

Sustainably Grown Veriflora

A Sustainability Standard for Cut Flowers and Potted Plants



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1.0 Purpose, Structure and Intended Uses

1.1. Purpose

The purpose of the Standard is to establish a comprehensive framework and common set of environmental, social, and quality requirements by which to demonstrate that an agricultural product has been produced and handled in a sustainable manner, from soil preparation and seed planting through production, harvest, post-harvest handling, and distribution for sale. In addition, the Standard is intended to establish guidelines for making public claims with respect to sustainably grown food and fiber crops, consistent with international guidance for Type I environmental labeling [Norm. Ref. 2].

1.2. Sustainable Agriculture Framework Elements

The sustainable agriculture framework set forth in this Standard addresses a spectrum of issues that can be grouped under three categories – environmental sustainability, social and economic sustainability, and product integrity – summarized under the following elements:

<i>Environmental Sustainability</i>	<ul style="list-style-type: none">- Sustainable Crop Production- Resource Conservation & Energy Efficiency- Ecosystem Protection- Integrated Waste Management
<i>Social & Economic Sustainability</i>	<ul style="list-style-type: none">- Fair Labor Practices- Community Benefits
<i>Product Integrity</i>	<ul style="list-style-type: none">- Product Quality- Product Safety and Purity

1.3. Structure of the Standard

The Standard addresses the full spectrum of sustainability issues under prerequisite requirements, Tier 1 conformance requirements and Tier 2 conformance requirements (Sections 7-18). Sector-specific annexes to the Standard contain additional Tier 1 and Tier 2 requirements that are applicable to products in the specific sector.

1.4. Intended Users

Intended users of this Standard are: 1) agricultural producers; 2) handlers of agricultural products such as distributors, wholesalers, importers, transporters, and retailers; 3) manufacturers; 4) third-party certifiers; and 5) purchasers of agricultural products, including consumers, businesses, institutions, government agencies, and other entities.

1.5. Voluntary Standard

This Standard is voluntary. It is not intended to replace the legal or regulatory requirements of any country in which agricultural products are produced, handled, or sold.

2.0 Scope, Goals and Limitations

2.1. Life-Cycle Scope

The sustainable agriculture framework set forth in this Standard addresses the full breadth of environmental, social, and quality issues associated with agricultural crops, encompassing a “life-cycle” scope of assessment — i.e., from seed to store. This scope ensures that potential impacts throughout the production and handling chain of custody can be taken into account, including both direct and indirect operations (e.g., farming practices, storage, conditioning, shipping, packaging, distribution, display), and ensures that agricultural operations are evaluated on a level playing field. This scope of assessment is consistent with international life-cycle assessment guidance [Add. Ref.7]. Within this scope, the Standard identifies a series of practices and procedures.

2.1.1. The Standard identifies crop production practices that: 1) build and maintain a healthy agro-ecosystem, based on healthy soil structure and functioning; 2) preferentially employ biological, mechanical, and cultural methods to control pest and disease vectors; 3) minimize agrochemical inputs, utilizing reduced risk or US National Organic Program (NOP) permitted agrochemical options; and 4) phase out those agrochemical inputs that pose significant, recognized acute and chronic risks to human health or ecotoxic risks to the environment.

2.1.2. The Standard identifies practices that protect the surrounding ecology including but not limited to waterways, riparian and wetlands habitats, high ecological value habitats and species, and other biologically and culturally significant areas.

2.1.3. The Standard identifies practices that optimize the use of water resources, reduce excessive packaging, and maximize the recycling of both agricultural and non-agricultural wastes through composting and other material recycling protocols.

2.1.4 The Standard provides a framework and guidelines for strategies that minimize overall packaging while maintaining the quality and appearance of the product.

2.1.5. The Standard provides a life-cycle impact assessment tool that encourages producers and handlers to seek the most energy efficient methods for growing, transporting and handling crops by supporting local/regional crop production and distribution of agricultural products and by minimizing fossil fuel use.

2.1.6. The Standard addresses the issue of global climate change related to agricultural production by providing a method to account for greenhouse gas emissions through the product life-cycle (from seed to store) from all direct and indirect sources. The Standard establishes specific greenhouse gas reduction goals, and sets an objective maximum carbon storage level per hectare while retaining overall productivity and yields.

2.1.7. The Standard defines practices that provide a safe and equitable workplace for agricultural workers.

2.1.8. The Standard provides guidelines and requirements for producers to support local communities through preferential purchasing, hiring, and improvements/development.

2.1.9. The Standard identifies minimum acceptable food safety practices to protect edible crops from food pathogens during the chain of custody.

2.1.10. The Standard establishes quality assurance and traceability requirements designed to ensure that sustainably grown products are properly handled throughout the chain of custody and that they can be traced back to their source.

2.2. Goals

The major goals of this Standard are:

- to encourage a growing segment of the agricultural sector to implement best management practices in terms of environmental, social and quality performance;
- to promote continuing improvement and stimulate innovation in agricultural production practices;
- to provide a uniform standard and assessment matrix that can be applied when evaluating the sustainability performance of a diverse array of agricultural production approaches, including organic, integrated pest management and other approaches.
- to enhance agro-ecosystem structure and functioning, and in so doing, increase total terrestrial carbon sequestration on agricultural soils;
- to increase the overall energy efficiency of agricultural systems;
- to reduce net greenhouse gas emissions from agricultural systems, including production, distribution and sales;
- to encourage and increase local bioregional production and consumption of agricultural products;
- to encourage an optimal balance in the use of arable lands for the production of food, fiber and biofuel crops;
- to raise public awareness about the significant sustainability issues and solutions associated with agricultural crop production, and to stimulate consumer purchases that reinforce sustainable agricultural production and handling; and
- to minimize packaging resource use through reducing, recycling, and re-use of packaging materials.

2.3. Limitations

2.3.1. The Standard does not set requirements where adequate independent enforcement mechanisms are unavailable.

2.3.2. The Standard does not address livestock or dairy production.

2.3.3. The Standard does not address wild crops.

2.3.4. The Standard does not address the nutrient density of edible crops.¹

2.3.5. Although the Standard is built upon a life-cycle impact assessment scope of assessment, it does not provide requirements for quantifying impact indicators in accordance with international life-cycle impact assessment (LCIA) guidance.

¹ Nutrient density is an important component of sustainability for edible crops. To be truly sustainable from the standpoint of the consumer of these crops, foods should deliver minimum levels of essential vitamins, minerals and high-potency antioxidants.

3.0 Conformance

3.1 Conformance Requirements

This Standard establishes prerequisite requirements for all agricultural producers and handlers, and provides two tiers of potential conformity upon which claims may be made. Tier 1 establishes the baseline performance for sustainable agriculture, while Tier 2 represents an even higher level of performance based on best management practices.

In order to be considered conformant to Tier 1 of this Standard, the Producer or Handler must:

- conform with 100% of pre-requisite (Section 6) and critical requirements (designated below) and in the relevant sector-specific annexes; and
- conform with at least 90% of the total **Tier 1** requirements (prerequisite, critical, and non-critical) in the Standard and in the relevant sector-specific annexes.²

Critical Requirements for Producers For conformance to the Standard		
6.1.	9.2.1.3.	11.3.3.
7.1.1.1.	9.2.1.4.	12.1.1.1.
7.1.1.2.*	9.2.1.6	12.1.1.2.
7.1.1.3.	9.3.1.1.	12.2.1.1.
7.1.1.4.	9.3.1.2.	12.3.1.1.
7.2.1.1.*	10.1.1.1.	13.1.1.1.
7.2.1.2.	10.1.1.2.	13.1.1.2.
7.2.1.3.	10.1.1.3.	14.1.1.3.
7.2.1.4.	10.2.1.1.	14.1.1.4.
7.2.1.5.	10.2.1.4.	14.2.1.1.**
7.3.1.2	11.1.1.	14.2.1.2.
7.3.1.4.	11.1.2.	
7.3.1.5	11.1.3.	
8.1.1.	11.1.4.	
8.1.2.	11.1.5.	
8.1.6.1.	11.2.1.	
8.1.7.	11.2.2.	
9.1.1.3.	11.2.3.	
9.1.1.5.	11.2.4.	
9.1.1.6.	11.3.1.	
9.2.1.1.	11.3.2.	

* Applicable to organic certified producers only

Critical Requirements For Handlers	
For conformance to the Standard	For conformance to added Fair Labor Practices and Community Benefits claim
6.2.	18.1.1.1.
15.1.1.1.	18.1.2.1.
15.1.1.2.	18.1.3.1.
15.1.1.3	18.1.4.1.
15.1.1.4.	18.1.5.1.
15.1.1.6.	18.2.1.1.
15.2.1.1.	18.2.2.1.
15.2.1.2.	18.2.3.1.
15.3.1.1.	18.2.4.1.
15.3.1.2.	18.3.2.1.
15.3.1.5.	18.3.3.1.
15.3.1.6.	18.4.1.
16.1.1.3.	18.5.1.
16.1.1.4.	18.6.1.
16.1.1.5.	
16.1.1.6.	
16.1.1.8.	
17.1.1.1.	
17.1.1.4.	
17.2.1.1. **	
17.2.1.2. **	

** Applicable to edible crops only

² If the conformance percentage for non-critical requirements is 89.5% or greater, this value will be rounded up to 90%.

To be considered conformant to Tier 2, the Producer or Handler must be fully conformant with Tier 1, and in addition, must conform to at least 80% of the Tier 2 requirements in the Standard and in the relevant sector-specific annexes.

3.2. Scope of Conformance

Conformance may be established for an entire Agricultural Production Operation or Handling Operation or for a portion of that operation. For example, products that are grown in one geographic location may be in conformance, while the same product grown in another location may not be in conformance. Fields and farm parcels must have distinct, defined boundaries.

3.3. Demonstrating Conformance for Public Claims

3.3.1. Producers and handlers of agricultural products seeking to make public claims based on this Standard are encouraged to have their operations certified as being in conformance to this Standard by an accredited third-party certifier, consistent with international requirements for Type I environmental labels [Norm. Ref. 2].³

3.3.2. Consistent with the US National Organic Program (NOP), public claims shall only be asserted if the conformant agricultural product has passed through a conformant handler distribution chain of custody.

³ Three types of environmental labels have been standardized under the ISO/IEC 14000 series. Type I environmental labeling (ISO/IEC 14024:1999) refers to voluntary, third-party certified labels “that indicate overall environmental preferability of a product within a particular product category based on life cycle considerations.”

4.0 Referenced Documents

4.1. Normative References

The following normative documents contain provisions that, through reference in this text, constitute provisions of this Standard.

1. Code of Federal Regulations Title 40 (40 CFR), last updated May 2, 2006.
 - Pesticide Programs, Subchapter E - Pesticide Programs, <http://www.epa.gov/pesticides/regulating/cfr.htm>.
 - Part 170: Worker Protection Standard.
2. ISO 14024:1999, "Environmental Labels and Declarations - Type I Environmental Labeling - Principles and Procedures."
3. U.S. Department of Agriculture, Agricultural Marketing Service, 7 CFR Part 205 [Docket Number: TMD-00-02-FR] RIN: 0581-AA40, National Organic Program, 2002. <http://www.ams.usda.gov/NOP>.
4. U.S. Department of Health and Human Services, Food and Drug Administration Center for Food Safety and Applied Nutrition (CFSAN). *Guidance for Industry: Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables*, and *Guidance for Industry: Guide to Minimize Microbial Food Safety Hazards for Fresh-Cut Fruits and Vegetables*. October 1998.
5. U.S. Environmental Protection Agency. *National Recommended Water Quality Criteria: 2002*. EPA 822/R/02/038. Washington, DC. 2002. www.epa.gov/waterscience/standards/wqcriteria.html.
6. U.S. Environmental Protection Agency website:
7. U.S. Environmental Protection Agency. 40 CFR Part 82 [EPA- HQ-OAR-2005-0538; FRL-] RIN 2060-AN54, *Protection of Stratospheric Ozone: The 2007 Critical Use Exemption from the Phaseout of Methyl Bromide*.
8. U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition website: Pesticides, Metals, Chemical Contaminants & Natural Toxins. <http://www.cfsan.fda.gov/~lrd/pestadd.html>.
9. WHO/PCS/01.5, International Programme on Chemical Safety, *The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification 2000-2002*. United Nations Environment Programme, International Labour Organization. World Health Organization, IOMC Inter-Organization Programme for the Sound Management of Chemicals. http://www.who.int/ipcs/publications/pesticides_hazard/en/

4.2. Additional References

1. ASTM EO6.71.10, "Standard Practice for Assessing Environmental Performance Improvements of Electric Power Generation Facilities and Infrastructure," Draft for Final Ballot, 2007.
2. California Environmental Protection Agency, No. 11. Rules for Medical Care When Handlers Use Organophosphates and Carbamates, Sacramento 2003.
<http://www.cdpr.ca.gov/docs/whs/pdf/hs8.pdf>
3. Food and Agriculture Organization of the United Nations (FAO). *Guidelines For Personal Protection When Working With Pesticides in Tropical Climates*, Rome, March 1990.
4. Food and Agriculture Organization of the United Nations (FAO). *International Code of Conduct for the Distribution and Use of Pesticides*, Rome 2002.
5. Food and Agriculture Organization of the United Nations (FAO). *Pesticide Storage and Stock Control Manual*, 1996.
<http://www.fao.org/docrep/v8966e/v8966e00.htm>
6. International Labour Organization (ILO) Conventions:
 - ILO Convention 29 — Forced Labour Convention (1930)
 - ILO Convention 87 — Freedom of Association and Protection of the Right to Organise Convention (1948)
 - ILO Convention 98 — Right to Organise and to Bargain Collectively Convention (1949)
 - ILO Convention 100 — Equal Remuneration Convention (1951)
 - ILO Convention 105 — Abolition of Forced Labour Convention (1957)
 - ILO Convention 110— Plantations Convention (1958), Convention and Protocol (1982)
 - ILO Convention 111 — Discrimination (Employment and Occupation) Convention (1958)
 - ILO Convention 135 — Workers' Representatives Convention (1971)
 - ILO Convention 138 — Minimum Age Convention (1973)
 - ILO Convention 143 — Migrant Workers (Supplementary Provisions) Convention (1975)
 - ILO Convention 155 — Occupational Safety and Health Convention (1981)
 - ILO Convention 170 — Chemicals Convention (1990)
7. International Organization for Standardization (ISO) Standards:
 - ISO 9001:2015, "Quality Management Systems — Requirements"
 - ISO 14001:2015, "Environmental Management Systems — Requirements With Guidance For Use"
 - ISO 14020:2000, "Environmental Labels and Declarations — General Principles"

- ISO 14040:1997, “Environmental Management — Life Cycle Assessment — Principles and Framework.”
 - ISO 14042:2000: “Environmental Management — Life Cycle Assessment — Life Cycle Impact Assessment.”
8. International Organization for Standardization (ISO), *ISO and Conformity Assessment*, 2005.
 9. International Programme on Chemical Safety, *Safety and Health in the Use of Agrochemicals*. A collaboration of International Labour Organization, United Nations Environmental Programme, and the World Health Organization. 2006.
 10. International Union for the Conservation of Nature and Natural Resources. “2003 Red List of Threatened Species.” 2003. Geneva, Switzerland. www.redlist.org
 11. LODI Rules, Lodi-Woodbridge Winegrape Commission, *Pesticide Impact Units for Pesticides Registered for Use in Lodi Vineyards*, 2005.
 12. MeisterPro. *Crop Protection Handbook*, Volume 92, 2006.
 13. The Organic Center, Foster, Rhode Island. “On Farm Energy Use”, accessed through The Organic Center website: www.organic-center.org/reportfiles/Energy_SSR_Cons_Summary.pdf
 14. UN Environmental Programme, Technology and Economic Assessment Panel and the Methyl Bromide Technical Options Committee, “Handbook on Critical Use Nominations for Methyl Bromide,” Version 5, October 2006.

5.0 Terminology

Accreditation. The process by which third-party entities are evaluated and endorsed to conduct certification activities in connection with this Standard.

Action Threshold. In pest management, the level of pest or disease activity affecting an agricultural crop below which no responsive action is necessitated, and above which pest/disease control is triggered.

Agricultural Inputs. All substances or materials used in the production or handling of agricultural products.

Agricultural Product. In this Standard, the term refers to the product derived from any food, fiber or biofuel crop intended for commercial sale.

Agricultural Production Operation. The farming enterprise engaged in production of agricultural crops.

Agricultural Production Plan. The written document that describes the protocols and procedures used by the Agricultural Production Operation in carrying out its daily functions.

Agricultural Production Process. The series of steps involved in the production of agricultural crops at a specific site, including each phase of soil preparation, seed and/or seedling selection and planting, pest management, irrigation, fertilization, harvesting, post-harvest handling, storage and shipping.

Agricultural Production Unit. The smallest commercially traded commodity unit for the agricultural product.

Agro-ecosystem. The combination of organisms and abiotic factors that interact in an agricultural field, as impacted by agricultural production processes.

Best Management Practice. An agricultural production technique that has been demonstrated on a specific crop in a specific region to have the least environmental and human health impacts of the currently available methods to accomplish a given production outcome, while being economically viable.

Biofuel. Any fuel derived from an agricultural crop.

Buffer Zone. A strip of land located between a sustainable agricultural production operation or portion of such an operation and an adjacent land area that is not under sustainable agricultural production. The buffer zone should be sufficient in size or other features (e.g., windbreaks or a diversion ditch) to prevent activities on one side of the zone from impacting the area on the other side.

Chain of custody. The pathway that a product takes from its point of production to the end consumer, consisting of each entity that takes legal and/or physical possession along this pathway.

Claim. Oral, written, implied, or symbolic representation, statement, or advertising or other form of communication presented to the public or buyers of agricultural products that relates to a crop's status as sustainably grown.

Compost. A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.

Compostable. Any mechanism, chemical or biological, that breaks down a material into carbon dioxide, water and minerals without ecotoxic effects when placed in a home compost pile, in the ground, or sent to a municipal composting facility, where permitted.

Contractor. An individual or company that is hired by the producer or handler to perform services.

Control. Any method that reduces or limits damage by populations of pests, weeds, or diseases to levels that do not significantly reduce productivity.

Crop. A plant or part of a plant intended to be marketed as an agricultural product.

Crop Residues. The plant parts remaining in a field after the harvest of a crop, which include stalks, stems, leaves, roots, and weeds.

Crop Rotation. The practice of alternating the annual crops grown on a specific field in a planned pattern or sequence in successive crop years so that crops of the same species or family are not grown repeatedly without interruption on the same field. Perennial cropping systems employ means such as alley cropping, intercropping, and hedgerows to introduce biological diversity in lieu of crop rotation.

Cultivation. Digging up or cutting the soil to prepare a seed bed, control weeds, aerate the soil, or work organic matter, crop residues, or fertilizers into the soil.

Cultural Methods. Methods used to enhance crop health and prevent weed, pest, or disease problems without the use of substances. Examples include: the selection of appropriate varieties and planting sites; proper timing and density of plantings; irrigation; and extending a growing season by manipulating the microclimate with greenhouses, cold frames, or wind breaks.

Discharge. A liquid, gaseous, sludge or solid substance that is released, emitted, or excreted into the surrounding environment and is considered to have ecological and/or human health impacts (e.g., excess nutrients, pesticides).

Disease vectors. Plants or animals that harbor or transmit disease organisms or pathogens that may attack agricultural crops.

Drift. The physical movement of prohibited substances from the intended target site onto a sustainable agricultural production operation or portion thereof.

Ecological Restoration. A process of returning ecosystems or habitats to their native structure and species composition.

Ecosystem. The composition of one or more flora and fauna communities in a defined geographic area.

Edible Crop. An agricultural crop that is intended for consumption by humans, including food crops and any other consumable crops, such as flowers.

Energy Efficiency Index. A measure of relative energy efficiency, expressed in oil equivalents per unit of agricultural product produced, that incorporates electricity and fuel consumption.

Fertilizer. A single or blended substance containing one or more recognized plant nutrient(s) which is used primarily for its plant nutrient content and which is designed for use or claimed to have value in promoting plant growth.

Field. An area of land identified as a discrete unit within an Agricultural Production Operation.

Food Pathogen. A microbial organism present in food at a level that can cause illness in humans.

Functional Biodiversity. The organisms that together play key ecological roles in maintaining soil quality and health.

GAP Audit. A food safety audit of a field crop, conducted in accordance with Good Agricultural Practice standards, consistent with the US FDA Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables and US FDA Guide to Minimize Microbial Food Safety Hazards for Fresh-Cut Fruits and Vegetables.

Genetically Modified Organism (GMO). Any organism in which any of the genes or other genetic material: 1) have been modified by in vitro techniques; or 2) are inherited or otherwise derived, through any number of replications, from any genes or other genetic material that has been modified by in vitro techniques.

GMP Audit. A food safety audit of a food storage, processing, handling, or distribution facility, consistent with US FDA Code of Federal Regulations 21.110.

Greenhouse Gas Index. A measure of greenhouse gas emissions, expressed in CO₂ equivalents per unit of agricultural product produced, associated with electricity and fuel consumption.

HACCP (Hazard Analysis Critical Control Points). A comprehensive food safety management framework, built around the establishment and monitoring of critical control points, i.e., points or stages in a process at which hazards can be identified and/or controlled.

Handle. To store, pack, process, ship, or sell agricultural products, except such term shall not include the sale, transportation, or delivery of crops by the producer thereof to a handler.

Handler (also, Handing Operation). The legal entity that is responsible for the storage, processing, conditioning, packaging, distribution, chain of custody and/or sale of agricultural products, and that is not a producer. It includes, but is not limited to, distributors, re-packers, transporters, and brokers, as well as retail establishments.

Handling Plan. The written document that describes the protocols and procedures used by the Handling Operation in carrying out its daily functions in conformance with this Standard.

Handling Process. The series of steps involved in the handling of agricultural products, including each phase of post-harvest handling, storage, shipping and retail display throughout the chain of custody.

High Ecological Value (HEV) Areas. Those areas that possess one or more of the following attributes:

- a) areas containing globally, regionally or nationally significant concentrations of biodiversity (e.g., rainforest);
- b) areas that are in or contain rare, threatened or endangered ecosystems;
- c) areas that provide basic services of nature (e.g., watershed protection or erosion control) in critical situations;
- d) areas fundamental to meeting the basic needs of local communities (e.g., subsistence or health);
- e) areas critical to local communities' traditional cultural identity (areas of significance identified in cooperation with such local communities); and
- f) areas that contain threatened or endangered species [Add. Ref. 10].

Industrial Chemical Residues. Chemical residues that are present in the environment as a result of industrial activities other than direct agricultural activities associated with a specific food crop.

LD₅₀. (Lethal Dose 50%). The amount of a chemical that is lethal to one-half (50%) of the experimental animals exposed to it. An LD₅₀ is usually expressed as the weight of the chemical per unit of body weight (mg/kg). The chemical exposure may be through ingestion (oral LD₅₀), applied to the skin (dermal LD₅₀), or administered in the form of vapors (inhalation LC₅₀, where LC₅₀ stands for Lethal Concentration 50%).

Life-Cycle Impacts. The impacts associated with an agricultural product or agricultural production operation from cradle to grave, that is, from the extraction and processing of raw materials production, distribution, use and end-of-life management.

LOD. The "limit of detection" below which a laboratory cannot confirm the presence of a specific residue in a given commodity.

Lot. Any number of containers which contain an agricultural product of the same kind from a specific Producer, a specific field(s), and a specific harvest date(s), located in the same conveyance, warehouse, or packing house and which are available for inspection at the same time. Commonly the amount of product harvested during one production shift.

Lot Number. A unique number that, at a minimum, identifies the Producer, the field(s), and the harvest date(s), and may in addition reflect the number of units packed.

Material Safety Data Sheet (MSDS). A document providing detailed information about the properties and uses of a chemical product or formulation, the nature of the product's hazards, appropriate safe handling procedures and emergency instructions. May also be referred to as Chemical Safety Data Sheet.

Metals. Cadmium, mercury, selenium, arsenic and other metals that either occur naturally in the environment or are introduced into the environment through agricultural or industrial activities. (For metals that are considered micronutrients at low levels, such as selenium, a tolerance level is recognized under the Standard.)

Migrant Worker. A citizen of one country who has migrated to another country for employment purposes and is employed in an Agricultural Production Operation or Handling Operation.

Mitigation. To minimize the ecological damage caused by an alteration in the landscape resulting from an agricultural activity through subsequent habitat restoration or through equitable compensation by means of land set-asides or other mechanisms.

Monitoring. To test or sample, especially on a regular or ongoing basis, to evaluate compliance with a given standard or regulation.

Native. Refers to flora or fauna that are indigenous to a given geographic area or bio-geographic province.

Net Fossil Fuel Gain.⁴ The difference between the amount of fossil fuels used (both direct and indirect) in the production of a biofuel and the amount of energy generated from that biofuel, measured in oil equivalents per hectare, calculated on a life-cycle basis [Add. Ref. 1].

Organic. An integrated system of farming based on ecological principles that aims to replenish and maintain long-term soil fertility by optimizing conditions for biological activity within the soil, rather than through the application of agrochemicals. Products sold into the United States as organic must meet the requirements of the National Organic Program (7 CFR Part 205).

Pesticide. Any substance or mixture of substances intended for preventing, destroying or controlling any pest, including vectors of human or animal disease, unwanted species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, fiber products or animal feedstuffs, insecticides, herbicides, fungicides, fumigants, miticides, rodenticides, nematocides, repellents, algicides, molluscicides, defoliant, desiccants, inoculants, bactericides, virucides, plant growth regulators, preservatives, and insect growth regulators, agents used to thin fruit or prevent premature fruit fall, and substances applied to crops either before or after harvest to protect the commodity from deterioration during storage and transport.

Plant Life-Cycle. The period of time starting from the time that a seed is planted to the time that a plant is harvested.

Planting Stock. Any plant or plant tissue other than annual seedlings but including rhizomes, shoots, leaf or stem cuttings, roots, or tubers, used in plant production or propagation.

Practices. Tangible methods and techniques used to complete a task associated with the production or handling of an agricultural product.

