ON-FARM FOOD SAFETY GUIDELINES FOR GREENHOUSE VEGETABLES - MANUAL

ONTARIO GREENHOUSE VEGETABLE GROWERS ASSOCIATION

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References

Introduction:
During the summer and fall of 1998, Dr. Douglas Powell and colleagues from the University of Guelph visited several greenhouses, packers and distributors. These visits, along with a comprehensive review of the epidemiological and food safety literature pertaining to fresh fruits and vegetables, formed the basis for an on-farm food safety program for the Ontario Greenhouse Vegetable Growers' Association (OGVGA).

The purpose of this initiative was to identify the science-based critical control points found in the production of greenhouse vegetables in Ontario and to implement steps to minimize the risks from microbiological contamination of these same products. Through consultation with the OGVGA board of directors and members of the association, the final report was developed into a practical and comprehensive guide, contained within this binder.

While this manual is meant to include all members of the OGVGA, only portions may apply to specific operators. For example, testing of dump tank water quality would apply only to packing sheds. Sections have been created to make it easier to determine what programs/steps should be taken during each stage of production, whether growing, harvesting, packing or shipping. Checklists have also been established as an important overview. This is to ensure that what needs to be done has been.

As a fundamental part of this program, an on-farm food safety coordinator will conduct on-site visits to help the members of the OGVGA to implement the steps contained in this manual. Each member of the association will be visited during a twelve-month period to ensure that everyone in the membership can comply with the standards set out by Dr. Powell and his colleagues. Standards, which follow principles outlined by the U.S. Food and Drug Administration and the U.S. Department of Agriculture and the Canadian Horticultural Council.

The guidelines and datasheets provided are to document and provide verifiable information concerning production, harvesting, packing, shipping and distribution. Guidance is provided as to the conditions that must be met to ensure that the risks from microbial contamination are minimized. If comparable procedures are already in place at your establishment, they should be incorporated into the documentation included in the manual.

Documentation of <u>all</u> of the procedures is crucial in establishing the necessary data when trying to show suppliers, retailer, etc. that you are doing everything possible to reduce the microbial risks associated with your product. Additional documentation to make this a comprehensive program should include receipts, memos, inspection and laboratory reports, and other written information, as requested.

For more information about the On-Farm Food Safety Program, contact the Ontario Greenhouse Vegetable Growers' Association at (519) 326-2604 or 1-800-265-6926.

DISCLAIMER:

The information contained in this on-farm food safety program was compiled for the Ontario Greenhouse Vegetable Growers' Association (OGVGA) from a variety of sources (please see reference list) for use by the Ontario greenhouse vegetable growers, packers and shippers. Every effort has been made to provide the most accurate and current information available. However, the OGVGA makes no warranties regarding the information contained in the guideline or the applicability of such information to a particular growing or handling operation. The OGVGA specifically disclaims any and all warranties, express or implied, including but not limited to implied warranties of merchantability and fitness for a particular use. The OGVGA does not warrant that the information contained in the materials will be error-free or that defects will be corrected. This guideline is not intended as legal advice and citations to statutes and regulations are for informational purposes only. Nothing in this guideline is intended to replace a grower, shipper or processor's own technical experts or legal advisors, and the OGVGA encourages growers, shippers and processors to consult such professionals before implementing an on-farm food safety program. The OGVGA may update the materials in this guideline from time to time, but the OGVGA does not accept or undertake any responsibility to update the information provided in this guideline on a regular basis or at all.

Under no circumstances, including, but not limited to gross negligence, shall the OGVGA be liable for any direct, indirect, incidental, special or consequential damages that result from the use of, or the inability to use, the information in this food safety program. Persons utilizing this guideline, with or without permission, specifically acknowledge and agree that the OGVGA is not liable for any damages resulting from its use.

Grower/Packer Guidelines

Producers within the Ontario Greenhouse Vegetable Growers' Association (OGVGA) are required to develop procedures aimed in controlling the operational conditions within their establishment (greenhouses, packinghouses, and shippers) for the production of safe food **(GP-1a)**. The following guidelines describe **good agricultural practices** (GAPs) and are focused on the identification and control of potential sources of microbiological contamination along the fresh produce pathway. The datasheets (GP-1 ⇨ GP-16) provided are to be used by growers and employees to document that all actions have been completed and can then be verified by a third party as necessary.

1) Food Safety Program:

a) Individual Food Safety Program

Guidelines are presented in this document to assist growers in developing and implementing their own food safety program. Please complete data sheet **(GP-1b)** for each greenhouse operation.

Provide the name, address, and location for each grower and greenhouse.

Name of Greenhouse Operation: _____

Name of Owner/Operator: _____

Location/Address: _____

_____

Telephone/Fax Numbers:

Telephone:_____

Fax:_____

Greenhouse Location (attach map): _____

b) Program Supervisor

Designate a manager, employee or employees as the official program supervisor(s).

Provide the name of the designated supervisor(s) and/or alternate(s).

Name of Program Supervisor(s): _____

_____

Name of Alternate: _____

Name of Alternate: _____

2) Food Safety Program

a) Premises

Premises include all elements in the greenhouse, packing shed and surroundings: the outside property, roadways, drainage, product flow, sanitary facilities, and water quality.
Pathogenic bacteria gain entry from air, water, animals, raw materials, dust, dirt and people. Therefore, establishments should have written programs featuring procedures to ensure the maintenance of buildings' satisfactory condition.

I) Structural components of establishments (greenhouses and packing sheds)

Greenhouses and other facilities must be:

- Of sound construction
- Maintained in good repair
- In an acceptable sanitary condition to reduce the potential for microbial contamination of produce.

Growers are advised to verify the adequate conditions to insure a satisfactory environment of the establishment **(GP-2)**.

II) Water Quality Program

a. Water supply

Water is an essential element in the production and handling of produce and is used in numerous operations, including: irrigation, application of fertilizers, crop protection sprays, and produce washing. It is also used for all sanitation practices in the greenhouse and packing shed. Establishments must have a water control program that evaluates the quality of source and in-plant water. Note that operations in which produce is in direct contact with water (dumping tanks) require a correspondingly higher level of attention to water quality compared to uses where there is minimal water to-produce contact.

b. Water Quality Evaluation **(GP-3)**

- Identify the source of water used in the different operations.

