



GUIDE OF

GOOD PRACTICES FOR SUSTAINABILITY

OF THE CHILEAN FRUIT INDUSTRY GROWER FIELD IMPLEMENTATION AND SELF EVALUATION



ChileG.A.P.[®]

GUIDE OF **GOOD PRACTICES FOR
SUSTAINABILITY**

OF THE CHILEAN FRUIT INDUSTRY
GROWER FIELD IMPLEMENTATION AND SELF EVALUATION



This Sustainability Guide has been drafted in the context of the Project called “Designing a Plan of Action and Program Implementation for a Sustainable Fruit Industry”, co financed by ProChile.

The Guide is based on a benchmark study of retailer requirements in Europe and the United States, as well as recommendations made by leading sector organizations.

It is intended to make implementing the main sustainability requirements easier. Although it is a basic or first guide focused on fruit growers, the principles and practices contained in it may be adapted to other links of the fruit chain, for which specific guides will be subsequently prepared.

This guide has been drafted by the Chilean Fruit Development Foundation (FDF), with inputs of the following specialized professionals:

Project Lead:

Ricardo Adonis P.	Agronomist	FDF (radonis@fdf.cl)
-------------------	------------	----------------------

Participants:

Andrea Araya	Agronomist	Technical Committee on the Industry
Andrés Delgado	Agronomist	Technical Committee on the Industry
Marjolaine Ducaud	Agronomist	Technical Committee on the Industry
Pabla Núñez	Agronomist	Technical Committee on the Industry
Edmundo Araya	M. Sc.	ASOEX (Association of Chilean Fresh Fruit Exporters)
Gabriel Sellés	Agronomist, PhD	INIA (Agriculture and Livestock Research Institute)
Gabriela Rodríguez	Project Engineer	Catholic University Link Centre





Table of Contents

Preface	7
CHAPTER 1	8
Program for a Sustainable Chilean Fruit Industry	8
1. Introduction	8
2. Definition	9
3. Elements of the Program for a Sustainable Chilean Fruit Industry	10
3.1 Fundamentals of the Program for a Sustainable Chilean Fruit Industry	10
CHAPTER 2	12
Guide to Implementing Good Practices for a Sustainable Chilean Fruit Industry	12
1. Social Sustainability	13
1.1 Workers	13
1.2 Community	24
2. Environmental Sustainability	25
2.1 Use and Maintenance of Natural Resources	26
2.2 Environment and Biodiversity Protection: Pest and Disease Control	36
2.3 Efficient Use of Energy	40
2.4 Control and Reduction of Greenhouse Gas Emissions	43
2.5 Waste Management	44
3. Food Safety	46
4. Economic Sustainability	47
5. Checklist	48



Preface

At the beginning of the 2000's, the Chilean fruit export industry responded in a timely, exemplary and positive manner to the challenge of implementing Good Agricultural Practices (GAP) for food safety assurance, among others. This fact has been internationally acknowledged by public and private organizations, and particularly the development of a "national protocol" (ChileG.A.P.), which has been accepted as an international equivalence by important GAP certification programs, such as GLOBALG.A.P.

Today markets have started developing needs in connection with Sustainability, a system that is complementary to GAP. Besides food safety, the concept regards other aspects, such as social and environmental factors, as well as the economic viability of the agricultural business. This is exactly what was picked up in the ChileG.A.P. Protocol, the fundamentals of which are these four inseparable elements that form the definition of Sustainability for the Chilean industry: Food Safety, Respect for the Environment and Social Corporate Responsibility, always considering economic sustainability as a basic and essential element.

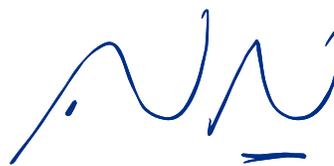
Sustainability is a globally emerging requirement. Although not mandatory yet, its implementation is very desirable, as it brings immediate benefits to agricultural management and to the community. This is why the Chilean Fruit Exporters Association (ASOEX) and the Chilean Fruit Development Foundation (FDF), supported by ProChile (the Chilean Bureau for the Promotion of Exports), have made this Guide available to help the fruit sector throughout the stage of implementing sustainability practices at field level.

This publication is firstly intended as a corroboration of the elements comprised in the concept of sustainability, so that this knowledge enables our partners and other users to identify the basic measures needed for a proper implementation, in line with the requirements currently being defined by most retailers. A checklist for self diagnosis purposes has been published along with this Guide. It will enable reporting progress on compliance with the requirements herein. The list is available in the sustainability section at: www.chilegap.com.

This Guide is actually a first document for understanding the sustainability principles and elements in what refers to fruit growers. However, these basic principles are also applicable to other links of the value chain of fruit, for which specific guides are to be subsequently added.

Indubitably, sustainability requirements will continue developing in the future, hence the need for a constant update of this publication, as shall be reflected at www.chilegap.com.

We thank the support provided by the aforesaid organizations and hope that this Guide is a useful element of support, so that our industry may continue growing in a sustainable manner.



Ronald Bown Fernández
Chairman And Ceo
Chilean Fresh Fruit Exporters Association

Chapter

1 Program for a Sustainable Chilean Fruit Industry

1. Introduction

Comprised of growers and exporters, the Chilean fruit industry has always paid a constant attention to keeping sustainable production conditions, since its mere existence depends on it. This is why the industry has historically and constantly applied a set of sustainable practices, such as minimizing pesticide use; abiding by Chilean industry specific labour laws and even improving worker conditions beyond the requirements; meeting the highest food safety standards for our global consumers; reducing water use by promoting modern irrigation techniques and other similar technologies, and making processed weather information available to society, so that decisions in agricultural management can be more accurate and according to environmental conditions. All these practices effectively respond to the concept presently known as sustainability. Hence, we may say that our industry has already done quite a job preparing to be sustainable.

ChileG.A.P. is a program developed by the Chilean fruit industry as a means to ensure that our growers and exporters better meet the market requirements defined in Good Agricultural Practices and Sustainability Initiatives.

Both concepts are complementary. They include common elements and others specific to their respective fields. As support material to facilitate their implementation, specific documents have been published, which include this Guide and its checklist in the case of Sustainability.

This Guide contains the Sustainability guidelines and practices generally required by most external markets. It also enables users to identify the actions that must be implemented according the reality of each crop site.

It must be taken as a first Guide, to be improved and completed in time, as market requirements evolve.

2. Definition

There are presently many definitions of sustainability in connection with agriculture. Although their basic aspects are the same, they emphasize differently the various elements comprised in the concept.

We have based our definition of sustainability on the concept of sustainable agriculture included by the USA Congress in the Food, Agriculture, Conservation and Trade Act of 1990, which comprises all of the elements found in the various existing definitions, whether governmental or private. For the purposes of this Guide, the aforesaid definition has been partly adapted to the Chilean fruit sector, as follows:

Sustainable fruit growing is a cultivation system specific to each crop field and comprised of all necessary actions for a long term:

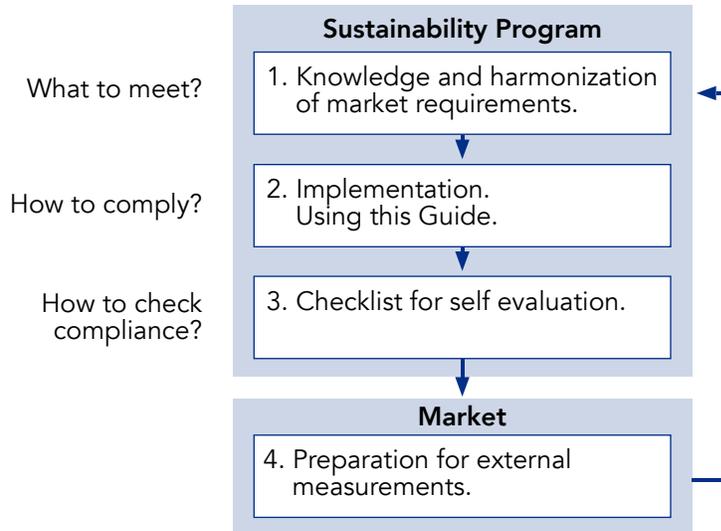
- *Maintenance and increase of field production to meet the demand for food;*
- *Maintenance in time, and improvement as applicable, of field natural resources;*
- *Efficient use of field resources, by incorporating natural biological cycles whenever possible;*
- *Improvement in the quality of life of fruit growers, workers and society as a whole, and*
- *Assurance of field productivity and cost efficiency for a continued business, providing healthy food and creating jobs.*

Site-Specific Characteristic of Sustainability

It must be noted that sustainability practices have to be "site-specific", or at least "area-specific", since the emphasis placed on actions and practices to be implemented or improved may vary according to the characteristics of the crop growing system and its surroundings. In the way of examples, sustainable practices may, in some cases, need to be more focused in aspects regarding natural resources, such as reducing water use, or the main aspect may be pesticide management in other cases. For other crops or

3. Elements of the Program for a Sustainable Chilean Fruit Industry

The Sustainability Program is designed to provide fruit growers and exporters with basic guidelines, as follows:



In order to facilitate the identification of the sustainable practices that must be implemented, the following operational materials have been prepared:

- a) This Guide for implementing Sustainability Practices in the Chilean fruit industry, defining the actions needed to attain a sustainable production, the contents of which have been determined upon a detailed analysis of the sustainability requirements established by the main international organizations and major food retailers worldwide, without including any requirements of just one organization or “retailer”, or provided in very specific standards only, and
- b) A mechanism for self evaluating compliance with the basic sustainability practices, consisting in a checklist of evaluation criteria, which should enable fruit growers to determine what priority actions are needed.