Procedures. The protocols identified by a Producer or Handler for selecting appropriate practices and materials to be used in implementing the Agricultural Production Plan or Handling Plan.

Processing. Cooking, baking, curing, heating, drying, mixing, grinding, churning, separating, extracting, cutting, fermenting, distilling, preserving, dehydrating, freezing, chilling, or otherwise manufacturing, and includes the packaging, canning, jarring, or otherwise enclosing food in a container.

⁴ This term is applicable for biofuels only.

Processor. The legal entity responsible for processing the crop into an agricultural product.

Producer. The legal entity responsible for the cultivating and growing agricultural-based consumer crops. A producer may also be involved in product storage, conditioning, packing and shipping operations.

Production Lot Number/Identifier. Identification of a product based on the production sequence of the product showing the date, time, and place of production used for quality control purposes.

Quality Management Report. Annual report that summarizes internal audit findings related to the implementation of an Agricultural Production Plan or Handling Plan.

Quality Manual. A compilation of specific product and process quality assurance procedures and practices applied to an Agricultural Production Operation or Handling Operation.

Records. Any information in written, visual, or electronic form that documents the activities undertaken by a producer or handler to demonstrate conformance with this Standard.

Sewage Sludge. A solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes but is not limited to domestic septage, and scum or solids removed in primary, secondary, or advanced wastewater treatment.

Soil Health. The capacity of soil to function, including: sustaining biological productivity; regulating water flow; storing and cycling nutrients; filtering, buffering, and transforming organic and inorganic materials; and functioning as a habitat and genetic reserve for numerous organisms.

Stakeholders. People who are, or who might be, affected by any action taken by an agricultural production operation. Examples are: customers, owners, workers, associates, partners, contractors, suppliers, relatives or people located nearby.

Standard. When capitalized, refers to this Standard (Sustainable Agriculture Standard).

Sustainable Agricultural Practices. Agricultural production and product handling activities that result in the production and delivery of products in a manner that is economically viable, ecologically sound and socially responsible.

Threatened or Endangered Species. Flora or fauna species that have been listed as threatened or endangered with the legal jurisdiction within which an agricultural production operation is doing business, as well as international listings, such as the Red List of the International Union for the Conservation of Nature [Add. Ref. 10].

Traceability. The ability to track an agricultural product back to the farm and field of derivation and forward through the chain of custody.

Type I Environmental Labeling. Voluntary, third-party certified labels or claims that indicate overall environmental preferability of a product within a particular product category, based on life cycle considerations, as described in ISO-14024:1999.

Worker. Any full-time, part-time, seasonal or temporary employee or contract employee hired to conduct work on behalf of the agricultural producer.

Xerophytic Plant. A plant that is adapted to life with a limited supply of water.

6.0 Prerequisite Requirements

This section of the Standard describes general conformance requirements for all agricultural producers and handlers. Producers and handlers are required to develop and implement management plans to support their sustainability objectives, and to comply with all relevant laws and regulations.

6.1. Prerequisite Requirements for Producers

6.1.1. Compliance with Country Regulations

The Producer shall demonstrate compliance with the applicable laws and regulations of the country(s) in which it operates, including but not limited to laws and regulations related to environmental, labor and business practices.

6.1.2. Agricultural Production Plan

The Producer shall establish and maintain a written Agricultural Production Plan, to be updated and reviewed annually, which describes its agricultural production operations as a means of ensuring that the product conforms to the requirements of this Standard. The Plan shall provide, at a minimum, descriptions of:

6.1.2.1. Crop Information

Crop types, varieties, seedstocks and rootstocks in production, including any information regarding disease/pest sensitivity and resistance/tolerance, as well as identification of all agricultural products purchased off-farm and marketed.

6.1.2.2. Farm Information

Fields, farm parcels, or greenhouses currently in production or intended for use, including projected annual yields, acreage, and site maps that place these operations in the context of landscape features, watersheds, natural habitats, and wildlife, and describe adjacent land uses.

6.1.2.3. Prior Land Use

Most recent known prior use of the land currently now being used or planned for use in the Agricultural Production Operation.

6.1.2.4. Production Steps

Each step in the production process (by crop, where the process differs between crops), including both pre-harvest and post-harvest operations, and including process flow diagrams.

6.1.2.5. Pest/Disease Management

A listing and description of conventional, organic and integrated pest/disease management practices and materials to be used, including but not limited to mechanical controls, cultural controls, biological controls, registered synthetic and botanically-derived pesticides, pesticide

rotation strategy, monitoring practices, action thresholds, and a written justification for all permitted synthetic pesticides used in lieu of non-chemical/botanical alternatives; and description of any known or potential pesticides, heavy metals, preservatives, or other industrial contaminants (e.g., PCBs) that may build up in or leach into soils, or discharge into surrounding water bodies or recapture/recycle systems as a result of pesticide use, fertilizer use, post-harvest treatments or other sources.

6.1.2.6. Agro-Ecosystem Health

A listing and description of inputs (including type, application rates and amounts), a description of functional biodiversity, and a description of soil conservation and erosion control practices and procedures.

6.1.2.7. Ecosystem Management

A description of the effects that the Agricultural Production Operation has had on flora and fauna species and habitats, and any mitigation efforts undertaken to date; a description of existing and planned vegetated buffer zones for watercourses and between areas under cultivation and non-cultivated areas; a list and accompanying maps of any areas of High Ecological Value (HEV), previously identified threatened or endangered habitats or species that are present within the property boundaries and, if known, adjacent to this property, including all facilities and fields, whether under cultivation or not; a description of contaminant monitoring protocols; and a description of the current or planned practices and procedures for conserving these resources, including a timetable for implementation and performance milestones.

6.1.2.8. Carbon Sequestration and Storage⁵

An approach for increasing the level of terrestrial carbon sequestration and storage resulting from agricultural production processes including, for example, maintenance of agro-ecosystem health, planting of buffer zones, and planted wind-breaks.

6.1.2.9. Energy Use

Annual documentation of electricity and fuel use in production, packaging and transportation, including types of energy sources used, monitoring procedures related to implementation of this Standard's requirements, and plans for regular review and update of the plan.

⁵ The agricultural sector can play a major role in helping to solve global climate change based on the storage potential of terrestrial carbon sequestration through sustainable agricultural practices. As noted by the Midwest Regional Carbon Sequestration Partnership, "Soil is a repository for decaying plant matter and the largest terrestrial storehouse of carbon. Soil management is of central importance. Soils currently are estimated to contain about 82 percent of all terrestrial carbon. Reducing 'tillage' to minimally disturb soil before planting crops; returning crop residues to the soil, planting temporarily-retired land with grass to stabilize it; and integrating nutrient and pest management into diversified cropping systems, are approaches for CO₂ sequestration in croplands." The strategies employed by Producers to improve carbon storage are measurable under this Standard, and therefore appropriate for inclusion in carbon credit schemes.

6.1.2.10. Quality Management

Quality Management practices and procedures employed to verify that the Plan is effectively implemented, including: 1) identification of individuals responsible for implementation of the Plan and the management structures established to support these individuals in the execution of their responsibilities; 2) employee training requirements and procedures for validating the effectiveness of such training; 3) production of a Quality Manual which describes specific product and process quality assurance procedures; 4) an auditable document management system to control the production and revision of procedural documents and the production and storage of records, test results and inspection reports (e.g., pertaining to production levels, shipments, invoices, customer complaints, and corrective actions); and 5) a Quality Management Report produced at least annually which summarizes internal audit findings related to the implementation of the Plan [ISO-14001, Add. Ref. 7].

6.1.2.11. Traceability Practices

Auditable traceability practices that will assure that products conforming to this Standard can be tracked through the chain of custody.

6.1.2.12. Record-Keeping

Record-keeping practices that ensure that records are retained for a minimum of five years and are auditable.

6.1.2.13. Additional Requirements

If not already addressed, current and planned practices and procedures, including a timetable for implementation and performance milestones, related to: water resource conservation; packaging resource use and minimization; integrated waste management; labor practices, community relations and economic viability; product quality, safety and purity.

6.1.3. Producer Traceability / Chain of custody

6.1.3.1. Registry of Conformant Products

The Producer shall maintain auditable records of the amount and types of conformant products grown during a production season, the amount in storage inventory, and sales of conformant products.

6.1.3.2. Product Identification

The Producer shall label all shipments, at a minimum, with the product harvest date and field identification, through the use of bar codes, radio frequency identification (RFID) or other readily identifiable methods, using industry standardized product identification methods when they exist.

6.1.3.3. Shipment Tracking Records

- a. The Producer shall include the agricultural product purchase order number and lot number on shipping invoices to provide a mechanism for Handlers to trace back the product to the farm and field.
- b. The Producer shall maintain auditable shipping records (e.g., purchase order numbers, shipping invoices, bills of lading, order documents, airway bills) indicating the types and volumes of agricultural products shipped, including a breakout where applicable of conformant and non-conformant products.

6.1.3.4. Physical Separation in Storage and Shipping

The Producer shall maintain physical separation between conformant and non-conformant agricultural products in storage, during transfer to shipping, and in shipping.

6.1.3.5. Filling Orders with Non-Conformant Products

In no case shall the Producer fill orders for conformant agricultural products with non-conformant products.

6.2. Prerequisite Requirements for Handlers

In order to be conformant to this Standard, handlers of agricultural products shall conform to the prerequisite requirements in this section. An exception is made for retail establishments that are not engaged in processing or repackaging of certified agricultural products; such establishments are only required to comply with the requirements of Section 6.2.3 to be considered conformant to the Standard, unless otherwise noted in sector specific annexes.

6.2.1. Compliance with Country Regulations

The Handler shall demonstrate compliance with all applicable laws and regulations of the country(s) in which it operates, including but not limited to laws and regulations related to environmental, labor and business practices.

6.2.2. Handling Plan

The Handler of conformant agricultural products shall establish and maintain a written Agricultural Product Handling Plan, to be updated and reviewed annually, which describes its handling policies and procedures as a means of ensuring that products conforming to the requirements of this Standard are properly handled while in its custody. The Plan shall provide a description of:

6.2.2.1. Process Steps

Each step in the handling process, including any use of post-harvest phytosanitary or pest controls, storage, packaging, shipment, and temperature/humidity management, and including process flow diagrams for handling facility operations.

6.2.2.2. Pest/Disease Management

A listing and description of conventional, organic and integrated pest/disease management or product preservation methods and materials to be used, including but not limited to mechanical controls, cultural controls, biological controls, registered synthetic and botanically-derived pesticides, monitoring practices, action thresholds, and a written justification for all permitted synthetic pesticides used in lieu of non-chemical/botanical alternatives.

6.2.2.3. Quality Management

Quality Management practices and procedures employed to verify that the Plan is effectively implemented, including: 1) identification of individuals responsible for implementation of the Plan and the management structures established to support these individuals in the execution of their responsibilities; 2) employee training requirements and procedures for validating the effectiveness of such training; 3) production of a Quality Manual which describes specific product and process quality assurance procedures; 4) an auditable document management system to control the production and revision of procedural documents and the production and storage of records, test results and inspection reports (e.g., pertaining to production levels, shipments, invoices, customer complaints, and corrective actions); and 5) a Quality Management Report produced at least annually which summarizes internal audit findings related to the implementation of the Plan [ISO-9001, Add. Ref. 7].

6.2.2.4. Traceability

Auditable traceability practices that will assure that products conforming to this Standard can be tracked through the chain of custody.

6.2.2.5. Record-Keeping

Record-keeping practices that ensure that records are retained for a minimum of five years and are auditable.

6.2.2.6. Additional Requirements

Other practices and procedures that are implemented in accordance with this Standard.

6.2.3. Handler Traceability / Chain of custody

6.2.3.1. Registry of Conformant Products

The Handler shall maintain auditable records of the amount and types of conformant products in inventory.

6.2.3.2. Order Taking and Filling

The Handler shall maintain an order taking and filling system that can distinguish conformant agricultural products from non-conformant products of the same type.

6.2.3.3. Lot Numbers

The Handler shall put agricultural product purchase numbers and lot numbers on shipping invoices to provide a mechanism for subsequent handlers in the chain of custody to trace the agricultural product back to the farm and field.

6.2.3.4. Mass Balance of Conformant Products

The Handler shall maintain sales records for conformant products, and be able to demonstrate that purchases of conformant agricultural products match the sales of such products, minus any portion lost due to shrinkage.

6.2.3.5. Product Identification Records

For each incoming agricultural production lot, the Handler shall record the product harvest date(s) and field identification, and in addition, maintain a record of the date of arrival at its facilities.

6.2.3.6. Shipment Tracking Records

The Handler shall maintain auditable shipping records (e.g., purchase order numbers, shipping invoices, bills of lading, order document, airway bills) indicating the types and volumes of agricultural products shipped, including a breakout of conformant and non-conformant products.

6.2.3.7. Physical Separation in Storage and Shipping

The Handler shall maintain physical separation between conformant and non-conformant agricultural products while in storage, during transfer to shipping, and in shipping to avoid commingling of products.

6.2.3.8. Product List

The Handler shall maintain an up-to-date list of conformant agricultural products in their inventory over a calendar year.

7.0 Element 1: Sustainable Crop Production

This section of the Standard addresses procedures and practices employed by the Producer to manage pests and diseases, soil resources, and agricultural crops:

- **Pest/Disease Management**

The Producer is required to apply least toxic pest and disease management and control systems, integrating organic practices as these are proven to be practical, with organic conversion timeframes to be determined on a per crop, per region basis. Where organic practices are not fully implementable on a practical basis, the Standard establishes minimum requirements related to the use of registered pesticides and fertilizers, integrating practices that minimize the overall use of synthetic pesticides and fertilizers and that direct the Producer toward use of the lowest risk pesticides.

- **Agro-Ecosystem Health: Soil Fertility, Soil Conservation and Erosion Control, and Soil Quality and Functional Biodiversity**

The Producer is required to approach agro-ecosystem health in a manner that maintains or improves the functional biodiversity, as well as “the physical, chemical, and biological condition of the soil and minimizes soil erosion . . . in a manner that does not contribute to contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.” [Norm. Ref. 3].⁶ Organic soil enhancement and fertility principles and practices are recognized as best practice, for crops and regions where such practices are proven to be practical, including the phase-out of synthetic pesticides and fertilizers; soil fertility, conservation and erosion control practices; biodiversity protection; and plant nutrition.

- **Crop Management: Varieties, Cultivars, Seedstocks and Planting Patterns**

Producers are required to optimize the use of varieties, cultivars and seedstocks through careful crop management, without compromising other aspects of conformance to the elements of sustainability.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

⁶ US Department of Agriculture, Agricultural Marketing Service, 7 CFR Part 205, Docket Number: TMD-00-02-FR, RIN: 0581-AA40, National Organic Program, p 45.

7.1. Pest/Disease Management

7.1.1. Tier 1 Requirements for Pest/Disease Management

7.1.1.1. Pest/Disease Management Description

The Producer shall provide relevant and complete information regarding pest/disease management in the Agricultural Production Plan, as required under Section 6.1.2. In addition, the Producer shall include its plan for adhering to the pesticide phase-out schedule described in 7.1.1.4.

7.1.1.2. Pest/Disease Management Requirements (Certified Organic Producers)

- a. If a Producer is certified as “organic,” the Producer shall provide the name of the program under which the Producer is certified, the name of the certifier, the date of certification, the certification registration number and the certification contact information. A copy of the current certification report, including a listing of any inputs, shall be provided upon request. A Producer who is not certified as organic shall instead provide the information requested in 7.1.1.3.
- b. For each USDA NOP permitted pesticide used on a given crop, the Producer shall maintain records regarding the method of application, application rates and dates, re-entry times, and product information contained on the label or material safety data sheet (MSDS).
- c. If there is an acute or chronic risk to workers or handlers from any NOP-permitted pesticide in use, then in order to use the pesticide:
 - i. the Producer shall have sufficient procedures and equipment in place to mitigate risk of exposure, and demonstrate that the potential for misuse is minimal;
 - ii. the pesticide shall be demonstrated to be critical for crop risk management, where there are no viable alternatives available;
 - iii. the pesticide shall be part of a pest management strategy that minimizes the potential for pest resistance by rotating agrochemicals and does not interfere with the increased utilization of biological control measures, either currently in use or planned for use; and
 - iv. the pesticide shall be phased out of use in accordance with Section 7.1.1.4 of this Standard.
- d. If there is an ecotoxic risk to the environment from any NOP-permitted pesticide in use, where the pesticide is classified by the EPA as posing a “moderate” or greater risk to small aquatic invertebrates, birds, bees or the natural enemies of pests [Add. Ref. 12], then in order to use the pesticide:
 - i. the Producer shall demonstrate no discharge of pesticide residues into the environment (e.g., from irrigation run-off, storm run-off, or percolation), in accordance with Section 8.1.6.2;
 - ii. the pesticide shall be phased out of use in accordance with Section 7.1.1.4 of this Standard.

7.1.1.3. Pest/Disease Management Requirements (Producers Not Currently Certified as Organic)

- a. For each synthetic or botanical pesticide used on a given crop, the Producer shall maintain auditable records regarding the method of application, application rates and dates, re-entry times, and product information contained on the label or material safety data sheet (MSDS). These records shall be accessible to all workers concerned and their representatives.
- b. The Producer shall demonstrate that any pesticides used by the Agricultural Production Operation are legally allowed for use within the government jurisdiction and territory in which the crop is grown, and are in compliance with any use or residue tolerance requirements for the countries and territories where the Agricultural products are being sold when products are exported. No pesticides shall be used that are not registered for that use, or otherwise allowed for use (e.g., designated “reduced risk” pesticides) in the United States by the US EPA [Norm. Ref. 1].⁷
- c. The Producer shall conform to the following pesticide use restrictions to reduce health risks to workers, handlers, and consumers, as well as risks to the environment:
 - i. Pesticides that pose a risk to workers in the Agricultural Production Operation and that have been identified by the World Health Organization (WHO) as extremely hazardous or highly hazardous (Class 1a and 1b) shall not be used during the plant life-cycle or post-harvest (see Appendix 1), consistent with the *International Code of Conduct for the Distribution and Use of Pesticides* (2002) [Norm. Ref. 9, Add. Ref. 4]. An exception is made when soil treatment cannot be effectively accomplished through non-chemical methods. In such cases, registered soil sterilizers or fumigants may be used on a case-by-case basis with prior written justification, applied in accordance with label instructions by licensed applicators following written safety protocols.
 - ii. For all remaining pesticides that are not classified as WHO Class 1a or 1b, the Producer shall apply the following assessment matrix to determine whether pesticide usage is allowed, consistent with iii. below.

Phase-Out Considerations				Mitigation Considerations	
Acute Risk to Workers & Handlers (EPA Class I-II)	Chronic Risk to Workers & Handlers (Q*)	Known Ecotoxicity (“moderate” or greater risk)	Pest/Disease Management Alternatives	Adequate Worker Protection Measures	Adequate Environmental Protection Measures

⁷ Pesticide Registration (PR) Notice 2000-6, Notice to Manufacturers, formulators, Producers and Registrants of Pesticide Products, May 7 2000.

- iii. If there is an acute or chronic risk to workers or handlers (i.e., EPA Class I or II [Norm. Ref. 6], or classified as a known or probable carcinogen), then in order to use a pesticide:
 - the pesticide shall be demonstrated to be critical for crop risk management, where there are no viable alternatives available;
 - the Producer shall have sufficient procedures and equipment in place to mitigate risk of exposure, and demonstrate that the potential for misuse is minimal;⁸
 - the pesticide shall be part of a pest management strategy that minimizes the potential for pest resistance by rotating agrochemicals and does not interfere with the utilization of biological control measures, either currently in use or planned for use; and
 - the pesticide shall be phased out of use in accordance with Section 7.1.1.4 of this Standard.
 - iv. If there is an ecotoxic risk to the environment, where the pesticide is classified by the EPA as posing a “moderate” or greater risk to small aquatic invertebrates, birds, bees or the natural enemies of pests [Add. Ref. 12], then in order to use a pesticide:
 - the pesticide shall be demonstrated to be critical for crop risk management, where there are no viable alternatives available;
 - the Producer shall have sufficient environmental protection procedures in place to demonstrate that there are no discharges of pesticide residues into the environment (e.g., from irrigation run-off, storm run-off, or percolation), in accordance with Section 8.1.6.2;
 - the pesticide shall be phased out of use in accordance with Section 7.1.1.4 of this Standard.
 - v. For those compounds being applied at any time during the phase-out period (Section 7.1.1.4), the Producer shall use a pesticide impact ranking scale to determine the types and combination of pesticides to be used based upon human toxicity and ecotoxicity considerations, application rates (frequency and amount), and method of application [e.g., Add. Ref. 11]. Ranking scales shall be provided in sector-specific annexes. Auditable records shall be maintained.
- d. The Producer shall be required to submit as part of its Agricultural Production Plan:
- i. A written and implemented procedure whereby:
 - biological, mechanical and cultural pest/disease control methods are favored over chemical treatment approaches as the principal methods of control for major pests and diseases for each crop;
 - biological and/or economic action thresholds are established;

⁸ For instance, there may be a potential for misuse when an EPA Class I pesticide with acute risk from inhalation is used in a confined space, and there is a reasonable likelihood that workers could be required to enter the space before the allowed reentry period to meet production objectives.

- direct and indirect monitoring of pests and diseases is carried out by qualified personnel on a routine basis (e.g., use of insect traps, leaf damage assessment, insect counts, product visual examinations for evidence of infestation, harvest damage assessment, infrared assessments); and
- diseased or pest-ridden crop field wastes are removed from production fields.
- ii. A written and implemented procedure shall be provided whereby the Agricultural Producer shall ensure that chemical controls are applied only when:
 - biological or economic action thresholds have been exceeded; and
 - field records indicate that biological, mechanical or cultural controls are ineffective.
- iii. The Producer shall include in the Agricultural Production Plan a strategy for phasing out sterilization/fumigation agrochemicals in favor of non-chemical biological, mechanical or cultural methods, or EPA-designated reduced risk or NOP permitted chemicals. Methyl bromide shall be phased out in accordance with the Montreal Protocol and subsequent international treaties [Norm. Ref. 7, Add. Ref. 14].

7.1.1.4. Pesticide Phase-Out

The Producer shall document annually in writing, consistent with Section 6.1.2, the phase-out of the use of pesticides in accordance with the following schedule:

- a. Synthetic or botanical pesticides representing acute risks to workers or handlers shall be phased out over a period to be determined by product sector and based on the availability of alternative controls;
- b. Synthetic or botanical pesticides representing chronic risks to workers or handlers classified by the US EPA either as neurotoxins or as known or probable carcinogens (i.e., Class A, B1, or B2) are phased out over a period to be determined by product sector and based on the availability of alternative controls [Norm. Ref. 1, Add. Ref. 12]; and
- c. Synthetic or botanical pesticides representing ecotoxic risks are phased out over a period to be determined by product on sector and based on the availability of alternative controls [Norm. Ref. 1, Add. Ref. 12].

7.1.2. Tier 2 Requirements for Pest/Disease Management

7.1.2.1. Residue Testing

The Producer shall institute statistically valid residue testing as part of its overall quality control monitoring efforts, consistent with the requirements of Section 14.2.2 of this Standard, or provide sufficient test data to demonstrate that monitoring is unnecessary.

7.1.2.2. Biological, Mechanical and Cultural Controls

The Producer shall use only biological, mechanical or cultural controls as the exclusive methods for controlling pests and diseases.

7.1.2.3. Beneficial Organisms

The Producer shall cultivate or obtain beneficial organisms and their appropriate support structures (e.g., insects, birds of prey) for on-site pest or disease control.

7.2. Agro-Ecosystem Health: Soil Health, Soil Conservation, Erosion Control, and Functional Biodiversity⁹

7.2.1. Tier 1 Requirements for Agro-Ecosystem Health

7.2.1.1. Soil Fertilization and Additives (Organic Producers)

- a. As per 7.1.1.2, a Producer organically certified to meet the requirements of the US NOP shall provide the name of the program under which it is certified, the name of the certifier, the date of certification, the certification registration number and the certification contact information. A Producer who is not currently certified as organic shall provide the information requested in 7.2.1.2.
- b. The Producer shall describe the soil health management methods and materials used, including but not limited to: fertilizers of biological origin, mycorrhizae, compost and compost teas, and any other soil additives. For each fertilizer or additive used on a given crop, the Producer shall provide the date(s) of use, the rate(s) of use, and any label information.

7.2.1.2. Soil Fertilization and Additives (Producers Not Currently Certified as Organic)

If a Producer is not certified as “organic,” then for each crop, then:

- a. Producer shall describe the soil health management methods and materials used, including but not limited to: synthetic fertilizers, fertilizers of biological origin, mycorrhizae, compost and compost teas, and any other soil additives. For each fertilizer or additive used on a given crop, the Producer shall provide the date(s) of use, the rate(s) of use, and any label information. Written justification shall be provided for all synthetic fertilizers used. Conformance to this Standard shall be contingent upon demonstration that synthetic fertilizers are not used as the sole strategy for maintaining soil fertility.
- b. The Producer shall be required to submit as part of the Agricultural Production Plan an approach by which its operation shall convert to organic soil health practices. The approach shall include the methods and procedures to be used, a timetable for conversion, and interim milestones. It shall include a planned phase-out of any fertilizers other than those permitted under the U.S. National Organic Program [Norm. Ref. 3].

⁹Practices aimed at maintaining healthy, robust agro-ecosystems are considered essential for increasing productivity and decreasing the need for pesticides. While the use of synthetic fertilizers is not prohibited under the standard, such use must be justified and must not constitute the sole strategy for soil enrichment.

7.2.1.3. Soil Conservation and Erosion Control Efforts

- a. The Producer shall provide relevant and complete information regarding current soil conservation and erosion control practices and procedures in the Agricultural Production Plan, as required under Section 6.1.2, and shall identify any current soil erosion problems that are directly attributable to the Agricultural Production Operations. Maps of areas subject to erosion, such as steep slopes, gullies, roads, riparian areas and cut banks, shall be included. Areas with extreme landslide risk shall not be cultivated.
- b. The Producer shall provide a timetable for implementation of planned soil conservation and erosion control practices, with performance milestones. Planned efforts shall:
 - i. take into consideration soil properties, erosion potential and cultural practices for all cultivated and non-cultivated areas;
 - ii. include procedures for minimizing surface erosion along roads or other heavily used surfaces through proper drainage ditches and other control activities; and
 - iii. where applicable, include procedures for minimizing soil compaction through use of such techniques as low impact tillage and harvesting methods and aerial transport of plant products and wastes.