The review may include whether the source of the water is from a well, open canal, reservoir, reused irrigation water, municipal water or other sources; water from unsafe sources has been a frequent cause of enteric infections.

- Evaluate the quality of water by microbiological testing done by a recognised laboratory.

Water used for processing operations should be safe and sanitary (potable water). Non-potable water should never be used in produce pre-harvest, and post-harvest operations. The type of water source will determine the frequency of tests taken per year. After tests are completed, keep results of all water tests in your files.

- Those operations that use chlorine as a microbiological control in operations where water comes in direct contact with fresh produce (for example dumping tanks) should regularly monitor chlorine levels.

Recommended chlorine levels have been reported of 100-200 ppm (free chlorine). However, recognizing the detrimental effect that high levels of chlorine may have on product quality, and recognizing that attention to other GAPs can significantly lower microbial risk on fresh produce, a level of 50-100 ppm chlorine should be sufficient **(GP-4)**.

b. Water Quality Evaluation - (cont'd)

- Add sufficient overflow water during processing to compensate
- for the potential build-up of organic materials.
- Establish and document a regular cleaning schedule for dump
- tanks, flumes and wash tanks with adequate sanitizers.
- Change wash water, and water used for other operations, as frequently as practicable to prevent the build-up of organic material and microbial contaminants.
- Where water is reused for a series of processes, verify that water is used first for those that need the highest water quality as in the final rinse, followed by use in processes where water quality needs are not as great, as in the flume or dump tank water.
- Document all verifications, and corrective actions taken.

c. Water distribution systems

- Verify that tanks, vessels, and pipes are designed and structured as to prevent contamination, particularly by rodents and other pests, birds, dust and rain.

When non-potable water is used it should be carried in separate lines that are readily distinguishable, preferably by colour, from lines carrying potable water.

III) Sanitary facilities

a) Washrooms and hand washing stations **(GP-5)**

Operators should consider the importance of proximity and accessibility of sanitary facilities to harvest crews in all sectors of fresh produce production. Employees should always have the opportunity to use the on an as-needed basis. Sanitary facilities should be maintained in sanitary condition and good repair at all times.

- Document steps taken to ensure compliance for quantity, sanitary condition and maintenance of field toilets, including:

  - ⊙ Average number of employees per week
  - ⊙ Number of toilets in use

III) Sanitary facilities - (cont'd)

- ⊙ Sanitation procedures and frequency of cleaning
- ⊙ Individual or company responsible for maintenance and sanitation
- ⊙ Procedure in place to check and replenish toilet paper, soap, paper towels and fingernail brushes
- ⊙ Adequate employee instruction in proper hand and nail washing techniques
- ⊙ Posted signs in the appropriate language(s) reminding employees to wash their hands and practice good hygiene

b) Equipment **(GP-6)**

Field equipment can easily spread germs to fresh produce. Therefore, growers should use adequate designed equipment for harvest and post harvest operations.
Harvest personnel are advised to frequently clean and sanitize bins, containers, brushes, buckets, gloves or other harvesting material that comes in contact with the product.
Any equipment used to haul garbage, manure, or other debris should not be used to haul fresh produce or have contact with cartons or pallets that are used in contact with fresh produce without first being carefully cleaned.
A program should be in place to monitor and control all elements in the area and maintain adequate records as well.

c) Storage and Transportation **(GP-7, GP-8)**

Contamination of greenhouse vegetables may occur due to improper practices during handling, storage, loading, unloading, and transportation operations. Consequently, growers are encouraged to pay particular attention to the product as it leaves the field for the cooler, packaging shed, or processing facility, and to guarantee that sanitation requirements are met during each stage.

c) Storage and Transportation - (cont'd)

- Establish an active and ongoing discussion with transportation personnel to ensure the success of any safety management program.

Without a proper dialogue on produce safety risks and the need for adequate sanitation standards any safety steps implemented along the farm to fork pathway may be negated.

d) Personnel

i) Employee written training

Operators should establish and maintain a program to train all employees, including supervisors, full-time, part-time, and seasonal personnel in good sanitation and hygiene practices, and institute a monitoring system to insure instructions are being followed while on duty.

Documentation for the general training session **(GP-9)** as well as for every employee **(GP-10)**, are necessary to verify that federal, provincial and local requirements for worker safety training are met.

Good hygienic practices by all personnel who are involved in the greenhouse harvesting, packing and distribution of OGVGA produce is essential in the control of microbial and other biological hazards.

Personnel responsible for training and identifying sanitation failures or produce contamination should have a background of education or experience to provide a necessary level of competency and to promote good sanitary practices **(GP-11)**.

e) Sanitation and Pest Control

i) Sanitation program

A written sanitation program must be developed and scheduled in order to ensure good hygienic practices.

Develop sanitation procedures for equipment, utensils, floors, drains, lighting devices, refrigeration units, and anything else impacting on the safety of the product **(GP-12)**.

e) Sanitation and Pest Control - (cont'd)

For each area and piece of equipment and utensils, the written sanitation program should specify:

- name of the person responsible;
- the chemicals used;
- the procedures used; and
- the frequency of cleaning and sanitizing.

Production should only begin after a pre-operation inspection has been carried out with satisfactory results **(GP-13)**.

ii) Pest control program

An adequate written pest control program should be developed and carried out at the greenhouse and packinghouse as part of the facility's good sanitation procedures **(GP-14)**.

Growers should assess the prevalence and likelihood of uncontrolled animal access to greenhouses and packinghouses in order to reduce the potential for contamination of crops by fecal material.

Besides the written pest control program, pest problems can be minimized by taking a few precautions, as listed in **GP-15**.

f) Trace Back System

A written trace-back program should be designed to outline the procedures the company would implement in the occurrence of a recall. In the event of an outbreak, lot identification investigations can lead to a specific company source or even field, rather than an entire commodity, thus lessening the economic burden on multiple industry operators not responsible for the problem.

A program must be developed to track individual containers from the farm, to the cooler, to the receiver, in as much detail as possible, and in conjunction with the retail sector. The following type of program has been suggested by other groups and can form the basis of a future OGVGA program.