In the short and medium terms, the program does not include the definition of any sustainability certification mechanisms, even though it can be used by the sector as a baseline to this end.

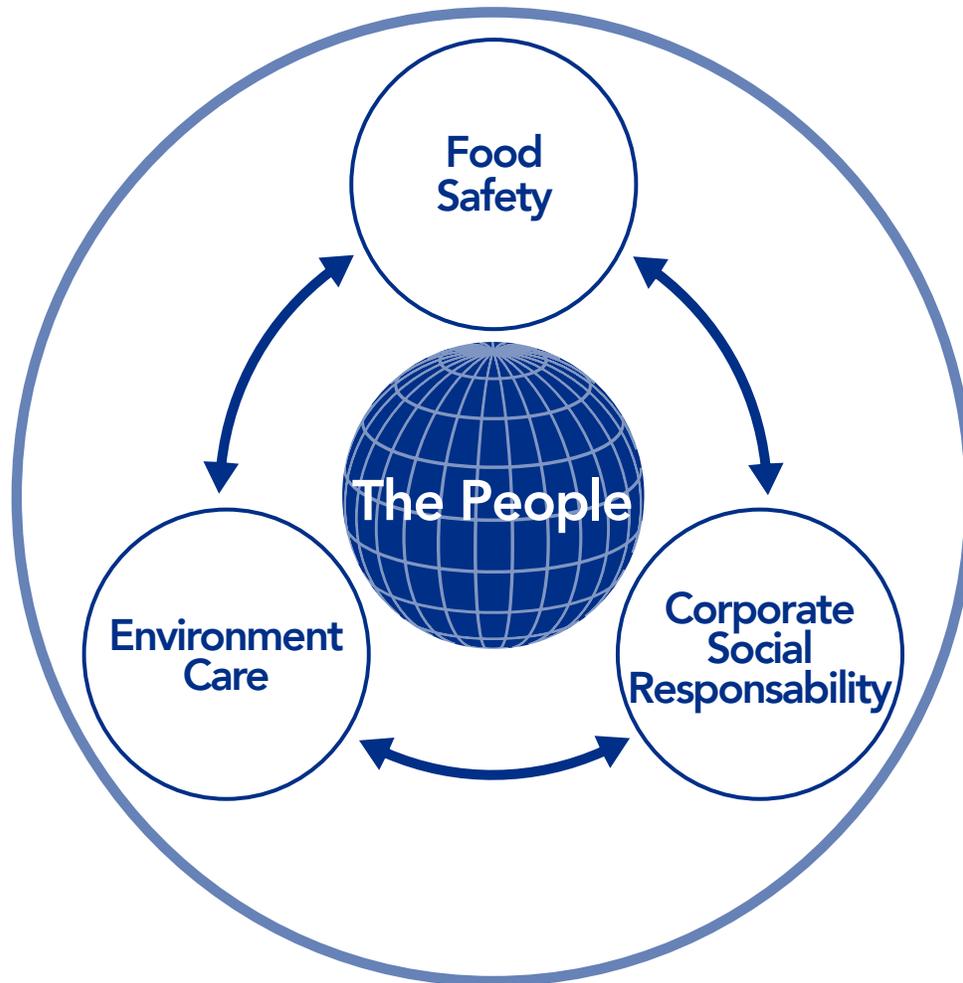
3.1 Fundamentals of the Program for a Sustainable Chilean Fruit Industry

Environmental care, food safety, corporate social responsibility and economic viability are generally defined as the four bases on which sustainability stands.

Food safety is part of sustainability for the Chilean fruit industry, because it concerns and affects social, economic and environmental aspects, and may, in turn, be affected by decisions made in any thereof. This is why we deem necessary that, for the fruit sector, food safety be added as a basis to the traditional view of sustainability. According to Chilean laws and private requirements, compliance with this fundamental is of the greatest importance in food production.

The following diagram shows the essential elements of each of these four fundamentals and the relationships among them.

Basis of the Fruit Industry Sustainability Policy:



It must be noted that the final objective is to improve the living conditions of people and of society as a whole.

Chapter

2 Guide to Implementing Good Practices for a Sustainable Chilean Fruit Industry

For a harmonic work with current requirements of the various market agents, the program for the sustainability of the Chilean fruit industry identifies and includes the main requirements defined on the matter by international market organizations, as well as in national and international standards.

These requirements and their relative importance may vary in time to accommodate new market concerns.

To implement specific sustainability requirements in each field, management decisions must adapt these aspects to the particular characteristics of each agricultural operation, crop, geographical localization and surrounding conditions.

For clarification purposes as to the relationship between Good Agricultural Practices (GAP) and Sustainability, the Control Points directly relating to both types of requirements, as defined in the GAP standards most commonly used in Chile, are also identified in this Guide to facilitate compliance with those aspects that are common to both of them.

The aspects for implementation in respect of each sustainability requirement currently proposed by the market are outlined in the following pages.

The Role Played by National Laws in the Sustainability Program

Chile has a set of laws and regulations on labour issues, which must be followed by all employers, regardless of the nationality of their workers.

As a part of sustainable practices, it is a basic requirement to abide by all laws and regulations applicable to the agricultural sector, including any existing provisions on temporary jobs.

Although certain requirements of global sustainability programs refer to specific legal situations, the discerning rule must be to implement at least that requirement that is greater, be it what Chilean law demands or what is specified in this Guide.

1. Social Sustainability

Social sustainability is comprised of the following three large areas:

1. Workers,
2. Community (immediately surrounding the crop field) and
3. Consumers.

It includes the following basic principles:

- Abiding by current Chilean laws;
- Employer commitment to workers:
 - Ethical work conditions (clean, safe, human and fair);
 - Occupational health and safety;
 - Training, and
 - No discrimination, whether based on sex or ethnic origin;
- Commitment to the surrounding community, ensuring that operations do not damage their quality of life, while respecting and acknowledging cultural diversity, local knowledge and practices of the various social groups, and searching to improve immediate local conditions, and
- Commitment to consumers through a strict respect of fruit growing conditions for a healthy, clean and safe produce.

For an agricultural operation to be socially sustainable, the implementation and maintenance of practices covering at least the following aspects is required:

1.1 Workers

There are at least two protocols on social responsibility worldwide to which various retailers have adhered:

- The BSCI (Business Social Compliance Initiative) Code of Conduct, issued by the Foreign Trade Association, Brussels, and
- The ETI (Ethical Trading Initiative) Code, which is also used as basis for SEDEX (Supplier Ethical Data Exchange) reporting, UK.

In general, the following practices are included in both Codes and require proof of compliance:

1. Choice of employment must be free.
2. Respecting the rights of freedom of association and collective bargaining is mandatory.
3. Workplace conditions must be safe and hygienic.
4. Working conditions must be decent: wages, weekly rest, health and safety.
5. Working hours may not be excessively long.
6. There may be no child labour.
7. There may be no discrimination.
8. Employment must be according to laws (contracts).
9. No inhuman or severe treatment may be allowed.

These provisions are minimum rules. However, companies must take as a base compliance with national laws or with the provisions, whether defined by law or in the codes, that better protect workers.

The social sustainability practices defined in this Guide regarding workers are in line with the standards provided in the previously mentioned codes and the requirements of Chilean laws.

1.1.1 Company Policy and Compliance with Current Chilean Laws

Guiding Principle: There must be a written policy stating the position of every company on the respect of human dignity at all times and in all situations, as well as on the surrounding community, consumers and the environment.

Social Responsibility Policy: The following practices serve to meet this requirement:

Check Point	Recommended Practices
<p>S1. Companies must have a social responsibility policy</p>	<p>Companies must have a written social responsibility policy, stating their commitments in connection with at least the following aspects:</p> <p>Workers:</p> <ul style="list-style-type: none"> • Commitment to fully abide by Chilean labour laws; • All workers hired under work contracts; • All wages paid in money; • Prohibition of bonded labour; • Prohibition of child labour and respect of the restrictions defined by the law on child labour; • Prohibition of any kind of harassment or discrimination; • Respect of the rights of freedom of association and collective bargaining pursuant to Chilean laws, and • A plan for occupational health and safety training <p>Surrounding community:</p> <ul style="list-style-type: none"> • Commitment to mitigate any impacts on the surrounding community, and • Support to surrounding community initiatives in aspects of local common interest <p>Consumers:</p> <ul style="list-style-type: none"> • Commitment to comply with all regulations, standards and practices aiming at a safe produce <p>The environment:</p> <ul style="list-style-type: none"> • Commitment to make good use, care and maintain natural resources and to the efficient use of energy <p>This Policy must be visible in offices and other work areas.</p>

1.1.2 Work Contract (Legally Stated Working Terms and Conditions)

Guiding Principle: All workers must have a work contract up to date and signed by the worker.