7.2.1.4. Carbon Stabilization, Sequestration and Storage

In accordance with Section 6.1.2, the Producer shall include in the Agricultural Production Plan a description of its approach for increasing the level of terrestrial carbon stabilization, sequestration and storage resulting from agricultural production processes including, for example, maintenance of agro-ecosystem health, planting of buffer zones, and planted wind-breaks, or through off-site carbon stabilization strategies.

7.2.1.5. Soil Quality and Functional Biodiversity¹⁰ in Agricultural Fields

- a. In accordance with Section 6.1.2, the Producer shall include in the Agricultural Production Plan a description of the beneficial flora and fauna and their critical functions in maintaining a healthy agro-ecosystem, including but not limited to: beneficial fungi, mycorrhizae, indicator species (e.g., parasitic wasps), primary and alternative hosts, pollinators, decomposers, and nutrient sources (e.g., soil organic matter, trap crops).
- b. The Producer shall develop and include in the Agricultural Production Plan an approach for building the health of the agro-ecosystem, consistent with the requirements of this section, and monitoring changes in the functional biodiversity over time. Indicator species shall be identified, and auditable monitoring data shall be maintained and compiled for annual review.

¹⁰ Nicholls, C., Altieri, M, *et. Al.*, A Rapid, Farmer-Friendly Agroecological Method to Estimate Soil Quality and crop Health in Vineyard Systems, *Biodynamics*, No. 40, Autumn 2004, pp 33-39.

7.2.2. Tier 2 Requirements for Agro-Ecosystem Health

7.2.2.1. Determining Plant Nutrition Requirements

The Producer shall develop and implement a method of assessing plant nutrition requirements (e.g., through soil analysis of organic matter, macronutrients and micronutrients, through visual or chemical foliage analysis, analysis of soil conductivity).

7.2.2.2. Composting

For composting operations, the Producer shall implement composting procedures designed to minimize contaminants and pests, and diseases. Compost shall be produced through a process that achieves an appropriate C:N ratio, ideally between 25:1 and 40:1. Temperature should be controlled during the decomposition phase, ideally with composting materials maintained at a temperature between 131°F and 170°F. In-vessel or static aerated pile systems should be composted for at least three days, while windrow systems should be composted for at least fifteen days.

7.2.2.3. Soil Carbon Storage Targets

For any region in which soil carbon storage potentials have been established, the Producer shall meet at least 80% of the target potential, per crop and soil type as defined in any sector-specific annexes.

7.3. Crop Management: Varieties, Cultivars, Seedstocks and Planting Patterns

7.3.1. Tier 1 Requirements for Crop Management

7.3.1.1. Selection of Varieties, Cultivars, and Seedstocks

- a. When selecting planting varieties, cultivars, seedstocks, and when determining planting densities and arrangements, the Producer shall take into account: climate, soil, intended farming style, amount of hand labor to be used, inherent nutrient density of the variety, and type of equipment to be used.
- b. When selecting plant varieties for ornamental purposes in drought prone climates, preference shall be given to the production of native and/or xerophytic stocks.
- c. The Producer shall give preference to seedstock, rootstock, plugs or liners from plants that are certified organic in accordance with the U.S. NOP, or that are conformant with the Standard [Norm. Ref. 3].

7.3.1.2. Intellectual Property Rights

The Producer shall respect intellectual property rights for all planting materials used.

7.3.1.3. Plant Health Certificates

The Producer shall maintain plant health certificates and related records, where such records are required.

7.3.1.4. No GMOs

The Producer shall not use genetically modified organism (GMO) planting materials.

7.3.1.5. Site Preparation

The Producer shall comply with local and national regulations, and with the ecosystem protection (Section 8) and waste management (Section 10) provisions of this Standard, in the clearing and preparation of land for planting.

7.3.2. Tier 2 Requirements for Crop Management

7.3.2.1. Vegetation for Crop Protection

Where vegetation is planted as a means of crop protection (e.g., windbreaks, trap species, weed-free strips), the Producer shall use perennial vegetation, preferably native.

7.3.2.2. Soil Building and Carbon Storage on Fallow Lands

The Producer shall plant fallow lands with nitrogen-fixing or other species proven to restore soil fertility and structure, and sequester and enhance soil carbon storage.

7.3.2.3. Monitoring for GMO Contamination

The Producer shall establish practices and procedures for monitoring crops with respect to possible contamination by any genetically engineered organisms known or suspected to be used on adjacent properties.

7.3.2.4. Appropriate Equipment

The Producer shall ensure that field machinery and equipment are appropriate to the site and scale of the agricultural operation (e.g., use of low ground pressure equipment).

7.3.2.5. Testing Plant Materials

The Producer shall provide documentation demonstrating that planting materials have been disease/virus tested and certified.

8.0 Element 2: Ecosystem Management and Protection

This section of the Standard addresses procedures and practices employed by the Producer to protect and enhance the integrity of surrounding natural ecosystems:

- **Habitat Management/Protection**

The Producer is required to take measures to minimize effects on natural ecosystems of the region in which it operates, protecting regional habitats and species through such measures as the institution of adequate buffer zones and use of native plants. Additionally, a sustainable Agricultural Production Operation should not add any contaminant substances to the environment that could affect natural ecological processes, and should have appropriate monitoring systems in place.

- **Mitigation and Set-asides**

The Producer is required to undertake steps to ameliorate or remediate any ecological damage caused by its Agricultural Production Operation — for example, as a result of clearing land for cultivation or development of infrastructural or other operational support mechanisms— either through habitat restoration or other forms of remediation, or through off-site” compensatory actions as land set-asides.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

8.1. Tier 1 Requirements for Habitat Management/Protection

8.1.1. Identification of HEV Areas and Listed Habitats and Species

In accordance with Section 6.1.2 of this Standard, the Producer shall include in the Agricultural Production Plan a description of areas of High Ecological Value (HEV) within the property boundaries of the Agricultural Production Operation, and a list of any threatened or endangered habitats or species (e.g., as listed by CITES) that are present within the property boundaries, and, if known, immediately adjacent to this property, including all facilities and fields, whether under cultivation or not.¹¹

8.1.2. Ecosystem Conservation

The Producer shall not engage in the following activities:

- a. Clearing of Areas of High Ecological Value for purposes of planting or other activities of the Agricultural Production Operation.
- b. Alteration of natural water bodies and water channels.
- c. Activities that negatively impact threatened or endangered habitats or species.

¹¹ CITES Species Database, <http://www.cites.org/eng/resources/species.html>

8.1.3. Prior Use of Property

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a description (to the best of the Producer's ability) of the most recent prior uses of the land currently being used for the Agricultural Production Operation. If the land was not formerly used for agricultural or livestock production, or was not otherwise significantly altered from its original state, then the Producer shall identify the habitat types that were present (e.g., grassland, riparian, wetland, forestland). If the prior habitat is not known, then an ecologically comparable area within the same region can be referenced as a surrogate.

8.1.4. Effects of Agricultural Production Operation on Flora and Fauna

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a description of the effects that the Agricultural Production Operation has had on natural ecosystem flora and fauna (e.g., soil micro-organisms, beneficial insects, riparian zones and other habitats), as well as a description of any mitigation efforts undertaken in response to these impacts to date.

8.1.5. Existing Buffer Zones for Watercourses and Cultivated Areas

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a description of any existing buffer zones that have been established for watercourses as well as buffer zones between areas under cultivation and areas of natural ecosystems or other non-cultivated areas. The description shall address: a) the types of vegetation planted (native or non-native, perennial or annual); b) physical barriers constructed in areas of extreme erosion potential, in areas with excessive movement of materials and/or machinery and where intermittent streams are not fish-bearing; c) procedures in place to ensure that heavy equipment is excluded from all buffer zones, unless used on pre-existing roads. In addition, the Producer shall develop a timetable for establishing buffer zones in the Agriculture Production Plan, to be implemented in accordance with Section 8.2.4.

8.1.6. Contaminant Discharges

8.1.6.1. Description of Potential Contaminant Sources

As required under Section 6.1.2, the Producer shall provide in the Agricultural Production Plan a description of current and historic land use practices that have or could result in the discharge of contaminants into surrounding water bodies as a result of pesticide use, fertilizer or compost use, post-harvest treatments or other sources, or could build up in soils and run-off into surface water or percolate into groundwater.

8.1.6.2. Testing

- a. The Producer shall conduct a soil test if the land use history indicates potential contamination that would result either in: 1) food crop absorption leading to residues above levels allowed in Sections 14.2.1.1 and 14.2.1.2 of the Standard, or 2) in discharges to ground or surface water resulting in contaminants above an established legal threshold.

- b. If published environmental fate and transport data indicate that current agrochemicals in use have the potential to result in ecotoxic discharges into ground or surface water, then the Producer shall conduct testing to confirm containment from such uses.

8.1.6.3. Monitoring Procedures

In addition, the Producer shall develop a timetable for instituting monitoring procedures for potential contaminants in the Agriculture Production Plan.

8.1.7. Watercourse Alterations

The Producer shall ensure that new crossings, dams, or other human-made alterations to natural watercourses are designed in a manner that does not disrupt the habitat of aquatic organisms (e.g., allowing fish passage).

8.1.8. Land Clearing and Tree Cutting

The Producer shall have necessary permits prior to land clearing or tree cutting associated with the Agricultural Production Operation.

8.2. Tier 2 Requirements for Ecosystem Management/Protection

8.2.1. Protection of High Ecological Value Areas

If HEVs are present on or adjacent to the Agricultural Production Operation, then the Producer shall conduct an ecological evaluation of the property and immediately adjacent properties, to determine the types and locations of natural habitats (e.g., woodlands, grasslands, shrub, savannah, riparian, wetlands) and disturbed habitats, and potential risks to ecosystem processes and biodiversity. Sources of expertise shall be consulted as part of the ecological evaluation, such as local university and agency scientists, existing natural heritage databases, and conservation organizations. Where recognized areas of HEV remain within the property boundaries of the Agricultural Production Operation, the Producer shall implement measures to protect these areas, consistent with the Agricultural Production Plan. A written summary of the results of this evaluation shall be prepared annually.

8.2.2. Ecological Policy Training

The Producer shall train workers in the implementation of the Agricultural Production Plan's stated ecological procedures and practices, and keep records of such training.

8.2.3. Mitigation and Restoration Plan / Set-Asides

The Producer shall prepare a written mitigation and/or restoration plan, with timetables and performance milestones, for specific habitats or species that have been disturbed or degraded, including designated HEV areas as well as lands that have been cleared for cultivation or for other development purposes by the current owner. Where on-site mitigation and/or restoration are impractical, a plan to establish off-site mitigations such as land set-asides shall be developed, with timetables and performance milestones.

8.2.4. Buffer Zones

The Producer shall plant new buffer zones with native vegetation.

8.2.5. Terrestrial Carbon Storage and Carbon Credits

The Producer shall provide an estimate of stored biomass, based on existing terrestrial vegetation (e.g., planted buffer zones, set-asides, windbreaks).

8.2.6. Maintenance / Restoration of Native Species

The Producer shall take effective steps to maintain or, as needed, restore native species composition within undeveloped areas of the farm not in agricultural use (e.g., watercourse buffer zones, windbreaks, HEV buffer zones). The identified attributes of HEV Areas shall not be diminished through direct agricultural practices or indirect effects of the operation.

9.0 Element 3: Resource Conservation and Energy Efficiency

This section of the Standard addresses procedures and practices employed by the Producer to conserve water, energy and packaging-related resources:

Water Resource Management

Water conservation is an important component of sustainability. The Producer is required to conserve water through the use of effective water delivery systems, conservation and monitoring methods and technologies, and the institution of water quality management practices to protect the quality of these resources.

Energy Resource Management

The Producer is required to monitor energy consumption, pursue increased energy efficiency in the production, handling and transport of agricultural products, and calculate the energy and associated greenhouse gases per agricultural production unit.

Packaging Resources

The Producer is required to develop strategies for minimizing the resources used for product packaging, and thereby reducing packaging related impacts, without compromising the integrity of the delivered product, through practices such as:

- reduction of packaging components;
- use of packaging materials made with recycled content;
- reuse of packaging materials; and
- sourcing of packaging materials from sustainable sources.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

9.1. Water Resource Management

9.1.1. Tier 1 Requirements for Water Resource Management

9.1.1.1. Water Resource Use

In accordance with Section 6.1.2 of this Standard, the Producer shall describe in the Agricultural Production Plan all surface and groundwater currently in use by the Agricultural Production Operation for all agricultural production processes, and provide references to permits issued by relevant authorities for use of this water. The Producer shall also include a description of all known surface and groundwater sources found on, or immediately adjacent to, the property, including a map of their locations.

9.1.1.2. Water Conservation Practices

In accordance with Section 6.1.2 of this Standard, the Producer shall describe its current water conservation practices, procedures and infrastructure in the Agricultural Production Plan.

9.1.1.3. Water Monitoring Methods

In accordance with Section 6.1.2 of this Standard, the Producer shall describe in the Agricultural Production Plan the quantitative methods used to monitor water use for plants, and the methods used to ensure that water delivery occurs without excessive evaporation and percolation. The Producer shall designate (e.g., on maps) where monitoring equipment is installed. Examples of such methods are: weather measurement systems to estimate evapo-transpiration from plants; computerized drip irrigation systems; water flow meters; piezometers; and use of tensiometers at different depths to monitor water delivery only at root system depth.

9.1.1.4. Water Capture

For greenhouse production, the Producer shall dedicate an area to water capture that is at least equal to the area dedicated for greenhouse production.

9.1.1.5. Water Quality Management

The Producer shall identify all potential industrial and domestic wastewater sources and contaminant point sources. If there is evidence of deteriorated water quality associated with agricultural production processes, then the Producer shall institute a wastewater quality monitoring program to detect the potential contamination. This monitoring may include one or more of the following parameters: pH, nitrogen, suspended solids, salinity, grease and oil, chemical pesticides, and biological oxygen demand.

9.1.1.6. Regulatory Compliance

The Producer shall be in compliance with all local and nationally applicable laws pertaining to water contamination levels.

9.1.1.7. Wastewater Treatment

The Producer shall provide wastewater treatment for industrial and domestic wastewater streams. Discharge parameters shall comply with the applicable local or national water discharge legal limits, or meet the EPA parameters provided in Appendix 2, and shall be sufficient to prevent the release of contaminants originating from agricultural production processes.

9.1.2. Tier 2 Requirements for Water Resource Management

9.1.2.1. Efficiency in Water Capture

If the Producer is operating in an area where the annual volume of water consumed by the operation is higher than volume of annual precipitation over the production site, then the Producer shall develop as part of its updated Agricultural Production Plan a strategy to improve the efficiency of water capture, if efficiency gains are possible.

9.1.2.2. Recharging Local Aquifer

The Producer shall develop a plan to ensure that water not captured directly or indirectly for use in irrigation shall be allowed to infiltrate to re-charge local aquifers. This requirement is exempted when the volume of annual precipitation over the production site is higher than annual volume of water consumed by the operation.

9.1.2.3. Methods for Monitoring Water Needs and Use

- a. The Producer shall produce a detailed site water balance.
- b. The Producer shall put into practice water monitoring methods to accurately monitor the degree to which water delivery occurs without excessive evaporation and percolation, if such methods are not already in place.
- c. The Producer shall put into practice an on-site means of calculating evapo-transpiration or otherwise determining the crop irrigation needs, if such methods are not already in place.
- d. The Producer shall monitor water consumption for different production activities in each production area.

9.1.2.4. Employee Training

The Producer shall provide training to managers and workers in the implementation of the Agricultural Production Plan's water quality management and water resource conservation protocols and procedures.

9.1.2.5. Wastewater Treatment

The Producer shall ensure that wastewater from industrial and domestic sources are treated separately. Rinsate from the cleaning of agricultural machinery shall be contained to prevent mixing with domestic wastewater.

9.1.2.6. Irrigation

The Producer shall install irrigation systems that minimize water consumption through direct application to the root zone. Impact-type irrigation spraying and flood irrigation shall not be used as a general means for plant production, but may be used in plant establishment.

9.1.2.7. Water Use Efficiency

The Producer shall conduct measurements to demonstrate that there is no net increase in water consumption over time relative to unit of production.

9.2. Energy Resource Management

9.2.1. Tier 1 Requirements for Energy Resource Management

9.2.1.1. Consumption Activities

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a summary of electricity and fuel consumption activities associated with its agricultural production processes.

9.2.1.2. Energy Generation and Conservation

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

9.2.1.3. Shipment Destinations

The Producer shall provide an auditable summary of shipment destinations for agricultural products, including a description of the means of transport used and the transport distance.

9.2.1.4. Fuel and Electricity Used in Agricultural Production Processes, Storage and Administrative Support

The Producer 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, and farm equipment operation, packing operations.

9.2.1.5. Indirect Energy from Chemical Inputs

The Producer shall calculate the indirect energy used to produce any synthetic fertilizers used in production.

9.2.1.6. Calculate Energy Efficiency Index and Greenhouse Gases per Agricultural Production Unit

Based on the energy and fuel use associated with its agricultural production practices direct and indirect, the Producer shall calculate the Energy Efficiency Index for the agricultural product (EEI_P), as well as the associated Greenhouse Gas Index (GHGI_P). The Producer shall provide the EEI_P and associate GHGI_P to downstream recipients who are conformant handlers.¹²

9.2.2. Tier 2 Requirements for Energy Resource Management

9.2.2.1. Energy Efficiency Analysis

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

¹² The GHGI_P will credit biofuels for the degree of net sequestration in the life-cycle.

9.3. Packaging Resource Minimization

9.3.1. Tier 1 Requirements for Packaging Resource Minimization

9.3.1.1. Packaging and Shipping Materials

The Producer shall provide a description of all materials used for product packaging and shipping in the Agricultural Production Plan.

9.3.1.2. Auditable Records

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

9.3.2. Tier 2 Requirements for Packaging Resource Minimization

9.3.2.1. Reused, Recycled, Compostable and Sustainably Sourced Materials

The Producer shall provide information, when available, about the degree to which packaging components are reused, made from recycled sources, made to be compostable, or made from sustainably sourced materials, including any documentation of such claims. The Producer shall also describe current methods for reusing packaging materials.

9.3.2.2. Material Reduction

The Producer shall assess the potential for: i) reducing the volume of packaging per unit of product delivered; ii) increasing the use of certified recycled or compostable materials; iii) obtaining materials from certified sustainable sources; or iv) reusing packaging materials. Based on this assessment, the Producer shall develop a plan of action to minimize packaging and packaging-related waste, with auditable timelines and performance benchmarks.

10.0 Element 4: Integrated Waste Management

This section of the Standard addresses procedures and practices employed by the Producer to minimize emissions and wastes:

- **Management of Agrochemical and Other Hazardous Chemicals and Wastes**

The Producer is required to implement pollution prevention practices and procedures that: 1) prevent agrochemical and other hazardous chemical run-off or contamination from agricultural production sites into the surrounding environment; 2) minimize effects to human health and the environment from agrochemical use and other hazardous materials; and 3) ensure proper disposal or recycling of hazardous chemicals and their containers.

- **Crop Residue, Product Waste and Other Non-Chemical Waste Management**

The Producer is required to undertake measures to minimize crop residues, product waste and other non-chemical wastes through practices such as recycling, composting and institution of second harvest programs for edible crops that would otherwise not be harvested and marketed.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

10.1. Management of Agrochemical and Other Hazardous Chemicals and Wastes

10.1.1. Tier 1 Requirements for Management of Agrochemical and Other Hazardous Chemicals and Wastes

10.1.1.1. Waste Management Plan

In accordance with Section 6.1.2 of this Standard, the Producer shall describe in the Agricultural Production Plan the practices and procedures used for managing agrochemical and other hazardous chemicals and wastes.

10.1.1.2. Agrochemical Storage

The Producer shall comply with the following agrochemical storage requirements:

- a. The Producer shall construct agrochemical storage buildings in compliance with local and national building codes and guidelines. Where such guidelines do not exist, the Producer shall assure that buildings are constructed in compliance with the IPCS *Safety and Health in the Use of Agrochemicals* and FAO *Pesticide Storage and Stock Control Manual*, including at a minimum: i) sufficient ventilation; ii) impermeable flooring (concrete, cement, or thick polyethylene sheeting); iii) ramps at entrances to contain any leakage; and iv) secure doors and windows to prevent unauthorized entry [Add. Ref. 5, Add. Ref. 9].

- b. The Producer shall site agrochemical storage facilities in compliance with local and national building codes and guidelines. Where such guidelines do not exist, the Producer shall site buildings in compliance with the IPCS and FAO guidance documents [Add. Ref. 5, Add. Ref. 9]. Buildings shall not be sited in areas subject to flooding or environmentally sensitive areas. Exceptions may be made where the Producer can demonstrate that agrochemical storage facilities meet complete containment performance standards.
- c. The Producer shall ensure that agrochemical storage areas are clearly marked and signed appropriately, and are equipped with readily accessible emergency equipment that includes, at a minimum:
 - i. sawdust or sand for spills;
 - ii. empty containers and bags to repack damaged or leaking containers;
 - iii. spade and brush;
 - iv. fire extinguisher;
 - v. emergency protective gear;
 - vi. water supply;
 - vii. an eyewash kit; and
 - viii. posted emergency procedures.
- d. The Producer shall ensure that agrochemical storage facilities have adequate storage capacity and are easily accessed by delivery vehicles.
- e. The Producer shall maintain auditable inventory control records.
- f. The Producer shall obtain possession permits for all agrochemicals and other hazardous materials that require such documentation for storage.

10.1.1.3. Handling of Agrochemicals and Other Hazardous Substances

The Producer shall comply with the following handling requirements for agrochemicals and other hazardous substances, consistent with IPCS and FAO guidance [Add. Ref. 5, Add. Ref. 9]:

- a. A clean and dust-free dispensing table shall be available for agrochemical mixing.
- b. Agrochemical and hazardous chemical drums and containers shall be arranged from oldest to newest (i.e., first in first out) to prevent obsolete stock from accumulating.
- c. Pallets shall be arranged to allow for free air flow, not over two meters in height and fully accessible for periodic cleaning without ladders.
- d. The Producer shall comply with practices for receiving or distributing pesticides as described in the FAO "Pesticide Storage and Stock Control Manual" [Add. Ref. 5].
- e. Transportation of agrochemicals and other hazardous substances shall be conducted with great care to avoid damage to containers or contamination of workers or worker equipment not designed specifically for hazardous material use. The Producer shall not accept damaged containers.

- f. The transfer of agrochemicals and other hazardous substances shall be performed by trained workers only, and shall be registered on inventory control records.¹³
- g. Agrochemicals and other hazardous substances shall not be removed from their original marked containers during transportation or storage.
- h. Spillage kits (e.g., sawdust, sand, or other absorption material) shall be available in each area where agrochemicals are mixed.
- i. Following any spillage event, spillage should be contained quickly, contaminated materials shall be safely stored prior to site removal, and an incident report shall be prepared.
- j. Drums and containers shall be thoroughly inspected at least monthly for leaking seals, split seams and corrosion, and records of inspection shall be maintained.
- k. Visibly damaged, leaking or weathered packing materials shall be removed from storage areas and contents shall be transferred to empty containers, which shall be labeled accordingly and noted on inventory control records.
- l. Written instructions for mixing of agrochemicals shall be made available to workers.
- m. The Producer shall dispose of used chemical containers that may contain hazardous residues in accordance with label instructions. Such containers shall be returned to the chemical manufacturer or other approved party whenever possible for proper disposal. If this procedure is not possible, then empty containers should be triple rinsed, punctured and landfilled, with rinsate water properly contained to prevent groundwater contamination. Under no circumstances shall use chemical containers be reused, consistent with the *International Code of Conduct for the Distribution and Use of Pesticides* and ILO Convention 170 [Add. Ref. 4, Add. Ref. 6]
- n. The Producer shall only use landfills or dumpsites, whether on-site or off-site, that have appropriate lining, warning signage, and restricted access.
- o. The Producer shall identify one or more individuals who shall be responsible for the storage and handling of agrochemical and hazardous materials as well as employee training, consistent the requirement of Section 11.2.2.1.

10.1.2. Tier 2 Requirements for Agrochemical and Other Hazardous Chemicals and Wastes

10.1.2.1. Agrochemical Storage and Handling

- a. The Producer shall implement a procedure for purchasing agrochemicals that prevents oversupply, and shall phase-out long-term storage of agrochemicals, such that agrochemical inventories are limited to the current 12-month period of use.
- b. The Producer shall institute inventory controls to ensure accurate monitoring capability, consistent with the 2002 *International Code of Conduct for the Distribution and Use of Pesticides* [Add. Ref. 4].
- c. The Producer shall establish decontamination procedures to address accidental spillage of liquid and powdered agrochemicals.

¹³ Such trained workers are referred to as “handlers” in US Worker Protection Standards, 40 CFR Part 170, Subpart A. General Provisions, Definitions Section [Norm. Ref. 1].

- d. The Producer shall organize its products within agrochemical storage facilities by toxicological category.

10.2. Management of Crop Residues, Product Waste and Other Non-Chemical Wastes

10.2.1. Tier 1 Requirements for Management of Crop Residues, Product Waste and Other Non-Chemical Wastes

10.2.1.1. Waste Management Plan

In accordance with Section 6.1.2 of this Standard, the Producer shall describe in the Agricultural Production Plan the practices and procedures used for managing crop residues, product waste and other non-chemical wastes.

10.2.1.2. Crop Residues and Product Wastes

- a. The Producer shall compost crop residues and product, either on or off-site, in a manner consistent with Section 7.2.2.2 of this Standard that does not negatively impact the surrounding environment. However, crop residues and product wastes that are contaminated from biological or agrochemical sources shall not be composted.
- b. The Producer shall document and maintain auditable records the dates, volume and/or weight of organic wastes that are composted or burned.
- c. The Producer may burn crop stubble on existing farm fields as a soil sterilization procedure, provided that such burning is conducted in accordance with local/regional air quality regulations.