Trace Back System - (cont'd)

i) Trace back coordination **(GP-16)**

Use a simple coding system to identify fresh produce in “loads”, at a minimum. An effective lot identification system should have documentation to indicate the source of a product and a mechanism for marking or identifying the product that, ideally, can follow the product from the farm to the consumer.

Coordinate trace back procedures with shipper/handler.

Maintain a copy of the shipper/handler's trace back procedures for your file

Verify that documentation includes, date of harvest, farm identification, and chain of custody from cooler to receiver.

The ability to identify the source of a product (positive lot identification) from the consumer back to the grower’s field serves as an important complement to good management practices intended to prevent the occurrence of produce safety problems, and to minimize the impact of foodborne disease outbreaks.

On-Farm Food Safety Datasheet **(GP-1a)**

Date of Report:

On-Farm Food Safety Program Implementation (Check if available and provide description)	Yes	Description
i) Premises Program Documentation		
- Facility Identification		
- On-Farm Food Safety Supervisor		
- Facility Maintenance Program		
- Water Quality Program		
- Sanitary Facilities Maintenance Program		
ii) Equipment Maintenance Program		
iii) Storage and Transportation Program		
iv) Employee Training and Hygiene Program		
v) Sanitation and Pest Control Program		
vi) Trace Back System Program		

On-Farm Food Safety Datasheet **(GP-1b)**

Date of Report:

b) Premises Program Identification	
Identification: Complete a worksheet for each greenhouse/packing shed	
Name of Operation:	
Name of Owner/Operator:	
Mailing Address:	
Phone/Fax Numbers	
Greenhouse/packing shed location (Attach map)	
On-Farm Food Safety Supervisor: Provide the name of the designated on-farm food safety supervisor(s) and/or alternate(s).	
Name of Supervisor:	
Name of Alternate	

On-Farm Food Safety Datasheet **(GP-2)**

Date of Report:

Greenhouse/Packing Shed Maintenance Program (Inspect for the following:)	Yes	Comments
Premises are not in close proximity to any source of pollution.		
Roadways are properly graded, compacted, dust proof and drained		
Shipping and receiving areas provide or permit good drainage		
Premises prevent access by pests, and provide adequate design required for thorough and effective cleaning and sanitation		
Ventilation facilities are equipped with filters or fittings that catch dust in order to prevent dissemination of microbes throughout the facility		
Adequate ventilation is sufficient to prevent build-up of excessive heat that can lead workers to become fatigued.		
Doors are tight fitting to exclude rodents, insects and dust		
Openings are fitted with removable screens to exclude insects, birds, and other pests		
Windows and screens are maintained in good repair and properly cleaned		

On-Farm Food Safety Datasheet **(GP-3)**

Date of Report:

Water Quality Evaluation				
Water	Irrigation Water	Pesticide Application Water	Hand Washing Water	Produce Washing Water
Source: Capped Well ❒ Uncapped Well ❒	YES / NO	YES / NO	YES / NO	YES / NO
Open Source: Canal, Reservoir, Pond, etc	YES / NO	YES / NO	YES / NO	YES / NO
Municipality/District Water Source	YES / NO	YES / NO	YES / NO	YES / NO
Irrigation system: Drip	YES / NO	YES / NO	Note: Maintain copies of test results in your files	
Irrigation system: Overhead	YES / NO	YES / NO		
Irrigation system: Furrow	YES / NO	YES / NO		
List dates for each category that is applicable				
Capped Well Annual Test Date:				
Uncapped Well, Canal, Reservoir, Pond, etc. (Quarterly test dates)				
Municipality/District Quality Report Date:				
Corrective Action & Date Taken: Chlorinate, Disinfect, Filtration, etc.				

Verified by

_____

Observations:

_____

_____

_____

_____

Monthly Report:

Concentration of chlorine in water (dumping tanks) Report twice a day**.**								
Day	Concentration (ppm)		Verified by	Comments	Day	Concentration (ppm)		Verified by	Comments
1					16				
2					17				
3					18				
4					19				
5					20				
6					21				
7					22				
8					23				
9					24				
10					25				
11					26				
12					27				
13					28				
14					29				
15					30				
					31				

On-Farm Food Safety Datasheet **(GP-5)**

Date of Report:

Sanitary Facilities Maintenance Program	Yes	Comments
Washrooms should be sufficient for the number of staff employed. A number of one per 10-20 employees has been recommended		
Washrooms should not open directly into produce handling areas in order to reduce the risk of contamination from blockage and other malfunctions.		
Hand washing stations should be located in washrooms (including portable toilets) conveniently positioned so that employees must pass them when returning to processing areas. They also should be provided in any other demanding areas.		
Hand-washing stations should supply hot and cold potable water, soap and/or anti-bacterial soaps, sanitary hand drying devices (preferably disposable paper towel) and nail brushes.		
Toilets should be well stocked with sufficient toilet-paper and be fitted with water flushing; since flushing handles are often a source of contamination, hand contact can be avoided if foot pedals are used.		

Verified by _____

On-Farm Food Safety Datasheet **(GP-6)**

Maintenance of Equipment
✔Checklist

❑ Use adequate designed equipment for harvest and post-harvest operations and always maintain it in clean and sound condition.

❑ Clean and sanitize bins, containers, brushes, buckets, gloves or other harvesting material that comes in contact with the product on a daily basis. Any equipment used to haul garbage, manure, or other debris should not be used to haul fresh produce or have contact with cartons or pallets that are used in contact with fresh produce without first being carefully cleaned.

❑ Remove contaminants, such as mud, diesel, grease, oil, produce, and debris from processing equipment daily.

❑ Remove product-left remnants from tables, belts, lines and conveyors that could cause microbial contamination.

❑ Verify that food-contact surfaces are corrosion resistant; knives, saws, blades, boots, gloves, smocks and aprons should be made of nontoxic materials and designed to withstand the environment of their intended use and the action of the product. These should be cleaned, inspected for defects, and cleave or replaced as needed.

❑ Repair, clean or discard damaged and muddy cartons or boxes to reduce contamination of produce.

❑ Verify that packinghouse equipment in contact with fresh produce is not used for carrying other materials (tools, fuels, etc) in order to reduce potential contamination.