Work Contract: The following practices help meet this requirement:

Check Point	Recommended Practices
S1. There must be a work contract for every worker, signed by both parties.	<p>Work contracts must be entered in all cases:</p> <ul style="list-style-type: none"> • All permanent and temporary workers must have a written work contract signed by the worker and the employer. • Knowledge of working terms and conditions: All workers must have a copy of the contract signed by both parties. • A term must be defined for contract legalization.
S2. Aspects to be specified in work contracts.	<p>The following items must be expressly included in all work contracts:</p> <ul style="list-style-type: none"> • The date and place; • The names of the employer and of the worker; • The worker's citizenship; • An identification of the contracted work, detailing the duties to be completed, which may be two or more, and the work place; • Daily work hours, including a schedule of the different shift combinations, whenever shifts are required; • The salary and worker benefits, clearly described in a contract clause, specifying the amount, form and date of payments, as well as all worker benefits, and • The contract term or duration, clearly described in a clause. <p>Any changes to the agreed terms and conditions, such as place, hours, duties, salary, etc., must be stated in a written amendment annexed to the contract and signed by the worker.</p>
S4. Foreigners	Employers must have internal controls in place to check whether foreign workers are entitled to work in the country. All foreign workers must have a valid work permit and be legal residents

Relationship with GAP: The control points concerning work contracts are mandatory in the GLOBALG.A.P. and ChileG.A.P. protocols. Hence, companies certified under these protocols are deemed to meet this sustainability aspect, since an independent auditor has already verified compliance with these standards.

1.1.3 Wages

Guiding Principle: The wages of all workers must be regularly paid in cash and not in kind. The amount and payment frequency must be specified in the work contract.

Salary Conditions: The following practices are aimed at meeting this requirement:

Check Point	Recommended Practices
<p>S5. Workers must know how much their salary or wages are, amount payable only in money</p>	<ul style="list-style-type: none"> • The salary or wages must be stipulated in the contract signed by both parties. • The salary amount must be at least the minimum wages required by Chilean laws and may vary according to factors such as experience, merit, level of training, etc. • Any overtime must also meet the provisions required by Chilean laws, in number of hours and compensation terms. • Salary must be fully paid in cash, and may not be partly or fully paid in kind. • No salary deductions may be applied as disciplinary measures. Deductions may only correspond to less hours worked or absences, as well as legal taxes, health care tax or others provided by law. <p>In the case of contracted work, it must also be assured that worker compensation is at least equal to the minimum wages required by Chilean laws.</p>
<p>S6. Salary Discount Conditions</p>	<p>Workers must be aware of any discounts that may apply. The accepted means of information is the work contract signed by both parties.</p> <p>Employers must be able to prove that any salary discounts are due to recorded absences and not applied as penalty.</p>

1.1.4 Working Hours

Guiding Principle: Daily and weekly work hours must not exceed those specified by Chilean laws.

Overtime is accepted if agreed by the worker, provided that the maximum number of working hours and compensation conditions defined by Chilean laws are met.

Daily Work Hours: The following aspects regarding daily work hours must be defined in work contracts:

Check Point	Recommended Practices
S7. Daily work hours must be limited and known in advance by workers.	<p>Daily work hours must be defined in the work contract signed by both parties.</p> <ul style="list-style-type: none"> • The number of working hours must be in accordance with Chilean laws. • A system must be in place to control attendance and number of working hours. • In Chile, these procedures must be as required by law, i.e. mechanical or electronic time monitoring systems to record arrival and exit time, or attendance books (approved by the authority) and signed by workers every day.
S8. Overtime	<ul style="list-style-type: none"> • All workers must be informed of any discount conditions that may apply. The accepted means of providing such information is the work contract signed by both parties. • Employers must be able to prove that any salary discounts are due to recorded absences and are not applied as penalty.

1.1.5 Bonded Labour

Guiding Principle: Bonded or compulsory labour is that the conditions of which do not allow workers to live freely during non-working hours. Retaining any worker identity documents or parts of salaries to force them to work certain hours is also considered forced work.

Bonded Labour: The following practices are aimed at meeting the requirements of no bonded labour:

Check Point	Recommended Practices
S9. Workers must be free to choose their jobs and leave them at their discretion.	<p>No bonded labour may exist.</p> <p>There may be no practices or any type of pressure intended to retain workers against their will.</p> <p>Employers may not retain any worker documents needed for legal identification.</p>

1.1.6 Child Labour

Guiding Principle: The work of minors (younger than 15) is forbidden. Children 15 to 17 years old may only work under conditions fully meeting the restrictions provided by law on minor protection and assurance of their proper development.

Child Labour: The following practices serve to meet this requirement

Check Point	Recommended Practices
S10. Abidance by Current Chilean Laws Regarding the Hiring of Minors	<p>This is done by checking people's age or date of birth in their respective documents, so as to meet the following conditions:</p> <ul style="list-style-type: none"> • In Chile, minors aged 15 or more can work in agriculture, with a work contract limited to light work that does not harm their health and development, or hinder their regular school attendance or participation in educational or school programs. • To do so, they must have a written express permission of one of their parents, a grandfather in their absence, or the individuals or institution in charge in the latter's absence. • Working hours may not exceed 30 per week, with a maximum of 8 per day
S11. Minors in Respect of Dangerous Work	<p>Workers under age 18 may not perform dangerous work. Law No. 20,189 and Executive Order No. 50 prohibit performance of the following activities by minors under 18:</p> <ul style="list-style-type: none"> • Handling, storing or applying potentially hazardous chemicals; • Work with ergonomic risk factors, handling loads over 20 kg (44 lbs.); • Work in extreme temperature conditions, and • Work with equipment requiring training and experience for safe handling and the use of which by inexperienced persons may cause disability or death.
S12. Conditions for Children Aged 15 to 16	<p>School hours must be free in the case of children 15 to 16 years old.</p>

1.1.7 Harassment at Work

Guiding Principle: Employers must not accept the use of physical punishment, threats of violence or physical, sexual, psychological or verbal abuse in the workplace.

Harassment at Work: The following practices help meet requirements in this respect:

Check Point	Recommended Practices
S13. Employers forbid all discrimination and harassment practices	<ul style="list-style-type: none"> • There may be no acceptance of any discrimination or harassment of workers by the company or higher ranking employees, whatever the reason (age, sex, nationality, religion, etc.). • Such discrimination or harassment practices may not exist in day to day treatment, salary or wage distinctions or promotions to higher ranking levels. • There must be a written policy (statement), of mandatory compliance, forbidding such practices and stating the mechanisms defined by the company to resolve any accusations.

1.1.8 Worker Welfare and Safety

Guiding Principle: Workplace conditions must be healthy and safe, meaning that workers are not exposed to conditions affecting their health, integrity or welfare.

Employers must take effective preventive measures to avoid accidents that may affect workers or the environment.

Worker Welfare and Safety: The following practices help meet requirements in connection with this aspect:

Check Point	Recommended Practices
S14. Occupational Safety Conditions at the Workplace	<p>The work place must be clean and safe, i.e. without any worker exposure to pests, diseases, chemical or physical (noise, cold, heat, etc.) contaminants that may affect the sanitary and hygienic conditions of a place.</p> <p>All workers must be provided with sanitary facilities and any necessary conditions according to specific workplace needs, such as proper lighting, protection against the cold and UV rays, sufficient ventilation, etc.</p>
S15. Safety Equipment	<p>Explicit and clear identification must mark each risk area, indicating in each case, if any personal protection equipment (PPE) is necessary.</p> <p>Proper PPE must be provided to all workers performing under risk conditions.</p>
S16. Access to First Aid Kits	<p>In every workplace, there must be first aid kits, whether fixed or portable, making sure that one is always available in the latter case.</p>
S17. Access to Toilets	<p>Workers must always have access to clean sanitary facilities (toilets and washbasins), which must exist in sufficient numbers, and be easily accessible and supplied with water for hand wash.</p>
S18. When dormitories or bedrooms are provided, their sanitary conditions must be acceptable.	<p>Group sleeping facilities or dormitories must be inhabitable and have utilities, in compliance with the following conditions:</p> <ul style="list-style-type: none"> • Ceilings, doors and windows, and even flooring, all in good conditions; • Proper lighting; • Good ventilation; • Drinking water supply; • Sufficient bathrooms (toilets and showers) pursuant to Chilean laws, with drainage to a sewage system (Latrines are acceptable, provided they are hermetic.), and • All must be kept clean, requiring a hygiene and vector control program.

Relationship with GAP: The GLOBALG.A.P. and ChileG.A.P. protocols define the following mandatory control points:

- Identification of risks to workers in the field, which *“may be done by risk managers or qualified organizations, such as mutual insurance companies, or by farmers themselves. Some dangers that must be considered in risk assessments are: moving equipment parts, power take off shafts, electricity, excessive noise, dust, vibrations, extreme temperatures, stairs, fuel storage, etc. Updates to the risk assessment are due whenever there are changes in the field, such as, for instance, new equipment additions, new or renewed facilities, purchase of new phytosanitary products, modified farming practices, etc.”*;
- Signalling any potential worker safety risks, by means of permanent signs that are readable and easy to understand, warning workers of every potential occupational safety risk;
- Availability of proper PPE for all workers (including sub contracted labour) and visitors, all clean and in good conditions, according to legal requirements or to the label instructions of any chemicals being handled;
- Availability of first aid kits in permanent workplaces, as well as near places of field work;
- Worker access to clean toilets, meeting the requirements provided by Chilean laws, and
- Inhabitable group sleeping facilities equipped with utilities.

