Voluntary Food Safety Guidelines for the Watermelon Industry

Final Draft

January 17, 2000

Introduction to Voluntary Guidelines for Control of Microbial Hazards

Increasing consumer concerns about food safety and several recent outbreaks of foodborne illnesses caused by microbial contaminants have encouraged the watermelon industry to examine and implement farm and production practices designed to minimize microbial hazards.

In January 1997, a group of growers, shippers and processors, hydro-vac operators and other industry professionals agreed to pool resources to develop voluntary guidelines which the watermelon industry can use to minimize the risk of microbial contamination. This effort, led by Western Growers Association (WGA) and the International Fresh-cut Produce Association (IFPA), is called the Food Safety Initiative. The National Watermelon Promotion Board has incorporated many guidelines from this Food Safety Initiative enacted by the WGA and IFPA, with changes, amendments, deletions and additions to make this document pertain to the specific needs of the watermelon industry. In addition, certain language and sections from the Food and Drug Administration's "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables" also were incorporated into these voluntary guidelines.

The information and **voluntary guidelines** which follow **are designed to be practical, economical, and yet effective.**

These voluntary guidelines are designed to serve as a template that a grower, packer, shipper or processor can adapt to their own business, and if used will demonstrate to customers, regulators and end consumers, a good faith effort to minimize microbial contamination risks.

There are data gaps in understanding the sources and significance of microbial hazards as well as practices to minimize them. Consequently, it is not well understood what specific impact water, manure or employees may have in contributing to foodborne disease. Despite these constraints, growers, packers, shippers and processors of watermelon are proactively addressing the increasing concerns about microbiological food safety issues among public health officials, media and consumer groups through the development of voluntary practices aimed at reducing the likelihood of foodborne diseases.

These **voluntary guidelines** are not "final" in that they may be periodically revised as more information and new technology allow the industry to better understand factors impacting these issues.

The premise of these **voluntary guidelines** is that watermelon is not only safe to eat, but increased consumption should be encouraged for the health and benefits that only watermelon can provide. In no case do the recommendations in this guide supercede applicable Federal, state or local laws or regulations for U.S. operators. Operators outside the U.S. should follow corresponding or similar standards, laws or regulations.

The National Watermelon Promotion Board is grateful to the Western Growers Association (WGA) and the International Fresh-Cut Produce Association (IFPA) for taking a leadership role in assembling a variety of agricultural and scientific experts to develop an comprehensive set of voluntary guidelines for use by the fresh produce industry. The board's goal has been to take a pro-active role for the watermelon industry, by seeking to recommend voluntary guidelines that are applicable for watermelon producers, shippers and importers to adopt for their operations. The board hopes to provide these voluntary guidelines as a valuable source of relevant information for industry members.

The board agrees with the following concepts included in the Mission Statement developed by the WGA and IFPA:

"In recognition of an exemplary record of years of successful production of safe, healthy produce, the industry has enhanced its efforts to identify and control any microbial hazards that may be associated with the production of fresh produce by:

- Monitoring the entire production process from planting to consumption;
- Developing and advocating guidelines for best management practices that control microbial hazards;
- Educating the produce industry, regulators, foodservice personnel, retailers, media and consumers about these efforts to provide the safest produce possible.

The board also amends the principles initially published in the FDA's "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables" for use by the watermelon industry:

- Prevention of microbial contamination of watermelon is favored over reliance on corrective actions once contamination has occurred.
- Fresh produce can become microbiologically contaminated at any point along the farm-to-table food chain.
- Accountability at all levels of the watermelon industry is important to a successful food safety program. There should be qualified personnel and effective monitoring to ensure that all elements of the program function correctly and to help track watermelons back through the distribution channels.
- Consumer education is needed because changes in consumer dietary habits, insufficient knowledge of hygienic practices, and an aging population have increased the risk of outbreaks of foodborne illness. About one-third of the U.S adult population has been documented to not routinely wash their hands or wash cutting boards after handling raw meat or poultry. The potential for cross-contamination of melons and other foods consumed uncooked has consequently increased.

User's Note

This document provides ***voluntary guidelines*** to minimize microbial contamination in various watermelon growing, packing, shipping and processing operations. The information and procedures provided have been developed with input from a broad cross-section of the produce industry and represents the best efforts of the industry and food safety experts to provide information on best management practices to minimize microbial contamination in a manner consistent with existing applicable regulations, standards and guidelines. The information provided herein is offered in good faith and believed to be reliable, but is made without warranty, express or implied, as to merchantability, fitness for a particular purpose or any other matter. These recommended ***voluntary guidelines*** are not designed to apply to any specific grower, farm operation, packing shed, facility or process. It is the responsibility of the user of this document to verify that these ***voluntary guidelines*** are appropriate for its use. The National Watermelon Promotion Board does not assume any responsibility for compliance with applicable laws and regulations, and recommends that users consult with their own legal and technical advisors to be sure that their own procedures meet with applicable client specifications and internal requirements, as well as federal, state and local laws and regulations.