❑ Monitor and control all elements in the area and maintain adequate records.

On-Farm Food Safety Datasheet **(GP-7)**

Date of Report:

Storage Maintenance Program (Inspect for the following:)	Yes	Comments
The establishment has an appropriate product storage area.		
A master sanitation plan for these areas has been established including a routine cleaning supplemented by thorough sanitizing on a regular basis. All racks, coils, floor space as well as visible debris and dirt should be cleaned on an ongoing basis.		
An adequate temperature control and monitoring capability are provided to ensure correct holding temperatures.		

Verified by _____

On-Farm Food Safety Datasheet **(GP-8)**

Date of Report:

Transportation Program (Inspect for the following:)	Yes	Comments
Product transport vehicles and equipment, such as conveyors and pallets, are free from odor and moisture, clean, and in good repair before loading the product.		
Workers practice good hygiene		
Transportation vehicles are maintained at the desired temperature.		
Fresh produce is loaded in trucks or trailers in a manner designed to minimize physical damage to the product and to reduce the potential for contamination during transport.		
At the point of shipping, product is inspected for damage, temperature abuse and code dates, with the product status recorded on some type of shipping log or other documentation.		
Document all verifications, and corrective actions taken.		
Vehicles have not previously been used to transport live animals or other material that could contaminate fresh produce.		

Verified by _____

On-Farm Food Safety Datasheet **(GP-9)**

Personnel Training Documentation

Date: _____ Grower: _____

Topics Discussed:

_____

_____

Trainer(s): _____ Affiliation: _____

_____ _____

Attended by:

List name of Attendees	Signature of Attendee
Observations:	

_____

_____

_____

_____

_____

On-Farm Food Safety Datasheet **(GP-10)**

Personnel Training Documentation

Employee: _____

Hire Date: _____

Position: _____

Date of Training	Topic Discussed

Observations: _____

_____

_____

_____

_____

On-Farm Food Safety Datasheet **(GP-11)**

Personnel Training Program (The focus of any training program should include, but is not limited to the following)

❑ Personal cleanliness

- All personnel should understand the impact of poor personal cleanliness and unsanitary practices on produce safety.

- Workers should wear outer garments suitable to the operation in a manner that protects against contamination of produce or produce-contact surfaces or packaging materials. Outer garments should be free of loose fitting, dangling or hanging features.

- Employees should wear adequate hair restraints in the packinghouse area.

- Clothes or other personal belongings should be stored in other areas where produce is not exposed or where equipment or utensils are not washed.

- Eating food, chewing gum or candy, drinking beverages or using tobacco should not be permitted in the packinghouse area at any time because of the potential that the hands and food-contact surfaces may become contaminated.

- Unsanitary personal practices such as scratching the head, placing the fingers in or about the nose or mouth, and indiscriminate and uncovered sneezing or coughing may contaminate fresh produce or any handling equipment.

❑ Hygienic Practices

- Employees handling produce should maintain their hands free from excessive contamination.

- Personnel should maintain gloves in clean and sanitary condition, if used. The gloves should be of an impermeable material.

❑ Washing of hands

- Efforts should be designed to advocate use of sanitation facilities.

- Employees should thoroughly wash their hands in an adequate hand washing facility before starting to work, after each absence from the work station, after using the restroom or blowing nose, and in any other time hands may have become soiled or contaminated.

- Employees should be taught proper hand washing techniques, that include, 1) hand washing with warm water (if available), 2) proper use of soap, 3) thorough scrubbing (including under finger nails and between fingers), and 4) rinsing and drying of the hands.

Personnel Training Program (Cont'd). (The focus of any training program should include, but is not limited to the following)

❑ Diseases and injuries

- Workers should be taught to report symptoms caused by illness, infection or other source that is associated with gastrointestinal illness such as diarrhea, fever, vomiting and jaundice. Lesions should also be reported, especially those containing pus such as a boil or infected wound that is open or draining and that is located on parts of the body that might have contact with produce or produce harvesting equipment. Those workers should be excluded from any operations.

- Personnel should be instructed to report such health condition to their supervisor. Persons with bad colds or other contagious diseases should not be allowed to handle produce. Minor cuts should be thoroughly washed, covered with first aid materials, and then enclosed in rubber gloves, leak-proof bands or other corrective measures.

- Signs should be posted where necessary to remind and enforce good practices. Employee training, health screening and constant monitoring of in-farm and packinghouse sanitation practices are an important part of reducing contamination by employees. Finally, document all verifications, and corrective actions taken

Date of Report:

Sanitation Program (Fill out for every Area and/or Equipment)	
Name of the person responsible:	
Area / Equipment:	
Frequency of cleaning:	
Chemicals used:	
Procedures:	
Special Instructions:	

On-Farm Food Safety Datasheet **(GP-13)**

Date of Report:

Sanitation Program (Inspect for the following)	Yes	Comments
Utensils and equipment are cleaned and sanitized in a manner that protects against contamination of produce, produce contact surfaces or produce-packaging materials.		
Cleaning steps include the finished product cooler, packaging material storage, chemical storage areas, and employee locker areas of the plant.		
Cleaning compounds and sanitizing agents are safe and adequate under the conditions of use.		
Only the following toxic materials are used or stored in a packinghouse: those required to maintain clean and sanitary conditions, those necessary for plant and equipment maintenance and operation, and those necessary for use in the plant's operations.		
Toxic cleaning compounds, sanitizing agents and pesticide chemicals are label-identified, and these are held and stored in a manner that protects against contamination of produce, produce-contact surfaces or produce-packaging materials.		
Single-service articles (such as utensils intended for one time use, paper cups and paper towels) are stored in appropriate containers and they are handled, dispensed, used, and disposed of in a manner that protects against contamination of produce.		
Just before production line start-up, a visual inspection of processing equipment is conducted to ensure that proper sanitation has been completed.		
Records and data are kept from all verifications		

Verified by _____

On-Farm Food Safety Datasheet **(GP-13)** **Cont'd**

Date of Report:

Sanitation Program (Cont'd) (Inspect for the following)		
Waste management	Yes	Comments
Waste, inedible material and other material suspected of harboring pathogenic microorganisms is kept separated prior to removal from the establishment		
Containers and storage rooms for such materials are leak proof, made of non-corrosive material and resistant to repeated disinfection.		
Waste materials are loaded in a separate section of the establishment under strict precautions that avoid any hygienic hazard to the clean sections of the establishment or to produce.		
Practices have been established to insure safe management and disposal of waste from portable toilets (if used) to prevent drainage into the field.		
Effluent disposal		
Effluent and sewage lines are enclosed (not open), well-maintained and large enough to carry peak loads.		
Drains are fitted with traps to control odors and that each fixture is vented to the outside to facilitate drainage. Improper disposal of human waste from toilets could lead to water, soil, animal or crop contamination.		

