

මහජන අදහස් සඳහා ප්‍රමිති කෙටුම්පත  
பொதுசனக் கருத்துரைக்கான கட்டளை வரைவு  
**DRAFT STANDARD FOR PUBLIC COMMENT**

(වෙනස්වීමට ඉඩ ඇත. திருத்தத்திற்குட்படக்கூடியது. Liable to alteration)

නිකුත් කළ දිනය  
வெளியீட்டுத் திகதி  
Date of Issue

} 2020-08-12

අදහස් එවිය යුතු අවසාන දිනය  
அபிப்பிராயங்களை தெலிப்பதற்கான இறுதித்திகதி  
Latest Date for Receipt of Comments

} 2020-10-12



**REQUIREMENTS FOR GOOD AGRICULTURAL PRACTICES (GAP)  
PART 4 : COCOA, NUTMEG & CLOVE  
(DSLS ..... : .....)**

යහපත් කෘෂිකාර්මික පිළිවෙත් සඳහා වූ අවශ්‍යතා  
4 කොටස : කොකෝවා, සාදික්කා හා කරාබු නැටි  
(ශ්‍රී. ලං. ප්‍ර. .... : .....)

මෙම කෙටුම්පත ශ්‍රී ලංකා ප්‍රමිතියක් ලෙස නොසැලකිය යුතු මෙන් ම භාවිතා නොකළ යුතු ද වේ.  
இவ்வரைவு இலங்கைக் கட்டளையெனக் கருதப்படவோ அன்றிப் பிரயோகிக்கப்படவோ கூடாது  
This draft should not be regarded or used as a Sri Lanka Standard.

අදහස් එවිය යුත්තේ : ශ්‍රී ලංකා ප්‍රමිති ආයතනය, 17, වික්ටෝරියා පෙදෙස, ඇල්විටිගල මාවත, කොළඹ 08.

Comments to be sent to: SRI LANKA STANDARDS INSTITUTION, 17, VICTORIA PLACE,  
ELVITIGALA MAWATHA, COLOMBO 08.



හැඳින්වීම

මෙම ශ්‍රී ලංකා ප්‍රමිති කෙටුම්පත , ශ්‍රී ලංකා ප්‍රමිති ආයතනය විසින් සකසන ලදුව, සියලුම උදෙසාම අංශ වලට තාක්ෂණික විවේචනය සඳහා යටත් ලැබේ.

අදාළ අංශ භාර කමිටු මාර්ගයෙන් ආයතනයේ මහා මණ්ඩල වෙත ඉදිරිපත් කිරීමට පෙර , ලැබෙන සියලුම විවේචන ශ්‍රී ලංකා ප්‍රමිති ආයතනය විසින් සලකා බලා අවශ්‍ය වෙනස්කම් කෙටුම්පත සංශෝධනය කරනු ලැබේ.

මෙම කෙටුම්පතට අදාළ යෝජනා හා විවේචන නියමිත දිනට පෙර ලැබෙන්නට සැලැස්වුවහොත් අගය කොට සලකනු, තවද, මෙම කෙටුම්පත පිළිගත හැකි බැව් හැඟෙන අය ඒ බව දන්වන්නේ නම් එය ආයතනයට උපකාරී වනු ඇත.

මෙ පිළිබඳව එවන සියලුම ලිපි සහන සඳහන් ලිපිනයට එවිය යුතුය.

අධ්‍යක්ෂ ජනරාල්  
ශ්‍රී ලංකා ප්‍රමිති ආයතනය,  
17, වික්ටෝරියා පෙදෙස,  
ඇල්විගල මාවත,  
කොළඹ 08.

XX

Introduction

This Draft Sri Lanka Standard has been prepared by the Sri Lanka Standards Institution and is now being circulated for technical comments to all interested parties.

All comments received will be considered by the SLSI and the draft if necessary, before submission to the Council of the Institution through the relevant Divisional Committee for final approval.

The Institution would appreciate any views on this draft which should be sent before the specified date. It would also be helpful if those who find the draft generally acceptable could kindly notify us accordingly.

All Communications should be addressed to:

The Director General  
Sri Lanka Standards Institution,  
17, Victoria Place,  
Elvitigala Mawatha,  
Colombo 08.



**Draft Sri Lanka Standard**  
**REQUIREMENTS FOR GOOD AGRICULTURAL PRACTICES (GAP)**  
**PART 4: COCOA, NUTMEG AND CLOVE**

**DSLS 1523 PART 4:**

**Gr.**

*Copyright Reserved*  
**SRI LANKA STANDARDS INSTITUTION**  
**No. 17, Victoria Place,**  
**Elvitigala Mawatha,**  
**Colombo 8,**  
**Sri Lanka.**

**Draft Sri Lanka Standard**  
**REQUIREMENTS FOR GOOD AGRICULTURAL PRACTICES (GAP)**  
**PART 4: COCOA, NUTMEG AND CLOVE**

**FOREWORD**

This Standard was approved by the Sectoral Committee on Agriculture and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on .....