10.2.1.3. Non-Agricultural Wastes from Agricultural Production Processes

- a. The Producer shall properly segregate wastes to facilitate recovery (e.g., organic, plastics, paper, cardboard, wood, metal, other solid wastes) for recycling or disposal in appropriate designated facilities either on or off-site.
- b. The Producer shall store segregated wastes intended for future use in a manner that does not impact facility operations or the surrounding environment and is consistent with applicable local and national laws and regulations. During storage, adequate methods shall be used to prevent wastes from leaching into soils or groundwater, and shall prevent waste dispersion (e.g., airborne or water).
- c. The Producer shall dispose wastes that are not recovered in accordance with local/national regulations. On-site waste dumpsites shall be located at least 50 meters from any water body, with the location noted in the Agricultural Production Plan.

10.2.1.4. Industrial, Construction and Domestic Wastes

- a. The Producer shall dispose of industrial wastes, construction debris or rubble, excavation materials, debris from land clearing, and domestic wastes in accordance with local/national regulations.
- b. In the absence of regulations, the Producer shall dispose of wastes in a manner that does not negatively impact the surrounding environment or pose a risk to human health.
- c. The Producer shall handle pressure-treated lumber construction debris and wastes in a manner consistent with US Environmental Protection Agency or other local/regional requirements, whichever are stricter; in no case shall such wastes be burned or composted.

10.2.2. Tier 2 Requirements for Management of Crop Residues, Product Waste and Other Non-Chemical Wastes

Currently there are no Tier 2 requirements.

11.0 Element 5: Fair Labor Practices

This section of the Standard addresses procedures and practices employed by the Producer to ensure a safe, healthy and non-discriminatory working environment.¹⁴

- **Hiring and Employment Practices**

The Producer is required to establish socially responsible policies pertaining to: hiring, wages and non-discrimination; working hours and overtime; freedom of association, right to organize and collective bargaining; vacation and sick leave; and child labor and forced labor.

- **Workplace Conditions**

The Producer is required to establish socially responsible policies pertaining to: access to housing, potable water and sanitary facilities; worker training; occupational health and safety; and human resources management.

- **Worker and Worker Family Access to Services**

The Producer is required to establish socially responsible policies pertaining to: access to education; access to health services; access to transportation

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

11.1. Hiring and Employment Practices

11.1.1. Hiring, Wages and Non-Discrimination

11.1.1.1. Tier 1 Requirements: Hiring, Wages, and Non-Discrimination

- a. The Producer's hiring and employment policy shall ensure equal opportunity and non-discrimination on the basis of race, color, gender, religion, political opinion, nationality or social class [Add. Ref. 6].
- b. The Producer shall have the right to require that applicants undergo a medical examination by a competent medical authority as a condition of hire, and an annual medical examination thereafter. However, the Producer shall not require HIV, genetic, or pregnancy tests as a condition of hire. The Producer may identify other medical conditions that disqualify an applicant from handling agrochemicals or from other potentially hazardous or arduous tasks.
- c. The Producer shall provide workers with a written agreement (e.g., employment contract) describing the terms of hire.

¹⁴ The size and complexity of small family operations should be taken into consideration by the auditor and certification body.

- d. The Producer shall not require workers to surrender identity papers or other original personal documents or pay deposits as a condition of employment.
- e. The Producer shall pay workers at least the cash equivalent of the national minimum legal wage or a wage that is consistent with local industry standards, whichever is greater. If workers are paid by production, an objective appraisal of the amount of work to be performed shall be conducted as per ILO Convention 100, and the resultant wages shall meet the above requirements [Add. Ref. 6]. An exception shall be made for migrant workers if national wage laws dictate an alternative wage scale, or allow for partial in-kind payments in accordance with ILO Convention 110 [Add. Ref. 6].
- f. Consistent with ILO Convention 110, the Producer shall make wage deductions only under conditions and to the extent prescribed by national laws or regulations or fixed by collective agreement. Workers shall be informed of the conditions under which and the extent to which such deductions may be made [Add. Ref. 6].
- g. The Producer shall pay workers on a regular basis in accordance with national law, in cash or cash equivalent (check, direct deposit).
- h. The Producer shall provide workers equal pay for equal work, regardless of gender, unless contracts stipulate otherwise (e.g., based on seniority), as per ILO Convention 100 [Add. Ref. 6].
- i. The Producer shall pay wages directly to workers (cash, check, direct deposit), not through intermediaries.
- j. The Producer shall maintain complete written earning records for workers, which at a minimum itemizes all wages and deductions in a form that can be audited.
- k. The Producer shall issue written pay records to workers that clearly state the wages, taxes and other withholding deductions.
- l. The Producer shall provide workers with access to their complete personal earnings records and other employment records.
- m. The Producer shall pay workers normal wages while participating in any required trainings and meetings.
- n. The Producer shall not impose financial disciplinary penalties on workers except where penalties are levied to protect worker safety, or where such penalties are allowable under national labor law. Where these exceptions exist, the Producer shall offer alternative non-financial disciplinary options to the worker, provided that such alternatives have been approved by a representative worker committee.
- o. Once a female worker has completed a minimum probationary period established by the Producer of no more than six months, the Producer shall be obligated to provide maternity leave with compensation in accordance with applicable local or national standards, with a guarantee of return to the same or equivalent position at the same or higher wage at the end of the maternity leave.
- p. The Producer shall post written policies pertaining to hiring and employment, occupational health and safety, non-discrimination and sexual harassment, grievances, child labor, workplace conditions, and freedom of association in a location easily accessible to all workers.

- q. The Producer shall not recruit migrant workers through the use of an illegal recruiter, consistent with ILO Convention 143 [Add. Ref. 6].
- r. The Producer shall maintain auditable records in personnel files describing causes for termination.
- s. The Producer is able to demonstrate that any termination of worker employment has been carried out in accordance with local and national laws.
- t. When contract labor is used, the Producer shall develop a written policy requiring its contractors to uphold the practices outlined in this section (11.1.1.1. a-s).

11.1.1.2. Tier 2 Requirements: Hiring, Wages and Non-Discrimination

- a. The Producer shall provide an annual summary of worker wages as compared to the minimum wage or the local industry average, whichever is greater.
- b. The Producer shall pay workers wages that are higher than the local industry standards or higher than regionally established minimum wages, whichever is higher, or shall pay permanent workers a living wage as defined by a governmental organization. (If such data do not exist, the cost of living may be established by measuring the average cost of food, shelter, transportation, health care, clothing, energy and education, in accordance with the formula generated by the 1998 International NGO Living Wage Summit.¹⁵)
- c. Consistent with ILO 87, 98 and 110 [Add. Ref. 6], there shall be a prior written agreement between the Producer and recruited migrant workers regarding: wages; trip expenses; trip safety; work hours; overtime arrangements; duration of employment; minimum age of employment; non-discrimination; breach of contract; and terms of repatriation should the recruited worker become ill or incapacitated before reaching the place of employment, be found to be medically unfit, or be denied employment after recruitment for a reason for which he/she is not responsible.
- d. The Producer shall use contractors only when permanent workers are not sufficiently skilled, or where the intended work is periodic or episodic in nature.
- e. The Producer shall obtain the following information from contractors:
 - i. Copy of contractor’s current business license;
 - ii. Work references;
 - iii. Auditable records of contractor payroll for contract workers providing services to the Producer, if allowable by law;
 - iv. Assurance that minimum wage requirements are met; and
 - v. Documentation that individuals assigned to perform potentially hazardous work have received the proper training, have proper personal protective equipment in good condition, and are using properly maintained equipment.

¹⁵ See, for instance, <http://www.ethicaltrade.org/in-action/issues/livingwage>

- f. The Producer shall establish policies for worker pay increases and promotions that take into consideration work performance, seniority, and level of training on an equitable basis.

11.1.2. Working Hours and Overtime

11.1.2.1. Tier 1 Requirements: Working Hours and Overtime

- a. The Producer shall not require workers to work more than the maximum total hours per week specified by applicable national laws. If there are no national laws specifying hours of work, then the Producer shall not require workers to work more than 48 hours per work week, excluding overtime, except when a written agreement exists between the Producer and its workforce.
- b. The Producer shall compensate workers for overtime hours at a rate specified by local or national laws. Workers shall be informed at the time of hiring if mandatory overtime is a condition of employment.
- c. The Producer shall have a written employment and hiring policy available that is easily accessible to all workers.
- d. Workers may not work more overtime per day or week than allowable by national law. In the absence of national regulations, any work hours exceeding 8 hours/day or 48 hours/week is considered overtime and workers may not work more than 60 hours per week except when a written agreement exists between the Producer and its workers. The Producer shall permit workers, at a minimum, twenty-four consecutive hours off in every seven day period or what is required by local law, whichever is greater, except during peak harvest periods, provided such a period does not exceed 30 days and that workers are paid for overtime.
- e. The Producer shall not require workers to work more than 16 consecutive hours in a 24-hour period.

11.1.2.2. Tier 2 Requirements: Working Hours and Overtime

The Producer shall compensate workers for overtime hours at a rate that is higher than required by local or national laws, or at least 50% higher than regular wages, where no local or national laws exist.

11.1.3. Freedom of Association, Right to Organize and Collective Bargaining

11.1.3.1. Tier 1 Requirements: Freedom of Association, Right to Organize and Collective Bargaining

- a. The Producer shall acknowledge in writing the workers' right to freedom of association, in accordance with ILO Convention 87 [Add. Ref. 6].
- b. The Producer shall state in writing that both the employer and workers shall each have the right to establish organizations, to draw up the rules of the organizations, to elect representatives, and to formulate programs and activities aimed at benefiting workers and their families, in accordance with ILO Convention 87 [Add. Ref. 6].

- c. The Producer shall acknowledge in writing the workers' the right to collective bargaining, in accordance with ILO Convention 87 [Add. Ref. 6].
- d. The Producer shall not terminate or enact punitive measures against any worker for involvement in union organization activities, or engage in anti-union activities, in accordance with ILO Conventions 98 and 135 [Add. Ref. 6]. Any workers who have been subject to punitive action or terminated for such activities shall be reinstated or receive appropriate compensation.
- e. The Producer shall not subject worker representatives to discrimination, harassment, or administrative oversight, and shall provide worker representatives with access to all workplaces necessary to enable them to carry out their representation functions, as per ILO Conventions 98 and 135 [Add. Ref. 6]. The Producer and its workers, or worker representatives, shall meet on a regular basis.
- f. The Producer shall ensure the right of workers to gather to discuss workplace grievances without fear of reprisal or other negative consequences.
- g. The Producer shall recognize a democratically elected workers' association, if such an association has been formed.

11.1.3.2. Tier 2 Requirements: Freedom of Association, Right to Organize and Collective Bargaining

- a. The Producer shall establish a schedule of regular meetings to be held between the workers' associations and management.
- b. The Producer shall provide funding to worker-sanctioned programs or to a worker productivity stimulus plan subject to approval by a democratically elected workers' association.

11.1.4. Vacation and Sick Leave

11.1.4.1. Tier 1 Requirements: Vacation and Sick Leave

- a. The Producer shall provide full-time workers paid sick leave and worker's compensation program that meets or exceeds the local or nationally mandated minimum.
- b. The Producer shall provide full-time workers with a vacation plan that meets national or local law, including national holidays, under which paid vacation days are accrued.

11.1.4.2. Tier 2 Requirements: Vacation/Sick Leave

- a. The Producer shall provide all workers with paid sick leave and a worker's compensation program that meets or exceeds the local or nationally mandated minimum.
- b. The Producer shall extend sick leave to all workers.
- c. The Producer shall maintain written records of employee vacation time taken, and allow workers to carry over accrued vacation days to the next year, if not used.

11.1.5. Child Labor and Forced Labor

11.1.5.1. Tier 1 Requirements: Child Labor / Forced Labor

- a. The Producer shall not accept employment of any persons under the age of 15 or whatever age is required under local or national law, whichever is older, in accordance with ILO Convention 138 [Add. Ref. 6]. Exceptions to this requirement may be made for family businesses that do not regularly employ hired workers, to be evaluated on a case-by-case basis.
- b. The Producer shall not allow workers under the age of 18 to handle potentially harmful chemicals, or undertake jobs that inherently have the potential to jeopardize health and safety as per ILO Convention 138 [Add. Ref. 6].
- c. The Producer shall observe all legal requirements for the work of authorized minors, including, but not limited to, those pertaining to hours of work, wages, and minimum education and working conditions.
- d. The Producer shall have an enforced policy prohibiting the use of forced labor, compulsory labor, slave labor, bonded labor, indentured labor and involuntary convict labor.
- e. The Producer shall maintain the following documentation for all workers who are legal minors under the age of 18:
 - i. Name
 - ii. Date of birth
 - iii. Current address
 - iv. Name of parents or legal guardian
 - v. Employment authorization signed by parents or legal guardian
 - vi. Type of work being conducted
 - vii. Number of hours assigned and worked
 - viii. Salary

11.1.5.2. Tier 2 Requirements for Child Labor / Forced Labor

Currently there are no Tier 2 requirements.

11.2. Workplace Conditions

11.2.1. Access to Housing, Potable Water and Sanitary Facilities

11.2.1.1. Tier 1 Requirements for Access to Housing, Potable Water and Sanitary Facilities

- a. The Producer shall provide workers with a clean, safe and litter-free working environment that includes, but is not limited to, convenient access to toilet facilities in adequate numbers, adequate lighting, access to clean eating areas, convenient access to potable water, sufficient ventilation and/or heating, and access to first aid kits and equipment for

- emergencies.¹⁶ Washroom and showers walls and floors shall be impermeable to water and readily cleansable with liquid disinfectants.
- b. The Producer shall provide workers with ready access to potable water. If water supply is not maintained by relevant government authorities, then potability is documented through regular chemical analysis to WHO potability or national standards, whichever are higher.¹⁷
 - c. The Producer shall provide workers and their families living on-site with access to clean, safe and litter-free habitable dwellings located outside of area of production. Worker housing shall be sited sufficiently far from agricultural production areas to prevent agrochemical exposure.
 - d. The Producer shall arrange for waste collection from worker housing.

11.2.1.2. Tier 2 Requirements: Access to Housing, Potable Water and Sanitary Facilities

- a. The Producer shall establish a process for assessing the housing needs of its workers and their families, including such issues as habitability, affordability and accessibility.
- b. The Producer shall conduct water analysis on an annual basis to confirm potability in conformance with local or national regulations.

11.2.2. Worker Training

11.2.2.1. Tier 1 Requirements for Worker Training

- a. The Producer shall provide training to all workers about the Agricultural Production Plan, including workers' roles and responsibilities in the implementation of the plan.
- b. The Producer shall provide training to all workers covering the following topics: worker rights; employer responsibilities to workers; non-discrimination and sexual harassment; policies related to workers and working conditions; and personal safety/hygiene. In addition, if pesticides or other hazardous substances are used at the worksite, then all workers shall be trained in: i) steps to reduce workplace, "take home" or drift exposures to themselves and their families, ii) information about the immediate, intermediate and long-term health risks to workers and their families, including risks to pregnant women, from exposure to the specific pesticides used at the worksite, iii) contact information for nearby low-cost or free legal and health services, and iv) the purpose and procedures of the biomonitoring tests (see Section 11.2.3.1.n).

¹⁶ Bath/washroom installations are scaled to the size and complexity of the Agricultural Production Operation. The Producer shall make the following provisions: toilets (1 per 30 men and 1 per 20 women); showers (1 per 40 men and 1 per 40 women); wash basins (1 per 40 men and 1 per 40 women) and stocked cleansing solutions (e.g., soap and water, hand-wipes) and disposable towels or hand-driers.

¹⁷ World Health Organization or national potable water standards, whichever are higher.

- c. The Producer shall provide training to workers who are involved with the operation of equipment and machinery, or who are asked to perform inherently dangerous tasks, in the use of protective equipment and proper operational procedures.
- d. The Producer shall provide training to workers who are in contact with agrochemicals or other potentially hazardous substances in: i) the use of proper clothing and additional protective equipment; ii) safe handling of hazardous materials, chemicals and biological agents; iii) understanding of chemical labels and chemical safety data sheets; and iv) the operation of application and mixing equipment (consistent with ILO Convention 170, and *FAO Guidelines For Personal Protection When Working With Pesticides In Tropical Climates* [Add. Ref. 3, Add. Ref. 6]).
- e. The Producer shall inform workers during training about hazards associated with exposure to chemicals used at the workplace, and instruct workers on how to obtain and use the information provided on labels and MSDS sheets (consistent with ILO Convention 170), including an explanation that: i) workers may be suffering from a pesticide-related illness when they are experiencing symptoms associated with the pesticides to which they have been exposed; ii) MSDS sheets and labels can help a health professional diagnose a pesticide-related condition; and iii) these documents should be provided to a health care provider, in case of suspected poisoning, consistent with US and international norms [Norm. Ref. 1, Add. Ref. 6].
- f. The Producer shall include in its worker training program a discussion of emergency procedures, contingency plans and procedures that have been developed to address potential emergencies, consistent with ILO Convention 155 [Add. Ref. 6], such as fire, flood, workplace accidents and other disasters.
- g. The Producer shall maintain a written record documenting instructors, materials and attendance for all worker trainings.
- h. Trainings shall occur at regular intervals, at a minimum yearly, free of charge, and during regular working hours.
- i. The Producer shall schedule regular safety meetings for all relevant workers.

11.2.2.2. Tier 2 Requirements: Worker Training

- a. The Producer shall provide workshops, classes, and/or trainings on ecological issues related to agricultural production processes to workers.
- b. The Producer shall provide training to migrant workers about their rights and responsibilities, including provisions in the case of loss of employment, freedom from harassment, and non-discrimination, consistent with ILO Convention 143 [Add. Ref. 6].

11.2.3. Occupational Health and Safety

11.2.3.1. Tier 1 Requirements: Occupational Health and Safety

- a. The Producer shall develop and enforce written policies and procedures governing the safe use of chemicals in the workplace, consistent with US Worker Protection Standards [Norm. Ref. 1] and ILO Convention 170 [Add. Ref. 6].

- b. The Producer shall establish written safety procedures to be followed in the event of accidents or exposures to hazardous materials.
- c. The Producer shall provide instruction in, and enforcement of, proper use of equipment safety guards and personal protective gear, including clothing and additional equipment.
- d. The Producer shall provide decontamination supplies for all workers who handle, mix, or apply agrochemicals with access to eye baths, hand washing and showers with soap and single use towels, after the handling of such chemicals. Decontamination supplies shall be available within ¼ mile (400 meters) of the handling/mixing site (including portable spray units) [Norm. Ref. 1].
- e. The Producer shall require workers or others who may be exposed to hazardous chemicals, airborne particulates, or other physical workplace risks, to wear appropriate clothing and additional protective equipment when mixing and applying chemical and biological agents or operating machinery, in accordance with ILO Convention 170, the UN FAO Pesticide Storage and Stock Control Manual, and the FAO Guidelines For Personal Protection When Working With Pesticides In Tropical Climates [Add. Ref. 3, Add. Ref. 5, Add. Ref. 6]. Such protective equipment shall be provided at no cost to all applicable workers, and may include: respirators, goggles or face shields, head protection, non-permeable overalls or ponchos, aprons, gloves, rubber boots, hearing protection, etc.
- f. The Producer shall maintain protective equipment in good working order, meeting local occupational health and safety standards. Such equipment shall be replaced by the Producer when deemed necessary, based on corroborated worker reports or external audits.
- g. The Producer shall describe procedures in place for ensuring that clothing worn during handling, mixing and application of pesticides does not pose a health risk to workers.
- h. The Producer shall prohibit workers under the age of 18 and pregnant women from handling, mixing or applying chemical and biological agents.
- i. In the case of pregnancy, the Producer shall reassign a worker to a position that does not involve heavy lifting, protracted bending or other inappropriate physical activities, without any reduction in pay.
- j. The Producer shall only assign workers who are trained as per 11.2.2.1(c) and (d) and authorized to apply chemical and biological agents and operating machinery to such tasks.
- k. The Producer shall not put workers in a situation that would result in exposure to chemicals any longer than allowable under law.
- l. The Producer shall ensure that agrochemicals are properly labeled or otherwise identified, that MSDS sheets for agrochemicals are available, and that records of agrochemical use are accessible to all workers concerned and their representatives, as per US Worker Protection Standards and ILO Convention 170 [Norm. Ref. 1, Add. Ref. 6].
- m. The Producer shall monitor and record the exposure of workers to hazardous chemicals when this is necessary to safeguard their safety and health or as may be prescribed by a government authority, in accordance with ILO Convention 170 [Add. Ref. 6]. In jurisdictions where health and safety codes require biomonitoring (i.e., cholinesterase blood testing) of workers potentially exposed to pesticides, the Producer shall ensure that such testing is conducted in accordance with these codes. In jurisdictions where no such codes exist, the Producer shall

ensure that workers who mix or apply such pesticides and who have been potentially exposed during any 6 days in a 30-day period to carbamate or organophosphate pesticides that are labeled with the words “danger” or “warning”, undergo biomonitoring before and after handling of pesticides, at least twice per year [Add. Ref. 2]. Biomonitoring results should be maintained in the employee file. If any health thresholds are exceeded, workers shall be reassigned to positions that do not involve further exposure, with no reduction in pay. Workers shall have access to their exam results. If any biomonitoring results indicate that workers have been exposed to excessive levels of pesticides, then the Producer shall be responsible for undertaking immediate corrective actions and procedures where warranted. In any given year, no worker shall handle, mix or apply pesticides for more than three months.

- n. The Producer shall enforce the workers’ rights to remove themselves from situations involving the use of chemicals or equipment when they have reasonable justification to believe that there is an imminent and serious risk to their safety or health. The Producer shall instruct workers who exercise this right should inform their supervisor immediately. No penalties shall be applied to workers who exercise this right, consistent with ILO Convention 170 [Add. Ref. 6].
- o. In the event of suspected pesticide exposure to a worker, a worker’s family member or bystander, the Producer shall provide pesticide application information and a copy of the label(s) and MSDS or information sheets to the affected person, his/her representative or a health care professional, upon request, within 24 hours of the report of suspected exposure. In the event of a medical emergency, the information shall be provided within one hour.
- p. The Producer shall site and design work areas in a manner intended to promote worker safety and prevent risks to the environment, including such considerations as: i) unobstructed access for workers and work vehicles; ii) adequate ventilation and lighting; iii) readily cleanable walls, floors, and surfaces; iv) clearly marked emergency exits and pathways free from obstructions; v) proper containment and storage space for hazardous materials; vi) proper warning signage; and vii) access to emergency equipment such as fire extinguishers.
- q. The Producer shall ensure that work equipment that is potentially hazardous to operate is: i) maintained in good working condition; ii) stored safely and clean; and iii) equipped with safety devices, including the use of protective guards placed over moving parts when available. The Producer shall make operating instructions for safe use available to workers.
- r. The Producer shall have an enforced policy prohibiting the presence of any person under age 15 in any place on the property other than a designated suitable area (e.g., child care) or for specific family oriented events. Such areas shall be located away from any chemical spraying, mixing or transporting operations to avoid any potential for exposure.
- s. The Producer shall prepare a summary report of worker accident/illness incidents at least annually, and shall include a description of the nature of injury or illness, and where and how the event occurred. Such events may include: work-site accidents, skin disorders, respiratory conditions, poisoning, hearing losses, deaths, days away from work.
- t. The Producer shall store safety records for at least three years (e.g., U.S. Occupational Safety and Health Administration OSHA Form 300).

11.2.3.2. Tier 2 Requirements: Occupational Health and Safety

- a. The Producer shall regularly monitor workers' knowledge of agrochemical application through meetings or other feedback mechanism.
- b. The Producer shall ensure that records of the monitoring of the working environment and of worker exposure to hazardous chemicals are kept for a period of no less than five years and are accessible to the workers and their representatives, in accordance with ILO Convention 170 [Add. Ref. 6].
- c. The Producer shall develop contingency plans in cooperation with worker representatives based upon a risk assessment of potential emergency situations that could arise, including but not limited to personal medical emergencies, fire, workplace accidents, chemical exposure, and natural disasters, consistent with ILO Convention 155 [Add. Ref. 6], and shall conduct drills at least annually.
- d. The Producer shall provide workers who are using protective equipment (e.g., boots, gloves, masks, suits) to handle, mix, or apply hazardous agrochemicals or other hazardous materials with a clothes changing station where contaminated clothing can be stored separately from street clothes.
- e. The Producer shall require that clothing worn during the handling, mixing and application of hazardous agrochemicals be removed on-site, and not be taken home by workers. Laundering shall be the responsibility of the Producer. Such clothes shall be washed and stored separately from other clothes.

11.2.4. Human Resources Management

11.2.4.1. Tier 1 Requirements for Human Resources Management

- a. The Producer shall establish a policy to ensure that the work environment is free of physical punishment or abuse, and free of verbal abuse or coercion of workers, and institute procedures to address incidents that may occur.
- b. The Producer shall establish a written policy describing the means by which workers can communicate grievances to designated management representatives. Workers shall be notified of such mechanisms, which shall guarantee no reprisals.
- c. The Producer shall establish a written procedure whereby workers can report incidents of sexual harassment to management without fear of reprisal, and educate workers about its policies and procedures.
- d. The Producer shall establish written grievance procedures for workers who experience sexual harassment, to ensure that worker complaints are fully investigated and that proper disciplinary action is taken where warranted.
- e. For Agricultural Production Operations employing more than 30 permanent workers, the Producer shall produce a written employee manual made available to all workers, which describes all relevant employment policies, including but not limited to hiring, termination,

conditions of employment, workplace conditions, working hours, benefits, pay schedule, holidays, sick leave, non-discrimination, sexual harassment, unacceptable behavior.