Verified by _____

On-Farm Food Safety Datasheet **(GP-14)**

Date of Report:

Pest control program	
Name of the person responsible for pest control in the facility:	
Name of the company or person responsible for extermination (if applicable):	
Frequency of extermination:	
List of chemicals used:	
Procedures:	
Comments:	

On-Farm Food Safety Datasheet **(GP-15)**

Pest Control Program
✔Checklist

❑ Store properly all equipment, clear of waste and litter.

❑ Keep cut all grasses around the premises to discourage the breeding and harboring of pests, such as rodents and reptiles.

❑ Remove any unnecessary articles to rid of areas where rodents and insects can harbor.

❑ Maintain adequate surface drainage to reduce breeding places for pests.

❑ Verify that daily cleaning is properly done, in order to remove product or product remnants that may attract pests in and around the packinghouse and any other facility where product is handled or stored.

❑ Inspect regularly all facilities to check for evidence of pest populations or animal contamination.

❑ Remove dead or trapped birds, insects, rodents, and other pests as soon as possible to ensure clean and sanitary facilities and to preclude exacerbating the situation by allowing carcasses to attract other pests.

❑ Eliminate potential nesting or hiding places for pests. Pests can be excluded by blocking areas and vents that allow entrance into the facility.

❑ Maintain a pest control record or log including dates of inspection, inspection report, and steps taken to eliminate any problems.

The use of insecticides or rodenticides is permitted only under precautions and restrictions that will protect against the contamination of produce, produce-contact surfaces or produce packaging materials. Guard or guide dogs may be allowed in some areas of a plant if the presence of the dogs is unlikely to result in contamination of produce, produce-contact surfaces or producing packaging materials.

On-Farm Food Safety Datasheet **(GP-16)**

Trace Back Procedures

Try to establish a coding system that can easily identify the product quickly and efficiently

For example: A Code consisting of five (5) numbers.

1. Establish a calendar for the year where each day has a randomly selected three-digit number. Only people with your calendar will be able to read the code. For example:

April 1999						
S	**M**	**T**	**W**	**T**	**F**	**S**
					1 463	**2** 602
3 101	**4** 210	**5** 870	**6** 543	**7** 480	**8** 371	**9** 512
10 400	**11** 522	**12** 352	**13** 720	**14** 890	**15** 144	**16** 561
17 103	**18** 240	**19** 640	**20** 662	**21** 741	**22** 221	**23** 221
24 460	**25** 113	**26** 313	**27** 321	**28** 530	**29** 812	**30** 770
31 160						

2. Establish a two-digit code to identify the grower or ranch location. The grower or greenhouse uses this same number every year. For example:

   01 "B & B Greenhouses"
   02 "Compostela Greenhouses"
   03 "Tomatiuh Greenhouses"

3. Example: Five Number Code = 32101
   First three digits = 321 = Date of harvest as April 27, 1999
   Last two digits = 01 = Grower as "B & B Greenhouses"
4. Each tray should be coded. It is easier to code each tray in the field.

   A label gun similar to the one used to place price stickers on food items in a grocery store works well or an inked roller pad/stamp.

Shipper/Handler Guidelines

Producers within the OGVGA are required to develop procedures aimed in controlling the operational conditions within the establishment (greenhouses, packinghouses, and shippers) for the production of safe food (**S-1a**). The following guidelines describe **good handling practices** that minimize the potential for microbial contamination during shipping and handling operations. The datasheets (**S1-S13**) provided are to be used by shippers and employees to document that all actions have been completed and can then be verified by a third party as necessary.

1) Food Safety Program:

a) Individual Food Safety Program

Guidelines are presented in this document to assist shippers in developing and implementing their own food safety program. Please complete data sheet (**S-1b**) for each greenhouse operation.

Provide the name, address, and location for each grower and greenhouse.

Name of Operation: _____

Name of Owner/Operator: _____

Location/Address: _____

_____

Telephone/Fax Numbers:

Telephone:_____

Fax: _____

Shipping Location (attach map):_____

b) Program Supervisor

Designate a manager, employee or employees as the official program supervisor(s).

Provide the name of the designated supervisor(s) and/or alternate(s).

Name of Program Supervisor(s):_____

_____

Name of Alternate: _____

Name of Alternate: _____

2) Food Safety Program

a) Premises

Premises include all elements in the greenhouse, packing shed and surroundings: the outside property, roadways, drainage, product flow, sanitary facilities, and water quality.
Pathogenic bacteria gain entry from air, water, animals, raw materials, dust, dirt and people. Therefore, establishments should have written programs featuring procedures to ensure the maintenance of buildings' satisfactory condition.

i) Structural components of establishments

Facilities must be:

- Of sound construction
- Maintained in good repair
- In an acceptable sanitary condition to reduce the potential for microbial contamination of produce.

Shippers are advised to verify the adequate conditions to insure a satisfactory environment of the establishment (**S-2**).

b) Sanitary facilities

i) Washrooms and hand washing stations (**S-3**)

Operators should consider the importance of proximity and accessibility of sanitary facilities to crews in all sectors of fresh produce production. Employees should always have the opportunity to use the on an as-needed basis. Sanitary facilities should be maintained in sanitary condition and good repair at all times.