As previously mentioned, fields certified under GLOBALG.A.P. or ChileG.A.P. meet the requirements defined in the main sustainability protocols in what regards worker welfare and safety.

1.1.9 Vacations

Guiding Principle: All workers are entitled to vacations pursuant to Chilean laws. Employers must allow workers to take the vacation period to which they are respectively entitled.

The following practices help meet requirements in this sense:

Check Point	Recommended Practices
S19. Vacations	The right of vacations of workers with permanent work contracts is provided by law, as well as the number of days and conditions thereof.

1.1.10 Sub contracts

Guiding Principle: Sub contracted workers must have guarantees pursuant to Chilean labour laws.

Farmer or agricultural companies must demand compliance with labour laws by their sub contractors.

The following practices help meet requirements in this sense:

Check Point	Recommended Practices
S20. Sub contract Identification	Farmer or agricultural companies must prepare a document identifying all sub contracted work with sub contractor names.
S21. Service Agreements with Sub contractors	<p>Farmers or agricultural companies must have signed service agreements with all sub contractors, containing a clause on mandatory compliance with current laws.</p> <p>These agreements must be signed by both parties, and specify both effective and expiry dates, or a duration.</p>

1.1.11 Worker Benefits

Guiding Principle: Workers must be granted benefits, including the right of health care and unemployment insurance, and pension contributions. The baseline is compliance with Chilean laws.

Worker Benefits: The following practices help meet requirements in this sense:

Check Point	Recommended Practices
S22. All workers must receive the legal benefits defined in Chilean laws.	<p>Worker benefits in Chile include contributions to public or private health insurance; unemployment and disability insurance, and survivor and old age pension funds.</p> <p>Employers must be able to submit proof of compliance with Chilean laws on worker benefits, in the form of signed documentation (such as copy of payments made to pension fund administrators, safety and health insurance).</p> <p>All payments granting rights to these benefits must be specified in monthly salary stubs.</p>

1.1.12 Training

Guiding Principle: Training is key for improving the quality of life of workers. Knowledge about their work enables people to play a significant role within a company, thus increasing their sense of accomplishment at work and in their personal life.

Training: The following practices help meet training requirements:

Check Point	Recommended Practices
<p>S23. A training program must be in place and followed for permanent workers.</p>	<p>The annual training program for permanent workers must include:</p> <p>a) Courses or lectures on:</p> <ul style="list-style-type: none"> • Workplace safety; • Dangerous substance handling; • Fire prevention and control; • Hygiene practices in the workplace and in produce handling; • Waste management; • Applicable environmental regulation for managers and supervisors, and • Company policy regarding labour and environmental issues. <p>b) Specific courses according to worker duties (pesticide applicator, tractor driver, warehouse clerk, etc.).</p> <p>Program courses may be distributed in time, so that permanent workers do not need to take the same courses every year.</p> <p>There must be proof of compliance with the program, in the form of signed attendance lists or the respective certificates.</p>
<p>S24. An initial induction program must be in place and applied to temporary workers.</p>	<p>Because the job duration of temporary workers is limited, there is often no time for training. In this case, all temporary workers must receive at least an initial induction covering four subjects:</p> <p>a) Workplace safety (right to know);</p> <p>b) Hygiene practices in the workplace;</p> <p>c) Food safety and hygiene in produce handling, and</p> <p>d) Company policy on labour and environmental issues.</p> <p>A signed attendance list must be kept.</p>

Relationship with GAP: The GLOBALG.A.P. and ChileG.A.P. protocols define the control points concerning operator training in hygiene and handling of dangerous substances as mandatory. However, they do not specify an annual frequency.

1.2 Community

The company or farmer relationship with the community must be respectful of local characteristics, not interfering negatively on the community surrounding conditions or damaging their existing quality of life, but rather contributing to its improvement.

1.2.1 Local Community Relations

Guiding Principle: Any productive activity has an impact on the surrounding community. The objective is to control any such negative impacts and strengthen all positive effects.

Local Community Relations: The following practices help meet requirements in this sense:

Check Point	Recommended Practices
S25. Identification of Impacts on the Surrounding Community	The impacts of production facilities (for instance: dust, noises, vibrations, waste, etc.) on the surrounding community must be known. A document must contain a list of these impacts.
S26. Plan for Reducing and Mitigating Negative Impacts on the Community	A plan of action must be in place to reduce, mitigate or eliminate, as applicable, any harmful impacts on the immediate or surrounding community This plan must be consistent with the impacts identified, as stated in the previous item.
S27. Getting to Know and Supporting Local Initiatives for Community Improvement	Farmers or companies must provide support to any initiatives of the surrounding community aimed at improving issues of local interest. They must also take own initiatives for the benefit of the community, whether individually or in partnership with other farmers or companies.

2. Environmental Sustainability

Environmental sustainability implies making good use of, and caring for, all natural resources involved in the production cycle, and tending towards their continued improvement.

It is comprised of five large areas of action:

- 2.1. Use and maintenance of natural resources (with an emphasis on water and soil);
- 2.2. Environment and biodiversity protection: Pest and disease control;
- 2.3. Efficient use of energy;
- 2.4. Control and reduction of greenhouse gas emissions, and
- 2.5. Waste management.

2.1 Use and Maintenance of Natural Resources

Environmental sustainability implies making good use of, and caring for, all natural resources involved in the production cycle, and tending towards their continued improvement.

2.1 Use and Maintenance of Natural Resources

A sustainable agriculture implies taking measures to preserve and improve the environment in the farm, and in its direct surroundings as possible.

2.1.1 Environmental Responsibility Policy

Guiding Principle: A written policy must exist, stating the company commitment to caring for the environment.

The following practices help meet requirements in this sense:

Control Point	Recommended Practices
A1. Companies must have a written environmental policy.	<p>Agricultural companies must have a written policy on environmental responsibility, stating their commitment with regard to the following aspects:</p> <ul style="list-style-type: none"> • Abiding by all national environmental laws; • Preserving natural resources and preventing or reducing adverse effects, minimizing or avoiding soil, water and air contamination and degradation caused by business activity; • Keeping, or recovering as applicable, the soil health, fertility and productivity in the long term; • Preventing water source exhaustion; • Promoting practices for waste reduction and recycling whenever feasible, and • Keeping or improving the field biodiversity.

2.1.2 Soil

Guiding Principle: Soil preservation practices must be in place, using techniques to keep or improve its integrity and quality.

2.1.2.1 Identification and Knowledge of Field Soil Characteristics

Description: Applying sustainable practices to soil management requires knowledge of the physical and chemical characteristics, which may vary from one crop area or quarter to the other in the field, hence requiring different practices by type of soil. A description of the soil and a field soil distribution map makes easier to identify any parts that may need different management.

Identification of the Field Soil Characteristics: The following practices help meet requirements in this sense:

Control Point	Recommended Practices
A2. Soil Map	<p>A field map or diagram must be prepared, identifying at least the following aspects:</p> <ul style="list-style-type: none"> • Type of soil by sector or quarter; • Crops, and • Location of water sources.
A3. A description of soil characteristics by field sector or quarter is necessary.	<p>The description of each identified type of soil must include the following characteristics:</p> <ul style="list-style-type: none"> • Type of soil (texture); • Soil structure; • Degree of compaction; • Depth; • Groundwater presence (aquifers); • Nutrients in soil; • Amount of organic matter in soil; • Overall salinity; • Plant cover; • Crust formation; • Risks of soil degradation for reasons other than erosion, and • Risk of soil erosion. <p>This outline of characteristics must be by sectors or quarters. The information may be recorded in documents, tables, or preferably, in a map, so as to be able to pinpoint the location of each type. This information must be updated every time that there is a change in crop distribution or in the described conditions, such as soil amendment applications, drainage systems, new wells, etc.</p>

Relationship with GAP: The soil management sections of the GLOBALG.A.P. and ChileG.A.P. protocols already recommend this map.

2.1.2.2 Soil Erosion

Soil erosion compromises both economic and environmental sustainability. This aspect must not be neglected, because it may be even caused by factors as simple as ill-managed risks.

Depending on the localization and geographical characteristics, there may be various challenges involved in reducing the risk of soil erosion in crop fields. Risk areas must be identified when assessing the field soil characteristics, as previously stated.