11.2.4.2. Tier 2 Requirements for Human Resources Management

- a. For any size Agricultural Production Operation, regardless of the number of workers employed, the Producer shall produce a written employee manual made available to all workers, which describes all relevant employment policies, including but not limited to hiring, termination, conditions of employment, workplace conditions, working hours, benefits, pay schedule, holidays, sick leave, non-discrimination, sexual harassment, unacceptable behavior.
- b. The Producer shall designate an individual to assess the human resource (i.e., socio-economic) service needs of its workers, and implement a plan to address these needs.
- c. The Producer shall maintain auditable records about the rate of worker turnover.
- d. If meal services are provided on-site, the Producer shall demonstrate that the cost of meals to employees does not exceed 25% of the purchase price of ingredients.

11.3. Worker and Worker Family Access to Services

11.3.1. Access to Education

11.3.1.1. Tier 1 Requirements: Access to Education

- a. In remote locations with no access to schools, the Producer shall provide school-aged children of workers housed on-site with access to formal education consistent with minimum national requirements.

11.3.1.2. Tier 2 Requirements: Access to Education

- a. The Producer shall encourage education of workers' children by providing them with incentives for staying in school.
- b. The Producer shall establish a process for assessing the educational needs of its workers and their families.
- c. The Producer shall meet regularly with community representatives to assess community health and education needs.
- d. The Producer shall actively support — through capital, in-kind or time — local efforts to address barriers to education, such as efforts to promote the construction of schools, the hiring of teachers, the purchasing of educational materials, and the provision of transport.

11.3.2. Access to Health Services

11.3.2.1. Tier 1 Requirements: Access to Health Services

- a. The Producer shall have transportation and care procedures in place in case of medical emergency.
- b. The Producer shall maintain the appropriate supplies and equipment to address major medical emergencies associated with occupational health risks, including a first-aid kit, an eye

flush and/or shower facility for accidental exposure to toxic pesticides and other hazardous chemicals and irritants.

- c. The Producer shall allow workers to have access to regular medical and dental wellness care during normal working hours.
- d. The Producer shall ensure workers the right to confidentiality in terms of their medical files, except that: 1) summary findings of initial and annual medical examinations shall be made available to the Producer to ensure that the worker does not have a medical condition that disqualifies him or her from handling agrochemicals or performing arduous tasks; and 2) biomonitoring test results conducted at the expense of the Producer to comply with this Standard shall be reported to the Producer.

11.3.2.2. Tier 2 Requirements for Access to Health Services

- a. The Producer shall develop and implement a formal process for assessing the health needs of its workers and their families.
- b. The Producer shall provide health benefits (medical/dental) to workers (e.g., contributions to a worker health insurance program, establishment of a worker health fund, provision of on-site health services).
- c. The Producer shall contract with or employ an on-site medical/health professional.

11.3.3. Access to Transportation

11.3.3.1. Tier 1 Requirements for Access to Transportation

- a. The Producer shall assess the transportation needs of its workers, including availability of services and costs.

11.3.3.2. Tier 2 Requirements for Access to Transportation

- a. The Producer shall take significant steps to address the identified transportation needs of its workers.
- b. If migrant workers are recruited, the Producer shall address the issue of transportation of such workers to and from the site of employment in the initial work contract, consistent with Section 11.1.1.2 of this Standard.

12.0 Element 6: Community Benefits

This section of the Standard addresses procedures and practices employed by the Producer to engage the surrounding community and provide tangible benefits to the community.

- **Addressing Local and Regional Community Impacts**

The Producer is required to assess the degree to which its Agricultural Production Operation impacts the surrounding community, and to seek cooperative strategies for minimizing such impacts.

- **Providing Local and Regional Community Support**

The Producer is required to develop policies intended to benefit the surrounding community in terms of local hiring, procurement, and infrastructure maintenance.

- **Economic Viability**

The Producer is required to demonstrate the financial viability of the Agricultural Production Operation.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

12.1. Addressing Local and Regional Community Impacts

12.1.1. Tier 1 Requirements: Addressing Local/ Regional Community Impacts

12.1.1.1. Impacts on Areas of Historical, Religious or Cultural Interest

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a summary of the ways in which the Agricultural Production Operation has impacted areas of significant historical, religious and cultural interest to the community (e.g., burial sites, churches, registered historic landmarks).

12.1.1.2. Environmental Issues

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a summary of the ways in which the Agricultural Production Operation has contributed to significant environmental issues of community concern (e.g., noise, chemical contamination, waste, transportation impacts, resource overuse, ecological damage, visual impacts).

12.1.2. Tier 2 Requirements: Addressing Local/Regional Community Impacts

12.1.2.1. Stakeholder Process for Assessment of Impacts Areas of Historical, Religious or Cultural Interest

The Producer shall conduct an assessment of the Agricultural Production Operation area to determine current or potential impacts to areas of significant historical, religious and cultural interest. This assessment shall include a formal process for gathering input from neighbors and local stakeholders, including indigenous and tribal peoples where applicable. The Producer shall maintain an auditable record of this community engagement.

12.1.2.2. Stakeholder Process for Assessment of Environmental Issues

The Producer shall identify significant environmental issues of community concern (e.g., noise, chemical contamination, waste, transportation impacts, resource overuse, ecological damage, visual impacts) resulting from agricultural production processes. This assessment shall include a formal process for gathering input from neighbors and local stakeholders, including indigenous and tribal peoples where applicable. The Producer shall maintain an auditable record of this community engagement.

12.1.2.3. Implementation of Improvement Strategy

Based on its assessment of current or potential impacts to areas of significant historical, religious and cultural interest, the Producer shall implement practices and procedures to minimize current or potential impacts on areas of significant historical, religious and cultural interest in the vicinity of the Agricultural Production Operation.

12.1.2.4. Minimizing Operational Impacts on Environment

Based on its assessment of significant environmental issues of community concern, the Producer shall implement practices and procedures to minimize such operational impacts.

12.2. Providing Local and Regional Community Support

12.2.1. Tier 1 Requirements for Providing Local/Regional Community Support

12.2.1.1. Description of Current Policies

In accordance with Section 6.1.2 of this Standard, the Producer shall provide in the Agricultural Production Plan a summary of current policies regarding:

- a. preferences for local hiring;
- b. procurement from regional sources; and
- c. contribution to community infrastructure maintenance.

12.2.2. Tier 2 Requirements: Providing Local/Regional Community Support

12.2.2.1. Local Hiring

The Producer shall develop and implement a policy establishing preferences for local hiring.

12.2.2.2. Regional Procurement

The Producer shall develop and implement policy that puts a priority on procurement from regional supplies and services.

12.2.2.3. Community Infrastructure Support

The Producer shall provide assistance of time, materials, or money for maintenance of community infrastructure (e.g., roads), especially where such infrastructure is impacted directly or indirectly by agricultural production processes.

12.2.2.4. Charitable Giving

The Producer shall have a written policy and procedure for providing charitable giving within the community, or contributing to environmental research, in the form of time, materials or money.

12.2.2.5. Supporting Local Health Institutions

The Producer shall engage in collaboration with local health authorities to support clinics/hospitals through donations of money, time, scholarships or materials.

12.2.2.6. Supporting Education Institutions

The Producer shall engage in collaboration with local education authorities to support local education institutions through donations of money, time, scholarships or materials.

12.3. Economic Viability

12.3.1. Tier 1 Requirements: Economic Viability

12.3.1.1. Financial Stability

The Producer shall provide documentation to substantiate that the Agricultural Production Operation is financially able to operate in accordance with its Agricultural Production Plan, and that financial exigencies do not lead to decisions that compromise environmental protection and social sustainability objectives.

12.3.1.2. Investment

The Producer shall demonstrate that investment and reinvestment decisions support management objectives with respect to environmental protection and social sustainability.

12.3.1.3. Efficient Utilization of Production

The Producer shall demonstrate a commitment to maximizing the utilization of production resources (e.g., through experimentation with new varieties, the development of new markets).

12.3.2. Tier 2 Requirements: Economic Viability

Currently there are no Tier 2 requirements.

13.0 Element 7: Product Quality

This section of the Standard addresses procedures and practices employed by the Producer to ensure that products meet essential quality characteristics consistent with the claim of sustainability.

- **Quality, Appearance and Grade**

The Producer is required to implement and adhere to practices and procedures that assure that the agricultural products are of sufficient quality to meet market needs. Specific quality requirements are defined in terms of recognized appearance and grading criteria, and vary by type of agricultural product.

- **Product Loss**

The Producer is required to monitor the extent of product losses in production, storage, and shipment, and to take quality assurance measures to minimize such losses.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

13.1. Quality, Appearance and Grade

13.1.1. Tier 1 Requirements for Quality, Appearance and Grade

13.1.1.1. Quality Procedures

In accordance with Section 6.1.2 of this Standard, the Producer shall develop a Quality Manual related to product quality assurance. The Quality Manual shall include, at a minimum, a description of practices and procedures used to ensure that agricultural products meet minimum industry appearance and grading criteria at the time of shipment, as specified by the USDA grading standards for edible crops, or as otherwise specified in sector-specific annexes. The Quality Manual shall also provide minimum shipping specifications (e.g., box/container conditions, box stacking, insulation, temperature/humidity, correct product identification) for out-going shipments of agricultural products conforming to this Standard.

13.1.1.2. Quality Inspections

The Producer shall conduct and document quality control inspections of each lot of agricultural products to be shipped.

13.1.1.3. Recordkeeping

The Producer shall provide auditable records related to its product quality assurance practices and procedures, including records related to product conditioning, storage conditions and shipment, as well as records related to corrective actions with a system in place for maintaining such records for no less than five years.

13.1.1.4. Storage and Shipping Practices

- a. The Producer shall maintain a policy to ship all agricultural products to the client, or transfer such products to the transporter, under proper temperature and humidity conditions.
- b. The Producer shall record temperatures for agricultural product lots at the time of departure from the farm, and the dates of shipment.
- c. The Producer shall measure and record the temperature of the transport vehicle into which the conformant agricultural product is being placed for shipment, along with the temperature of any accompanying product already in the vehicle.
- d. The Producer shall include the temperature of the product and the transport vehicle at the time of shipment on the bill of lading.

13.1.2. Tier 2 Requirements for Quality, Appearance and Grade

13.1.2.1. Customer Service

Producer shall maintain customer service tracking reports, including records of customer complaints, returns and credits.

14.0 Element 8: Product Safety and Purity

This section of the Standard addresses procedures and practices employed by the Producer to ensure that products meet essential safety and purity characteristics to assure the delivery of a healthful product to consumers.

- **Food Safety (Edible Crops Only)**

The Producer is required to undergo third-party food safety management audits, and to institute comprehensive food safety management procedures to control food pathogens through the monitoring of critical control points in the production and handling of food crops.

- **Contaminant Residue Management**

- For edible crops, the Producer is required to ensure that residues of any contaminants in or on agricultural products conform, at a minimum, to US Food and Drug Administration standards, including: pesticides, metals, industrial chemical contaminants, drug and chemical residues and natural toxins.
- For non-edible crops, the Producer is required to ensure that, at the time of Agricultural Product shipment or handling, that there are no levels of topical residues of any contaminants that could create a health risk from dermal transfer.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

14.1. Food Safety (Edible Crops Only)

14.1.1. Tier 1 Requirements for Food Safety

14.1.1.1. Conformance with US Food Safety Guidance

The Producer shall demonstrate that agricultural products have been produced in accordance with US Food and Drug Administration sector-specific guidance principles [Norm. Ref. 4].

14.1.1.2. Food Safety Management Plan

The Producer of edible agricultural products shall describe its food safety management plan, including its Sanitation Standard Operating Procedures (SSOPs), describing the methods used for cleaning equipment and surfaces, the methods used for cleaning of surrounding areas (non product-contact surfaces), the frequency of cleaning, the types and concentrations of cleaning chemicals used, the cleaning implements used, and the methods used for rodent control.

14.1.1.3. GAP/GMP Audits

The Producer shall demonstrate that its fields and facilities involved in the production of the agricultural product have undergone a third-party audit during the previous 12 months in accordance with the relevant US Good Agricultural Practice or Good Manufacturing Practice

guidance [Norm. Ref. 4], or in accordance with more stringent voluntary industry or mandated government requirements. For GAP or GMP audits, the Producer shall provide documentation that its fields and facilities received an audit score of at least 80 points on a scale of 0 to 100.

14.1.1.4. Food Pathogen Procedures

The Producer shall maintain written procedures for responding in the event that a food pathogen is detected at any point during the chain of custody, including, but not limited to: product quarantine, product recall, client notification, confirmation testing, contaminant source investigation, and corrective action steps.

14.1.1.5 Tier 2 Requirements for Food Safety

Currently there are no Tier 2 Requirements.

14.2. Contaminant Residue Management

14.2.1. Tier 1 Requirements for Contaminant Residue Management

14.2.1.1. Pesticide Residue Compliance Requirements (Edible Crops)

The Producer's agricultural product shall comply with the following requirements:

- a. Residues of any pesticide registered for use on the crop shall not exceed the levels permitted under the USDA National Organic Program (NOP), i.e., 5% of US EPA established tolerance levels [Norm. Ref. 3].
- b. Persistent residues of any pesticide not currently registered for use on the crop that are nevertheless present as a result of background contamination from prior use shall not exceed the action level established under the US FDA. Residues of any other pesticide not currently registered or allowed for use on the crop shall not be present above LOD [Norm. Ref. 1].

14.2.1.2. Compliance Requirements for Other Contaminants (Edible Crops)

The Producer's agricultural product either shall comply with U.S. Food and Drug Administration [Norm. Ref. 8] or World Health Organization requirements, whichever is stricter, for metals, chemical contaminants, drug and chemical residues, and natural toxins, where such standards exist.

14.2.1.3. Conformance Requirements for Topical Residues (Non-Edible Crops)

The Producer shall, at the time of Agricultural Product shipment or handling, demonstrate (e.g., by presenting a certificate of analysis) that there are no levels of topical pesticide residues that could create a health risk from dermal transfer, or shall have procedures in place and provide written documentation assuring that workers and handlers are not being exposed to risks from exposure (e.g., through use of personal protective equipment such as gloves).

14.2.2. Tier 2 Requirements for Contaminant Residue Management

14.2.2.1. Testing Requirements for Edible Crops

The Producer shall provide statistically valid test results to demonstrate conformance to Section 14.2.1.1.

14.2.2.2. Testing Requirements for Non-Edible Crops

Unless otherwise specified in sector-specific annexes to this Standard the Producer shall implement a sampling and testing plan to demonstrate conformance to Section 14.2.1.3, unless procedures are in place to assure that workers and handlers are not subject to risks from exposure (e.g., through use of personal protective equipment such as gloves).

15.0 Handler Requirements: Environmental Sustainability

In addition to the prerequisite requirements described in Section 6.2. of this Standard, the Handler is required to conform to additional requirements as described in Sections 15-17. To the extent that a Producer is involved in handling operations for the agricultural product, then the Producer shall conform to relevant requirements in Sections 15-17. Note that retail establishments that are not engaged in processing or repackaging of certified agricultural products are not required to comply with the requirements of this section, unless otherwise noted in sector specific annexes.

This section describes handler requirements pertaining to the following environmental sustainability issues.

- **Energy Efficiency and Associated Reductions in Greenhouse Gases**

The Handler is required to monitor energy consumption, pursue increased energy efficiency in the handling and transport of agricultural products, calculate the energy and associated greenhouse gases per agricultural production unit, and achieve increased energy efficiency and reduced greenhouse gases over time.

- **Packaging Resources Minimization**

The Handler is required to develop strategies for minimizing the resources used for product packaging, and thereby reducing packaging related impacts, without compromising the integrity of the delivered product, through practices such as:

- reduction of packaging components;
- use of packaging materials made with recycled content;
- reuse of packaging materials; and
- sourcing of packaging materials from sustainable sources.

- **Integrated Waste Management**

The Handler is required to employ waste management practices related to agricultural products, chemicals used to treat agricultural products for pest control or preservative purposes, or ancillary materials that minimize waste and ensure proper containment of hazardous chemicals.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

15.1. Energy Efficiency and Associated Reductions in Greenhouse Gases

15.1.1. Tier 1 Requirements for Energy Efficiency and Greenhouse Gas Reductions

15.1.1.1. Consumption Activities

In accordance with Section 6.2.2 of this Standard, the Handler shall provide in the Handler Plan a summary of electricity and fuel consumption activities associated with its Handling Operation.

15.1.1.2. Energy Generation and Conservation

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

15.1.1.3. Shipment Destinations

The Handler shall provide an auditable summary of shipment destinations for agricultural products, including a description of the means of transport used and the transport distance. The Handler shall indicate whether transport systems are operated by the Handler, by a contractor to the Handler, or by another third party.

15.1.1.4. Energy Used in the Handling Operation

The Handler shall provide auditable records of fuel and electricity used in the Handling Operation(s).

15.1.1.5. Fuels Used in Product Transport

The Handler shall provide auditable records, such as vehicle logs, of the types and amounts of fuels used in agricultural product transport, including transport of products to the Handler's facilities, transport of products between Handler-operated facilities, and shipping to downstream handlers from the Handler's facilities, when such shipping involves Handler operated vehicles.

15.1.1.6. Calculate Energy Efficiency Index and Greenhouse Gas Index per Agricultural Production Unit

- a. The Handler shall maintain a record of the Energy Efficiency Index (EEl_p) and Greenhouse Gas Index (GGI_p) for each incoming conformant agricultural product handled (see Section 9.2.1.6).
- b. The Handler shall calculate the Energy Efficiency Index (EEl_T) — the energy consumption associated with transport of each conformant agricultural product to and among its facilities. The EEl_T is expressed in oil equivalents per unit of agricultural product handled.
- c. The Handler shall calculate the Greenhouse Gas Index ($GHGI_T$) associated with product transport to and among its facilities.
- d. If the Handler's operation involves significant energy inputs to store or condition (e.g., long-term refrigerated storage) the agricultural product, then the energy consumption (in oil equivalents) per unit of conformant agricultural product shall be calculated (EEl_H), and the associated Greenhouse Gas Index ($GHGI_H$).¹⁸
- e. The Handler shall update the EEIP and GHGIP by adding in the EEIT and GHGIT, respectively, and the EEIH and GHGH as relevant.

¹⁸ Each sector specific annex will specify whether the EEIH calculation is required, based on the amount of energy required to perform the handling function.

$$\text{Updated EEIP} = \text{EEIP} + \text{EEIT} + \text{EEIH}$$

$$\text{Updated GHGIP} = \text{GHGIP} + \text{GHGIT} + \text{GHGIH}$$

- f. The Handler shall provide its updated EEI_p and GHGI_p to downstream conformant handler recipients in the chain of custody.

15.1.2. Tier 2 Requirements for Energy Resource Management

15.1.2.1. Energy Efficiency Analysis

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

15.1.2.2. Energy Conservation

The Handler shall demonstrate improvement in its updated EEI_p , in accordance with requirements for handlers established in any applicable sector specific annexes.

15.1.2.3. Greenhouse Gas Reductions

The Handler shall demonstrate improvement in its updated GHGI_p , in accordance with requirements for handlers established in any applicable sector specific annexes.

15.2. Packaging Resources Minimization

15.2.1. Tier 1 Requirements for Packaging Resources Minimization

15.2.1.1. Packaging and Shipping Materials

The Handler shall provide a description of all materials used for product packaging and shipping in the Handler Plan.

15.2.1.2. Auditable Records

The Handler shall provide auditable records of materials used in product packaging and transportation, including the type and quantities of materials used.

15.2.2. Tier 2 Requirements for Packaging Resources Minimization

15.2.2.1. Reused, Recycled, Compostable and Sustainably Sourced Materials

The Handler shall provide information, when available, about the degree to which packaging components are reused, made from recycled sources, made to be compostable, or made from sustainably sourced materials, including any documentation of such claims. The Handler shall also describe current methods for reusing packaging materials.

15.2.2.2. Material Reduction

The Handler 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. reusing packaging materials.

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

15.3. Integrated Waste Management

15.3.1. Tier 1 Requirements for Integrated Waste Management

15.3.1.1. Description of Waste Management Practices

The Handler shall describe waste management practices and procedures related to agricultural products, chemicals used to treat agricultural products for pest control or preservative purposes, or ancillary materials used in the Handling Operation in the Handling Plan, consistent with Section 6.2.2.

15.3.1.2. Waste Storage

Wastes shall be stored in a manner that does not impact facility operations or the surrounding environment. At a minimum, such waste management shall prevent leaching of wastes into soils or groundwater, and shall prevent waste dispersion (e.g., airborne or water).

15.3.1.3. Waste Segregation

Wastes shall be properly segregated on-site to facilitate recovery, where permissible (e.g., organic, plastics, paper, wood, metal, other solid wastes, chemicals).

15.3.1.4. Recycling

The Handler shall ensure that non-organic wastes are recycled or disposed off-site in appropriate designated facilities.

15.3.1.5. Used Chemical Containers

The Handler shall dispose of used chemical containers that may contain hazardous residues in accordance with label instructions. Such containers shall be returned to the chemical manufacturer or other approved party whenever possible for proper disposal. If this procedure is not possible, then the Handler shall ensure that empty containers are triple rinsed, punctured and landfilled, with rinsate water properly contained to prevent groundwater contamination. Under no circumstances shall the Handler reuse used chemical containers, consistent with the *International Code of Conduct for the Distribution and Use of Pesticides* and ILO Convention 170 [Add. Ref. 4, Add. Ref. 6].

15.3.1.6. Wastewater Treatment

The Handler shall require wastewater treatment for industrial and domestic wastewater streams unless municipal wastewater treatment facilities routinely manage such discharges. Discharge parameters shall comply with the applicable local or national water discharge legal limits, and shall be sufficient to prevent the release of contaminants originating from agricultural production processes.

15.3.2. Tier 2 Requirements for Integrated Waste Management

Currently there are no Tier 2 requirements.

16.0 Handler Requirements: Social and Economic Sustainability

This section describes handler requirements pertaining to the following social sustainability issues.

- **Worker Safety and Training**

The Handler is required to ensure a safe working environment, with sufficient worker training to ensure that conformant agricultural products are handled in accordance with the Handling Plan procedures.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

16.1. Worker Safety and Training

16.1.1. Tier 1 Requirements for Worker Safety and Training¹⁹

16.1.1.1. Training in Implementation of Handling Plan and Quality Manual

The Handler shall provide training to all workers about their roles and responsibilities related to the Handling Plan and Quality Manual (See Section 15.5.1).

16.1.1.2. Safe Use of Chemicals

The Handler shall maintain a written policy and procedures governing the safe use of chemicals in the workplace (e.g., ILO Convention 170) [Add. Ref. 6]. This policy shall be applied to workers as well as to any licensed pest control applicators who may be contracted by the Handler.

16.1.1.3. Protective Clothing and Equipment

The Handler shall require that workers or others who may be exposed to hazardous chemicals, airborne particulates, or other physical workplace risks, to wear appropriate clothing and additional protective equipment when mixing and applying chemicals or when operating equipment, in accordance with ILO Convention 170. The Handler shall provide protective equipment at no cost to all applicable workers, and maintain personal protective equipment in good working order, meeting local/national occupational health and safety standards. Such equipment shall be replaced by the Handler when deemed necessary, based on corroborated worker reports or external audits.

16.1.1.4. Worker Option to Avoid Potential Exposure

The Handler shall ensure the workers' right to remove themselves from situations involving the use of chemicals when they have reasonable justification to believe that there is an imminent and serious risk to their safety or health. The Handler shall require workers who exercise this right

¹⁹ The extent to which fair labor practices and community benefits requirements should be incorporated into Tier 1 of the handler portion of the Standard is a subject that should be taken into consideration as part of the scope of the of the Handler.

should inform their supervisor immediately. No penalties shall be applied to workers who exercise this right, consistent with ILO Convention 170 [Add. Ref 5].

16.1.1.5. Safe Work Areas

The Handler shall site and design work areas in a manner intended to promote worker safety and prevent risks to the environment, including such considerations as:

- a. unobstructed access for workers and work vehicles;
- b. adequate ventilation and lighting;
- c. readily cleanable walls, floors, and surfaces;
- d. clearly marked emergency exits and pathways free from obstructions;
- e. proper containment and storage space for hazardous materials;
- f. proper warning signage; and
- g. access to emergency equipment such as fire extinguishers.

16.1.1.6. Working Training

- a. The Handler shall provide training to workers in:
 - i. the use of proper clothing and additional protective equipment;
 - ii. safe handling of hazardous materials, chemicals and biological agents;
 - iii. understanding of chemical labels and chemical safety data sheets;
 - iv. hazards associated with potential exposure to chemicals used at the workplace; and
 - v. the operation of application and mixing equipment (consistent with ILO Convention 170).
- b. The Handler shall maintain a written record documenting instructors, materials and attendance for all worker trainings.
- c. The Handler shall provide trainings at regular intervals, at a minimum yearly, free of charge, during regular working hours, and pay workers normal wages during such trainings.

16.1.1.7. Incident Reports

The Handler shall prepare summary reports of worker accident/illness incidents at least annually, and shall include a description of the nature of injury or illness, and where and how the event occurred. Such events may include: work-site accidents, skin disorders, respiratory conditions, poisoning, hearing losses, deaths, days away from work.

16.1.1.8. Safety Records

The Handler shall store safety records for at least three years (e.g., US Occupational Safety and Health Administration OSHA Form 300).

16.1.2. Tier 2 Requirements for Worker Safety and Training

Currently there are no Tier 2 requirements.

17.0 Handler Requirements: Product Integrity

This section describes handler requirements pertaining to the following product integrity issues.

- **Product Quality**

The Handler is required to implement and adhere to practices and procedures that protect the quality of agricultural products, and minimize product losses.

- **Product Safety and Purity**

- The Handler is required to employ practices and procedures that prevent conformant agricultural products from being contaminated or adulterated during the handling processes.
- For edible crops, the Handler is required to institute comprehensive food safety management procedures to control food pathogens through the monitoring of critical control points in the production and handling of food crops.

Basic requirements are described in this section, while additional requirements may be described in sector-specific Annexes.

17.1. Product Quality

17.1.1. Tier 1 Requirements for Product Quality

17.1.1.1. Quality Manual

Consistent with Section 6.2.2 of this Standard, the Handler shall develop a Quality Manual related to product quality assurance. The Quality Manual shall include, at a minimum, a description of practices and procedures used to ensure that agricultural products meet minimum industry appearance and grading criteria at the time of shipment, as specified by the USDA grading standards for edible crops or as otherwise specified in sector-specific annexes. The Quality Manual shall also provide minimum shipping specifications (e.g., box/container conditions, box stacking, insulation, temperature/humidity, correct product identification) for in-coming shipments and out-going shipments of agricultural products conforming to this Standard.

