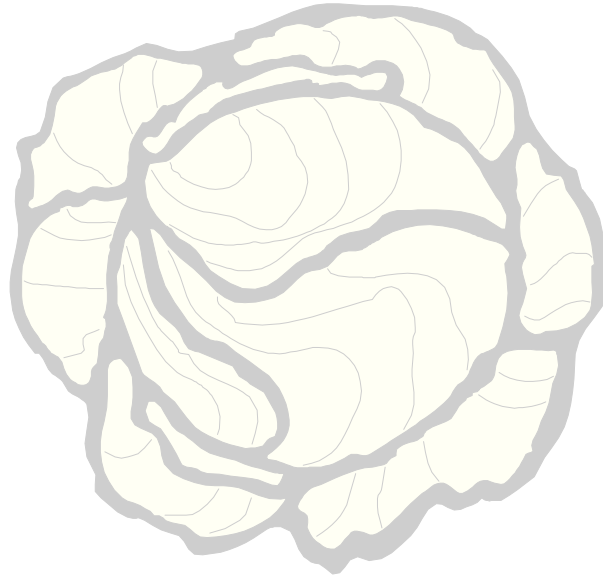


Field Cored Lettuce “FC Lettuce”



Best Practices

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"FC Lettuce"

Best Practices

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INTRODUCTION

Traditionally, iceberg lettuce has been harvested and shipped to processing plants as whole head lettuce, with only minimal removal of wrapper leaves. Some suppliers have adopted a new way of harvesting iceberg lettuce by removing outer wrapper leaves, cap leaves and cores of lettuce in the field, resulting in a cleaner product that provides more value and less waste.

This document, “Field Cored Lettuce,” has been developed with the goal of establishing and implementing “Best Practices” for the preparation of field cored lettuce. The primary objective of “Best Practices” is to enhance the safe production of iceberg lettuce products by providing guidance to the industry.

This document is a compilation of food safety practices that minimize the physical, chemical and biological hazards associated with field cored lettuce. Issues of relevance to product quality are not specifically addressed. It is recommended that each supplier incorporate appropriate procedures to assure and further enhance the quality of iceberg lettuce.

DEFINITIONS

FC Lettuce: The acronym “FC” stands for "Field Cored" Iceberg Lettuce.

GAPs: The terms GAPs or Good Agricultural Practices refer to the "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables," which was published by the Food and Drug Administration in 1998. GAPs provide the foundation for the “Best Practices” document.

Best Practices: “Best Practices” is a comprehensive guidance document designed to enhance the safe production of FC lettuce. The document addresses all steps from growing to the introduction of FC lettuce to processing lines.

FDA: This acronym stands for Food and Drug Administration.

EPA: This acronym stands for Environmental Protection Agency.

M.S.D.S.: This acronym stands for Material Safety Data Sheet.

GMPs: Good Manufacturing Practices in Manufacturing, Processing, Packing, or Holding Human Food (21 CFR 110)

FC LETTUCE “BEST PRACTICES”

When growing any type of lettuce, growers should comply with the FDA’s "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables," also referred to as Good Agricultural Practices (GAPs). For more detailed information, consult the GAPs Guide.

In addition to the GAPs, the following practices are recommended for the harvesting and handling of FC lettuce:

1.0 Pre-Harvest

1.1 Harvesting Equipment Design Requirements

Harvesting equipment should be built using the principles of sanitary design. The materials that are used should be appropriate for food use. In addition, the equipment should be designed for ease of sanitation and the prevention of contamination by foreign objects.

Examples of sanitary design features include:

- Conveyor belt materials should be appropriate for food contact.
- All overhead hydraulic hoses and fittings should be protected with a catch pan.
- All night-lights should be shielded.
- All direct contact surfaces should be constructed of materials that are appropriate for food contact.

1.2 Cleaning of Harvesting Equipment

1.2.1 Daily Cleaning

Harvesting equipment should be cleaned at the end of the harvest day in the following manner:

- Rinse with potable water to remove all product remains and debris.
- Apply a detergent that is suitable for food operations, following the manufacturer’s recommendations for concentration and time.
- Scrub and remove any buildup as needed (do not use metal brushes). Brushes should be designated for use on harvesting equipment only.
- Rinse off all detergent residues with potable water.

- Sanitize the equipment with a sanitizer that is suitable for food operations. Follow the label instructions for mixing, use and disposal of the chemical. Check and document the concentration of the sanitizer. Examples of some commonly used sanitizers are: a) iodophors (max. 25 ppm); b) quaternary ammonium compounds (max. 200 ppm); and c) chlorine compounds (max. 200 ppm).

1.2.2 Pre-Operation Sanitation

The harvesting belt equipment should be rinsed and sanitized again prior to harvesting the next day to eliminate any possible dust accumulation or debris from overnight storage.

- Rinse with potable water.
- Sanitize equipment using up to 200 ppm of total chlorine or an alternate sanitizer.
- Check and document the sanitizer concentration during the pre-operation inspection.

1.2.3 Cleaning Procedure Verification

Cleaning procedure effectiveness should be monitored and evaluated through visual and/or microbial evaluations. Document all monitoring activities and corrective actions.

1.3 **Food Safety Pre-Operation Inspection**

Inspect FC lettuce harvesting equipment prior to start-up. It is important to document the inspection results and corrective actions. An inspection checklist could include:

- Harvest equipment cleanliness
- Potential sources of physical and chemical hazards
 - Hydraulic hoses
 - Hydraulic motors
 - Overhead hydraulic fittings
 - Night-lights
 - Conveyor belts and bolts
- Wash water quality
 - Wash water reservoir tank cleanliness
 - Concentration of disinfectant
 - Concentration of any other water additives as applicable.

- Harvest crew personal equipment cleanliness
 - Knives
 - Gloves
 - Aprons
 - Hairnets

2.0 Harvesting and Trimming

2.1 Harvest Knives and Coring Rings

2.1.1 Harvest Knife and Coring Ring Material

Harvest knives and coring rings should be made of stainless steel with non-porous and cleanable handles.

2.1.2 Knife/Coring Ring Maintenance

- Cutting tools should be maintained so that they are sharp and free from damage such as ragged edges.
- Inspect knife/coring ring condition periodically and replace damaged tools.
- Knives with coring rings attached to the blade should have smooth, sanitary welds.
- No extraneous material, such as tape, should be attached to knives.

2.1.3 Knife Sanitation

- Knife cleanliness should be maintained through daily cleaning and sanitizing.
- To further enhance cleanliness, the knives can be dipped or soaked in a sanitizer solution when not in use during harvest.
- Use a sanitizer such as chlorine (up to 200 ppm total chlorine).
- Check, adjust (if necessary) and document the sanitizer concentration strength as often as necessary to assure its effectiveness.

2.2 Harvest Crew Hygiene

2.2.1 Protective Garments

Each harvest crewmember should wear appropriate clean protective garments. Examples may include:

- Hairnets and beard nets that cover hair completely

- Gloves, preferably of a contrasting color to the natural lettuce color
- Aprons made of cleanable material

2.2.2 Hygiene Practices

Harvest crews should be trained in the proper use of toilet facilities and hand wash stations. Such efforts should be part of an ongoing training effort.

2.2.3 Personal Health

- Any worker diagnosed with an active case of illness caused by any of the following pathogens (*Salmonella typhi*, Shigella species, *E.coli* 0157:H7 or Hepatitis A) or workers with diarrheal disease shall not have contact with the product or food-contact surfaces.
- Workers who have an open or draining lesion or wound shall have the lesion or wound completely covered in a manner that will prevent contact of the lesion or wound with raw product or harvesting equipment.

2.3 **Harvest Crew Practices**

- Knives, gloves and aprons should be in a clean and sanitary condition before the start-up of lettuce harvesting.
- Gloves and aprons should be cleaned and rinsed periodically during the harvest day.
- Heavily soiled and/or damaged gloves/aprons should be replaced.
- An area (with receptacle) should be provided to store gloves and aprons, during breaks or when using toilet facilities.
- Never take gloves, knives or aprons inside the toilet facilities.
- Knives and protective garments should not be left on top of harvesting equipment or on the ground.
- Receptacles with a sanitizer solution should be provided to store and sanitize knives that are not in use.
- Knives and gloves should be collected at the end of each day. Knives should not be taken home.

- Wash hands thoroughly with soap and water before returning to work after using the toilet facilities, after breaks or when leaving the workstation.
- All personal belongings should be stored away from areas where they may come in contact with product or product-contact surfaces.
- Eating, drinking, smoking or chewing gum or tobacco products while harvesting FC lettuce is not allowed.
- Food preparation and eating during lunch breaks is not allowed in the lettuce field or next to the harvesting belt.
- Glass containers are not allowed in the field or field borders.

3.0 Coring and Rinsing

3.1 Rinse Water Application

After core removal, the cored area should be rinsed with water that is of adequate sanitary quality.

3.2 Rinse Water Quality

- Only water from a potable source shall be used.
- Water reservoir tanks shall be kept clean and sanitary. Visual inspections and/or other testing (e.g. ATP, microbiological) should be performed at appropriate frequencies to verify sanitary conditions. All verification activities should be documented.
- Any water additive used to rinse the cored area of the lettuce must be FDA or EPA compliant for the intended use. Copies of M.S.D.S. should be maintained on file.

3.3 Water Quality Monitoring

- Rinse water disinfectant levels shall be monitored and adjusted to adequate levels to prevent cross-contamination from the rinse water system. Only approved wash water disinfectants shall be used and residual levels should be monitored and adjusted at a frequency that is suitable for the operation.

- If chlorine is used as a water disinfectant in a recirculated system, chlorine concentrations should be measured and documented in terms of ppm free residual chlorine.
- Any other substance used to treat the rinse water for FC lettuce should be monitored to verify correct concentration. These checks should be documented.

3.4 Process Controls

The following parameters should be checked and documented. The frequency may be modified depending upon the stability of the process.

- Rinse water disinfectant concentration
- Water reservoir tank sanitation
- Core and wrapper leaves removal
- Rinse of cored area
- Knife sanitizer concentration

4.0 Container (Bin) Filling / Handling

4.1 Container Cleanliness

4.1.1 Reusable Containers

- Reusable containers should be constructed and designed for easy cleaning.
- Containers should be cleaned and sanitized before returning to the field.
- Frequency and specific cleaning steps for containers should be documented.

4.2 Container Inspection

A formal inspection and repair program should be implemented for reusable containers. Damaged containers should be removed or repaired.

4.2.1 Pallets

Pallets used with bins or containers should be in good condition, e.g. free from loose pieces such as nails or staples. Damaged wood pallets should not be used.

4.2.2 Securing Pallets to Bins

- If pallets are used with FC lettuce bins, the bins should not be secured using nails or staples. Other means of securing bins should be used.
- The bottoms of bins should be protected from exterior punctures. If the bottom of a bin is open or exposed, bottom covers should be used. Bottom covers should be of sufficient strength to protect the lettuce and liner from external punctures such as wood splinters or nails.

4.3 **Bin Liner**

Bin liners that are suitable for food use should be used when harvesting FC lettuce. The material and liner specifications may vary depending on specific technologies used by each processor. The liners should protect the lettuce from exterior contamination and have no adverse effect on the lettuce.

4.3.1 Liner Cleanliness and Storage

- Liners have direct contact with FC lettuce; therefore, they should be stored away from exterior contaminants such as dust, rain or pests. Care should be taken to handle liners in a way that prevents damage and cross contamination during storage and harvesting of FC lettuce. Liners should be stored in an enclosed area following all applicable GMPs for handling of food product ingredients.
- Liners should be placed inside the bins and/or containers just before filling the bins.

4.3.2 Liner Covering

Liners should be covered and protected from exterior contamination. Immediately after filling, the liner should be closed using a method that does not create a potential for foreign object inclusion

4.4 **Container Labeling Requirements**

For the purposes of product traceability, each container (bin) should be labeled with information that allows for effective traceback.

Examples of information that may be included are:

- Grower or Ranch ID
- Harvest time

- Harvest date
- Crew number
- Lot ID

Labels should be secured to bins in a manner that does not create a potential for foreign object inclusion.

4.5 Container/Bin Covering

Containers/bins with product should be appropriately covered during storage and transportation to prevent cross-contamination while stacked.

5.0 Transportation to Cooler

5.1 Tarp Covering of Load

Bins should be covered with a clean tarp before removing the load from the field. The tarp should cover the top of the bins completely and be secured to prevent cross-contamination during transit from field to cooler. This step should be followed regardless of the distance from the field to the cooler. Tarps should be maintained in a clean and intact condition.

6.0 Cooling

6.1 Cooling Equipment Cleanliness

Vacuum coolers should be maintained clean and free from debris. A preventive maintenance program should be in place, which includes periodic inspection of cooling equipment and repair of any damaged part that may become a source of foreign objects, such as loose paint or loose bolts and fittings.

6.2 Cooler Facility Staging Area Cleanliness

The cooler staging area should be kept clean, free from debris, and protected from airborne contaminants. It is best to stage bins in a shaded area. Immediate perimeters should be clear of unused equipment and free from weeds and trash, which may become a harborage for pests.

6.3 Cooling Equipment Cleaning Procedures

Vacuum tubes should be inspected for cleanliness before cooling operations begin each day. If needed, corrective actions should be taken.

6.4 Personnel Practices

Personnel working in the cooling area should follow good employee practices, including:

- No eating or smoking
- No drinking and no glass containers
- Proper hand washing after using toilet facilities

7.0 Container (Bin) Closure (Vacuum / Gas Flush / Sealing)

7.1 Vacuum / Sealing Equipment Cleanliness

- Equipment used to extract air and inject gas (if applicable) should be maintained in a clean and sanitary condition. Vacuum / gas flush nozzles and pipes should be cleaned and sanitized daily. When not in use, vacuum nozzles and fittings should be stored in a sanitary manner.
- Check vacuum pump equipment for damage and replace any broken or damaged pieces. If modified atmosphere packaging is used, verify that the gas is of food-grade quality.

7.2 Sealing Method

The system used to seal or close liner bags should minimize the risk of foreign object inclusion.

7.3 Personnel Practices

Personnel working in the sealing area should follow good employee practices, including:

- Use of hairnets / beard nets where appropriate
- Use of clean gloves

7.4 Product Protection during Vacuum / Sealing Operation

- The modified atmosphere and/or sealing of the bin liners should be conducted in an environment that is protected from potential food safety hazards.
- The area and surroundings where the sealing process is conducted should be clean and free from debris. Good housekeeping should be maintained.

8.0 Processing Facility

8.1 GMP Requirements

During the transport of FC lettuce to the processing plant, sanitary conditions and proper employee practices should be maintained. At the plant, receiving and cold storage activities should be conducted according to GMPs. Appropriate monitoring procedures should be implemented.

8.2 Bin Dumping and Conveying

8.2.1 Container Integrity Inspection

Containers should be inspected for damage to the container or liner to minimize the potential for product contamination.

8.2.2 Liner Opening Technique

The liner should be opened carefully to avoid contaminating the product with pieces of the liner itself or by other means.

8.2.3 Product Inspection

Prior to cutting, product should be visually inspected for overt contamination with foreign objects.

Field Cored Lettuce Best Practices Process Flow