Field Soil Erosion: The following practices help meet requirements in this sense:

Check Point	Recommended Practices
A4. A field visual inspection is necessary to identify soil erosion risks.	<p>The field areas that are prone to, or may undergo, soil erosion of any type (due to the wind, water runoff, slopes, etc.) must be identified.</p> <ul style="list-style-type: none"> • These areas must be inspected at least once a year to check that erosion is contained. • A record must be kept of the identification and checks of each of these areas.
A5. Erosion prevention measures must be implemented to mitigate damages and avoid any potential erosion risks.	<p>Corrective or preventive actions must be taken in field areas that are prone to erosion.</p> <ul style="list-style-type: none"> • Such measures will depend on field characteristics, but the following are some examples: vegetation management between rows, "mulch" cover, localized irrigation, slope reduction, bush plantation on borders of sloping areas, etc. • These measures are just examples. Each fruit grower must implement technical and management measures as necessary and befitting the specific conditions. <p>All corrective actions taken must be recorded.</p>
A6. Measures must be in place for damage mitigation and soil compaction risk reduction.	<p>Field areas where the soil is subject to seal and compaction risks must be identified.</p> <p>Measures must be in place as necessary and appropriate for reducing soil seals, infiltration and compaction wherever there is such a risk.</p>

Relationship with GAP: The soil management sections of the GLOBALG.A.P. and ChileG.A.P. protocols contain the same definitions of the last two previous items. This is why companies certified under these protocols are deemed to meet both items, given that an independent auditor has already verified compliance.

2.1.3 Nutrient Management

Guiding Principle: Fertilization programs must take into account specific crop nutritional needs and nutrients available in the soil, so as not to make an excessive use of fertilizers, and thus, prevent any water contamination.

- The proper use of fertilizers in the amount needed for specific crop reduces the risk of surface and groundwater contamination. Excessive fertilization may contaminate waters, and increase crop vulnerability to diseases in some cases.
- Fertilizing less than required by the plant may compromise crop productivity, hence negatively affecting the fruit grower's economic sustainability.

Nutrient Management Plan: The following practices contribute to a sustainable management in what regards fertilization:

Control Point	Recommended Practices
A7. A nutrient management plan is in place to meet crop nutritional needs.	<p>A written organic and non organic fertilizer management plan must exist:</p> <ul style="list-style-type: none"> • Defining fertilizer use and application criteria according to crop needs and soil contents, while avoiding any damage to the environment for excessive applications, and • Specifying soil and crop analyses during technically recommended periods, to serve as basis to determine fertilization needs.
A8. The levels of key soil and crop nutrients must be determined.	<p>Soil and crop analyses must be conducted every season to determine available nutrient levels and fertilization needs.</p> <ul style="list-style-type: none"> • These analyses must be completed: <ul style="list-style-type: none"> - For every quarter or area corresponding to each relevant soil type identified, and - During the periods recommended for each crop. • Fertilization dosage determinations and application decisions must be made by qualified professionals (or by fruit growers themselves if they can provide proof of qualification). • All nutrient analyses and fertilizer determinations, as well as any recommendations on fertilization, must be kept in file for at least two years.

Relationship with GAP: This requirement for soil and crop analyses, as well as its recommendations and records, are exactly as provided in the fertilizer application sections of the GLOBALG.A.P. and ChileG.A.P. protocols. Hence, companies certified under these protocols are deemed to meet both items, as an independent auditor has already verified compliance.

Control Point	Recommended Practices
A9. Organic matter contents in soil must be maintained or improved.	<p>Keeping the soil organic matter contents is an important practice, because it helps retain humidity, among others.</p> <p>Several methods exist to do so:</p> <ul style="list-style-type: none"> - Adding organic matter in the form of guano, which must be treated to void contaminating the water or edible parts of plants, and - Promoting and expanding managed or controlled plant covered areas, a technique that also reduces erosion.

2.1.4 Water

Guiding Principle: The main sustainability principles regarding water use and management are as follows:

- Preserving the environment, by not contaminating surface or ground waters in the field, and
- Reducing water use in irrigation and applying every management aimed at preventing the reduction or exhaustion of water sources.

2.1.4.1 Water Sustainability Plan

Growers must have a plan for water sustainability in their facilities.

Water Sustainability Plan: The plan must contain the following matters:

Control Point	Recommended Practices
A10. A water sustainability plan must be in place for every site.	<p>A water sustainability plan must be prepared to ensure that all available measures have been selected for water protection and its rational use. It must contain actions or commitments regarding the following aspects:</p> <ul style="list-style-type: none"> • A description of the origin or source of all water used; • The location of water intake points on the field map (ideally with coordinates); • A description of water usage in the field; • A description of all legal permits obtained and measures adopted to ensure compliance with any legal rights owned; • An identification of all threats or risks, whether actual or potential, to water quality and availability for the field; • Irrigation water needs by crop; • Goals and strategies for reducing water use and keeping its quality, and • An annual assessment of water use goal attainment, with strategy adjustments.

Relationship with GAP: The previous item is partly equivalent to the water management plan provided both by GLOBALG.A.P. and ChileG.A.P. Compliance with this criterion is "recommended".

2.1.4.2 Water Origin

Regarding the origin of water for agricultural use, sustainability practices require at least:

- a) That waters come from legally authorized sources, and
- b) That water sources are not endangered (reduction or exhaustion) by field use.

Water Origin: The following practices contribute to meeting this requirement:

Control Point	Recommended Practices
A11. Water rights and permits for groundwater use have been obtained.	<p>Fruit growers must have all legal documents proving any relevant rights of surface or ground water usage.</p> <p>Volumes of water authorized for use must be known. It must be possible to prove that water extraction is according to authorized volumes.</p> <p>(NOTE: In the case of surface courses, it must be taken into account that volume quotas are seasonal.)</p>
A12. Water sources used in the field must be sustainable.	<p>Water used in fields must come from sustainable sources, meaning that they recover any volumes taken. To this end:</p> <ul style="list-style-type: none"> • No water may be drawn from any sources in volumes exceeding allowed quotas. • No water may be drawn in volumes that endanger source level recovery.

Relationship with GAP: The sections on water supply of the GLOBALG.A.P. and ChileG.A.P. protocols contain the same definitions of the last two previous items. This is why companies certified under these protocols are deemed to meet both items, given that an independent auditor has already verified compliance.

2.1.4.3 Water Quality Protection

Keeping the quality of water as it runs through fruit fields and is returned to surrounding areas is a way to care for the environment and contribute to society.

Water Quality Protection: The following practices help meet this requirement:

Control Point	Recommended Practices
<p>A13. All actual or potential threats that the activities in the field may pose to water quality must be identified.</p>	<p>A contamination risk assessment must be performed, identifying all field elements or activities that may affect canals, channels, wells and irrigation waters.</p> <p>Examples of this type of risks:</p> <ul style="list-style-type: none"> • Oil spills from refuelling tractors and equipment; • Equipment workshop location in respect of water courses; • Location of toilets and sewage systems or septic tanks; • Location of areas for pesticide loading into sprayers; • Overflows of pesticides, fertilizers and other chemicals; • Fertilizer application; • Location of guano stockpiling areas. • Handling of excess solutions containing products such as pesticides and fertilizers (fertigation), and • Waste and garbage. <p>All these risk areas or activities must be located in, or relocated to, places where their effects on water (in canals, channels, wells, ponds or ditches) are minimized by considerations such as slope, distance, the existence of barriers, etc.</p>
<p>A14. Fertilizer application and management techniques must be such as to reduce the spread of nitrogen and other compounds into surface or ground waters.</p>	<p>It has been internationally determined that the main adverse effects of nitrogen fertilizing on water are due to an incorrect fertilization. The following aspects must be considered for contamination risk reduction:</p> <ul style="list-style-type: none"> • Fertilizer dosages must be technically determined according to crop needs. • Application times must be adequate to plant needs, using nitrogen fertilizer formulations that enable plants to draw the most benefits. • No fertilizer (particularly if nitrogen based) may be applied before rainfalls. • Fertilizer sprayers must be kept in good conditions, avoiding any leaking, dripping or similar faults. • For fertigation: <ul style="list-style-type: none"> - Drippers must be kept properly located. - Using dripper flows to verify actual water use should be a regular practice. • For avoiding surface or ground water contamination, actions must be taken to prevent rain or irrigation water runoff from carrying fertilizers picked up where they are applied.

Control Point	Recommended Practices
A15. Excess solutions or empty can wash water, must not be poured into water sources or in places where these may arrive.	<p>Requirements for areas where agrochemicals are prepared and loaded into sprayers:</p> <ul style="list-style-type: none"> • They must be paved or water-proofed, or have biological beds; • They must be capable of containing spills and located away from water courses; • Empty pesticide containers must be properly triple rinsed. Already washed empty containers must be taken to gathering centres, and • Excess solutions must be used for own crops, or poured for disposal on surfaces specifically prepared for this purpose.

Relationship with GAP: The previous item is partly as required by GLOBALG.A.P. and ChileG.A.P. in the control points of the sections on disposal of excess solutions or mixtures, pesticide storage and handling of empty pesticide containers.

Control Point	Recommended Practices
A16. Preventive measures and actions must be taken to avoid spilling fertilizers, pesticides and other similar products.	<p>To prevent surface or ground water contamination by spills, the following measures must be taken, as a minimum:</p> <ul style="list-style-type: none"> • Products must be stored where they are not exposed to humidity, rainfall or floods. • Fertilizer or pesticide spills must be avoided everywhere in fields; • Spills or overflows of solutions containing fertilizers (fertigation) or pesticides must be avoided, and the means to pick them up, or absorb them if they are liquids, must be available whenever they occur. • The means to pick up or absorb spills must be available in case they occur. • Signals must be in place, directing personnel on how to handle spills. • No household or agricultural waste may ever be disposed in water.