17.1.1.2. Temperature and Humidity Management Practices

- a. To maximize product life, the Handler shall establish written temperature and humidity management procedures, and shall maintain adequate storage facilities to store products at proper temperature and humidity levels.
- b. The Handler shall record the temperature of each lot upon arrival.
- c. The Handler shall measure and record the temperature of the transport vehicle into which the conformant agricultural product is being placed for shipment, along with the temperature of any accompanying product already in the vehicle.

- d. The Handler shall include the temperature of the product and the transport vehicle at the time of shipment on the bill of lading.

17.1.1.3. Inspections

The Handler shall conduct quality control inspections of each shipment of conforming agricultural products upon arrival, whereby conformance or non-conformance with the product quality requirements or other requirements of this Standard are recorded.

17.1.1.4. Physical Separation in Storage and Shipping

To prevent accidental commingling or cross-contamination, the Handler shall maintain physical separation of conformant and non-conformant products, consistent with Section 6.2.3.6.

17.1.2. Tier 2 Requirements for Product Quality

17.1.2.1. Customer Service

The Handler shall maintain customer service tracking reports, including records of customer complaints, customer returns and credits, and actions taken in response to such complaints.

17.1.2.2. Auditing of Quality Management Practices

The Handler shall develop and institute internal auditing procedures to verify the implementation of its Handler Plan, and produce an annual Quality Management Report to summarize the internal audit findings.

17.1.2.3. Monitoring Product Quality by Supplier

The Handler shall institute a system for:

- a. monitoring and documenting product quality by supplier;
- b. reporting non-conformities to suppliers; and
- c. documenting corrective actions.

17.1.2.4. Record-Keeping

The Handler shall maintain records pertaining to product quality, product losses (shrink), returns, customer complaints, and invoices for a period of no less than five years.

17.1.2.5. Shipping Conditions Tracking

The Handler shall establish procedures for tracking the transit temperature history and other shipping conditions for each lot. These procedures shall include the use of temperature and/or humidity data recorders in a significant proportion of inbound and outbound shipments, procedures for resolving deficiencies, and the establishment of an annual summary for conformant agricultural products.

17.1.2.6. Use of Industry Standardized Product Identification Technology

The Producer shall use industry standardized product identification methods, such as barcodes, RFIDs or other methods, including field identification and harvest date information.

17.2. Product Safety and Purity

17.2.1. Tier 1 Requirements: Product Purity and Safety

17.2.1.1. Food Safety Management Plan (Edible Crops Only)

The Handler of edible agricultural products shall describe its food safety management plan, including its Sanitation Standard Operating Procedures (SSOPs), describing the methods used for cleaning equipment and surfaces, the methods used for cleaning of surrounding areas (non product-contact surfaces), the frequency of cleaning, the types and concentrations of cleaning chemicals used, the cleaning implements used, and the methods used for rodent control.

17.2.1.2. GMP Audit (Edible Crops Only)

The Handler of edible agricultural products shall provide documentation demonstrating that a GMP audit was conducted during the most recent growing season by a recognized third-party certifier, and that the audit score received was 80 points or higher on a scale of 0-100 [Norm. Ref. 4].

17.2.1.3. Protection from Contamination

The Handler shall take adequate measures to ensure that conformant agricultural products are not contaminated during the handling process.

17.2.2. Tier 2 Requirements: Product Purity and Safety

Currently there are no Tier 2 requirements.

18.0 Additional Handler Requirements for Fair Labor Practices Conformance

This section provides additional Tier 1 and Tier 2 requirements for Handlers who wish to establish their conformance with the social responsibility criteria and indicators of the Standard.

18.1. Hiring and Employment Practices

18.1.1. Hiring, Wages and Non-Discrimination

18.1.1.1. Tier 1 Requirements for Hiring, Wages, and Non-Discrimination

- a. The Handler's hiring and employment policy shall ensure equal opportunity and non-discrimination on the basis of race, color, gender, religion, political opinion, nationality or social class [Add. Ref. 6].
- b. The Handler shall have the right to require that applicants undergo a medical examination by a competent medical authority as a condition of hire, and an annual medical examination thereafter. However, the Handler shall not require HIV, genetic, or pregnancy tests as a condition of hire. The Handler may identify other medical conditions that disqualify an applicant from handling agrochemicals or from other potentially hazardous or arduous tasks.
- c. The Handler shall provide workers with a written agreement (e.g., employment contract) describing the terms of hire.
- d. The Handler shall not require workers to surrender identity papers or other original personal documents or pay deposits as a condition of employment.
- e. The Handler shall pay workers at least the cash equivalent of the national minimum legal wage or a wage that is consistent with local industry standards, whichever is greater. If workers are paid by production, an objective appraisal of the amount of work to be performed shall be conducted as per ILO Convention 100, and the resultant wages shall meet the above requirements [Add. Ref. 6]. An exception shall be made for migrant workers if national wage laws dictate an alternative wage scale, or allow for partial in-kind payments in accordance with ILO Convention 110 [Add. Ref. 6].
- f. Consistent with ILO Convention 110, the Handler shall make wage deductions only under conditions and to the extent prescribed by national laws or regulations or fixed by collective agreement. Workers shall be informed of the conditions under which and the extent to which such deductions may be made [Add. Ref. 6].
- g. The Handler shall pay workers on a regular basis in accordance with national law, in cash or cash equivalent (check, direct deposit).
- h. The Handler shall provide workers equal pay for equal work, regardless of gender, unless contracts stipulate otherwise (e.g., based on seniority), as per ILO Convention 100 [Add. Ref. 6].

- i. The Handler shall pay wages directly to workers (cash, check, direct deposit), not through intermediaries.
- j. The Handler shall maintain complete written earning records for workers, which at a minimum itemizes all wages and deductions in a form that can be audited.
- k. The Handler shall issue written pay records to workers that clearly state the wages, taxes and other withholding deductions.
- l. The Handler shall provide workers with access to their complete personal earnings records and other employment records.
- m. The Handler shall pay workers normal wages while participating in any required trainings and meetings.
- n. The Handler shall not impose financial disciplinary penalties on workers except where penalties are levied to protect worker safety, or where such penalties are allowable under national labor law. Where these exceptions exist, the Handler shall offer alternative non-financial disciplinary options to the worker, provided that such alternatives have been approved by a representative worker committee.
- o. Once a female worker has completed a minimum probationary period established by the Handler of no more than six months, the Handler shall be obligated to provide maternity leave with compensation in accordance with applicable local or national standards, with a guarantee of return to the same or equivalent position at the same or higher wage at the end of the maternity leave.
- p. The Handler shall post written policies pertaining to hiring and employment, occupational health and safety, non-discrimination and sexual harassment, grievances, child labor, workplace conditions, and freedom of association in a location easily accessible to all workers.
- q. The Handler shall not recruit migrant workers through the use of an illegal recruiter, consistent with ILO Convention 143 [Add. Ref. 6].
- r. The Handler shall maintain auditable records in personnel files describing causes for termination.

18.1.1.2. Tier 2 Requirements: Hiring, Wages and Non-Discrimination

- a. The Handler shall provide an annual summary of worker wages as compared to the minimum wage or the local industry average, whichever is greater.
- b. The Handler shall pay workers wages that are higher than the local industry standards or higher than regionally established minimum wages, whichever is higher, or pay permanent workers a living wage as defined by a governmental organization. (If such data do not exist, the cost of living may be established by measuring the average cost of food, shelter, transportation, health care, clothing, energy and education, in accordance with the formula generated by the 1998 International NGO Living Wage Summit.²⁰)

²⁰ See, for instance http://www.rafiusa.org/programs/Bangkok_proceedings/07livingwages.pdf

- c. Consistent with ILO 87, 98 and 110 [Add. Ref. 6], there shall be a prior written agreement between the Handler and recruited migrant workers regarding: wages; trip expenses; trip safety; work hours; overtime arrangements; duration of employment; minimum age of employment; non-discrimination; breach of contract; and terms of repatriation should the recruited worker become ill or incapacitated before reaching the place of employment, be found to be medically unfit, or be denied employment after recruitment for a reason for which he/she is not responsible.
- d. The Handler shall use contractors only when permanent workers are not sufficiently skilled, or where the intended work is periodic or episodic in nature.
- e. Where contract labor is used, the Handler shall develop a written policy requiring its contractors to uphold the same hiring practices as those outlined in Section 11.1.1.1 of this Standard.
- f. The Handler shall obtain the following information from contractors:
 - i. Copy of contractor's current business license;
 - ii. Work references;
 - iii. Auditable records of contractor payroll for contract workers providing services to the Handler, if allowable by law;
 - iv. Assurance that minimum wage requirements are met; and
 - v. Documentation that individuals assigned to perform potentially hazardous work have received the proper training, have proper personal protective equipment in good condition, and are using properly maintained equipment.
- g. The Handler shall establish policies for worker pay increases and promotions that take into consideration work performance, seniority, and level of training on an equitable basis.

18.1.2. Working Hours and Overtime

18.1.2.1. Tier 1 Requirements: Working Hours and Overtime

- a. The Handler shall not require workers to work more than the maximum total hours per week specified by applicable national laws. If there are no national laws specifying hours of work, then the Handler shall not require workers to work more than 48 hours per work week, excluding overtime, except when a written agreement exists between the Handler and its workforce.
- b. The Handler shall workers shall be compensated for overtime hours at a rate specified by local or national laws. Workers shall be informed at the time of hiring if mandatory overtime is a condition of employment.
- c. The Handler shall have a written employment and hiring policy available that is easily accessible to all workers.
- d. Workers may not work more overtime per day or week than allowable by national law. In the absence of national regulations, any work hours exceeding 8 hours/day or 48 hours/week is

considered overtime and workers may not work more than 60 hours per week except when a written agreement exists between the Handler and its workers. The Handler shall permit workers, at a minimum, twenty-four consecutive hours off in every seven day period or what is required by local law, whichever is greater, except during peak harvest periods, provided such a period does not exceed 30 days and that workers are paid for overtime.

- e. The Handler shall not require workers to work more than 16 consecutive hours in a 24-hour period.

18.1.2.2. Tier 2 Requirements: Working Hours and Overtime

- a. The Handler shall compensate workers for overtime hours at a rate that is higher than required by local or national laws, or at least 50% higher than regular wages, where no local or national laws.

18.1.3. Freedom of Association, Right to Organize and Collective Bargaining

18.1.3.1. Tier 1 Requirements: Freedom of Association, Right to Organize and Collective Bargaining

- a. The Handler shall acknowledge in writing the workers' right to freedom of association, in accordance with ILO Convention 87 [Add. Ref. 6].
- b. The Handler shall state in writing that both the employer and workers shall each have the right to establish organizations, to draw up the rules of the organizations, to elect representatives, and to formulate programs and activities aimed at benefiting workers and their families, in accordance with ILO Convention 87 [Add. Ref. 6].
- c. The Handler shall acknowledge in writing the workers' the right to collective bargaining, in accordance with ILO Convention 87 [Add. Ref. 6].
- d. The Handler shall not terminate or enact punitive measures against any worker for involvement in union organization activities, or engage in anti-union activities, in accordance with ILO Conventions 98 and 135 [Add. Ref. 6]. Any workers who have been subject to punitive action or terminated for such activities shall be reinstated or receive appropriate compensation.
- e. The Handler shall not subject worker representatives to discrimination, harassment, or administrative oversight, and shall provide worker representatives with access to all workplaces necessary to enable them to carry out their representation functions, as per ILO Conventions 98 and 135 [Add. Ref. 6]. The Handler and its workers, or worker representatives, shall meet on a regular basis.
- f. The Handler shall ensure the right of workers to gather to discuss workplace grievances without fear of reprisal or other negative consequences.

18.1.3.2. Tier 2 Requirements: Freedom of Association, Right to Organize and Collective Bargaining

- a. The Handler shall recognize a democratically-elected workers' association, if such an association has been formed.

- b. The Handler shall establish a schedule of regular meetings to be held between the workers' associations and management.
- c. The Handler shall provide funding to worker-sanctioned programs or to a worker productivity stimulus plan subject to approval by a democratically-elected workers' association.

18.1.4. Vacation and Sick Leave

18.1.4.1. Tier 1 Requirements: Vacation and Sick Leave

- a. The Handler shall provide full-time workers paid sick leave and worker's compensation program that meets or exceeds the local or nationally mandated minimum.
- b. The Handler shall provide full-time workers with a vacation plan that meets national or local law, including national holidays, under which paid vacation days are accrued.

18.1.4.2. Tier 2 Requirements: Vacation/Sick Leave

- a. The Handler shall provide all workers with paid sick leave and a worker's compensation program that meets or exceeds the local or nationally mandated minimum.
- b. The Handler shall extend sick leave to all workers.
- c. The Handler shall allow workers to carry over accrued vacation days to the next year, if not used in a given year.

18.1.5. Child Labor and Forced Labor

18.1.5.1. Tier 1 Requirements: Child Labor / Forced Labor

- a. The Handler shall not accept employment of any persons under the age of 15 or whatever age is required under local or national law, whichever is older, in accordance with ILO Convention 138 [Add. Ref. 6]. Exceptions to this requirement may be made for family businesses that do not regularly employ hired workers, to be evaluated on a case-by-case basis.
- b. The Handler shall not allow workers under the age of 18 to handle potentially harmful chemicals, or undertake jobs that inherently have the potential to jeopardize health and safety as per ILO Convention 138 [Add. Ref. 6].
- c. The Handler shall observe all legal requirements for the work of authorized minors, including, but not limited to, those pertaining to hours of work, wages, minimum education and working conditions.
- d. The Handler shall have an enforced policy prohibiting the use of forced labor, compulsory labor, slave labor, bonded labor, indentured labor or involuntary convict labor.
- e. The Handler shall maintain the following documentation for all workers who are legal minors under the age of 18:
 - i. Name
 - ii. Date of birth
 - iii. Current address
 - iv. Name of parents or legal guardian

- v. Employment authorization signed by parents or legal guardian
- vi. Type of work being conducted
- vii. Number of hours assigned and worked
- viii. Salary

18.1.5.2. Tier 2 Requirements: Child Labor / Forced Labor

Currently there are no Tier 2 requirements.

18.2. Workplace Conditions

18.2.1. Access to Housing, Potable Water and Sanitary Facilities

18.2.1.1. Tier 1 Requirements: Access to Housing, Potable Water and Sanitary Facilities

- a. The Handler shall provide workers with a clean, safe and litter-free working environment that includes, but is not limited to, convenient access to toilet facilities in adequate numbers, adequate lighting, access to clean eating areas, convenient access to potable water, sufficient ventilation and/or heating, and access to first aid kits and equipment for emergencies.²¹
- b. The Handler shall provide workers with ready access to potable water. If water supply is not maintained by relevant government authorities, then potability is documented through regular chemical analysis to WHO potability or national standards, whichever are higher.

18.2.1.2. Tier 2 Requirements: Access to Housing, Potable Water and Sanitary Facilities

Currently there are no Tier 2 requirements.

18.2.2. Worker Training

18.2.2.1. Tier 1 Requirements: Worker Training

- a. The Handler shall provide training to all workers covering the following topics: worker rights; employer responsibilities to workers; non-discrimination and sexual harassment; policies related to workers and working conditions; and personal safety/hygiene. In addition, if pesticides or other hazardous substances are used at the worksite, then all workers shall be trained in: i) steps to reduce workplace exposures to themselves and their families, ii) information about the immediate, intermediate and long-term health risks to workers and their families, including risks to pregnant women, from exposure to the specific compounds

²¹ World Health Organization or national potable water standards, whichever are higher.

- used at the worksite, and iii) contact information for nearby low-cost or free legal and health services
- b. The Handler shall provide training to workers who are involved with the operation of equipment and machinery, or who are asked to perform inherently dangerous tasks, in the use of protective equipment and proper operational procedures.
 - c. The Handler shall provide training to workers who are in contact with pesticides or other potentially hazardous substances in: i) the use of proper clothing and additional protective equipment; ii) safe handling of hazardous materials, chemicals and biological agents; iii) understanding of chemical labels and MSDS sheets; and iv) the operation of application and mixing equipment (consistent with ILO Convention 170, and *FAO Guidelines For Personal Protection When Working With Pesticides In Tropical Climates* [Add. Ref. 3, Add. Ref. 6]).
 - d. The Handler shall inform workers during training about hazards associated with exposure to chemicals used at the workplace, and instruct workers on how to obtain and use the information provided on labels and MSDS sheets (consistent with ILO Convention 170), including an explanation that: i) workers may be suffering from a pesticide-related illness when they are experiencing symptoms associated with the pesticides to which they have been exposed; ii) MSDS sheets and labels can help a health professional diagnose a pesticide-related condition; and iii) these documents should be provided to a health care provider, in case of suspected poisoning, consistent with US and international norms [Norm. Ref. 1, Add. Ref. 6].
 - e. The Handler shall include in worker training program a discussion of emergency procedures, contingency plans and procedures that have been developed to address potential emergencies, consistent with ILO Convention C5 [Add. Ref. 6], such as fire, flood, workplace accidents and other disasters.
 - f. The Handler shall maintain a written record documenting instructors, materials and attendance for all worker trainings.
 - g. Trainings shall occur at regular intervals, at a minimum yearly, free of charge, and during regular working hours.
 - h. The Handler shall schedule regular safety meetings for all relevant workers.

18.2.2.2. Tier 2 Requirements: Worker Training

- a. The Handler shall provide training to migrant workers about their rights and responsibilities, including provisions in the case of loss of employment, freedom from harassment, and non-discrimination, consistent with ILO Convention 143 [Add. Ref. 6].

18.2.3. Occupational Health and Safety

18.2.3.1. Tier 1 Requirements: Occupational Health and Safety

- a. The Handler shall develop and enforce written policies and procedures governing the safe use of chemicals in the workplace, consistent with US Worker Protection Standards [Norm. Ref. 1] and ILO Convention 170 [Add. Ref. 6].

- b. The Handler shall establish written safety procedures to be followed in the event of accidents or exposures to hazardous materials.
- c. The Handler shall provide instruction in, and enforcement of, proper use of equipment safety guards and personal protective gear, including clothing and additional equipment.
- d. The Handler shall provide decontamination supplies for all workers who handle, mix, or apply agrochemicals with access to eye baths, hand washing and showers with soap and single use towels, after the handling of such chemicals.
- e. The Handler shall require workers or others who may be exposed to hazardous chemicals, airborne particulates, or other physical workplace risks, to wear appropriate clothing and additional protective equipment when mixing and applying chemical and biological agents operating machinery, in accordance with ILO Convention 170, the UN FAO *Pesticide Storage and Stock Control Manual*, and the FAO *Guidelines For Personal Protection When Working With Pesticides In Tropical Climates* [Add. Ref. 3, Add. Ref. 5, Add. Ref. 6]. Such protective equipment shall be provided at no cost to all applicable workers, and may include: respirators, goggles or face shields, head protection, non-permeable overalls or ponchos, aprons, gloves, rubber boots, hearing protection, etc.
- f. The Handler shall maintain protective equipment in good working order, meeting local occupational health and safety standards. Such equipment shall be replaced by the Handler when deemed necessary, based on corroborated worker reports or external audits.
- g. The Handler shall describe procedures in place for ensuring that clothing worn during handling, mixing and application of pesticides does not pose a health risk to workers.
- h. The Handler shall prohibit workers under the age of 18 and pregnant women from handling, mixing or applying chemical and biological agents.
- i. In the case of pregnancy, the Handler shall reassign a worker to a position that does not involve heavy lifting, protracted bending or other inappropriate physical activities, without any reduction in pay.
- j. The Handler shall only assign workers who are trained as per 11.2.2.1(c) and (d) and authorized to apply chemical and biological agents and operating machinery to such tasks.
- k. The Handler shall not put workers in a situation that would result in exposure to chemicals any longer than allowable under law.
- l. The Handler shall ensure that agrochemicals are properly labeled or otherwise identified, that MSDS sheets for agrochemicals are available, and that records of agrochemical use are accessible to all workers concerned and their representatives, as per US Worker Protection Standards and ILO Convention 170 [Norm. Ref. 1, Add. Ref. 6].
- m. The Handler shall enforce the workers' rights to remove themselves from situations involving the use of chemicals or equipment when they have reasonable justification to believe that there is an imminent and serious risk to their safety or health. The Handler shall instruct workers who exercise this right should inform their supervisor immediately. No penalties shall be applied to workers who exercise this right, consistent with ILO Convention 170 [Add. Ref. 6].

- n. In the event of suspected pesticide exposure to a worker, a worker's family member or bystander, the Handler shall provide pesticide application information and a copy of the label(s) and MSDS or information sheets to the affected person, his/her representative or a health care professional, upon request, within 24 hours of the report of suspected exposure. In the event of a medical emergency, the information shall be provided within one hour.
- o. The Handler shall site and design work areas in a manner intended to promote worker safety and prevent risks to the environment, including such considerations as: i) unobstructed access for workers and work vehicles; ii) adequate ventilation and lighting; iii) readily cleanable walls, floors, and surfaces; iv) clearly marked emergency exits and pathways free from obstructions; v) proper containment and storage space for hazardous materials; vi) proper warning signage; and vii) access to emergency equipment such as fire extinguishers.
- p. The Handler shall ensure that work equipment that is potentially hazardous to operate is: i) maintained in good working condition; ii) stored safely and clean; and iii) equipped with safety devices, including the use of protective guards placed over moving parts when available. The Handler shall make operating instructions for safe use available to workers.
- q. The Handler shall have an enforced policy prohibiting the presence of any person under age 15 in any place on the property other than a designated suitable area (e.g., child care) or for specific family oriented events.
- r. The Handler shall prepare a summary report of worker accident/illness incidents at least annually, and shall include a description of the nature of injury or illness, and where and how the event occurred. Such events may include: work-site accidents, skin disorders, respiratory conditions, poisoning, hearing losses, deaths, days away from work.
- s. The Handler shall store safety records for at least three years (e.g., U.S. Occupational Safety and Health Administration OSHA Form 300).

18.2.3.2. Tier 2 Requirements: Occupational Health and Safety

- a. The Handler shall regularly monitor workers' knowledge of agrochemical application, if applicable to the Handling Operation, through meetings or other feedback mechanism.
- b. The Handler shall ensure that records of the monitoring of the working environment and of worker exposure to hazardous chemicals are kept for a period of no less than five years and are accessible to the workers and their representatives, in accordance with ILO Convention 170 [Add. Ref. 6].
- c. The Handler shall develop contingency plans in cooperation with worker representatives based upon a risk assessment of potential emergency situations that could arise, including but not limited to personal medical emergencies, fire, workplace accidents, chemical exposure, and natural disasters, consistent with ILO Convention C5 [Add. Ref. 6], and shall conduct drills at least annually.
- d. The Handler shall provide workers who are using protective equipment (e.g., boots, gloves, masks, suits) to handle, mix, or apply hazardous agrochemicals or other hazardous materials with a clothes changing station where contaminated clothing can be stored separately from street clothes.

- e. The Handler shall require that clothing worn during the handling, mixing and application of hazardous agrochemicals be removed on-site, and not be taken home by workers. Laundering shall be the responsibility of the Handler. Such clothes shall be washed and stored separately from other clothes.

18.2.4. Human Resources Management

18.2.4.1. Tier 1 Requirements for Human Resources Management

- a. The Handler shall establish a policy to ensure that the work environment is free of physical punishment or abuse, and free of verbal abuse or coercion of workers, and institute procedures to address incidents that may occur.
- b. The Handler shall establish a written policy describing the means by which workers can communicate grievances to designated management representatives. Workers shall be notified of such mechanisms, which shall guarantee no reprisals.
- c. The Handler shall establish a written procedure whereby workers can report incidents of sexual harassment to management without fear of reprisal, and educate workers about its policies and procedures.
- d. The Handler shall establish written grievance procedures for workers who experience sexual harassment, to ensure that worker complaints are fully investigated and that proper disciplinary action is taken where warranted.
- e. For Handling Operations employing more than 30 permanent workers, the Handler shall produce a written employee manual made available to all workers, which describes all relevant employment policies, including but not limited to hiring, termination, conditions of employment, workplace conditions, working hours, benefits, pay schedule, holidays, sick leave, non-discrimination, sexual harassment, unacceptable behavior.

18.2.4.2. Tier 2 Requirements for Human Resources Management

- a. For any size Handling Operation, regardless of the number of workers employed, the Handler shall produce a written employee manual made available to all workers, which describes all relevant employment policies, including but not limited to hiring, termination, conditions of employment, workplace conditions, working hours, benefits, pay schedule, holidays, sick leave, non-discrimination, sexual harassment, unacceptable behavior.
- b. The Handler shall designate an individual to assess the human resource (i.e., socio-economic) service needs of its workers, and implement a plan to address these needs.
- c. The Handler shall maintain auditable records regarding the rate of turnover of workers.

18.3. Worker and Worker Family Access to Services

18.3.1. Access to Health Services

18.3.1.1. Tier 1 Requirements: Access to Health Services

- a. The Handler shall have transportation and care procedures in place in case of medical emergency.
- b. The Handler shall maintain the appropriate supplies and equipment to address major medical emergencies associated with occupational health risks, including a first-aid kit, an eye flush and/or shower facility for accidental exposure to toxic pesticides and other hazardous chemicals and irritants.
- c. The Handler shall allow workers to have access to regular medical and dental wellness care during normal working hours.
- d. The Handler shall ensure workers the right to confidentiality in terms of their medical files.

18.3.1.2. Tier 2 Requirements: Access to Health Services

- a. The Handler shall develop and implement a formal process for assessing the health needs of its workers and their families.
- b. The Handler shall provide health benefits (medical/dental) to workers (e.g., contributions to a worker health insurance program, establishment of a worker health fund, provision of on-site health services).

18.3.2. Access to Transportation

18.3.2.1. Tier 1 Requirements: Access to Transportation

- a. The Handler shall assess the transportation needs of its workers, including availability of services and costs.