Some of the recommendations contained in this document are already mandatory under federal, state and local laws and regulations. Contact appropriate national, regional and state regulatory offices and produce trade associations for help in identifying those laws and regulations that are applicable to a specific operation.

In addition, the guidelines are not "final," as they may be revised periodically as experience, research and new technology may suggest. Additional developments in the fields of microbiology, epidemiology and the evolving understanding of new and emerging disease issues will assist in developing preventative strategies.

Last, but most importantly, these guidelines are designed to be general and not specific. They are also designed to inform others (ie, retailers, foodservice firms, media, advocacy groups, regulatory officials and consumers) of our current and evolving attention to these issues. The guidelines are particularly directed to the members of our industry as an aid to alert them to potential contamination issues.

NOTE: If in using these guidelines, a grower, packer, shipper or processor determines that a potential for risk exists, they are advised to contact either agricultural association, professional consultant, state or local agricultural department officials or other government entity to determine what, if any, remedial tasks should be performed to minimize the potential risk.

Voluntary Guidelines for Control of Microbial Hazards in Pre-Plant, Pre-Harvest and Harvest Facilities

For the watermelon industry, control of microbial hazards requires a thorough examination of inputs, production tools, soils, fertilizers, water, labor and growing and harvesting equipment.

Growers are advised to look at each of these inputs separately and document the origin and impact of each input before using it. A summary of the pre-plant, pre-harvest and harvest inputs and identifying potential points of contamination can be summarized as follows:

I. PRE-PLANT

A. Soils: Growers are encouraged to research and review the previous uses of the fields as well as the adjoining fields. Suggested questions to be asked, answered and reviewed include:

1. Do animals have access to the field?
2. What was the last crop grown?
3. What operations are taking place in adjoining fields?
4. Was the field ever used as a feedlot, landfill or toxic waste site?
5. If the previous use is unknown or if any of the questions lead the grower to believe a potential hazard exists, it is suggested that soils be tested for contaminants. If the concern is confirmed, implementing corrective action prior to planting a crop is encouraged.

II. FERTILIZERS

A. Fertilizers: Those fertilizers such as manure and compost should be monitored for possible microbial pathogens (Any agent or microorganism, capable of causing human disease.)

1. Growers are advised to consider a minimum application to harvest interval to assure that the manure or compost has fully broken down in the soil before the crop is harvested. Animal manure and human fecal matter represent a significant source of human pathogens. A particularly dangerous pathogen, *Escherichia coli* O157:H7, is known to originate primarily from ruminants (any cud-chewing animal) such as cattle, sheep, and deer, shed it through their feces. In addition, animal and human fecal matter are known to harbor *Salmonella, Cryptosporidium,* and other pathogens. Therefore the use of biosolids and manures, including solid manure, manure slurries and manure tea, must be closely managed to limit the potential for pathogen contamination.

2. Growers must also be alert to the presence of human or animal fecal matter that may be unwittingly introduced into the watermelon growing and handling environments. Potential sources of contamination include use of untreated or improperly treated manure: nearby composting or manure storage areas, livestock, or poultry operations; nearby municipal wastewater or biosolids storage, treatment, or disposal areas; and high concentrations of wildlife in the growing and harvesting environment (such as heavy concentrations of migratory birds, birds nesting in packing sheds, bats, amphibians, rodents, or deer in watermelon fields).

3. Good Agricultural Practices for Manure Management

Growers should follow good agricultural practices for handling animal manure to reduce the introduction of microbial hazards to watermelon. Such practices include processes, like composting, that are designed to reduce possible levels of pathogens in manure. Good agricultural practices may also include minimizing direct or indirect manure-to-watermelon contact, especially nearing harvest time. Examples of good agricultural practices for growers to consider are discussed below.

3.1 Treatments to Reduce Pathogen Levels

A variety of treatments may be used to reduce pathogens in manure and other organic materials. Treatment may be performed by the grower using organic materials generated on the farm or by a supplier. Choice of treatment will depend on the needs and resources of an individual grower or supplier. Treatments may be divided into two groups, passive and active.

3.1.1 Passive treatments

Passive treatments rely primarily on the passage of time, in conjunction with environmental factors, such as natural temperature and moisture fluctuations and ultraviolet (UV) irradiation, to reduce pathogens. To minimize microbial hazards, growers relying on passive treatments should ensure manure is well aged and decomposed before applying to fields. Holding time for passive treatments will vary depending on regional and seasonal climatic factors and on the type and source of manure. Passive treatments such as aging should not be confused with actively managed treatments such as composting.