Relationship with GAP: The previous item is partly as required by GLOBALG.A.P. and ChileG.A.P. in several control points of the fertilizer and pesticide storage sections.

Control Point	Recommended Practices
A17. Practices must be in place to prevent the spread of organic fertilizers of animal origin into surface or ground waters.	<p>The following preventive practices must be considered to prevent organic fertilizers (guano) from spreading into waters:</p> <ul style="list-style-type: none"> • Products must be stored where they are not exposed to humidity, rainfall or floods. • Avoiding any potential contamination from excessive application of organic fertilizers (guano), hence determining beforehand their nutrient contributions and correlating them with other sources of nitrogen and specific crop needs; • Storing them away from water courses (at 25 m [82'] or more), with raised edges to contain any spills; • Preventing any rain or irrigation water runoffs from carrying organic fertilizers (guano) into surface or ground waters. • Alternative: Not applying any organic fertilizers of animal origin.

Relationship with GAP: The previous item is as required by GLOBALG.A.P. and ChileG.A.P. in the “organic fertilizer” section.

2.1.4.4 Reduction of Water Use in Agriculture

As a way to protect water sources and ensure future supply, one of the main goals for sustainable farming is reducing water volumes used in irrigation.

It must be considered as desirable that fruit growers be able to prove their water use reductions. A recommended good practice is conducting a preliminary water balance study in fields, including water availability and agricultural demands, as a prior determination of the maximum area for safe irrigation.

Water Use Reduction in Agriculture: The following practices contribute to meeting this requirement:

Control Point	Recommended Practices
A18. Lined In field Ponds and Channels or other Measures for Lesser Water Loss	To reduce water losses by infiltration and evaporation in ponds, dams, channels and ditches, fruit growers must implement linings and covers, wherever technically feasible and recommended, in areas in which water loss by evaporation or infiltration may be significant due to weather, topography or type of soil.
A19. No leaks may exist in irrigation or water intake pumps, ponds or water connection pipes.	<p>For water loss reduction, no leaks may exist in ponds or pumps, their pipes or supply connections to fertigation tanks and facilities.</p> <p>Raised tanks must also be used for water storage, solution preparation and sprayer loading.</p>

Control Point	Recommended Practices
A20. A method must be in place to determine when and how much irrigation is needed by crops.	<p>The best way to reduce water volumes consists in limiting irrigation only to actual plant needs, according to their development and the type of climate, and considering any salinity removal requirements, as applicable.</p> <p>To determine when and how much irrigation is needed by each crop, a system must be in place for irrigation scheduling and control, based on technical methods involving the use of evapotranspiration values determined in meteorological stations or evaporation trays, and the water binding capacity of soils, as well as moisture content variations between watering cycles, measured through drill rods, tensiometers, sensor probes, etc.</p> <p>These values and measurements must be recorded, also stating watering times per event.</p> <p>When first implementing a sustainability program, it is recommended to define an annual goal of irrigation water reduction, until it can be determined that water volumes are the best possible without affecting production.</p>

Relationship with GAP: The previous item is a control point recommended by GLOBALG.A.P. and ChileG.A.P. in the sections on forecasting watering needs of their protocols.

Control Point	Recommended Practices
A21. Irrigation systems must enable a measured and controlled watering of crops.	<p>Irrigation systems must enable the measurement and control of watering volumes.</p> <ul style="list-style-type: none"> • Irrigation must be as technical as possible, and localized (drip or microspray) whenever the type of crop so permits. In the case of surface (furrow) irrigation, a system must be in place to deliver a controlled volume of water to each furrow, such as spiles, straight tubes, sleeves, California method, etc. • Water system controls must be kept in good conditions to measure volumes for watering all planted crops. • In the case of localized irrigation, controlling the conditions of the irrigation system must be possible through regular pressure measurements and emitter discharge control to determine the uniformity coefficient (manometers in good conditions, clean filters). • A localized irrigation system must be annually measured or checked, and undergo maintenance processes. • In the case of localized irrigation, operators handling technical irrigation or fertigation must have certificates of attendance to training courses on these matters.

Relationship with GAP: The previous item is partly as required by GLOBALG.A.P. and ChileG.A.P. in several control points of the sections on irrigation methods.

Control Point	Recommended Practices
A22. The volume of water used in each type of crop or quarter must be measured and recorded.	<p>Actual water volumes applied each time must be measured for all crops or quarters.</p> <p>This information must be registered in detailed records of each irrigation cycle (date, quarter or crop, watered area, duration, water volumes).</p> <ul style="list-style-type: none"> - In the case of localized irrigation, water volumes may be read each time from the volumetric fillers located behind the filters, or determined from irrigation times and average emitter flow. - In the case of surface irrigation, water volumes may be determined each time on the basis of irrigation times and average volumes applied to furrows. Installing liquid level measuring instruments in the inflow ditches of each quarter or irrigation unit may be considered. <p>At the end of each season, overall water volumes used in irrigation must be determined for each crop or quarter.</p>

Relationship with GAP: The previous item is partly as required by GLOBALG.A.P. and ChileG.A.P. in the sections on irrigation methods.

Control Point	Recommended Practices
A23. Fruit growers must know the current and long term water requirements of every crop and compare them to water availability.	<p>Irrigation records must serve for information analysis, to optimize the use of water.</p> <ul style="list-style-type: none"> • Based on these records, overall annual water volumes must be determined for each crop or quarter, and compared with the total volume available to the field. • It must be possible to prove that water volumes used annually do not exceed authorized levels. (NOTE: In the case of surface courses, it must be taken into account that volume quotas are seasonal). • Crop water consumption must also be compared to geographically representative theoretical needs, a value that may be based on specialist advise or valid information for the region. • Whenever planning to change crops or include new areas, the potential water needs of these new plantations must be known and correlated with the officially authorized availability.
A24. A plan must be prepared for irrigation system and water use optimization.	<p>All necessary practices for maximizing the efficiency of the irrigation system must be applied to each crop or quarter. The following are some of these practices:</p> <ul style="list-style-type: none"> • Measuring and adjusting irrigation equipment; • Using water use meters, pressure gauges as applicable, and timers; • Checking that the entire system and all equipment are in good conditions; • No leaks, well located sprinklers, salt removed from the system, etc., and • Irrigation personnel training.

2.2 Environment and Biodiversity Protection: Pest and Disease Control

In order to reduce to a minimum any risks to humans and the environment, pest and disease control must involve the least use of pesticides possible according to crop nature and specific pests, and whether they are quarantine or not.

2.2.1 Integrated Pest Management (IPM)

Guiding Principle: Compatibility between care for the environment and pest and disease control is achieved through management criteria and systems that enable less pesticide applications. Integrated Pest Management techniques must be favoured to this end. The three fundamentals of IPM are: prevention, monitoring and control. Because of the variable nature of pest presence in different crops and geographical areas, IPM must be implemented according to specific local physical, biological and economic conditions.

Implementing an Integrated Pest Management involves a prior analysis of all pertinent measures for pest development reduction, followed by the selection of management methods for a reduced use of phytosanitary products, or other actions that are economically fit and help reduce risks to the environment and humans.

The following practices are aimed at meeting this requirement:

Control Point	Recommended Practices
A25. IPM concepts must be applied before making any decision on pesticide application.	<p>The three following fundamentals of IPM must be applied:</p> <ul style="list-style-type: none"> • Prevention: This consists in management practices to reduce pest and disease spread and implantation, or contamination, in crops. They include all actions to avoid or prevent any pest appearances in fields. The following management practices are some common examples: picking up pruning debris, knowing if any plants around the fruit fields or orchards are hosts or attractors of any pests, using phenology models to determine pest development phases, etc. • Monitoring: Field monitoring of the amount and distribution of the main pests of each crop. Monitoring records must be kept. The idea is to make application decisions based on monitoring results. • Control: These practices must favour the use of products with the lowest environmental impact possible and consider the need for alternating products to prevent any resistance development. Grounds must be stated in writing for all applications.
A26. Technical advice is needed for implementing IPM practices.	Fruit growers must get advice for implementing an Integrated Pest Management (IPM) system. This advice may be provided by specialists or come from knowledge acquired by growers through formal training, which must be documented.

Relationship with GAP: It must be taken into account that the GLOBALG.A.P. and ChileG.A.P. protocols contain these aspects as mandatory control points:

- Under IPM Application in the section of the same name, and
- Under Reasons for Application in the crop protection section.

2.2.2 Choice of Products and Recommendations for Use

Guiding Principle: The idea is to arrive to the best pest and disease control that entails the least environmental impact and risks for consumers and workers. The choice of pesticides for use on crops is one of the most delicate processes in what regards environmental sustainability.