18.3.2.2. Tier 2 Requirements: Access to Transportation

- a. The Handler shall take significant steps to address the identified transportation needs of its workers.
- b. If migrant workers are recruited, the Handler shall address the issue of transportation of such workers to and from the site of employment in the initial work contract, consistent with Section 11.1.1.2 of this Standard.

18.4. Addressing Local and Regional Community Impacts

18.4.1. Tier 1 Requirements: Addressing Local/ Regional Community Impacts

18.4.1.1. Impacts on Areas of Historical, Religious or Cultural Interest

The Handler shall provide a summary of the ways in which the Handling Operation has impacted areas of significant historical, religious and cultural interest to the community (e.g., burial sites, churches, registered historic landmarks), if applicable.

18.4.1.2. Environmental Issues

The Handler shall provide a summary of the ways in which the Handling Operation has contributed to significant environmental issues of community concern (e.g., noise, chemical contamination, waste, transportation impacts, resource overuse, ecological damage, visual impacts).

18.4.2. Tier 2 Requirements: Addressing Local/Regional Community Impacts

18.4.2.1. Stakeholder Process for Assessment of Impacts Areas of Historical, Religious or Cultural Interest

The Handler shall conduct an assessment of the Handling Operation area to determine current or potential impacts to areas of significant historical, religious and cultural interest, if applicable. This assessment shall include a formal process for gathering input from neighbors and local stakeholders, including indigenous and tribal peoples where applicable. The Handler shall maintain an auditable record of this community engagement.

18.4.2.2. Stakeholder Process for Assessment of Environmental Issues

The Handler shall identify significant environmental issues of community concern (e.g., noise, chemical contamination, waste, transportation impacts, resource overuse, ecological damage, visual impacts) resulting from Handling Operation, if applicable. This assessment shall include a formal process for gathering input from neighbors and local stakeholders, including indigenous and tribal peoples where applicable. The Handler shall maintain an auditable record of this community engagement.

18.4.2.3. Implementation of Improvement Strategy

Based on its assessment of current or potential impacts to areas of significant historical, religious and cultural interest, the Handler shall implement practices and procedures to minimize current or potential impacts on areas of significant historical, religious and cultural interest in the vicinity of the Handling Operation.

18.4.2.4. Minimizing Operational Impacts on Environment

Based on its assessment of significant environmental issues of community concern, the Handler shall implement practices and procedures to minimize such operational impacts.

18.5. Providing Local and Regional Community Support

18.5.1. Tier 1 Requirements: Providing Local/Regional Community Support

18.5.1.1. Description of Current Policies

The Handler shall provide a summary of current policies related to:

- a. preferences for local hiring;
- b. procurement from regional sources; and
- c. contribution to community infrastructure maintenance.

18.5.2. Tier 2 Requirements: Providing Local/Regional Community Support

18.5.2.1. Local Hiring

The Handler shall develop and implement a policy establishing preferences for local hiring.

18.5.2.2. Regional Procurement

The Handler shall develop and implement policy that puts a priority on procurement from regional supplies and services.

18.5.2.3. Community Infrastructure Support

The Handler shall provide assistance of time, materials, or money for maintenance of community infrastructure (e.g., roads), especially where such infrastructure is impacted directly or indirectly by the Handling Operation.

18.5.2.4. Charitable Giving

The Handler shall have a written policy and procedure for providing charitable giving within the community, or contributing to environmental research, in the form of time, materials or money.

18.5.2.5. Supporting Local Health Institutions

The Handler shall engage in collaboration with local health authorities to support clinics/hospitals through donations of money, time, scholarships or materials.

18.2.2.6. Supporting Education Institutions

The Handler shall engage in collaboration with local education authorities to support local education institutions through donations of money, time, scholarships or materials.

18.6. Economic Viability

18.6.1. Tier 1 Requirements: Economic Viability

18.6.1.1. Financial Stability

The Handler shall provide documentation to substantiate that financial exigencies do not lead to decisions that compromise environmental protection and social sustainability objectives.

18.6.2. Tier 2 Requirements: Economic Viability

Currently there are no Tier 2 requirements.

Certification of Sustainably Grown
Cut Flowers and Potted Plants
Requirements for Growers and Handlers
Veriflora

Appendices

Appendix 1: Pesticides (Active Ingredients) Classified by the World Health Organization (WHO) as Extremely Hazardous (1a) or Highly Hazardous (1b)

Tables and Text excerpted from: "The WHO Recommended Classification of Pesticides by Hazard and Guidelines to Classification: 2004"

Extremely Hazardous (1a)							
Common name / Active Ingredient	CAS no	UN no.	Chemical Type	Physical state	Main Use	LD 50 mg/kg	Remarks
Aldicarb [ISO]	116-06-3	2757	C	S	I-S	0.93	DS 53; EHC 121; HSG 64; IARC 53; ICSC 94; JMPR 1996a
Brodifacoum [ISO]	56073-10-0	3027	CO	S	R	0.3	DS 57; EHC 175; HSG 93
Bromadiolone [ISO]	28772-56-7	3027	CO	S	R	1.12	DS 88; EHC 175; HSG 94
Bromethalin [ISO]	63333-35-7	2588		S	R	2	
Calcium cyanide [C]	592-01-8	1575		S	FM	39	Adjusted classification; see note 1; ICSC 407
Captafol [ISO]	2425-06-1			S	F	5000	Adjusted classification; see note 2; HSG 49; IARC 53; ICSC 119; JMPR 1978, 1986a; see note 3
Chlorethoxyfos [ISO]	54593-83-8	3018	OP	L	I	1.8	Extremely hazardous by skin contact (LD50 in rabbits 12.5 mg/kg)
Chlormephos [ISO]	24934-91-6	3018	OP	L	I	7	
Chlorophacinone [ISO]	3691-35-8	2588		S	R	3.1	DS 62; EHC 175
Difenacoum [ISO]	56073-07-5	3027	CO	S	R	1.8	EHC 175; HSG 95
Difethialone [ISO]	104653-34-1	2588		S	R	0.56	EHC 175
Diphacinone [ISO]	82-66-6	2588		S	R	2.3	EHC 175
Disulfoton [ISO]	298-04-4	3018	OP	L	I	2.6	DS 68; JMPR 1992, 1997a
EPN	2104-64-5	2783	OP	S	I	14	See note 4; ICSC 753
Ethoprophos [ISO]	13194-48-4	3018	OP	L	I-S	26	DS 79; JMPR 2000
Flocoumafen	90035-08-8	3027	CO	S	R	0.25	EHC 175; ICSC 1267
Hexachlorobenzene [ISO]	118-74-1	2729	OC	S	FST	10000	Adjusted classification; see notes 3 and 5; DS

Extremely Hazardous (1a)							
							26; IARC 79; ICSC 895
Mercuric chloride [ISO]	7487-94-7	1624	HG	S	F-S	1	See note 3; ICSC 979
Mevinphos [ISO]	26718-65-0	3018	OP	L	I	12	DS 14; ICSC 924; JMPR 1998b
Parathion [ISO]	56-38-2	3018	OP	L	I	13	See note 3; DS 6; HSG 74; IARC 30, Suppl. 7; ICSC 6; JMPR 1996b
Parathion-methyl [ISO]	298-00-0	3018	OP	L	I	14	See note 3; DS 7; EHC 145; HSG 75; ICSC 626; JMPR 1985c, 1996b
Phenylmercury acetate [ISO]	62-38-4	1674	HG	S	FST	24	Adjusted classification; see notes 3 and 6; ICSC 540
Phorate [ISO]	298-02-2	3018	OP	L	I	2	DS 75; JMPR 1997b, 2005
Phosphamidon	13171-21-6	3018	OP	L	I	7	See note 3; DS 74; ICSC 189; JMPR 1987b; CAS Nos for E and Z isomers 297-99-4 and 23783-98-4
Sodium fluoroacetate [C]	62-74-8	2629		S	R	0.2	DS 16
Sulfotep [ISO]	3689-24-5	1704	OP	L	I	5	ICSC 985
Tebupirimfos [ISO*]	96182-53-5	3018	OP	L	I	1.3	Extremely hazardous by skin contact (LD50 9.4 mg/kg in rats)
Terbufos [ISO]	13071-79-9	3018	OP	L	I-S	1.6	JMPR 1991, 2004

EHC = Environmental Health Criteria Monograph; DS= Pesticide Data Sheet; HSG = Health and Safety Guide; IARC = IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; ICSC = International Chemical Safety Card; JMPR = Evaluation by the Joint FAO/WHO Meeting on Pesticide Residues.

Notes to Class 1a

1. Calcium cyanide is in Class 1a as it reacts with moisture to produce hydrogen cyanide gas. The gas is not classified under the WHO system (see Table 8).
2. Captafol is carcinogenic in both rats and mice.
3. The international trade of captafol, hexachlorobenzene, mercury compounds, parathion, parathion-methyl, and phosphamidon is regulated by the Rotterdam convention on Prior Informed Consent (see <http://www.pic.int/>), which entered into force on 24 February 2004. See table 7, p. 39
4. EPN has been reported as causing delayed neurotoxicity in hens.
5. Hexachlorobenzene has caused a serious outbreak of porphyria in humans. The use and production of hexachlorobenzene is severely restricted by the Stockholm convention on persistent organic pollutants, which entered into force on 17 May, 2004. See <http://www.pops.int/>

6. Phenylmercury acetate is highly toxic to mammals and very small doses have produced renal lesions: teratogenic in the rat.

Highly Hazardous (1b)							
Common name / Active Ingredient	CAS no	UN no.	Chemical Type	Physical state	Use	LD 50 mg/kg	Remarks
Acrolein [C]	107-02-8	1092	F	L	H	29	EHC 127; HSG 67; IARC 63; ICSC 90
Allyl alcohol [C]	107-18-6	1098	Alcohol	L	H	64	Highly irritant to skin and eyes; ICSC 95
Azinphos-ethyl [ISO]	2642-71-9	2783	OP	S	I	12	DS 72; JMPR 1974
Azinphos-methyl [ISO]	86-50-0	2783	OP	S	I	16	DS 59; ICSC 826; JMPR 1992
Blasticidin-S	2079-00-7	2588	ON	S	F	16	
Butocarboxim [ISO]	34681-10-2	2992	C	L	I	158	JMPR 1985a
Butoxycarboxim [ISO]	34681-23-7	2992	C	L	I	288	
Cadusafos [ISO]	95465-99-9	3018	OP	L	N, I	37	JMPR 1992
Calcium arsenate [C]	7778-44-1	1573	AS	S	I	20	EHC 224; IARC 84; ICSC 765; JMPR 1969
Carbofuran [ISO]	1563-66-2	2757	C	S	I	8	DS 56; ICSC 122; JMPR 1997b, 2003b. See note 2
Chlorfenvinphos [ISO]	470-90-6	3018	OP	L	I	31	ICSC 1305; JMPR 1995b
3-Chloro-1,2-propanediol [C]	96-24-2	2689	ON	L	R	112	See note 1
Coumaphos [ISO]	56-72-4	2783	OP	S	AC, MT	7.1	ICSC 422; JMPR 1991
Coumatetralyl [ISO]	5836-29-3	3027	CO	S	R	16	
Zeta-cypermethrin [ISO]	52315-07-8	3352	PY	L	I	166	See note 9, p. 7; HSG 22; ICSC 246
Demeton-S-methyl [ISO]	919-86-8	3018	OP	L	I	40	DS 61, EHC 197; ICSC 705; JMPR 1990
Dichlorvos [ISO]	62-73-7	3018	OP	L	I	56	Volatile, DS 2; EHC 79; HSG 18; IARC 20, 53; ICSC 690; JMPR 1994
Dicrotophos [ISO]	141-66-2	3018	OP	L	I	22	ICSC 872
Dinoterb [ISO]	1420-07-1	2779	NP	S	H	25	
DNOC [ISO]	534-52-1	2779	NP	S	I-S, H	25	JMPR 1965a, EHC 220. See note 2
Edifenphos [ISO]	17109-49-8	3018	OP	L	F	150	JMPR 1982
Ethiofencarb [ISO]	29973-13-5	2992	C	L	I	200	JMPR 1983
Famphur	52-85-7	2783	OP	S	I	48	

Highly Hazardous (1b)							
Fenamiphos [ISO]	22224-92-6	2783	OP	S	N	15	DS 92; ICSC 483; JMPR 1998b, 2003b
Flucythrinate [ISO]	70124-77-5	3352	PY	L	I	67	Irritant to skin and eyes, see note 9, p.7; JMPR 1986b
Fluoroacetamide [C]	640-19-7	2588	C	S	R	13	See note 2
Formetanate [ISO]	22259-30-9	2757	C	S	AC	21	
Furathiocarb	65907-30-4	2992	C	L	I-S	42	
Heptenophos [ISO]	23560-59-0	3018	OP	L	I	96	
Isoxathion [ISO]	18854-04-8	3018	OP	L	I	112	
Lead arsenate [C]	7784-40-9	1617	AS	S	L	10	EHC 224; IARC 84; ICSC 911; JMPR 1969
Mecarbam [ISO]	2595-54-2	3018	OP	Oil	I	36	JMPR 1987a
Mercuric oxide [ISO]	21908-53-2	1641	HG	S	O	18	ICSC 981, CICAD 50. See note 2
Methamidophos [ISO]	10265-92-6	2783	OP	S	I	30	See note 2; HSG 79; ICSC 176; JMPR 1991, 2003b
Methidathion [ISO]	950-37-8	3018	OP	L	I	25	JMPR 1998b
Methiocarb [ISO]	2032-65-7	2757	C	S	I	20	JMPR 1999
Methomyl [ISO]	16752-77-5	2757	C	S	I	17	DS 55, EHC 178; HSG 97; ICSC 177, JMPR 1989, 2002
Monocrotophos [ISO]	6923-22-4	2783	OP	S	I	14	See note 2; HSG 80; ICSC 181; JMPR 1996b
Nicotine [ISO]	54-11-5	1654	ON	L	I	50	ICSC 519
Omethoate [ISO]	1113-02-6	3018	OP	L	I	50	JMPR 1997a
Oxamyl [ISO]	23135-22-0	2757	C	S	I	6	DS 54; JMPR 1986b, 2003b
Oxydemeton-methyl [ISO]	301-12-2	3018	OP	L	I	65	JMPR 1990, 2003b
Paris green [C]	12002-03-8	1585	AS	S	L	22	Copper-arsenic complex
Pentachlorophenol [ISO]	87-86-5	3155	OP	S	I, F, H	80	See note 2; Irritant to skin; EHC 71; HSG 19; IARC 53; ICSC 69
Propetamphos [ISO]	31218-83-4	3018	OP	L	I	106	
Sodium arsenite [C]	7784-46-5	1557	AS	S	R	10	EHC 224; IARC 84
Sodium cyanide [C]	143-33-9	1689	CY	S	R	6	ICSC 1118; CICAD 61
Strychnine [C]	57-24-9	1692		S	R	16	ICSC 197

Highly Hazardous (1b)							
Tefluthrin	79538-32-2	3349	PY	S	I-S	22	See note 9, p. 7
Thallium sulfate [C]	7446-18-6	1707	OS	S	R	11	DS 10, EHC 182; ICSC 336
Thiofanox [ISO]	39196-18-4	2757	C	S	I-S	8	
Thiometon [ISO]	640-15-3	3018	OP	Oil	I	120	DS 67; ICSC 580; JMPR 1980
Triazophos [ISO]	24017-47-8	3018	OP	L	I	82	JMPR 1994, 2003b
Vamidothion [ISO]	2275-23-2	3018	OP	L	I	103	JMPR 1989
Warfarin [ISO]	81-81-2	3027	CO	S	R	10	DS 35, EHC 175; HSG 96; ICSC 821
Zinc phosphide [C]	1314-84-7	1714	OP	S	R	45	S 24, EHC 73; ICSC 602

EHC = Environmental Health Criteria Monograph; DS= Pesticide Data Sheet; HSG = Health and Safety Guide; IARC = IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; ICSC = International Chemical Safety Card; JMPR = Evaluation by the Joint FAO/WHO Meeting on Pesticide Residues.

Notes to Class 1b

1. 3-Chloro-2,3-propanediol in nonlethal dosage is a sterilant for male rats. This compound is also known as alpha chlorhydrin.
2. The international trade of carbofuran, DNOC, fluoroacetamide, methamidophos, monocrotophos, and pentachlorophenol is regulated by the Rotterdam convention on Prior Informed Consent (see <http://www.pic.int/>), which entered into force on 24 February 2004. See Table 7, p. 39.

ENTRIES AND ABBREVIATIONS USED IN THE TABLES

Active ingredients printed in italics in tables 1-5 are either new or have been reclassified.

Column 1: Sequential number of active ingredients, preceded by an indicator of the category in the classification.

Column 2: Common name. [ISO] denotes common name of the active ingredient approved by the International Organization for Standardization. Such names are, when available, preferred by WHO to all other common names. However, attention is drawn to the fact that some of these names may not be acceptable for national use in some countries. If the letters ISO appear within parentheses (ISO), this indicates that ISO has standardized (or is in the process of standardizing) the name of the base, but not the name of the derivative listed in column 1. For example, fentin acetate (ISO) indicates that fentin is an ISO name, but fentin acetate is not. ISO* denotes pending ISO approval of the name. C denotes chemical, trivial, or other common name.

Column 3: CAS Registry number: The number for the chemical, not those for e.g., different esters or salts are given.

Column 4: UN number refers to the UN Recommendations on the transport of dangerous goods, Eleventh revision (1999). This is given only for active ingredients in Tables 1, 2, 3 or 4, since so few ingredients in Table 5 have UN numbers. The UN number refers only to the active ingredient; formulations are likely to have different numbers, since the ingredient may, for example, be dissolved in a solvent - and liquid products have different UN numbers, which depends on their flammability.

Column 5: Chemical type. Only a limited number of chemical types are shown. Most have some significance in the sense that they may have a common antidote, or may be confused in the nomenclature with other chemical types — e.g., thiocarbamates are not cholinesterase inhibitors and do not have the same effects as carbamates. Chemical type is also a determinant of the UN numbering system. These chemical classifications are included only for convenience, and do not represent a recommendation of the part of the World Health Organization as to the way in which the pesticides should be classified. It should, furthermore, be understood that some pesticides may fall into more than one type.

AS Arsenic compound	HG Mercury compound	PAA Phenoxyacetic acid derivative
BP Bipyridylium derivative	NP Nitrophenol derivative	PZ Pyrazole
C Carbamate	OC Organochlorine compound	PY Pyrethroid
CO Coumarin derivative	OP Organophosphorus compound	T Triazine derivative
CU Copper compound	OT Organotin compound	TC Thiocarbamate

Column 6: Physical state. Refers only to the active ingredient. L denotes liquid, including solids with a melting point below 50°C; oil denotes oily liquids and S solids, including waxes. The physical state may affect the exposure potential and thus the absorbed amount of the chemical, and thus is a factor affecting the classification (See table on page 3 in Part 1).

Column 7: Main use. In most cases only a single use is given. This is only for identification purposes and does not exclude other uses.

AC acaricide	I insecticide	O other use for plant pathogens
AP aphicide	IGR insect growth regulator	PGR plant growth regulator
B bacteriostat (soil)	Ix ixodicide (for tick control)	R rodenticide
FM fumigant	L larvicide	RP() repellent (species)
F fungicide, other than for seed treatment	M molluscicide	-S applied to soil: not used with herbicides or plant growth regulators
FST fungicide, for seed treatment	MT miticide	SY synergist
H herbicide	N nematocide	

Column 8: LD50. The LD50 value is a statistical estimate of the number of mg of toxicant per kg of body weight required to kill 50% of a large population of test animals: the rat is used unless otherwise stated. Usually a single value, but sometimes a range is given. "c" preceding the value indicates that it is a value within a wider than usual range, adopted for classification purposes. When several different values are reported in the literature, the lowest is reported and used as the basis of classification, unless there are clear indications that a higher value is more reliable. Oral route values are used unless the dermal route values place the compound in a more hazardous class, or unless the dermal values are significantly lower than the oral values, although in the same class. Dermal LD50 values are indicated with the letter D.

Column 9: Remarks. This column is used to indicate cases in which the classification of a technical product has been adjusted (i.e., the oral LD50 value is not directly used as the basis of classification); Major irritant properties are also noted although they do not affect the classification. Sources of further information may also be given here: DS denotes a WHO/FAO Data Sheet on Pesticides, EHC an Environmental Health Criteria monograph, HSG a Health and Safety Guide, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, ICSC an International Chemical Safety Card and JMPR an evaluation by the Joint FAO/WHO Meeting on Pesticide Residues. These publications (with the exception of IARC Monographs) can be found on the IPCS web site (<http://www.who.int/pcs/>).

Appendix 2: Treated Wastewater Parameters

Water quality parameter	Recommended values (mg/L)	
BOD	50	
Suspended solids	50	
pH	6.0-9.0	
<i>Discharge rates</i>	<i>Sampling</i>	<i>Analysis</i>
<10 m ³ /day	Monthly	Annual
10 to 100 m ³ /day	Weekly	Each semester
>100 m ³ /day	Daily	Quarterly
Heavy metals and other organic and inorganic contaminants	According to national legislation or, in its absence, US EPA values.	

Source: US Environmental Protection Agency (EPA).
National recommended water quality criteria: 2002.
 EPA 822/R/02/047. Washington, DC., [Norm. Ref. 5]

Certification of Sustainably Grown
Cut Flowers and Potted Plants
Requirements for Growers and Handlers
Veriflora

Sector Specific Annexes

Annex 1: Cut Flowers

I. Purpose and Scope of Annex

This Annex is intended to be used in conjunction with the Standard to identify and encourage sustainable production practices, and to stimulate continuing improvement, in the cut flower industry. In addition to the requirements found in the Standard for sustainable agriculture production and handling operations, cut flower producers and handlers shall conform to the sector-specific Tier 1 and Tier 2 requirements described in this Annex. The table below identifies critical requirements for certification, as a supplement to the table found section 3.1 of the Standard.

II. References

Currently there are no references for this Annex.

III. Terminology

Cold Chain Management. Maintaining the proper hydration and temperature of cut flowers, foliage and fillers to achieve maximum shelf-life through appropriate temperature, humidity, and hydration control methods, from the time products are harvested through the time of sale. Temperatures are maintained at or below 41° Fahrenheit, or between 50 and 65°F for tropicals.

IV. Conformance

For this Annex, the following sector-specific critical requirements for conformance have been identified:

Critical Requirements for Producers		Critical Requirements for Handlers
V.1.1.2	V.4.1.3.	VI.1.1.1.
V.1.1.4	V.4.1.4.	VI.1.1.2.
V.2.1.1.	V.4.1.5.	VI.1.1.3.
V.4.1.1.	V.4.1.6.	VI.1.1.4.
V.4.1.2.		

V. Producer Requirements

V.1. Sustainable Crop Production

V.1.1. Tier 1 Requirements: Sustainable Crop Production

V.1.1.1. Auditable Agrochemical Rotation

The Producer shall develop and implement an auditable agrochemical rotation strategy for all applied products (e.g., reduced risk, botanicals).

V.1.1.2. Weekly Pest/Disease Monitoring

Monitoring for pest/diseases are carried out by designated personnel at least weekly for sampled beds or rows, with auditable records kept by pest/disease vector.

V.1.1.3. Weed Control Plan

The Producer shall establish a plan to eliminate non-mechanical or cultural weed control.

V.1.1.4. Pesticide Usage

Consistent with Sections 7.1.1.2, 7.1.1.3 and 7.1.1.4 of the Standard, pesticide usage shall conform to Tables 1 - 3, as provided at the end of this Annex. [Note that Tables 1-3 may be modified to accommodate any additional pesticides identified as candidates for usage by flower production operations, pending evaluation in accordance with the assessment matrix provided in 7.1.1.3.c.ii.]

V.1.2. Tier 2 Requirements: Sustainable Crop Production

V.1.2.1. Pest / Disease Control

The Producer shall demonstrate that biological or other pest/disease products permitted under the US National Organic Program (e.g., soaps, detergents, ethyl alcohol) are the principal source of control.

V.1.2.2. Monitoring of Pests/Diseases and Beneficials

The Producer shall monitor the principal pests/diseases and keystone beneficial organisms on a spatial basis (e.g., through GIS in fields, color-banding on rows or beds in greenhouse). These records shall be kept at least 2 years.

V.1.2.3. Weed Control

The Producer shall utilize only mechanical or cultural weed control means.

V.1.2.4. Quantitative Plant Nutrition Assessment

The Producer's method for assessing plant nutrition requirements shall be quantitative in nature (see Standard, 7.2.2.1).

V.1.2.5. Fertilizer Recycling

The Producer shall recycle fertilizer run-off or leachates, including but not limited to: synthetic fertilizers, fertilizers of biological origin, mycorrhizae, compost and compost teas, and any other soil additives.

V.2. Resource Conservation and Energy Efficiency

V.2.1. Tier 1 Requirements: Resource Conservation and Energy Efficiency

V.2.1.1. Calibration of Water Usage

Where temperature and/or humidity sensors automatically trigger irrigation systems, the Producer shall independently calibrate the overall usage (e.g., bi-level tensiometers, soil moisture blocks, soil observation pits).

V.2.2. Tier 2 Requirements: Resource Conservation and Energy Efficiency

V.2.2.1. Chemical / Bacterial Water Analysis

The Producer shall conduct chemical and bacterial water analysis of the farm's irrigation source(s) at least twice per year. A monitoring plan is in place to mitigate salt, acidity and/or bacterial levels where thresholds are seasonally exceeded.

V.2.2.2. Discharge Monitoring

The Producer shall demonstrate through an accredited third-party laboratory that discharges are compliant with local or national wastewater regulations and that all pesticides levels from deep wells or other monitored sources do not exceed human or keystone species thresholds, where these are established nationally or regionally.

V.3. Integrated Waste Management

V.3.1. Tier 1 Requirements: Integrated Waste Management

Currently there are no additional Tier 1 requirements.