- Document steps taken to ensure compliance for quantity, sanitary condition and maintenance of field toilets, including:

⊙ Average number of employees per week
⊙ Number of toilets in use
⊙ Sanitation procedures and frequency of cleaning
⊙ Individual or company responsible for maintenance and Sanitation
⊙ Procedure in place to check and replenish toilet paper, soap, paper towels and fingernail brushes
⊙ Adequate employee instruction in proper hand and nail washing techniques
⊙ Posted signs in the appropriate language(s) reminding employees to wash their hands and practice good hygiene

c) Equipment

Equipment can easily spread germs to fresh produce. Therefore, shippers should use adequately designed equipment for post harvest operations.

- Personnel are advised to frequently clean and sanitize bins,
- containers, brushes, buckets, gloves or other material that comes in contact with the product.
- Any equipment used to haul garbage or other debris should
- not be used to haul fresh produce or have contact with cartons or pallets that are used in contact with fresh produce without first being carefully cleaned.
- The cooler facility should have procedures to ensure sanitation measures and maintenance procedures are being conducted.
- A written program should be in place to monitor and control all elements in the area and maintain adequate records as well (**S-4**).

d) Storage and Transportation

- Contamination of greenhouse vegetables may occur due to improper practices during handling, storage, loading, unloading, and transportation operations. Consequently, shippers are encouraged to pay particular attention to the product as it arrives at the processing facility, and to guarantee that sanitation requirements are met during each stage while on the premises.

- Establish an active and ongoing discussion with transportation personnel to ensure the success of any safety management program. **(S-5, S-6)**.
  Without a proper dialogue on produce safety risks and the need for adequate sanitation standards any safety steps implemented along the farm to fork pathway may be negated.

d) Personnel

i) Employee written training

Operators should establish and maintain a program to train all employees, including supervisors, full-time, part-time, and seasonal personnel in good sanitation and hygiene practices, and institute a monitoring system to insure instructions are being followed while on duty.

Documentation for the general training session (**S-7**) as well as for every employee (**S-8**), are necessary to verify that federal, provincial and local requirements for worker safety training are met. Good hygienic practices by all personnel who are involved in the greenhouse harvesting, packing and distribution of OGVGA produce is essential in the control of microbial and other biological hazards.

Personnel responsible for training and identifying sanitation failures or produce contamination should have a background of education or experience to provide a necessary level of competency and to promote good sanitary practices (**S-9**)

f) Sanitation and Pest Control

i) Sanitation program

A written sanitation program must be developed and scheduled in order to ensure good hygienic practices.

Develop sanitation procedures for equipment, utensils, floors,

drains, lighting devices, refrigeration units, and anything else impacting on the safety of the product (**S-10**).

For each area and piece of equipment and utensils, the written sanitation program should specify:

- name of the person responsible;
- the chemicals used;
- the procedures used; and
- the frequency of cleaning and sanitizing.

Production should only begin after a pre-operation inspection has been carried out with satisfactory results (**S-11**).

ii) Pest control program

An adequate written pest control program should be developed and carried out at the shipping location as part of the facility's good sanitation procedures (**S-12**).

Shippers should assess the prevalence and likelihood of uncontrolled animal access to their premises in order to reduce the potential for contamination of crops by fecal material.

Besides the written pest control program, pest problems can be minimized by taking a few precautions, as listed in **S-13**.

g) Trace Back System

A written trace-back program should be designed to outline the procedures the company would implement in the occurrence of a recall.

In the event of an outbreak, lot identification investigations can lead to specific company source or even field, rather than an entire commodity, thus lessening the economic burden on multiple industry operators not responsible for the problem.

A program must be developed to track individual containers from the farm, to the cooler, to the receiver, in as much detail as possible, and in conjunction with the retail sector. The following type of program has been suggested by other groups and can form the basis of a future OGVGA program.

i) Trace back coordination

Use a simple coding system to identify fresh produce in "loads", at a minimum. An effective lot identification system should have documentation to indicate the source of a product and a mechanism for marking or identifying the product that, ideally, can follow the product from the farm to the consumer (**S-14**).

Coordinate trace back procedures with grower/packer.

- Maintain a copy of the grower/packer's trace back procedures for your file

Verify that documentation includes, date of harvest, farm identification, and chain of custody from cooler to receiver.

The ability to identify the source of a product (positive lot identification) from the consumer back to the grower's field serves as an important complement to good management practices intended to prevent the occurrence of produce safety problems, and to minimize the impact of foodborne disease outbreaks.

h) Documentation and Verification (**S-15**)

Verification that the on-farm food safety program has been implemented by individual growers can be achieved through written documentation. Growers, packers and shippers utilizing good agricultural and good handling practices will minimize the potential for microbial contamination.

Verify that the grower has an individual on-farm food safety program.

Maintain a copy of the Grower Implementation Checklist (**GP-17**)

On-Farm Food Safety Datasheet **(S-1a)**

Date of Report:

B. On-Farm Food Safety Program Implementation (Check if available and provide description)	Yes	Description
i) Premises Program Documentation		
- Facility Identification		
- On-Farm Food Safety Supervisor		
- Facility Maintenance Program		
- Sanitary Facilities Maintenance Program		
ii) Equipment Maintenance Program		
iii) Storage and Transportation Program		
iv) Employee Training and Hygiene Program		
v) Sanitation and Pest Control Program		
vi) Trace Back System Program		
vii) Documentation and Verification		

On-Farm Food Safety Datasheet **(S-1b)**

Date of Report:

b) Premises Program Identification	
Identification: Complete a worksheet for each shipper	
Name of Operation:	
Name of Owner/Operator:	
Mailing Address:	
Phone/Fax Numbers	
Shipping location (Attach map)	
On-Farm Food Safety Supervisor: Provide the name of the designated on-farm food safety supervisor (s) and/or alternate(s).	
Name of Supervisor:	
Name of Alternate	

On-Farm Food Safety Datasheet **(S-2)**

Date of Report:

Shipper Premises Maintenance Program (Inspect for the following:)	Yes	Comments
Premises are not in close proximity to any source of pollution.		
Roadways are properly graded, compacted, dust proof and drained		
Shipping and receiving areas provide or permit good drainage		
Premises prevent access by pests, and provide adequate design required for thorough and effective cleaning and sanitation		
Ventilation facilities are equipped with filters or fittings that catch dust in order to prevent dissemination of microbes throughout the facility		
Adequate ventilation is sufficient to prevent build-up of excessive heat that can lead workers to become fatigued.		
Doors are tight fitting to exclude rodents, insects and dust		
Openings are fitted with removable screens to exclude insects, birds, and other pests		
Windows and screens are maintained in good repair and properly cleaned		