Choice of Products and Recommendations for Use: The following practices help meet this requirement:

Control Point	Recommended Practices
A27. Only Pesticides Registered in Chile for Use to Treat Particular Crops against Specific Pests or Diseases	All pesticides used, whether biological or inorganic, must be natural and registered for use in Chile on the specific crops and against the pests or diseases to be treated. The SAG (Agriculture and Livestock Service) Registry contains the list of these products. The product label must show the pesticide registration number and crops for which it is approved. The List of Pesticides of the Chilean of Fruit Exporters Association (www.asoex.cl) may be consulted for Maximum Residue Levels (MRL) required by authorities of various countries.
A28. Pesticides must only be applied following responsible technical recommendations.	The choice and recommendation of pesticide applications must be backed by technically responsible persons. <ul style="list-style-type: none"> • In the case of external advisors, their qualifications must be proven by means of a professional degree or certificates of attendance to specific and up to date courses on the subject, etc. (Faxes and emails from advisors, universities, government agencies, etc. are permitted.) • When advisors are fruit growers themselves, their experience must be supplemented by technical knowledge, demonstrated, for instance, with certificates of attendance to specific courses or technical documentation, such as product technical manuals, etc.
A29. Application Records	Records must be kept of all phytosanitary product applications, stating the following information per application: <ul style="list-style-type: none"> • Product or products applied and dates of application; • Crop identification, indicating the area or quarter on which it was applied; • Size of the area or quarter (in hectares); • Product dosage and total volume used; • Name of the authorizing persons and of those preparing the mixture; • Name of applicators, and • Identification of sprayers used. <p>Records must be kept for two years.</p>
A30. Applied pesticides must correspond to the required control.	Pesticides must be fit for the required control (pest, disease or weed), i.e. they must be authorized for controlling the specific pests, weeds or diseases, and used as stated on their respective labels.

Control Point	Recommended Practices
A31. Management for Pesticide Resistance Prevention	<p>Pest development of resistance to pesticides must be prevented, as it leads to the need for additional control measures.</p> <p>Whenever several applications are necessary during a crop season, because of pest, disease or weed levels, the characteristics thereof or weather reasons, there must be proof of the use of practices to prevent resistance.</p> <p>When there are authorized alternatives, applying different products must be considered for this purpose.</p>

Relationship with GAP: The sections on phytosanitary products of the GLOBALG.A.P. and ChileG.A.P. protocols contain the same definitions of all the previous items. This is why companies certified under these protocols are deemed to meet this sustainability aspect, as an independent auditor has already verified compliance with these standards.

2.2.3 Adjustments and Conditions of Pesticide Sprayers

Guiding Principle: Equipment in good conditions and well-adjusted are an assurance of the successful outcome of applications, hence avoiding repeat treatments and reducing soil, water and air contamination with pesticides.

Adjustments and Conditions of Pesticide Sprayers: The following practices help meet this requirement:

Control Point	Recommended Practices
A32. People who regulate and adjust pesticide sprayers, as well as those who prepare and apply the products, must be specifically trained.	<p>The following aspects must be considered in reference to regulating and adjusting phytosanitary product sprayers:</p> <ul style="list-style-type: none"> • All pesticide sprayers must be adjusted at least once a year by in house or external qualified persons; • When equipment adjustments are externally handled, tax receipts or invoices of payments made must be kept. • All adjustments or regulations should ideally be subsequently checked using water sensitive paper. • Farm personnel must include qualified sprayer operators, and their training must be backed by certificates of attendance to specific courses. • The persons making product applications must have a valid official permit issued by the SAG.

Control Point	Recommended Practices
A33. The mechanical conditions of pesticide sprayers must be regularly checked.	<p>Tractors and pesticide sprayers must be regularly serviced, as follows:</p> <ul style="list-style-type: none"> • A checklist must be completed stating the results of the following checks: pump oil levels; tire pressure; conditions of hoses and nozzles; absence of leaks, oil included; deflector presence and conditions; proper operation of nebulizer agitators, and tractor instruments and equipment. • Service frequency depends on equipment use, but it must be completed at least monthly. • Qualified in house personnel may handle this service.

Relationship with GAP: The same definition is included for the preceding items in the GlobalG.A.P. and ChileG.A.P. protocols.

2.2.4 Preventive Measures Prior to Pesticide Application

Guiding Principle: Account must be taken of all preventive measures in respect of the environment and surrounding community before applying any pesticides.

The following practices help meet this requirement:

Control Point	Recommended Practices
A34. Training in Environmental Protection and Pesticide Use	<p>People working in pesticide application must be trained or instructed in environmental protection measures, such as changes in wind direction and speed, inspection and upkeep of sprayer deflectors, if any, application near inhabited places or areas with animals, etc.</p>
A35. Application Conditions	<p>Before applying any phytosanitary products, conditions must be assessed, including, for instance: weather at the time of application (wind speed and temperature), tractor performance rate, equipment working pressure, etc.</p> <p>Fruit growers must have defined acceptable limit values for applications to proceed.</p> <p>The conditions must be recorded for each application.</p>
A36. Buffer zones must be delimited to protect bordering areas from contamination.	<p>Buffer zone must be defined on borders with adjacent roads, houses, schools, etc., to prevent any adrift products from applications to be carried to such places. This is considered critical in sensitive areas, such as fields adjacent to schools, towns and other places.</p> <p>Buffer areas may be bushes or trees sufficiently tall to pick up any adrift material, or mesh or other elements capable of preventing any adrift contamination from reaching inhabited places.</p>

Control Point	Recommended Practices
A37. Measures for Protecting Houses and other Inhabited Places during Applications	<p>PA written and verified plan must exist, defining measures for the protection of homes and other places with people or animals during pesticide applications.</p> <p>These measures may include warning signs, changes in application methods near such places, etc.</p>

2.3 Efficient Use of Energy

As a way to protect energy resources and ensure future supplies thereof, one of the main goals consists in reducing the use of energy from non renewable sources (coal, oil and its derivatives, electricity and other similar ones).

2.3.1 Plan for an Efficient Energy Use

Guiding Principle: A written policy must be in place stating company position and commitments regarding the reduction of energy use and the implementation of activities for an increased energy efficiency.

The following practices help meet this requirement:

Control Point	Recommended Practices
A38. Companies must have a policy on energy efficiency.	<p>Agricultural companies must have a written policy stating their commitment to an efficient use of energy, which must specifically include at least the following items:</p> <ul style="list-style-type: none"> • Energy use must be controlled, further identifying equipment and activities with the highest consumption levels. • Actions must be implemented to improve energy efficiency, by optimizing energy use. • Electric power and fuel use must be continuously checked. • The feasibility of implementing the use of renewable energy sources (solar, wind, etc.) must be studied, whenever possible.

2.3.2 Energy Consumption

Guiding Principle: The knowledge of how much energy is used by each piece of equipment and operation is the basis of energy efficiency plans.

The following practices help meet this requirement:

Control Point	Recommended Practices
A39. Stages or equipment using non renewable energy must be identified, and their demands noted.	<p>The use of fuel and non renewable energy (diesel fuels or gas, electricity, LPG, etc.) must be monthly recorded for each stage or equipment, including cold stores, electronic packing lines, pumps, tractors, general electricity, etc.). This information will help identify the equipment that uses the most energy and plan strategies for optimizing and reducing such use.</p> <p>At the end of every season or crop cycle, energy consumption must be expressed both in absolute values (liters of oil, total kilowatts, etc.) and relative values (liters of oil per ton of fruit, total kilowatts per ton of fruit, etc.), so as to estimate one or more specific energy use indexes. This information will serve in assessing the degree of efficiency with which energy is used.</p>
A40. The evolution of energy use must be analyzed.	<p>From the previously mentioned records, fruit growers must tabulate monthly fuel and electric power use, by sector in divided premises and by equipment for tractors, pumps and other significant machinery.</p> <p>For energy use analysis, the recommendation is to make comparisons with the same month of the previous year or by unit of produce, as applicable, such as by ton of fruit.</p>

2.3.3 Reduction in Energy Use

Guiding Principle: The following practices help reduce and optimize energy use (electricity, fuels, etc.):

Control Point	Recommended Practices
A41. A plan or program must be in place to reduce the use of energy from non renewable sources.	<p>The identification of equipment or stages entailing the greatest fuel or electricity demands must be followed by a study of use reduction and optimization options, to then prepare an implementation plan.</p> <p>This plan must contemplate a study on the use of renewable energies (solar or wind, geothermal, etc.).</p> <p>The following actions are examples of energy use reduction measures: improving equipment servicing plans; combining operations, particularly those involving tractors and trucks to decrease their use, replacing equipment with more efficient or less energy consuming ones for the same purposes.</p>

A42. Rate Negotiations Based on the Demand	Rates must be negotiated with the corresponding electric power supplier. These negotiations must be on a demand basis to get the lowest available rate.
A43. Electric connections must be split into sectors.	Electric power facilities must be separated by sectors, setting offices and warehouses (which generally use less energy) apart from areas of greater demand, such as cold stores, engines, pumps and others, so as to detect any major deviations caused by faults or overuse, and hence, have a better control.
A44. Light bulbs must be of the energy saving type.	Lighting must use energy efficient light fixtures and bulbs. If this were not possible, a plan must exist for their replacement in time and a goal date for all lights to be of the efficient type.
A45. A record must be kept of tractor, other rolling equipment and engine service.	A servicing record must be kept of all equipment (tractors, vans, pumps, engines, well pumps, etc.), identifying each piece. Hours of operation and used fuel and oil (if applicable) must be recorded every month.
A46. Equipment must be sized according to tasks.	It must be verified that the power of equipment being used is according to their respective tasks, particularly tractors, and cold store, deep well and irrigation pump engines. When pumps need replacing, it must be assured that they are of the proper power and not oversized. Considering the use of frequency controllers is recommended to reduce the demand on start and energy use peaks of pumps.
A47. Equipment Replacement Plan	Equipment and engine replacements must follow a written plan or program. In each case, priority must be given to more efficient equipment in terms of power or fuel use, considering the possibility of using renewable energy sources whenever feasible (solar panels, wind power, geothermal energy, etc.).