Implementation of Good Agricultural Practices (GAP) has been given an utmost importance due to high expectations in terms of food safety, produce quality, environmental health and social sustainability requirements in international trading of cocoa, nutmeg and clove. The GAP Program address the environmental, economic, and social sustainability encompassing all on-farm activities resulting to lower production costs but following sustainable farming practices. Joint commitment to economic, social and environmental sustainability is required from everyone involved in the value chain. The GAP for cocoa, nutmeg and clove, will contribute to sustainable agriculture in general. And also serve as a reference tool for farmers in deciding at each step in the production and processing process, on practices and/or outcomes that are environmentally sustainable and socially acceptable. The GAP will be guided in sustainable farming to produce high yield and quality products that commands high price to generate more income, healthy environment surrounding, leading to improved farmer income and making farming attractive to future generations.

This Standard is subjected to the provisions under the Food Act No. 26 of 1980, the National Environmental Act No. 47 of 1980, the Soil Conservation Act No. 25 of 1951, the Fauna and Flora Protection Ordinance No. 02 of 1937, the Forest Ordinance No. 16 of 1907, the Control of Pesticides Act No. 33 of 1980, the Employment of Women, Young Person and Children Act No. 47 of 1956 and the regulations framed thereunder, and any other regulatory and statutory requirements wherever applicable.

In the preparation of this Standard the valuable assistance derived from the publications of the Codex Alimentarius Commission, Department of Standards Malaysia and International Cocoa Organization is gratefully acknowledged.

**1 SCOPE**

This Standard prescribes the GAP to be applied for the production and processing within the farm site of cocoa, nutmeg and clove for their sustainable production that is legally compliant, environmentally sound, socially acceptable and economically viable to ensure safe and quality produce or product that is suitable for utilization and/or consumption.

This Standard does not absolve any product, person(s), corporate entities and organizations from fulfilling criteria laid down in the Standards for product(s) that use(s) the **SLS** mark.

All materials containing or produced from Genetically Modified Organisms (GMOs) are not compatible with this Standard.

## 2 REFERENCES

SLS 106	Specification for Cocoa beans
SLS 113	Specification for nutmeg and mace
SLS 143	Code of practice for general principles of food hygiene
SLS 241	Specification for Cloves
SLS 614	Specification for potable water
SLS 1465	Code of practice for application of pesticides
SLS ISO 19932-1	Equipment for crop protection - Knapsack sprayers - Part 1: Safety and environmental requirements
SLS ISO 27065	Protective clothing – Performance requirements for protective clothing worn by operators applying pesticides and re-entry workers

## 3 DEFINITIONS

For the purpose of this Standard the following definitions shall apply:

**3.1 additives:** A substance added in small quantities to improve quality or preserve of cocoa, nutmeg and clove.

**3.2 crop producers:** Entities involved in commercial production of crops including individuals, groups and companies.

**3.3 economically viable production:** Production that gives positive returns on a sustainable basis.

**3.4 environmentally sound:** Farm practices with minimal effect on the environment.

**3.5 hazard:** Biological, chemical or physical agent in food, with the potential to cause an adverse health effect.

**3.6 good agricultural practices (GAP):** Collection of scientific principles to apply for on-farm production and post-production processes, resulting in safe and quality food, spices, beverages and non-food agricultural products, while taking into account economical, social and environmental sustainability.

**3.7 hazardous substance:** Any substance, whether solid, liquid or gas, that may cause harm to human, animal or plant health.

**3.8 integrated pest management (IPM):** A management system that uses all suitable available techniques and methods in a manner as compatible as possible to maintain pest population at levels below those causing economic injury.

**3.9 inter-cropping:** Cropping system in which two or more crops are grown at the same time on a single plot.

**3.10 legally compliant:** Adherence to all existing legal, regulatory and statutory requirements.

**3.11 maximum residue limits (MRL):** The maximum concentration of a pesticide residue (expressed as mg/kg), that is expected to be legally permitted in food or animal feeds.

**3.12 pests:** Organisms that are capable of causing injury and economic/ commercial loss to crops. These organisms include insects or any other invertebrates, fungi, bacteria, viruses, mycoplasma, weeds and vertebrates.

**3.13 pre-harvest interval (PHI):** The minimum time between the application of pesticides to a crop and the harvesting of that crop.

**3.14 processing:** Operations which may consist of handling, post-harvest handling, packaging, storing and labelling of cocoa, nutmeg and clove products.

**3.15 produce:** Cocoa, nutmeg and clove that are produced according to this Standard.

**3.16 production:** Any primary operation involved in producing of cocoa, nutmeg and clove including cultivation and harvesting of the product.

**3.17 product:** Product that has been produced, processed, and/or handled in compliance with this Standard.

**3.18 pruning:** A horticultural and silvicultural practice involving the selective removal of branches, buds, or roots of a plant.

**3.19 quality produce:** Produce that is safe for consumption and/or suitable for utilization.

**3.20 shade trees:** Any tree grown with spreading canopies specifically for its shade.

**3.21 socially acceptable:** Meeting concerns on the welfare and safety of persons working or living within the farmer surrounding the farms.

**3.22 sustainable crop production:** A holistic, systems-oriented approach to farming that is efficient in resource management and focuses on the interrelationship of social, economic and environmental processes.

**3.23 traceability:** The ability to trace the history, application, use and location of an item or its characteristics through recorded identification data.

## **4 REQUIREMENTS**

### **4.1 Document requirements**

#### **4.1.1 Traceability**

The produce shall be traceable to the farm where it has been originally produced.

#### **4.1.2 Site map**

The farmer shall maintain an up-to date site map including the location, access to the site, farm



lay out, land extent of the farm and adjacent activities.

#### **4.1.3** *At the farm site*

Documents require assuring the traceability shall be maintained at the farm site.

#### **4.1.4** *During transportation*

A traceability system should be maintained during the transportation that should be able to trace the product back to the farm, date of harvest and grade and type of the produce.

#### **4.1.5** *At the retail market*

The final product shall contain identification number, QR, Bar, batch code or any reliable method to be able to trace back to the farm.

### **4.2 Record keeping**

**4.2.1** Farms shall keep up-to-date records.

**4.2.2** All records shall be maintained and retained for at least 2 years unless stipulated by any specific legislation, otherwise.

**4.2.3** The farm records shall be accessible and audited.

**4.2.4** Record keeping system shall be established in which all the essential elements are captured including following details;

- a) Name of the farmer;
- b) Address of the farm site;
- c) Year and the season;
- d) The crop, the variety, the origin of the planting materials and the date of planting;
- e) The type, amount, the mode-of-application and the date of application of fertilizer;
- f) The common name, commercial or brand name, amount or dosage, the name of the operator, the mode-of-application, and the date of application of pesticides;
- g) The date, number of trees/plants harvested, quantity and type of the product; and
- j) Land extent and cropping pattern.

### **4.3 Internal audit**

**4.3.1** Internal audit shall be carried out at least once a year based on the requirements of this Standard. It shall be completed and documented.

**4.3.2** Corrective actions shall be implemented and documented.

### **4.4 Record of complaints**

Records of complaints on all produce not in compliance with requirements in this Standard and their remedial actions shall be made available on-site.

## **5 PRIMARY PRODUCTION REQUIREMENTS**

### **5.1 Environmental hygiene**

**5.1.1** Source plants (cocoa, nutmeg and clove) shall be protected from contamination by human, animal, domestic, industrial and agricultural wastes which may be present at levels likely to be a risk to environmental health.

**5.1.2** Adequate precautions shall be taken to ensure that these wastes are disposed of in a manner that will not contaminate plants and not constitute a health hazard to consumers of the final product.

### **5.2 Location of the production site**

**5.2.1** The proximity of production sites that pose a high risk for contamination of source plants, such as animal production facilities, hazardous waste sites and waste treatment facilities, shall be identified and evaluated for the potential to contaminate production fields with microbial or other environmental hazards.

**5.2.2** Consideration of production site location should include an evaluation of the slope and the potential for runoff from nearby fields, the flood risk as well as hydrological features of nearby sites in relation to the production site.

**5.2.3** The crop producer shall implement measures to prevent or minimize contamination of source plants at the production site.

**5.2.4** All procedures associated with primary production shall be carried out under hygienic conditions to minimize contamination and potential sources of contamination of produce or products.

### **5.3 Planting materials and rootstocks**

**5.3.1** Planting materials shall conform to the specifications of the Department of Export Agriculture (DEA).

**5.3.2** Choice of planting materials or rootstocks shall meet requirements as agreed between crop producers and customers wherever possible, recommended and/ or certified by the DEA.

**5.3.3** Where hybrid planting materials are used, seed source should be known and a record of the variety name, variety purity, batch number and seed vendor should be kept. Where available, seed certification records should be retained.

**5.3.4** Where grafted planting materials are used, records should be kept of the scion, root stock, source, batch number and vendor.

**5.3.5** Where vegetative planting materials are used, records shall be obtained from the registered nursery and maintained.

**5.3.6** Where propagation material produced within the farm, records of mother plants, date of establishment, method of propagation, planting media, agro-chemicals used, cultural

practices and agronomic practices shall be recorded.

**5.3.7** Planting material shall be free from pests and diseases.

**5.3.8** Where protected varieties are used, the farm shall respect intellectual property right legislation on plant variety protection.

**5.3.9** Varieties used for planting in the farm should preferably possess resistance or tolerance to major pests, so as to minimize utilization of pesticides.

**5.3.10** If seed treatments are carried out on planting materials, such treatments shall be justified and recorded.

#### **5.4 Site history**

**5.4.1** A recording system shall be established on the history of the site, the layout of fields and their crop history.

**5.4.2** For all new planting sites, a risk assessment shall be carried out, taking the following into account:

- a) Prior use of the land;
- b) Potential impacts for the production by adjacent crops and areas; and
- c) Potential impact of activities carried out at adjacent areas.

**5.4.3** The information of the risk assessment shall be recorded.

#### **5.5 Minimum grace period for GAP certification**

**5.5.1** Minimum grace period from conventional farming to GAP production shall be 06 months or elapse of one annual harvest for all three crops.

**5.5.2** The grace period shall not be applicable when the crop is established in a land which has not been used for agriculture or industrial purpose for long time (more than 1 year).

#### **5.6 Site management**

**5.6.1** The farm management shall demonstrate that it has legal rights to the cultivation of the land and all necessary regulatory approvals.

**5.6.2** Farms shall not be located on steep slopes which may be detrimental to the environment. Crops shall not be cultivated above 60 degree of slope of the land.

**5.6.3** Where farms are located on sloping lands (within the permissible level), appropriate soil conservation measures shall be undertaken to prevent soil erosion and silt deposition into drains and other waterways.

**5.6.4** The farm shall not be established adjacent to natural forest reserves. The minimum distance from the natural water streams shall be maintained according to the national Laws.

**5.6.5** The required catchment area shall be protected when the farm is located near to the

reservoir or natural water body.

**5.6.6** A visual identification or reference system for each field shall be established.

**5.6.7** Enough and suitable shade trees shall be planted to meet the appropriate sunshine requirements.

## **5.7 Inter-cropping**

Where inter-cropping is practiced, the recommendations or regulations applicable on other crops shall be followed.

## **5.8 Soil and substrate management**

### **5.8.1** *Soil type mapping*

A soil map shall be developed and recorded for the farm, which can then be used during land preparations, inter-cropping and replanting programmes, where necessary.

### **5.8.2** *Soil structure*

Cultivation practices shall be selected to avoid soil compaction and to improve or maintain soil structure.

### **5.8.3** *Soil conservation*

Recommended cultivation and soil conservation techniques that minimizes soil erosion shall be adopted.

### **5.8.4** *Soil fumigation*

Where chemical fumigation of soils, substrates or potting media is carried out, it shall be justified and recorded.

### **5.8.5** *Potting media, mulch and shading materials*

**5.8.5.1** Preference shall be given to the use of natural substrates.

**5.8.5.2** No shelter, mulch, soil or any substrate shall be obtained from natural forest reserves.

**5.8.5.3** Usage of sand, top soil, coir dust, cow dung or compost shall be encouraged for preparation of potting media as recommended.

**5.8.5.4** Recommended sterilization methods shall be followed prior to the use as a potting media.

**5.8.5.5** Where chemicals are used to sterilize the potting media, records shall be kept and maintained.

**5.8.5.6** The location of sterilization shall be kept confined. Solarization shall be the preferred option of sterilization.

## **5.9 Fertilizer management**

### **5.9.1 Nutrient requirement**

**5.9.1.1** A soil care plan shall be developed to ensure that nutrient losses are minimized.

**5.9.1.2** The application of fertilizers should be based on nutrient levels of the soil or substrates wherever possible and requirements of the crop.

**5.9.1.3** Soil testing and treatment shall be followed as per the DEA recommendations.

### **5.9.2 Fertilizer utilization**

**5.9.2.1** Usage of fertilizers shall be in accordance with the recommendations of the DEA.

**5.9.2.2** The type, quantity, method, timing and frequency of fertilizer application shall be carefully observed so as to maximize benefits and to minimize losses.

**5.9.2.3** Crop producers shall not use untreated solid or liquid manure.

**5.9.2.4** In cases where the farm produces its own organic inputs, proper treatment procedures shall be adopted to reduce or eliminate pathogens present in the raw material and to minimize the probability of contaminating the product. Records of treatment procedures, including the raw materials used shall be kept. The location of the composting site shall also consider the slope and its proximity to crop production sites in order to prevent cross contamination from run-off or leaching. Composting area shall be located at the lowest catena of the crop production site.

**5.9.2.5** Organic and inorganic fertilizers shall be used appropriately, optimizing yield and minimizing negative impacts on human health, the environment and the quality of the produce.

### **5.9.3 Records of application**

All applications of soil and foliar fertilizers shall be recorded. Records shall include location of application, origin and composition of fertilizers, date of application, type and quantity of fertilizer applied, method and frequency of application and name of the operator.

### **5.9.4 Application machinery**

Fertilizer application machinery shall be kept in good working condition and calibrated to ensure the correct quantity is applied.

### **5.9.5 Fertilizer source and storage**

**5.9.5.1** Fertilizer stock records shall be kept up-to-date and made available for inspection.

**5.9.5.2** Fertilizers shall be clearly labeled and stored in a way not contaminating the environment.

**5.9.5.3** Fertilizers shall not be stored in close contact with pesticides. If this is not possible, fertilizers and pesticides shall be physically separated and labeled accordingly.

**5.9.5.4** Fertilizers shall be stored in a covered, clean, dry location where there is no risk of contamination of water sources. Fertilizers shall not be stored in direct contact with the ground.

**5.9.5.5** Fertilizers shall not be stored with nursery stocks.

**5.9.5.6** Fertilizers shall not be stored with farm produce or products.

**5.9.5.7** Records of sources and nutrient content of fertilizers used shall be kept and made available for inspection.

**5.9.6** *Organic fertilizer*

**5.9.6.1** Organic fertilizer shall be stored and handled in an appropriate manner to reduce the risk of contamination of farm produce or products and the environment.

**5.9.6.2** Human sewage sludge shall not be used.

**5.9.6.3** In order to avoid pollution by heavy metals or by nitrate leaching, the levels of nutrients, heavy metals and other potential pollutants in the organic fertilizer shall be confirmed before application. A proper account shall also be taken of the nutrient contribution of organic fertilizers.

**5.9.6.4** The use of organic fertilizers in cultivation shall be based on nutrient management plans.

**5.9.6.5** The source of organic fertilizer shall be recorded.

**5.9.6.6** Operators shall maintain purchase, handling, treatment and processing records.

**5.10** **Irrigation and fertigation**

**5.10.1** *Planning*

Farmers shall have acquired plans in their irrigation or fertigation systems based on historical and scientific data.

**5.10.2** *Method*

**5.10.2.1** The most efficient and commercially practical water delivery system shall be used to ensure the best utilization of nutrient and water resources as well as to protect water sources and avoidance of pollution.

**5.10.2.2** Due consideration shall be given to a water management plan to optimize water and nutrient usage and reduce wastage.

**5.10.2.3** All crop producers shall maintain water usage records of irrigation and fertigation.

### **5.10.3** *Quality of water*

**5.10.3.1** Untreated sewage water shall not be used

**5.10.3.2** Water sources shall be analyzed at least once a year for microbial, chemical and inorganic pollutants. The analysis results shall comply to the microbiological requirements and chemical residual limits of the **SLS 614**.

### **5.10.4** *Supply of water*

**5.10.4.1** On-farm water requirements shall be derived from sustainable sources.

**5.10.4.2** Crop producers shall seek advice from relevant authorities on water sourcing.

**5.10.4.3** On-farm water sources shall be managed to ensure water-use efficiency and sustainability.

## **5.11** **Crop protection**

**5.11.1** The use of pesticides in crop production shall be minimized. Non-chemical control measures are preferred over chemical treatments.

**5.11.2** Wherever possible, crop producer shall apply recognized Integrated Pest Management (IPM) techniques. Crop producers shall seek advice on IPM from the DEA.

**5.11.3** Proper pruning should be practiced regularly and through the use of appropriate tools in order to reduce pest and disease infestation.

**5.11.4** Diseased or infested pods, branches and other plant material should be regularly removed from the trees, and properly disposed of in a way that prevents contamination. Tools used should be dedicated for this purpose only and disinfected before and after each use.

**5.11.5** In situations where trees are already old and/or less productive, rehabilitation should be done.

### **5.11.6** *Choice of pesticides*

**5.11.6.1** The records of plant protection products shall be kept and maintained for inspection.

**5.11.6.2** Crop producers shall only use pesticides that are officially recommended by DEA for use on the crop that is to be protected & registered under the national Law.

**5.11.6.3** Crop producers should select the least hazardous pesticides out of the recommended list and shall not use the dosage exceeding the recommendation.

**5.11.6.4** Instructions on the pesticide label shall be followed to ensure effective application and to avoid risks to operators, consumers and the environment.

**5.11.6.5** A pesticide-rotation strategy (mode-of-action) should be adopted to avoid reliance on any one pesticide.

**5.11.6.6** For crops to be exported, crop producers shall not use pesticides that are banned or disallowed in importing countries.

**5.11.6.7** Crop sanitation and quarantine activities shall be adopted at all times.

**5.11.6.8** Pesticides applied for other crops in the integrated farming systems shall be carried out avoiding any direct contamination of the target crops.

**5.11.7** *Records of application*

All applications of pesticides shall be recorded to include the name of crop, location and date of application, reason for application, name of pesticide (common name and the trade name) used, dosage, method of application and name of the operator.

**5.11.8** *Safety, training and instructions*

**5.11.8.1** Operators shall be trained on safety measures and proper application of pesticides complying with the **SLS 1465**.

**5.11.8.2** Each area of application shall be field-marked with appropriate warning signs of the re-entry period.

**5.11.9** *Personal protective equipment*

**5.11.9.1** Operators shall be equipped with suitable personal protective equipment (PPE) in accordance with the **SLS ISO 27065** as appropriate to the danger posed to the applicator.

**5.11.9.2** Personal protective gear shall be cleaned after use, minimizing the environmental contamination and stored separately from pesticides.

**5.11.10** *Pre-harvest interval*

Crop producers shall be strictly adhered to pre-harvest intervals prescribed in pesticide product labels.

**5.11.11** *Spray equipment*

**5.11.11.1** Spray equipment shall conform to the **SLS ISO 19932-1** and be kept in good working condition.

**5.11.11.2** Calibration shall be carried out as and when necessary to ensure accurate delivery of the required quantity of pesticide.

**5.11.11.3** Equipment used for chemical application should be properly cleaned and securely stored.

**5.11.12** *Disposal of surplus spray mix*

Surplus spray mix and tank washings shall be disposed of with utmost care (This can be



sprayed on the treated part of the crop as long as the recommended dosage has not been exceeded or on designated fallow land away from water sources). Records shall be kept of such spraying.

**5.11.13** *Pesticide storage*

**5.11.13.1** Pesticides shall be stored in accordance with the national regulations.

**5.11.13.2** Pesticides shall be stored in a secured, water-resistant, well-ventilated and well-lit location away from other materials.

**5.11.13.3** All shelves shall be made of non-absorbent materials.

**5.11.13.4** The pesticide store shall be able to retain spillage.

**5.11.13.5** There shall be adequate facilities for measuring and mixing of pesticides.

**5.11.13.6** There shall be emergency facilities to deal with contamination and accidental spillage.

**5.11.13.7** Keys and access to the store shall be limited to workers with adequate knowledge on the handling of pesticides.

**5.11.13.8** A procedure to handle accidents, a list of emergency telephone numbers and the location of the nearest telephone shall be available within the immediate vicinity of the store. Similar information shall also be available next to the designated telephone.

**5.11.13.9** An inventory of the pesticides in store shall be kept and readily available for inspection.

**5.11.13.10** All pesticides shall be stored in their original packaging.

**5.11.13.11** Only the pesticides that are recommended and registered for use on crops on the farm shall be stored.

**5.11.13.12** Solid pesticides shall be stored on shelves above liquids or stored separately.

**5.11.13.13** Hazard and warning signs of potential dangers shall be placed on access doors.

**5.11.14** *Empty pesticide containers*

**5.11.14.1** Empty pesticide containers shall not be re-used. The disposal of empty pesticide containers shall be in a manner that prevents exposure to humans and contamination of the environment.

**5.11.14.2** Official collection and disposal systems shall be used, if available.

**5.11.14.3** Empty containers shall be rinsed at least three times with water and the washings are returned to the spray tank before disposing.

**5.11.14.4** Unless participating in established recycling programmes or with expressed permission from the authorities, rinsed containers shall be pierced and dented to prevent re-use.

**5.11.14.5** Empty containers shall be kept secure until they are disposed.

**5.11.14.6** Disposal or destruction of containers shall be in accordance with the national Laws.

## **5.12 Harvesting**

**5.12.1** Harvesting of cocoa, nutmeg and clove shall be done at correct maturity.

**5.12.2** Harvesting of cocoa should be conducted in the appropriate manner to avoid damage to the flower cushion.

**5.12.3** The farmer shall take required precautions to minimize the damage during harvesting of pods/ fruits;

**5.12.3.1** Cocoa pod breaking should be conducted in the appropriate manner to avoid damage to the beans.

**5.12.3.2** Nutmeg fruit halving should be conducted in the appropriate manner to avoid damage to the nutmeg seed and mace.

**5.12.3.3** Bunches of clove buds threshing should be appropriate manner to avoid damage to the flower bud and branch terminals.

**5.12.4** Harvested produce shall not be placed in direct contact with the ground.

**5.12.5** Newly harvested produce shall not be mixed with any of the previously harvested produce.

**5.12.6** Harvested produce that are heavily bruised, damaged, diseased, or over-ripened shall be segregated. Those cannot be made usable by further processing shall be disposed of properly to avoid contamination.

**5.12.7** Equipment and containers used for harvesting and vehicles used for transporting the produce shall be clean and hygienic.

**5.12.8** Containers used for harvesting shall be made from non-toxic materials. These containers shall be designed and constructed to ensure that, these can be cleaned, disinfected and maintained in working condition to avoid contamination. When using reusable harvesting containers and tools, a cleaning and disinfection schedule shall be in place to prevent contamination. A record of cleaning shall be available. Containers that are damaged and can no longer be kept in a hygienic condition shall be discarded.

**5.12.9** As far as practicable, harvesting containers shall only be used for storing harvested produce. If these containers are used for other purposes, they shall be cleaned and disinfected as necessary prior to use for storing any product or produce.

**5.12.10** Used fertilizer bags shall not be used for collecting harvest and for covering of product or produce.

**5.12.11** Chemical, biological and physical contaminations from the handlers shall be prevented.

### **5.13 Post-harvest handling**

**5.13.1** The post-harvest handling should be done in accordance with good hygienic practices as described in the **SLS 143**.

**5.13.2** All product packing and storage sites shall have adequate pest control measures, particularly in the working areas and storage areas for packaging materials, pesticides and storage of fertilizers.

#### **5.13.3 *Post-harvest treatment***

**5.13.3.1** Use of additives post-harvest treatments should be minimized.

**5.13.3.2** When additives are used, they shall be in accordance with the national legislations. In addition, where pesticides are involved, they shall be officially registered for post-harvest use under the Pesticide Act.

**5.13.3.3** For crops to be exported, crop producers, post-production processors, packers and exporters shall not use chemicals or pesticides that are banned or disallowed in importing countries.

**5.13.3.4** Crop producers, post-production processors, packers and exporters shall be able to demonstrate their competence and knowledge with regard to the post-harvest treatment, post-harvest handling procedures, storage and transportation.

**5.13.3.5** Records for all post-harvest treatment shall be kept to include crop name, location, date of treatment, reason for treatment, type of post-harvest treatment, dosage, frequency, methods of treatment and name of the operator.

#### **5.13.4 *Cocoa fermentation***

Produce shall be fermented in the appropriate manner for the required time in accordance to the recommended practices by the DEA.

#### **5.13.5 *Drying***

**5.13.5.1** Drying cocoa shall commence upon completion of fermentation in accordance with recommended practices by the DEA.

**5.13.5.2** Drying Nutmeg and Clove shall commence upon completion in accordance with recommended practices by the DEA.

**5.13.5.3** Separation of kernel (nutmeg without shell) shall be done in accordance with recommendations by DEA.

**5.13.5.4** Suitable precautions shall be taken, where practicable, to protect product from contamination and damage by domestic animals, rodents, birds, mites, insects or other

objectionable substances during drying, handling and storage.

**5.13.5.5** Drying time shall be minimized as much as possible by using optimal drying conditions to attain required moisture level to avoid fungal growth and toxin production.

**5.13.5.6** All the contact surface should be made out of food-grade material and stainless steel material.

**5.13.5.7** Fuel stores shall be located with adequate distance away from the drying area.

**5.13.6** *Processed bean/clove buds/ nutmeg seed sieving*

Waste and foreign matter shall be removed from the beans, clove buds and nutmeg seeds.

**5.13.7** *Post-harvest washing*

**5.13.7.1** Potable water conforms to the **SLS 614** shall be used for washing of produce.

**5.13.7.2** Source of water for post-harvest washing shall be analyzed at least once a year for microbial, chemical and inorganic pollutants to ensure that it is potable and safe complying with the **SLS 614**.

**5.13.8** *Pesticide residue analysis of produce*

**5.13.8.1** The frequency of pesticide residue analysis shall be based on risk assessment, taking into consideration of the types of pesticides used, frequency of applications, intended market assessments, national and international regulations.

**5.13.8.2** Crop producers and/or suppliers shall provide evidence of pesticide residue testing.

**5.13.8.3** The test results shall be traceable to the crop producer and to the production site.

**5.13.8.4** The laboratories used for pesticide residue testing shall be accredited by a competent accreditation authority.

**5.13.8.5** Preventive and corrective action plans shall be in place in the event when a Maximum Residue Limits (MRL) is exceeded where necessary.

**5.13.9** **Storage**

Storage site shall be clean, cool, dry and hygienic, not be exposed to direct sunlight with good ventilation, free of heat accumulation, and be able to prevent contamination by hazardous substances.

**5.13.10** **Grading**

Produce shall be graded in accordance to the minimum standard as provided in **SLS 106, 113** and **241**.

**5.14** **Packaging on farm**

**5.14.1** Packaging materials shall be stored in clean storage areas to avoid contamination by physical and chemical hazards as well as pests. It shall be protected from rodents, birds and other animals.

**5.14.2** Where produce is field packed, packaging shall not be left in the field overnight where risk of contamination exists.

**5.14.3** Packing material should be made out of virgin material. The farmer should obtain food-grade certificate from the supplier with Material Safety Data Sheet (MSDS).

**5.14.4** Bags or containers used to store chemicals and feeds shall not be re-used.

**5.14.5** Re-usable crates, boxes, containers and also vehicles used to transport harvested produce shall be cleaned to ensure that they are free from foreign materials, soil, dirt, manure, crop residue, decaying produce, lubricant, and any other contaminant which may be detrimental to the quality of the produce and/or consumers' health.

## **5.15 Waste and pollution management, recycling and re-use**

**5.15.1** All possible waste products and sources of pollution shall be identified in all areas of the production.

**5.15.2** Having identified wastes and pollutants, a plan shall be developed and implemented, to prevent or reduce wastage and pollution. Whenever possible, land filling or burning by means of recycling the waste shall be prevented (Crop debris may be composted and re-used for soil conditioning).

## **6 WORKER HEALTH, SAFETY AND WELFARE**

### **6.1 Action plan**

There shall be an action plan to promote safe and good working conditions. Workers who are handling produce shall be medically screened as per the legal requirements.

### **6.2 Training**

**6.2.1** Training shall be given to workers operating dangerous or sophisticated equipment and handling of chemicals.

**6.2.2** Workers shall undergo training in basic hygiene and food safety before handling produce. The aspects of hygiene shall include personal cleanliness, clothing cleanliness and personal behavior. Workers shall be made aware of the requirement to notify management when they contact any communicable disease which may render them unfit to work in the vicinity of produce destined for human consumption.

**6.2.3** Records of training for each employee shall be kept.

**6.2.4** Accident and emergency procedures shall be available with clear instructions to all

workers. These procedures shall be displayed in the appropriate language for the workforce. Instructions shall be supported by warning signs and symbols where appropriate.

### **6.3 Facilities and equipment**

**6.3.1** First-aid boxes and other safety equipment shall be made available at permanent sites on the farm. All workers shall be informed of these locations and the personnel-in-charge of safety.

**6.3.2** All hazards shall be clearly identified by warning signs and symbols where appropriate.

### **6.4 Pesticide handling**

Workers undertaking pesticide applications on the farm shall receive regular health checks in line with guidelines based on regulatory requirements.

### **6.5 Workers' hygiene**

**6.5.1** Hygiene protocol shall be put in place in order to prevent physical, microbiological and chemical contamination for workers.

**6.5.2** Workers shall have access to clean toilet and washing facilities in the vicinity of their work.

**6.5.3** Workers shall receive basic training in hygiene requirements for the handling of produce. The training program shall outline the need for hand cleaning, the covering of skin cuts, and the confinement of smoking, eating and drinking in permitted areas.

### **6.6 Welfare**

**6.6.1** All employment conditions shall comply with regulations.

**6.6.2** If on-site living quarters are provided, they shall be habitable and have basic amenities and facilities.

## **7 SOCIAL JUSTICE**

**7.1** The certification body shall not certify the GAP production in the case of clear social injustice or any violation of basic human rights.

**7.2** Children under the age of 14 years shall not be employed or involved.

**7.3** Employees shall have equal opportunities, treatment and equal wages when performing the same level of work, regardless of colour, sex, religion, race, political opinion, nationality, extraction or origin.

**7.4** The operator shall provide adequate health and safety measures for employees, casual workers and contractors to prevent accidents and injuries to health arising out of, linked with

or occurring in the course of work, by minimizing, so far as is reasonably practical, the causes of hazards inherent in the working environment.

## **8 ENVIRONMENTAL ISSUES**

### **8.1 Impact of farming on the environment**

Crop producers shall conform to existing environmental legislation. This covers the concern for air, water, soil, biodiversity and other environmental issues.

### **8.2 Wildlife and biodiversity conservation**

**8.2.1** Crop producers shall always be conscious of the need to conserve wildlife, biodiversity, high conservation value areas and the enhancement of agricultural biodiversity.

**8.2.2** Where Environmental Impact Assessment (EIA) is required, consideration for the conservation of wildlife and biodiversity shall include the following areas:

- a) Conduct a baseline audit to understand existing animal and plant diversity on the farm. Conservation organizations may be requested to conduct surveys to measure biodiversity and identify areas of concern.
- b) Take action to avoid damage and deterioration of habitats on the farm; and
- c) Create an action plan to enhance habitats and increase biodiversity on the farm complying comply to the national legislation.

### **8.3 Unproductive sites**

Crop producers are encouraged to convert unproductive sites in their farms into conservation areas for natural flora and fauna.

## **9 PACKAGING REQUIREMENTS**

**9.1** Crop producers shall not use packaging material that may contaminate GAP produce or products.

**9.2** The use of packing material containing Polyvinyl chloride (PVC) shall be prohibited.

**9.3** Packaging materials, storage containers or bins that contain a synthetic pesticide, preservative, fumigant or their residues shall be prohibited.

**9.4** Recycled materials shall not be used for packaging of GAP certified produce.

**9.5** Agricultural produce from conventional agriculture shall not be packed together with GAP-certified and GAP-labeled products.

## **10 MARKING AND/OR LABELLING REQUIREMENTS**

**10.1** GAP certified product shall be labeled with QR code number, Bar, batch code or any reliable method to be able to trace back issued by competent authority.

**10.2** Label should indicate all ingredients, the processing methods and additives if any, used in the product.

**10.3** The following shall be marked or labeled legibly and indelibly on each package/container to cover GAP and general labeling requirements:

- a) Name of the produce or product;
- b) Grade (quality/ size);
- c) Name and address of the crop producer;
- d) QR code/ Batch or code number;
- e) Net mass in grams or in kilograms;
- f) Date of manufacture/ harvest;
- g) Date of expiry/ best before;
- j) Instruction for usage; and
- k) Storage condition.