3.1.2 Active treatments

Active treatments generally involve a greater level of intentional management and a greater input of resources compared with passive treatments. Active treatments include pasteurization, heat drying, anaerobic digestion, alkali stabilization, aerobic digestion, or combinations of these.

Composting is an active treatment commonly used to reduce the microbial hazards of raw manure. It is a controlled and managed process in which organic materials are digested, aerobically or anaerobically, by microbial action. When composting is carefully controlled and managed, and the appropriate conditions are achieved, the high temperature generated can kill most pathogens in a number of days. Thus, the risk of microbial contamination from composted manure is reduced compared to untreated manure.

Composting should not be confused with simpler passive treatments such as aging.
In general, passive treatments, such as aging, will require a significantly longer period of time to reduce microbial hazards compared to active treatments which expose pathogens to lethal conditions, such as high temperature or high pH. In addition, much of the research on the composting of manure and application of manure to field crops has focused on the effects of different practices on soil fertility and crop quality. Research on pathogen survival in untreated manure, treatments to reduce pathogen levels in manure, and assessing the risk of cross-contamination of food crops from manure under varying conditions is largely just beginning. Some pathogens tolerate higher temperatures than others. In addition, management practices required to achieve the time and temperature necessary to eliminate or reduce microbial hazards in manure or other organic materials may vary depending on

seasonal and regional climatic factors (such as ambient temperature and rainfall) and on the specific management practices of an individual operation.
While the agencies do not have sufficient data to make specific time and temperature recommendations that would apply to all composting or other manure treatment operations, good agricultural practices, as discussed below, may reduce the risk of microbial contamination of watermelon by manure.

3.2 Handling and Application

Review existing practices and conditions to identify potential sources of contamination.

a. Manure storage and treatment sites should be situated as far as practicable from watermelon production and handling areas.
b. Minimize contamination of watermelon from manure in open fields, compost piles, or storage areas. Manure storage or treatment sites close to watermelon fields or packinghouses increase the risk of microbial contamination. The minimum distance necessary will depend on many factors, including farm layout and the slope of the land, what runoff controls are in place, the likelihood of wind-spread or heavy rainfall, and the quantity of manure and how it is contained.
c. Consider barriers or physical containment to secure manure storage or treatment areas where contamination from runoff, leaching, or wind spread is a concern. Physical containment may include concrete block, soil berms, pits, or lagoons. Practices such as storage on concrete slabs or in clay-lined lagoons may reduce the potential of leachate entering groundwater.
d. Consider good agricultural practices to minimize leachate from manure storage or treatment areas contaminating watermelon. Rainfall onto a manure pile can result in leachate, potentially containing pathogens. Growers may want to consider covering manure piles, such as storing manure under a roof or covering piles with an appropriate covering. Alternatively, growers may consider collecting water that leaches through manure that is being stored or treated. Collecting leachate allows the grower to control its disposal (e.g., on a vegetative grassway) or use (e.g., to control moisture during composting). Leachate may pose a microbial hazard similar to the manure from which it originates. Growers using manure leachate or manure tea in watermelon production areas should follow good agricultural practices, such as maximizing time between application and harvest, to minimize microbial hazards.
e. Consider practices to minimize the potential of recontaminating treated manure.
    - Treated manure can be recontaminated by birds and rodents. Covered storage and reducing nearby harborage, like tall grass and debris, may reduce the potential for recontamination.
    - Equipment, such as tractors, that come into contact with untreated or partially treated manure and are then used in watermelon fields can be a source of contamination. Equipment used to turn compost, and other multiple use equipment that contacts manure, should be cleaned (such as with high pressure water or steam sprays) before it contacts watermelon. Growers should also be aware of other factors, such as farm layout and traffic flow, that may allow a tractor to drive through manure before entering a watermelon field.

3.2.1 Untreated Manure

Use of untreated (raw) manure on food crops carries a greater risk of contamination compared with the use of manure that has been treated to reduce pathogens. Growers using untreated manure need to consider the following good agricultural practices:

a. Consider incorporating manure into the soil prior to planting. Competition with soil microorganisms may reduce pathogens. Incorporating manure into the soil (e.g., prior to planting) may enhance this competition.
b. Applying raw manure, or leachate from raw manure, to watermelon fields during the growing season prior to harvest is not recommended.
c. Maximize the time between application of manure to watermelon production areas and harvest.

In general, the shorter the time between application of raw manure to a production area and harvest of the crop, the greater the risk of pathogens being present in manure or soil and contaminating the crop. Although no one knows for sure how long pathogens can survive in the field or on produce, some researchers have reported that, depending on conditions, pathogens may survive in raw manure for as much as a year or more.