On-Farm Food Safety Datasheet **(S-3)**

Date of Report:

Sanitary Facilities Maintenance Program	Yes	Comments
Washrooms should be sufficient for the number of staff employed. A number of one per 10-20 employees has been recommended		
Washrooms should not open directly into produce handling areas in order to reduce the risk of contamination from blockage and other malfunctions.		
Hand washing stations should be located in washrooms (including portable toilets) conveniently positioned so that employees must pass them when returning to processing areas. They also should be provided in any other demanding areas.		
Hand-washing stations should supply hot and cold potable water, soap and/or anti-bacterial soaps, sanitary hand drying devices (preferably disposable paper towel) and nail brushes.		
Toilets should be well stocked with sufficient toilet-paper and be fitted with water flushing; since flushing handles are often a source of contamination, hand contact can be avoided if foot pedals are used.		

Verified by _____

On-Farm Food Safety Datasheet **(S-4)**

Maintenance of Equipment ✔Checklist
❑ Use adequate designed equipment for post-harvest operations and always maintain it in clean and sound condition. ❑ Clean and sanitize bins, containers, brushes, buckets, gloves or other material that comes in contact with the product on a daily basis. Any equipment used to haul garbage, manure, or other debris should not be used to haul fresh produce or have contact with cartons or pallets that are used in contact with fresh produce without first being carefully cleaned. ❑ Remove contaminants, such as mud, diesel, grease, oil, produce, and debris from processing equipment daily. ❑ Remove product-left remnants from tables, belts, lines and conveyors that could cause microbial contamination. ❑ Verify that food-contact surfaces are corrosion resistant; knives, saws, blades, boots, gloves, smocks and aprons should be made of nontoxic materials and designed to withstand the environment of their intended use and the action of the product. These should be cleaned, inspected for defects, and cleave or replaced as needed. ❑ Repair, clean or discard damaged and muddy cartons or boxes to reduce contamination of produce. ❑ Verify that any equipment in contact with fresh produce is not used for carrying other materials (tools, fuels, etc) in order to reduce potential contamination. ❑ Monitor and control all elements in the area and maintain adequate records.

On-Farm Food Safety Datasheet **(S-5)**

Date of Report:

Storage Maintenance Program (Inspect for the following:)	Yes	Comments
The establishment has an appropriate product storage area.		
A master sanitation plan for these areas has been established including a routine cleaning supplemented by thorough sanitizing on a regular basis. All racks, coils, floor space as well as visible debris and dirt should be cleaned on an ongoing basis.		
An adequate temperature control and monitoring capability are provided to ensure correct holding temperatures.		

Verified by _____

On-Farm Food Safety Datasheet **(S-6)**

Date of Report:

Transportation Program (Inspect for the following)	Yes	Comments
Product transport vehicles and equipment, such as conveyors and pallets, are free from odor and moisture, clean, and in good repair before loading the product.		
Workers practice good hygiene		
Transportation vehicles are maintained at the desired temperature.		
Fresh produce is loaded in trucks or trailers in a manner designed to minimize physical damage to the product and to reduce the potential for contamination during transport.		
At the point of shipping, product is inspected for damage, temperature abuse and code dates, with the product status recorded on some type of shipping log or other documentation.		
Document all verifications, and corrective actions taken.		
Vehicles have not previously been used to transport live animals or other material that could contaminate fresh produce.		

Verified by _____

On-Farm Food Safety Datasheet **(S-7)**

Personnel Training Documentation

Date: _____ Grower: _____

Topics Discussed: _____

_____

Trainer(s): _____ Affiliation: _____

_____ _____

Attended by:

List name of Attendees	Signature of Attendee

Observations: _____

_____

_____

_____

_____

On-Farm Food Safety Datasheet **(S-8)**

Personnel Training Documentation

Employee: _____

Hire Date: _____

Position: _____

Date of Training	Topic Discussed

Observations: _____

_____

_____

_____

_____

On-Farm Food Safety Datasheet (S-9)

Personnel Training Program (The focus of any training program should include, but is not limited to the following)

❑ Personal cleanliness

- All personnel should understand the impact of poor personal cleanliness and unsanitary practices on produce safety.

- Workers should wear outer garments suitable to the operation in a manner that protects against contamination of produce or produce-contact surfaces or packaging materials. Outer garments should be free of loose fitting, dangling or hanging features.

- Employees should wear adequate hair restraints in the packinghouse area.

- Clothes or other personal belongings should be stored in other areas where produce is not exposed or where equipment or utensils are not washed.

- Eating food, chewing gum or candy, drinking beverages or using tobacco should not be permitted in the packinghouse area at any time because of the potential that the hands and food-contact surfaces may become contaminated.

- Unsanitary personal practices such as scratching the head, placing the fingers in or about the nose or mouth, and indiscriminate and uncovered sneezing or coughing may contaminate fresh produce or any handling equipment.

❑ Hygienic Practices

- Employees handling produce should maintain their hands free from excessive contamination.

- Personnel should maintain gloves in clean and sanitary condition, if used. The gloves should be of an impermeable material.

❑ Washing of hands

- Efforts should be designed to advocate use of sanitation facilities.

- Employees should thoroughly wash their hands in an adequate hand washing facility before starting to work, after each absence from the work station, after using the restroom or blowing nose, and in any other time

hands may have become soiled or contaminated.

- Employees should be taught proper hand washing techniques, that include, 1) hand washing with warm water (if available), 2) proper use of soap, 3) thorough scrubbing (including under finger nails and between fingers), and 4) rinsing and drying of the hands.

On-Farm Food Safety Datasheet (S-9) Cont'd

Personnel Training Program Cont'd. (The focus of any training program should include, but is not limited to the following)

❑ Diseases and injuries

- Workers should be taught to report symptoms caused by illness, infection or other source that is associated with gastrointestinal illness such as diarrhea, fever, vomiting and jaundice. Lesions should also be reported, especially those containing pus such as a boil or infected wound that is open or draining and that is located on parts of the body that might have contact with produce or produce harvesting equipment. Those workers should be excluded from any operations.

- Personnel should be instructed to report such health condition to their supervisor. Persons with bad colds or other contagious diseases should not be allowed to handle produce. Minor cuts should be thoroughly washed, covered with first aid materials, and then enclosed in rubber gloves, leak-proof bands or other corrective measures.

- Signs should be posted where necessary to remind and enforce good practices. Employee training, health screening and constant monitoring of in-farm and packinghouse sanitation practices are an important part of reducing contamination by employees. Finally, document all verifications, and corrective actions taken

On-Farm Food Safety Datasheet **(S-10)**

Date of Report:

Sanitation Program (Fill out for every Area and/or Equipment)	
Name of the person responsible:	
Area / Equipment:	
Frequency of cleaning:	
Chemicals used:	
Procedures:	
Special Instructions:	

On-Farm Food Safety Datasheet **(S-11)**

Date of Report:

Sanitation Program (Inspect for the following)	Yes	Comments
Utensils and equipment are cleaned and sanitized in a manner that protects against contamination of produce, produce contact surfaces or produce-packaging materials.		
Cleaning steps include the finished product cooler, packaging material storage, chemical storage areas, and employee locker areas of the plant.		
Cleaning compounds and sanitizing agents are safe and adequate under the conditions of use.		
Only the following toxic materials are used or stored on the premises: those required to maintain clean and sanitary conditions, those necessary for plant and equipment maintenance and operation, and those necessary for use in the plant's operations.		
Toxic cleaning compounds, sanitizing agents and pesticide chemicals are label-identified, and these are held and stored in a manner that protects against contamination of produce, produce-contact surfaces or produce-packaging materials.		
Single-service articles (such as utensils intended for one time use, paper cups and paper towels) are stored in appropriate containers and they are handled, dispensed, used, and disposed of in a manner that protects against contamination of produce.		
Just before production line start-up, a visual inspection of processing equipment is conducted to ensure that proper sanitation has been completed.		
Records and data are kept from all verifications		

Verified by _____

On-Farm Food Safety Datasheet **(S-11) Cont'd**

Date of Report:

Sanitation Program Cont'd (Inspect for the following)		
Waste management	Yes	Comments
Waste, inedible material and other material suspected of harboring pathogenic microorganisms is kept separated prior to removal from the establishment		
Containers and storage rooms for such materials are leak proof, made of non-corrosive material and resistant to repeated disinfection.		
Waste materials are loaded in a separate section of the establishment under strict precautions that avoid any hygienic hazard to the clean sections of the establishment or to produce.		
Practices have been established to insure safe management and disposal of waste from portable toilets (if used) to prevent drainage into the field.		
Effluent disposal		
Effluent and sewage lines are enclosed (not open), well-maintained and large enough to carry peak loads.		
Drains are fitted with traps to control odors and that each fixture is vented to the outside to facilitate drainage. Improper disposal of human waste from toilets could lead to water, soil, animal or crop contamination.		

Verified by _____

On-Farm Food Safety Datasheet **(S-12)**

Date of Report:

Pest control program	
Name of the person responsible for pest control in the facility:	
Name of the company or person responsible for extermination (if applicable):	
Frequency of extermination:	
List of chemicals used:	
Procedures:	
Comments:	

On-Farm Food Safety Datasheet **(S-13)**

Pest Control Program ✔ Checklist
❑ Store properly all equipment, clear of waste and litter. ❑ Keep cut all grasses around the premises to discourage the breeding and harboring of pests, such as rodents and reptiles. ❑ Remove any unnecessary articles to rid of areas where rodents and insects can harbor. ❑ Maintain adequate surface drainage to reduce breeding places for pests. ❑ Verify that daily cleaning is properly done, in order to remove product or product remnants that may attract pests in and around the packinghouse and any other facility where product is handled or stored. ❑ Inspect regularly all facilities to check for evidence of pest populations or animal contamination. ❑ Remove dead or trapped birds, insects, rodents, and other pests as soon as possible to ensure clean and sanitary facilities and to preclude exacerbating the situation by allowing carcasses to attract other pests. ❑ Eliminate potential nesting or hiding places for pests. Pests can be excluded by blocking areas and vents that allow entrance into the facility. ❑ Maintain a pest control record or log including dates of inspection, inspection report, and steps taken to eliminate any problems. The use of insecticides or rodenticides is permitted only under precautions and restrictions that will protect against the contamination of produce, produce-contact surfaces or produce packaging materials. Guard or guide dogs may be allowed in some areas of a plant if the presence of the dogs is unlikely to result in contamination of produce, produce-contact surfaces or producing packaging materials.

On-Farm Food Safety Datasheet **(S-14)**

Trace Back Procedures

Try to establish a coding system that can easily identify the product quickly and efficiently
For example: A Code consisting of five (5) numbers.

1. Establish a calendar for the year where each day has a randomly selected three-digit number. Only people with your calendar will be able to read the code. For example:

April 1999						
S	**M**	**T**	**W**	**T**	**F**	**S**
					1 463	**2** 602
3 101	**4** 210	**5** 870	**6** 543	**7** 480	**8** 371	**9** 512
10 400	**11** 522	**12** 352	**13** 720	**14** 890	**15** 144	**16** 561
17 103	**18** 240	**19** 640	**20** 662	**21** 741	**22** 221	**23** 221
24 460	**25** 113	**26** 313	**27** 321	**28** 530	**29** 812	**30** 770
31 160						

2. Establish a two-digit code to identify the grower or ranch location. The grower or greenhouse uses this same number every year. For example:

   01 "B & B Greenhouses"
   02 "Compostela Greenhouses"
   03 "Tomatiuh Greenhouses"

3. Example: Five Number Code = 32101
   First three digits = 321 = Date of harvest as April 27, 1999
   Last two digits = 01 = Grower as "B & B Greenhouses"
4. Each tray should be coded. It is easier to code each tray in the field.

   A label gun similar to the one used to place price stickers on food items in a grocery store works well or an inked roller pad/stamp.

On-Farm Food Safety Datasheet **(S-15)**

Date of Report:

Grower Name and Identification Code	Verify Grower Food Safety Program	Copy of Grower Checklist	Comments

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