V.3.2. Tier 2 Requirements: Integrated Waste Management

V.3.2.1. Rinsate Recycling

The Producer shall recycle pesticide rinsates into spray tanks (e.g., from washing spray equipment, uniforms, pesticide containers) or deactivate agrochemical rinsates (e.g., carbon filters in septic tanks).

V.4. Product Quality

V.4.1. Tier 1 Requirements: Product Quality

V.4.1.1. Cut Date / Bunch Date

The Producer shall label all farm shipments with the product cut date and/or bunching date.

V.4.1.2. Phytosanitation

The Producer shall develop written phytosanitary control policies and procedures intended to maximize the life of floral products, including minimum specifications for the cleansing, sterilization, replacement and/or sharpening of hydration vessels, post-harvest handling areas and cutting instruments.

- a. All sorting/grading tables and racks, and cutting and storage instruments and receptacles shall be cleansed daily. Cleansing and sterilization agents shall be used where proven effective based on the vase-life test results.
- b. White or light color-coded buckets or other receptacles shall be used for conformant products.
- c. The Producer shall designate an individual responsible for the routine filing or sharpening of cutting tool. A sharpened replacement for the circular cut-off saw shall be on the premise. The sharpening angle for circular cut-off saws shall be at least 4 degrees.
- e. The Producer shall record the use of any fumigants, consistent with the requirements of 7.1.1.3.c.
- f. The Producer shall institute basic ethylene reduction procedures that include daily disposal of plant waste, hydration, pre-cooling (where feasible), and adequate ventilation of areas that may accumulate ethylene.

V.4.1.3. Vase-Life / Transportation Simulation

A vase-life and transportation simulation testing protocol shall be developed by the Producer.

- a. The transportation simulation shall be based on the estimated transit period, including estimated temperatures. The vase-life protocol shall, at a minimum, extend from post-harvest shipment to seven days beyond the transportation simulation.
- b. Floral developmental data and data pertaining to quality defects shall be recorded in an auditable form.
- c. The Producer shall provide conformant Handlers with relevant summary data from its vase-life and transportation simulation testing.

V.4.1.4. Fungal Testing

If the floral variety is susceptible to *Botrytis* sp. or other fungal decay, testing shall be carried out to simulate floral handling during shipment.

V.4.1.5. Hydration

The Producer shall utilize hydration methods as needed in the field, in the post-harvest facility, and during shipment. Recognized life extension water treatments shall be used where proven cost effective for conformant floral varieties.

V.4.1.6. Cold Chain Management

The Producer shall develop policies and procedures to ensure proper cold chain management of its floral products.

- a. All floral products shipments shall be supervised by a designated manager.
- b. The Producer shall assure that all transportation is equipped with fully operational cooling equipment meeting the Quality Manual specifications for temperature and humidity.
- c. Cold storage facility and transfer temperatures shall be maintained at or below 41° Fahrenheit, or between 50 and 65° Fahrenheit for tropicals.
- d. The Producer shall record temperatures of floral product lots and of refrigerated transport boxes at the time of departure from the farm and at the time of off-loading at the shipping agent's premises, and maintain an annual summary.
- e. For products stored longer than 6-10 hours, humidity shall be maintained at a minimum of 80-85%.

V.4.1.7. Customer Credit

The Producer shall demonstrate compliance with a standard of less than 1% customer credits.

V.4.2. Tier 2 Requirements

V.4.2.1. Microbial Testing

Microbial testing to insure proper sanitation shall be carried out randomly at least once a month during the harvesting season.

V.4.2.2. Storage Time and Date of Shipment

The Producer shall maintain a written policy regarding the length of time that a floral product may be stored before being placed in the shipping container (box), and shall legibly indicate the date on which floral products are placed in their shipping containers, either directly on the container or label, or on shipping documents accompanying the shipment.

V.4.2.3. Temperature Management for Transport

- a. The Producer shall use a sealed loading dock or comparable approach for all palletized shipments of conformant agricultural product to ensure continuity in temperature management.
- b. The Producer shall provide transporters with shaded parking as needed.

VI. Handler Requirements

VI.1. Product Quality

VI.1.1. Tier 1 Requirements: Product Quality

V1.1.1.1. Phytosanitation

- a. The Handler shall develop written phytosanitary control policies and procedures intended to maximize the life of floral products, including minimum specifications for the cleansing, sterilization, replacement and/or sharpening of hydration vessels, handling areas and cutting instruments.
- b. All sorting and repacking tables, cutting and storage instruments, and receptacles shall be cleansed at least weekly.
- c. The Handler shall use sterilization agents and conduct bacterial tests at least bi-monthly.
- d. White or light color-coded buckets or other receptacles shall be used for conformant products.
- e. The Handler shall designate an individual responsible for the routine filing or sharpening of cutting tool. A sharpened replacement for the circular cut-off saw shall be on the premise. The sharpening angle for circular cut-off saws shall be at least 4 degrees.
- f. The Handler shall record the use of any fumigants, consistent with the requirements of 7.1.1.3.c.
- g. The Handler shall institute basic ethylene reduction procedures that include daily disposal of plant waste, hydration, pre-cooling (where feasible), and adequate ventilation of areas that may accumulate ethylene.

VI.1.1.2. Cold Chain Management

The Handler shall develop policies and procedures to ensure proper cold chain management of its floral products.

- a. All floral products shipments shall be supervised by a designated manager.
- b. The Handler shall assure that all transportation is equipped with fully operational cooling equipment meeting the Quality Manual specifications for temperature and humidity.
- c. Cold storage facility and transfer temperatures shall be maintained at or below 41° Fahrenheit, or between 50 and 65° Fahrenheit for tropics.
- d. The Handler shall record temperatures of floral product lots and of refrigerated transport boxes at the time of receipt at the Handler's facility and at the time of shipment from the Handler's facility, and maintain an annual summary.
- e. For products stored longer than 6-10 hours, humidity shall be maintained at a minimum of 80-85%.

VI.1.1.3. Hydration

The Handler shall utilize hydration methods in the handling facility and during shipment. Recognized life extension water treatments shall be used where proven cost effective for conformant floral varieties.

VI.1.1.4 Quality Inspections

The Handler shall inspect floral products for conformance to minimum product quality specifications, including but not limited to the following:

- a. Visual appearance — the product must be free from disease, marking or blemishes that would compromise the product’s aesthetic value.
- b. Grading — the product must meet minimum specifications for head or bloom size, bloom or berry count, bunch size and weight, stem count, stem length and strength.
- c. Cut Stage — the product must have an appropriate cut stage to ensure that the product develops to its full potential upon hydration and does not get damaged in packing or transit.
- d. Color/Variety Assortment — the product must meet the purchase order in terms of assortment of varieties and/or color.
- e. Packaging — the product must be packed, bound and presented in such a manner as to protect it from mechanical damage.

VI.1.1.5. “Best Before” Date

Based on a goal of providing the consumer with a guaranteed vase-life of at least five days, the Handler shall identify a “best before” date for all bouquets — i.e., the date beyond which the floral product quality would be expected to show signs of deterioration.²² The Handler shall determine the “best before” date based upon vase-life and transportation simulation testing provided by the Producer. (If Producer tests results are unavailable or unreliable, the Handler shall conduct vase life-testing.)

VI.1.1.6. Customer Credit

The Handler shall demonstrate compliance with a standard of less than 1% customer credits.

VI.1.2. Tier 2 Requirements: Product Quality

VI.1.2.1. Daily Cleansing

All sorting and repacking tables, cutting and storage instruments, and receptacles shall be cleansed daily.

²²The “best before” date should not be interpreted as a “sell-by” date, nor should it be used as a consumer quality claim. It could be used, however, by a handler in establishing a “sell-by date, by back-tracking five days.

VI.1.2.2. Temperature Management for Transport

- a. The Handler shall use a sealed loading dock or comparable approach for all palletized shipments of conformant agricultural product to ensure continuity in temperature management.
- b. The Handler shall provide transporters with shaded parking as needed.

**Cut Flowers Annex, Table 1: Pesticides Not Permitted for Use,
or Permitted During Phase-Out Period Only on a Case-by-Case Basis²³**

Includes EPA Class I Pesticides or Pesticides that are Highly, Very Highly or Extremely Ecotoxic

Pesticide Active Ingredient	EPA Toxicity Class (I); Ecotoxicity (E)	Case-by-Case Review Required
1,3-Dichloropropene	I	YES
Abamectin (Avermectin)	E	YES
Arsenic Acid	I	
Captan	I	
Carbaryl	E	
Chloropicrin	I	YES
Chlorothalonil (Emulsifiable Concentrate)	I, E	YES
Chlorpyrifos (Emulsifiable Concentrate) ^{a)}	I, II, E	YES
Copper Ethanolamine Complex	I	
Copper Hydroxide	I	
Copper Sulfate	I	
Cyfluthrin (Emulsifiable Concentrate)	I	
Deltamethrin	E	
Endosulfan	I	
Fenbutatin-Oxide (Emulsifiable Concentrate)	I	
Fludioxonil	E	
Fluvalinate	E	
Kresoxim-methyl	I	
Metam-Sodium	I	YES
Methyl bromide	I	YES
Methyl Parathion	I	
Myclobutanil (Emulsifiable Concentrate)	I	
Naled	I	
Oxadiazon (Emulsifiable Concentrate)	I	
Paraquat	I	
PCP	E	
Propargite	I	
Propoxur	I, E	
Pyraclostrobin	E	
Thiabendazole	E	
Thiamethoxam	E	
Thiophanate-methyl	E	
Tralomethrin	E	
Triforine	I	

²³ Case-by-case review will consider availability of viable alternatives, assurances that proper protective measures are being taken to protect workers and the environment, and compatibility with the use of biological controls.

a) Chlorpyrifos toxicity ratings based on route of exposure: Inhalation Class I, Dermal Class II

Cut Flowers Annex, Table 2: Permitted Pesticides Scheduled to be Phased Out, Unless Justified for Continued Use on a Case-by-Case Basis²⁴

Includes EPA Class II-III Pesticides with Known, Probable or Possible Oncogenicity/Carcinogenicity (Q), or with Moderate to Moderately High Ecotoxicity*

Pesticide Active Ingredient	EPA Toxicity Class (II-III); Oncogenic (Q*); Ecotoxicity (E)
Acephate	III, Q*
Acetamiprid	II, IV
Amitraz	II, Q*
Benomyl	III, Q*
Beta-Cypermethrin	II, Q*
Bifenthrin	II, Q*
Buprofezin	III, Q*
Carbendazim	III, Q*
Carboxin	III, IV, Q*, E
Chlorfenapyr	III, Q*
Chlorothalonil (Wettable Powder)	II, Q*, E
Chlorpyrifos (Wettable Powder)	III, E
Copper Oxychloride	E
Copper, Fixed	Q*
Cymoxanil	II, Q*
Cyfluthrin	III
Cypermethrin	III, Q*, E
Cyproconazole	III, Q*
Daminozide	III, Q*
Dazomet	II, Q*
Diazinon	III, E
Difenoconazole	III, Q*, E
Dimethoate	II, Q*
Dimethomorph	III, Q*
Epoxiconazole	III, IV, Q*
Ethion	II, E
Fenarimol	II, III, E
Fipronil	II, Q*
Flufenoxuron	III, E
Folpet	III, Q*, E

²⁴ Case-by-case review will consider availability of viable alternatives, assurances that proper protective measures are being taken to protect workers and the environment, and compatibility with the use of biological controls.

Pesticide Active Ingredient	EPA Toxicity Class (II-III); Oncogenic (Q*); Ecotoxicity (E)
Fosetyl-aluminum	III, Q*
Hexythiazox	III, Q*
Imidacloprid	III, E
Iprodione	III, Q*
Linuron	III, Q*
Malathion	III, Q*, E
Mancozeb	III, Q*
Metalaxyl	III, Q*
Metiram	III, Q*, E
Milbemectin	II
Myclobutanil	II, III
Oxadiazon (Wettable Powder)	II, Q*, E
Pendimethalin	III, Q*, E
Phosalone	II, E
Piperalin	II
Pirimicarb	II
Procymidone	III, Q*
Profenofos	II
Propiconazole	III, Q*, E
Pymetrozine	III, Q*
Pyrimethanil	III, Q*
Tebuconazole	II, III, Q*
Tetraconazole	III, Q*
Tetradifon	III, Q*
Thiodicarb	II, E
Thiram	III, E
Triadimefon	III, Q*
Vinclozolin	III, Q*

Cut Flower Annex, Table 3: Examples of Pesticides Currently Permitted for Use in the Production of Cut Flowers

EPA Designated "Reduced Risk", GRAS ²⁵ , or Class III-IV Synthetic Pesticides (Active Ingredient)	Substances Permitted under U.S. NOP (Active Ingredient)
Azadirachtin	<i>Beauveria Bassiana</i>
Azoxystrobin	<i>Bacillus thuringiensis</i>
Beta-Cyfluthrin	<i>Borkholderia cepacea</i>
Bifenazate	Citoquinine
Bitertanol	Citric Extract
Boscalid	Complex of Microorganisms
Cholecalciferol	Copper Sulfate
Cyprodinil	Detergent
Cyromazine	Elemental Sulfur
Diflubenzuron	Entomopathogenic Fungi
Etoxazole	Essential Oils
Famoxadone	Fatty Acids
Fenamidone	<i>Ficus S.</i> Extract
Fenbutatin-Oxide (Wettable Powder)	Humic Acids
Fenhexamid	Hydrolated Garlic-Pepper
Fixed Copper	Hydrolated Absinthe
Flutolanil	Hydrolated Chamomile
Gibberellic Acid	Hydrolated Nettle
Hymexazol	Hydrolated Tobacco
Kasugamycin	Iodine
Metaldehyde	Lemon " <i>Swinglia</i> " Extract
Methoxyfenozide	Metallic Copper
Oxycarboxin	Mineral Oils
Phosphorous Acid	Neem Extract
Plant Extract 620	Nicotine Extract
Potassium Phosphite	Organic Amino Acids
Propamocarb Hydrochloride	<i>Phaecilomyces fumosoroseus</i>
Spinosad	<i>Phaecilomyces s.</i>
Spiromesifen	Potassium Salts
Sulfur	Quaternary Ammonium
Triflumizole	Ruda Extracts
	<i>Streptomyces candidus</i>
	<i>Streptomyces griseoviridis</i>
	<i>Streptomyces lydicus</i>
	<i>Trichoderma S.</i>

²⁵GRAS is Generally Regarded as Safe

EPA Designated "Reduced Risk", GRAS ²⁵ , or Class III-IV Synthetic Pesticides (Active Ingredient)	Substances Permitted under U.S. NOP (Active Ingredient)
	Vegetable Extracts
	<i>Verticillium Lecanii</i>
	<i>Verticillium S.</i>

Annex 2: Potted Plants

I. Purpose and Scope of the Annex

This Annex is intended to be used in conjunction with the Standard to identify and encourage sustainable production practices, and to stimulate continuing improvement, in the potted plant industry. In addition to the requirements found in the Standard for sustainable agriculture production and handling operations, potted plant producers and handlers shall conform to the sector-specific Tier 1 and Tier 2 requirements described in this annex. Section III below identifies critical requirements for certification, as a supplement to the table found in section 3.1 of the Standard.

II. References

No references at this time.

III. Terminology

Degradable. For this annex, any mechanism, chemical or biological, that breaks down a material into carbon dioxide, water and minerals without ecotoxic effects within a short period of time when placed in soil.

Containers. For this annex, any pot or other receptacle into which a potted plant is grown or transplanted.

Handler. In addition to the entities included in the handler definition in the Standard, a potted plant handler may be a nursery.

Potted plant. Ornamental flower, shrub, herb, vegetable, plug, cutting or other plant that is produced, shipped, and sold in its own dedicated container filled with a soil or an alternative growth medium.

IV. Conformance

For this annex, the following sector-specific critical requirements for conformance have been identified:

Critical Requirements for Producers	Critical Requirements for Handlers
V.1.1.2.	VI.1.1.1.
V.1.1.3.	VI.1.1.3.
V.1.1.4.	VI.2.1.1.
V.2.1.1.	VI.2.1.2.
V.3.1.1.	VI.3.1.1.
V.4.1.1	VI.4.1.1.
	VI.7.1.1.

V. Producer Requirements

V.1. Sustainable Crop Production

V.1.1. Tier 1: Sustainable Crop Production

V.1.1.1. Non-Applicable Requirements

The Producer shall not be responsible for conformance to the following requirements in the Standard, which are not applicable to potted plants:

Sections of Standard that are Not Applicable
7.2.1.4.
7.2.1.5.
7.2.2.3.
7.3.1.1.b
7.3.2.3.
8.2.5.
9.1.1.4.
9.1.2.1.
9.1.2.2.

V.1.1.2. Conditionally Applicable Requirements

The Producer shall only responsible for conformance to the following requirements in the Standard under selected conditions, as follows:

Section of Standard	Conditions Under Which Conformance is Required
7.2.1.3.	Soil Conservation and Erosion Control Efforts: Applies only when plants are grown in open fields, or when erosion or leaching from soil mixing may occur.
7.3.2.4.	Appropriate Equipment: Applies only when plants are grown in open fields.
9.1.2.6.	Irrigation: Applies only when plants are grown in open fields.
10.2.1.2.c.	Crop Residues and Product Waste: Applies only when plants are grown in open fields.
14.1.1.1.	Conformance with US Food Safety Guidance, for edible plants only.
14.1.1.2.	Food Safety Management Plan, for edible plants only.
14.1.1.3.	GAP/GMP Audits, for edible plants only.
14.1.1.4.	Food Pathogen Procedures, for edible plants only.

V.1.1.3. Weekly Pest/Disease Monitoring

Monitoring for pest/diseases are carried out by designated personnel at least weekly, with auditable records kept by pest/disease vector.

V.1.1.4. Use of Fumigants

The Producer shall record the use of any fumigants, consistent with the requirements of 7.1.1.3.c.

V.1.2. Tier 2: Sustainable Crop Production

V.1.2.1. Pest / Disease Control

The Producer shall demonstrate that biological or other pest/disease products permitted under the US National Organic Program (e.g., soaps, detergents, ethyl alcohol) are the principal source of control.

V.1.2.2. Fertilizer Recycling

The Producer shall recycle fertilizer run-off or leachates, including but not limited to: synthetic fertilizers, fertilizers of biological origin, mycorrhizae, compost and compost teas, and any other soil additives.

V.2. Resource Conservation and Packaging

V.2.1. Tier 1 Requirements: Resource Conservation and Packaging

V.2.1.1. Containers

The Producer shall develop a policy to reduce the amount of container waste going to landfill. This policy may, for instance, include the use of reusable containers, container take-back systems, containers that degrade in soil, or containers that are compostable.

V.2.2. Tier 2 Requirements: Resource Conservation and Packaging

V.2.2.1. Containers

The Producer shall demonstrate a measurable reduction in the amount of container waste going to landfill of at least 20%.

V.2.2.2. Chemical / Bacterial Water Analysis

The Producer shall conduct chemical and bacterial water analysis of the farm's irrigation source(s) at least twice per year. A monitoring plan is in place to mitigate salt, acidity and/or bacterial levels where thresholds are seasonally exceeded.

V.2.2.3. Discharge Monitoring

The Producer shall demonstrate through an accredited third-party laboratory that discharges are compliant with local or national wastewater regulations and that all pesticides levels from deep

wells or other monitored sources do not exceed human or keystone species thresholds, where these are established nationally or regionally.

V.3. Ecosystem Protection

V.3.1. Tier 1 Requirements: Ecosystem Protection

V.3.1.1. Soil and Planting Material Source Records

The Producer shall maintain records of its source(s) of soils and other planting media.

V.3.1.2. Peat Moss

The Producer shall record the amounts and sources of peat moss used, and where alternatives exist, develop a policy for substituting peat moss with renewable substrate materials.

V.3.2. Tier 2 Requirements: Ecosystem Protection

V.3.2.1. Minimizing Effects from Soil and Planting Material Sources

The Producer shall demonstrate that its source(s) of soils and other materials used as planting media do not utilize extraction practices that result in soil erosion or damage to surrounding ecosystems.

V.3.2.2. Mitigation at Soil Material Extraction Sites

The Producer shall conduct mitigation activities on soil material excavation sites, utilizing organic material and revegetation.

V.4. Integrated Waste Management

V.4.1. Tier 1 Requirements: Integrated Waste Management

V.4.1.1. Reusing Containers

The Producer shall develop and implement a method for reusing containers from culled or repotted plants in order to minimize waste.

V.4.1.2. Recycling Soil and Plant Material

The Producer shall develop and implement a policy for recycling excess potting wastes, including soil and plant material.

V.4.2. Tier 2 Requirements: Integrated Waste Management

V.4.1.2. Rinsate Recycling

The Producer shall recycle pesticide rinsates into spray tanks (e.g., from washing spray equipment, uniforms, pesticide containers) or deactivate agrochemical rinsates (e.g., carbon filters in septic tanks).

V.5. Fair Labor Practices

Currently there are no additional requirements under this element.

V.6. Community Benefits

Currently there are no additional requirements under this element.

V.7. Product Quality

V.7.1. Tier 1: Product Quality

V.7.1.1. Culling and Repotting

The Producer shall develop and implement a written policy to cull and/or repot conformant products that are root bound or have otherwise outgrown their respective planting containers.

V.7.1.2. Phytosanitation

The Producer shall develop written phytosanitary control policies and procedures intended to maximize product life of potted plants, including minimum specifications for the cleansing, sterilization, replacement and/or sharpening of hydration vessels, post-harvest handling areas and cutting instruments.

V.7.1.3. Customer Credit

The Producer shall maintain records of customer credits.

V.8. Product Safety and Purity

Currently there are no additional requirements under this element.

VI. Handler Requirements

VI.1. Sustainable Crop Production

VI.1.1. Tier 1: Sustainable Crop Production

VI.1.1.1. Conditionally Applicable Requirements

The Handler shall only responsible for conformance to the following requirements in the Standard under selected conditions, as follows:

Section of Standard	Conditions Under Which Conformance is Required
17.2.1.1.	Food Safety Management Plan, for edible plants only.
17.2.1.2.	GMP Audits, for edible plants only.

VI.1.1.2. Weekly Pest/Disease Monitoring

The Handler shall monitor and maintain auditable records of pests and diseases at least weekly.

VI.1.1.3. Use of Fumigants

The Handler shall record the use of any fumigants, consistent with the requirements of 7.1.1.3.c.

VI.1.2. Tier 2: Sustainable Crop Production

Currently there are no Tier 2 requirements.

VI.2. Resource Conservation and Packaging

VI.2.1. Tier 1 Requirements: Resource Conservation and Packaging

VI.2.1.1. Water Conservation and Monitoring

The Handler shall describe its current water conservation practices, procedures and infrastructure in the Handling Plan. In addition, the Handler shall describe the quantitative methods used to monitor water use for plants and to assess plant moisture demands.

VI.2.1.2. Containers

The Handler shall develop a policy to reduce the amount of container waste going to landfill. This policy may, for instance, include the use of reusable containers, container take-back systems, containers that degrade in soil, or containers that are compostable.

VI.2.2. Tier 2 Requirements: Resource Conservation and Packaging

VI.2.2.1. Containers

The Handler shall demonstrate a measurable reduction in the amount of container waste going to landfill of at least 10%.

VI.2.2.2. Discharge Monitoring

The Handler shall demonstrate through an accredited third-party laboratory that discharges are compliant with local or national wastewater regulations.

VI.3. Ecosystem Protection

VI.3.1. Tier 1 Requirements: Ecosystem Protection

VI.3.1.1. Soil and Planting Material Source Records

The Handler shall maintain records of its source(s) of soils and other planting media.

VI.3.1.2. Peat Moss

The Handler shall record the amounts and sources of peat moss used, and where alternatives exist, develop a policy for substituting peat moss with renewable substrate materials.

VI.3.2. Tier 2 Requirements: Ecosystem Protection

VI.3.2.1. Minimizing Effects from Soil and Planting Material Sources

The Handler shall demonstrate that its source(s) of soils and other materials used as planting media do not utilize extraction practices that result in soil erosion or damage to surrounding ecosystems.

VI.3.2.2. Mitigation at Soil Material Extraction Sites

The Handler shall conduct mitigation activities on soil material excavation sites, utilizing organic material and revegetation.

VI.4. Integrated Waste Management

VI.4.1. Tier 1 Requirements: Integrated Waste Management

VI.4.1.1. Reusing Containers

The Handler shall develop and implement a method for reusing containers from culled or repotted plants in order to minimize waste.

VI.4.1.2. Recycling Soil and Plant Material

The Handler shall develop and implement a policy for recycling excess potting wastes, including soil and plant material.

VI.4.2. Tier 2 Requirements: Integrated Waste Management

VI.4.2.2. Rinse Recycling

The Handler shall recycle pesticide rinsates into spray tanks (e.g., from washing spray equipment, uniforms, pesticide containers) or deactivate agrochemical rinsates (e.g., carbon filters in septic tanks).

VI.5. Fair Labor Practices

Currently there are no additional requirements under this element.

VI.6. Community Benefits

Currently there are no additional requirements under this element.

VI.7. Product Quality

VI.7.1. Tier 1 Requirements: Product Quality

VI.7.1.1. Culling and Repotting

The Handler shall develop and implement a written policy to cull and/or repot conformant products that are root bound or have otherwise outgrown their respective planting containers.

VI.7.1.2. Quality Inspections

The Handler shall apply recognized industry quality standards, if applicable, when conducting inspections in accordance with Section 17.1.1.3.

VI.7.1.3. Customer Credit

The Handler shall maintain records of customer credits.

VI.7.1.4. Temperature-Controlled Transport

The Handler shall use temperature-controlled transport for long-distance hauling in extreme weather conditions or where hauls exceed 24 hours.

VI.7.2. Tier 2 Requirements: Product Quality

VI.7.2.1. Daily Cleansing

All sorting and repacking tables, cutting and storage instruments, and receptacles shall be cleansed daily.

VI.7.2.2. Customer Credit

The Handler shall demonstrate compliance with a standard of less than 10% customer credits.

VI.7.2.3. Planting Instructions

Retail handler shall provide planting instructions to potential customers, including information pertaining to: shade and drought tolerance, temperature regime, and watering instructions.

VI.8. Product Safety and Purity

Currently there are no additional requirements under this element.