2.4 Control and Reduction of Greenhouse Gas Emissions

Guiding Principle: Reducing any possible adverse effects that the agricultural activity may have on the environment is a critical practice. Specifically, knowing and reducing emission levels of the so called “greenhouse gases”. One way to do so is through the identification of the main sources of such emissions.

Note: Greenhouse gases are those that, whether naturally originated or caused by human activity, when accumulated in the atmosphere, absorb and emit radiation in the infrared range. This characteristic causes them to retain heat and contribute to a temperature raise around the Earth, similar to what happens in a greenhouse. In the Kyoto Protocol, six gases of this type are identified as being caused by human activity: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride.

Control Point	Recommended Practices
A48. Knowing which are the main sources of greenhouse gas emissions is a must.	Based on internationally recognized methodologies (which may be Internet carbon footprint calculators specially developed for agriculture) and on the available information, greenhouse gas emission levels must be determined for each crop. Once determined, the main sources of these emissions need to be identified, i.e. inputs or tasks with the highest emission levels.
A49. A plan must be in place for mitigating and reducing the main emissions.	Upon identification of the inputs or tasks that are the main sources of emissions, a plan must be prepared for their reduction. This plan may include aspects such as changing certain inputs for others with lower emission levels, rationalizing tasks, replacing activities, changing engines, etc., as applicable.

2.5 Waste Management

As a way to protect energy resources and ensure future supplies, one of the main goals is reducing the use of energy from non renewable sources, such as carbon, oil and its derivatives, electricity and others of the sort).

2.5.1 Sustainable Garbage or Waste Management

Guiding Principle: : Fruit growers must mitigate environmental impacts:

- By reducing waste volumes, through an analysis of how both organic and inorganic waste are handled in their farms.
- By properly managing waste and abiding by national laws, considering that hazardous waste must be managed separately and pursuant to current laws and regulations.

The following practices help meet this requirement:

Control Point	Recommended Practices
A50. Identification of Types and Volumes of Produced Waste and Debris	<p>Fruit growers must know the types and volumes (in kg or lb.) of organic (including own debris from crops) and inorganic waste generated by the farm.</p> <p>To this end, they must prepare a list of waste types and annual volumes, indicating, for instance:</p> <ul style="list-style-type: none"> • Organic waste: residues from pruning, discarded fruit, wood, cardboard, etc. • Inorganic waste: plastic (from irrigation system replacements, packages, broken harvest trays, etc.), engine oils, scrap, etc.
A51. Organic waste management must not affect the environment.	<p>Managing organic waste or debris must not adversely affect the immediate environment, as could be the case of spills or land or road floods, whether in the farms or surrounding fields; odours, attracting flies and other vectors, and other effects. It is necessary to check at least once a month that this type of waste is well controlled.</p> <p>Composting or other similar processes must be in place for the recycling of organic waste.</p>
A52. Inorganic waste management must not affect the environment.	<p>Managing inorganic waste or debris produced in farms must not adversely affect the immediate environment. Plastic, paper and obsolete equipment are some examples of this type of waste, which must be kept under control. "Hazardous" waste (such as used oils and other substances) must be identified, because it cannot be handled as domestic like waste. Proper control of inorganic waste must be checked at least once a month.</p> <p>Wherever location and distance make it feasible, recycling practices must be considered for matter such as paper, cardboard, plastic, wood, etc.</p>

Control Point	Recommended Practices
A53. Farms must be clean.	Farms must be free from garbage. Waste must be kept in a specially designated area, away from water sources and courses.

Note: Chilean laws define hazardous waste as [suggested translation: “the waste or mixture thereof that represent a risk of public health and/or adverse effects on the environment, whether directly or in reason of its current or planned handling, because it has any of the characteristics specified in Article 11”]. The latter provides that [suggested translation: “The presence of any one of the following characteristics shall suffice for waste to be considered hazardous: acute toxicity, chronic toxicity, extrinsic toxicity, flammability, reactivity and corrosive potential”]. (Decree No. 148 of the Ministry of Health, June 12, 2003).

2.5.2 Agrochemical and other Hazardous Waste Management

The following practices help meet this requirement:

Control Point	Recommended Practices
A54. Controlled Storage of Pesticides and other Hazardous Substances	Pesticides and other hazardous substances, as well as hazardous waste, must be stored separately, under lock, and controlled by responsible persons.
A55. Pesticides and other hazardous substances must be stored where there is no risk of floods.	The areas designated for storing pesticides and hazardous substances or waste must be located in places without any risk of floods from channel overflows, rainwater accumulation or any other cause. Fuels, acids, workshop products and other hazardous substances must be stored so they are protected from water and meeting all safety conditions required by Chilean laws, which are dependent on the type of substance.
A56. The storage and disposal of materials having contained pesticides and other hazardous chemicals must not affect the environment.	Packages having contained pesticides or other hazardous chemicals must be handled in a controlled manner and in a specially designated place, kept under lock and not affecting the environment as a result of rainouts, floods, drippings or any other causes. Packages of other products such as acids, oils, engine oils, fertilizers, etc., must be stored under the control of responsible persons, and disposed as required by the relevant authorities.
A57. Empty pesticide containers may not be reused.	Empty pesticide containers must be triple washed. Their rinse water must be loaded into application tanks. Once punctured, they must be taken to a distributor or the like. Reusing pesticide containers is only permitted to hold and transport the product indicated on the label within farm premises..

Relationship with GAP: Pesticide storage and container handling by triple washing are covered in the corresponding sections of the GLOBALG.A.P. and ChileG.A.P. protocols. However, no reference is made in either protocol to the controlled storage of other hazardous products.

3. Food Safety

Guiding Principle: In fruit growing, food safety is the foundation on which sustainability rests, because of its impact on the other three fundamentals, as well as throughout the entire fruit chain. For agriculture to be sustainable, consumer health must be assured by offering produce that is safe and healthy from the microbial, chemical and physical perspectives. To do so, growers must take all measures necessary to abide by Chilean official regulations and meet the food safety requirements defined by the market, and must have a traceability system, which need not be computerized.

The following practices help meet this requirement:

Control Point	Recommended Practices
11. Fields and orchards must meet all food safety standards.	<ul style="list-style-type: none"> • All farms must be validly certified through programs accepted in internationally recognized protocols and authorized in Good Agricultural Practices or Food Safety. • Accepted certifications in Chile are ChileG.A.P., GLOBALG.A.P. and others recognized by the Global Food Safety Initiative (GFSI). • Whenever there is fruit packing or other similar processing in the premises, Good Manufacturing Practices must also be followed.
12. All food safety standards must be met.	<ul style="list-style-type: none"> • All practices must be traceable to the crop quarter in which the fruit is grown. • Fruit being delivered or exiting the farm must be traceable to whomever or wherever it is delivered or sold.

4. Economic Sustainability

Economic sustainability entails that all actors in the fruit chain be committed to safeguard the economic viability of agriculture, without which growers cannot keep their crops, nor maintain their sources of employment or sustain their family groups. It involves two large areas of action:

- Efficiency and
- Productivity.

The following practices help meet this requirement:

Control Point	Recommended Practices
E1. Administrative management methods must be in place for every farm.	Every farm must have an internally or externally kept administrative management method or system, including input, material and produce stock inventories; payment, cost and cash flow controls, and the hiring of permanent, temporary and other personnel.
E2. Accounting of Production Costs	All fruit growers must have a system or methodology to determine itemized production costs, capable of determining total costs per unit of produce, such as, for instance, cost per ton.
E3. Several options must be available for produce sales.	Fruit growers must have several options available to sell their produce without any hindrances, and must be able to freely choose to whom to sell and with whom to enter agreements.
E4. Fruit growers must keep records of annual yields	A system or methodology must be in place for fruit growers to keep track of annual yields per crop, in tons per hectare, including produce quality. Statistics must be kept by growers, enabling them to compare yields from year to year or season to season

5. Checklist

The checklist is intended to help verify the degree of compliance with the requirements contained in this Guide. It is annexed hereto as Appendix 1 and posted at:

<http://www.asoex.cl/sustentabilidad/guias-de-buenas-practicas.html>

The checklist contains a grading table for each “control point”, with four evaluation options to be graded from 0 to 6, after choosing the option that best reflects the current situation of the farm or facility under assessment. There are detailed instructions in the same web site.

Subsequently, the average grade or score is calculated for each section, followed by a determination of the overall level of compliance.

GUIDE OF
**GOOD PRACTICES FOR
SUSTAINABILITY**
OF THE CHILEAN FRUIT INDUSTRY
GROWER FIELD IMPLEMENTATION AND SELF EVALUATION



SOURCE OF LIFE

Prepared by:



Revised by:

