as: water pumping, greenhouse lighting and climate control, cold storage facilities, farm equipment operation and packing operations.

28.4.5 The Operator shall complete an analysis of his fuel and electricity usage, and develop a plan for increasing energy efficiency, with timelines and performance milestones.

28.4.6 The Operator shall determine and document the energy demand by the enterprise for developing an energy efficiency plan with goals and implementation activities towards increased efficiency, reduced dependency on non-renewable sources and increased use of renewable energy.

28.4.7 Records shall be maintained on all aspects of energy management

28.5 Integrated Waste and pollution management, recycling and re-use

28.5.1 All possible waste products produced by the firm/farm processes shall be identified and documented.

28.5.2 There shall be written procedures to minimize wastage and for the safe, hygienic disposal of rejected produce and rubbish.

28.5.3 There shall be a documented plan to minimize waste, reduce pollution and recycle wastes. The plan shall be implemented and confirmed by visible actions and measures.

28.5.4 Wastewater treatment and disposal systems such as constructed wetlands, bio-bed set are advised and shall be environmentally friendly, subjected to Environmental Impact Assessment and regular analysis done as per NEMA regulations.

28.5.5 Written procedures for minimizing and disposal of non-hazardous waste shall be developed and communicated to all concerned persons and relevant authorities

28.5.6 The farm or premises shall be clear of litter and shall have adequate provisions for waste disposal.

28.5.7 Burning of wastes shall be done in a controlled manner. Burning for hazardous material shall be carried out by NEMA licensed operator.

28.5.8 Only approved non-ozone-depleting refrigerants shall be used.

28.5.9 Documented Identification of all waste generated as well as source of pollution at each stage of production process shall be provided.

28.5.10 Documented management plan for reducing generation of wastes and pollution sources together with training in waste management for personnel on adequate handling of waste materials shall be available.

28.5.11 Risk assessment for storage, transport and disposal of wastes shall be carried out periodically.

28.5.12 Wastewater disposal systems such as soak-waste water treatment facilities or constructed wetlands shall be environmentally acceptable. Waste shall be handled in appropriate ways to avoid risk and unnecessary environmental impact.

28.5.13 The operator shall put in place a system for treatment of domestic sewerage water, and warehouse for storage of pesticide wastes and other hazardous wastes.

28.5.14 Old sump oil shall be disposed off in a safe manner. It may be used as fuel but only in a suitable combustion system.

28.5.15 Waste material such as plastic sheet, cardboard, wood etc. shall be recycled.

28.5.16 Packaging materials to be used should meet NEMA requirements

28.5.17 Every effort shall be made to reduce the use of natural materials that have not been grown specifically for commercial use (timber etc.).

28.6 Water sources

28.6.1 There shall be no waste water treatment facility, latrine, flush toilets or septic tanks within 500 m of an open water source and 250m from a borehole or on riparian land.

28.6.2 Riparian land shall be conserved according to the relevant National Environmental Regulations.

28.6.3 Rivers shall not be dammed or diverted without permission from the relevant competent authority for water resources. Lakes shall not be restricted by bunds or dykes.

28.7 Wastewater treatment

The Operator shall ensure all wastewater is treated as per the NEMA regulations.

28.8 Bio-diversity and ecological conservation

28.8.1 The operator shall have a documented conservation policy or statement which shall comply with the local legislation governing wildlife and conservation issues.

28.8.2 Tree planting areas shall be defined so that unnecessary disturbance is avoided and to enable environmental upgrading. Where land is cleared by burning, precautions shall be in place to avoid the spread of fire to other areas.

28.8.3 Operators bordering designated environmental sites shall acknowledge and respect the sites. Natural game corridors shall be maintained to allow wild animals access to water and to other land areas.

28.8.4 The producer shall not engage in the following activities:

- a) Alteration of natural water bodies and water channels.
- b) Activities that negatively impact threatened or endangered habitats or species.

28.8.5 The producer shall train workers in the implementation of the Environmental Management Plan's stated ecological procedures and practices, and keep records of such training.

28.9 Soil conservation

28.9.1 Good agricultural practice (GAP) shall be implemented.

28.9.2 Where applicable, riparian land boundaries shall be established and riparian regulations observed.

28.9.3 The use of organic manure and composted waste shall be encouraged for maintenance of soil fertility.

29 Waste and pollution management, recycling and re-use

29.1 There shall be written procedures for the safe, hygienic disposal of rejected produce and rubbish. Organic waste materials from crops which have been treated with pesticides can be fed to animals if GAP has maintained and pre-harvest intervals complied with.

29.2 Wastewater disposal systems such as soak pits or constructed wetlands are advised and shall be environmentally friendly and subject to EIA.

29.3 All possible waste products produced by the farm processes shall be identified and documented,
as are the potential sources of pollution.

29.4 Written procedures for minimizing and disposal of non-hazardous waste shall be developed and communicated.

29.5 There shall be a documented plan to minimize waste, reduce pollution and recycle wastes.

29.6 The plan shall be implemented and confirmed by visible actions and measures.

29.7 The firm and its premises shall be clear of litter. The premises shall have adequate provisions for waste disposal.

30 Complaint handling procedures

30.1 The operator shall show commitment to adequately address complaints that may arise with regard to the activities of the firm/farm.

30.2 There shall be an established and documented complaint handling procedure addressing all issues relating to the farm's / company's activities.

30.3 The procedure shall state all the steps taken to address arising complaints and all the recommended corrective actions shall be stated and acted upon.

30.4 The complaint handling procedure shall be regularly reviewed to enhance effectiveness. The evaluation system shall be used to determine the reason for clients' complaints and the corrective and preventive action undertaken.

30.5 The procedure shall be available to customers as required.

31. Legal and contractual obligations

31.1 Legal compliance

The operators shall comply with international, regional and national laws and regulations as applicable

31.2 Intellectual Property (IP) rights and royalties

31.2.1 Operators shall respect all relevant IP rights.

31.2.2 The operator will continue to inform and train their employees with respect to IP rights and applicable legislation.

31.3.3 Royalties will be set within internationally acceptable ranges as negotiated by the parties.

31.4 Arbitration

In case of any unresolved disagreements between parties in the annual nut and oil crops value chain, the arbitration will be through applicable laid down regulations and procedures.

32. Complaint handling procedures

32.1 The operator shall show commitment to adequately address complaints that may arise.

32.2 There shall be an established and documented complaint handling procedure addressing all issues relating to the operator.

32.3 The procedure shall state all the steps taken to address arising complaints and all the recommended corrective actions shall be stated and acted upon.

32.4 The complaint handling procedure shall be regularly reviewed to enhance effectiveness. The evaluation system shall be used to determine the reason for the clients' complaints and the corrective and preventive action undertaken. The procedure shall be available to customers as required.

ANNEX**IRRIGATION APPLICATION RECORD SHEET**

Farm Name:.....Tel.....

Date	Time of irrigation	Block	Irrigation Method	Length of Irrigation (Hr) A	Crop Dev stage	Crop Water Requirement	Amount applied (mm/hr) B	Total applied (A+B)	Rain Received (mm)	Metre Reading		Comments (Water PH)
										Start	Finish	

Remarks.....

Name of Supervisor.....Date.....Sign.....

WASTE DISPOSAL RECORD

Farm /Company Name.....Tel.....

Person/Company Disposing.....Tel.....

Date	Description(type of waste)	Quantity	Company	Method of disposal	Disposing site

Remarks.....

Supervisor.....Date.....Sign.....

TOILET CLEANING PROGRAM

Name of the Farm/Institution/Departments.....

Date	Time	Sink Cleaned	Floor Cleaned	Door Handle Cleaned	Toilet paper/ Soap Replaced	Trash Emptied	Name &Signature of staff

Remarks.....

Name of Supervisor.....Date.....Sign.....

NUTRIENT MANAGEMENT RECORD

Farm Name.....

Year.....

Date	Block/Unit	Type of fertilizer applied	Crop fertilized	Rate (KG/HA)	Area applied	Amount of element applied KG/HA					Foliar Fertilizer applied			Condition during application	Applicant initials
						N	P	K	Mg	Others	Foliar chemical used	Label rate/100L	Rate of water/HA		

Remarks.....

Name of Supervisor.....Date.....Sign.....

CROPS DIARY

Record all farm activities mostly when planting to keep track of the crop progress

Farm Name-----

Planting Date	Names of operator	Farm/parcel Block NO	Seed Variety	Date of irrigation	Germination date	Germination rate%	harvesting		Remarks
							Expected	Actual	

Supervisor remarks.....

Checked By.....Date.....

HARVESTING RECORD

Make sure you update your record after each harvest to ensure you keep track on when to harvest

Farm Name-----

Harvesting Date	Name of reaper	Crop Type	Block NO	Quantity of produce	Quality of produce	Stored / sold	remarks

Supervisor remarks.....

Checked By:Date.....

MACHINE CALIBRATION RECORD TEMPLATE

Company name:.....

Machine Name	Model Number	Brand	Location/S tation	Date of calibration	Calibration made	Calibration readings	Calibration results	Malfunction reported	Next due date

Remarks.....

Supervisor.....**Date**.....**Sign**.....

SPRAY RECORD TEMPLATE

Company name:.....

Growing region (County/ Subcounty/ Ward)		Date of application				
Farm name & code						
Location of land treated (Block number)						
Does the treated block have a buffer zone		Yes			No	
If no above, please ensure there is a buffer zone (The buffer crop should not be used for human/ animal consumption without observing the PHI)						
Name of operator						
a. Tank Mix						
1. Chemical trade name and Active Ingredient and adjuvant used	2. Target insect/ disease & crop	3. Approval for use by PCPB in the spraying crop (Yes/ No)	4. Expected export market/ destination of grown crop	5. Approved for use in the export market (Yes/No)	6. Total volume of active ingredient	7. Recommend ed dilution rate (Per Litre)

If no in selection a3 or/and a5 above, please choose an alternative spray chemical.					
b. Application					
1. Pests/ disease treated and sprayed crop	2. Density/ m ² (From scouting report)	3. Application Rate (per acre)	4. Area treated (Acres)	5. PHI in Days	
You are required to observe the PHI as an additional guide to harvesting decisions. Additionally, note that you should rotate the active ingredient of spray chemical which are of different action modes					
c. Spraying Conditions					
1. Time	2. Wind speed (Calm/ moderate/ severe) No spraying for speeds above 15km/h	3. Moisture (Dry/ rainy/ foggy) It is advisable to spray on dry conditions	4. Temperature (No spraying for temperatures above 30°C)		
Notes:					
This is a true and accurate record of the application.					
Name.....Signature.....Date.....					

Remarks.....

Supervisor.....Date.....Sign.....