Good agricultural practices to maximize the time between manure application and harvest of watermelon for the fresh market include, but are not limited to, post-harvest application and incorporation, applying raw manure to a fall cover crop to minimize nutrient loss, planning crop rotations where manure is applied to agronomic crops, or to fields planted with crops that are to be cooked or properly heat-processed prior to being delivered to consumers.

Additional research is needed to determine how pathogens in manure may spread in the field. However, for some operations, drift, flooding, or runoff from adjacent fields may result in microbial hazards. Growers may consider scheduling application of raw manure on adjacent fields to maximize the time between manure application to those fields and harvest of fresh market watermelon. Growers may also consider establishing field plans where the fields closest to watermelon crops are planted with crops that do not receive raw manure.

Where it is not possible to maximize the time between application and harvest, such as for watermelon crops which are harvested throughout most of the year, raw manure should not be used.

III. WATER

All water used in the production of crops can act as potentially significant contributors of microbial contamination. In the field, water is used for irrigation, sanitation for employees, washing watermelon and for mixing fertilizers and pesticides, etc. Whatever water comes into contact with watermelon, its quality dictates the potential for pathogen contamination.

A. Irrigation water:

1. Growers are encouraged to identify and review the source of water used on the farm. Review may include whether the source of water is from a well, open canal, reservoir, reused irrigation water, a municipality or other sources.
2. The water may be tested for contaminants on a periodic basis. The frequency of the testing may be determined by the water source. Testing may be considered for *E. coli* and fecal coliforms.
3. Growers are encouraged to also identify and review the method of water delivery such as drip station, sprinkler pump, pressure system or other method to insure that no water system is at risk for cross-contamination.

B. Pesticide and foliar feed mix water:

1. Growers are encouraged to be aware that water used for pesticide or foliar feed applications could be a source for microbial contamination.
2. Growers are encouraged to be able to identify the source of the water used for pesticide applications.

C. Watermelon wash water:

1. Clean and pathogen-free water is recommended for use in washing watermelons. The water may be tested periodically for contaminants.

IV: FARM EMPLOYEES:

Personal hygiene is important in preventing microbial contamination. Growers are encouraged to review:

A. Field sanitation:

1. Growers/harvesters must carefully and thoroughly review the following:
   a. The number, condition and positioning of toilets must meet all local, state and federal guidelines.
   b. Portable toilets should not be cleaned in the field.
   c. Septic trucks servicing the portable toilets should have direct access to the toilets and be located in areas that would minimize the likelihood of contamination of product in the event of leakage or a spill. It is advised that all servicing be conducted at a remote site.
   d. Hand-washing facilities should be easily accessible and well-stocked with sufficient toilet paper, paper towels, drinking water and potable water for hand washing. Soap and/or anti-bacterial soaps must be available. Single-use towels for hand drying must also be available. Run-off water should not be allowed to drain in the field, but should be collected in a drainage tank to be disposed of at a remote site.

B. Personal hygiene/training:

1. Growers/harvesters are encouraged to provide personal hygiene training to all farm/harvesting personnel, including written procedures for the training.

2. Emphasizing the importance of washing hands after breaks, after using the bathroom, before coming to work and before going home is encouraged. Efforts designed to advocate use of sanitation facilities are encouraged.

3. Each grower/harvester is advised to have a system in place to report sickness, cuts and other ailments that could contaminate the product.

V. EQUIPMENT

A. Use harvesting and packing equipment appropriately and keep it as clean as practicable
Any equipment used to haul garbage, manure, or other debris should not be used to haul watermelon without first being carefully cleaned and sanitized.

B. Keep harvest containers clean to prevent cross-contamination of watermelon.

C. Assign responsibility for properly cleaned equipment to the person in charge.

Voluntary Guidelines for Control of Microbial Hazards in the Packinghouse

I. GENERAL:

Depending on the specific operation and commodity, harvested product is brought from the field to the packinghouse in cartons, bins, trailers and gondolas. This equipment should be cleaned to eliminate dirt, foreign material and product or product parts that may accumulate.

II. WATER SANITATION OR QUALITY:

- **A.** In the packinghouse, the product may undergo washing and/ or hydrocooling before, during or after it is packed in the market containers for shipment.
- **B.** Chlorinated water could reduce bacterial populations.
- **C.** Another consideration is that most packinghouse equipment is constructed of mild steel, not stainless as in processing plants, and the pH and chlorine levels recommended for processing plants would be destructively corrosive.
- **D.** Effective chlorine sanitation is more difficult in this environment because of the need to maintain higher free chlorine levels at slightly higher pH levels.

III. EMPLOYEE HYGIENE:

Good employee hygiene is very important. Employee training, health screening and constant monitoring of packinghouse sanitation practices (hand washing, personal hygiene) are an important part of reducing contamination by employees.

IV. PACKINGHOUSE EQUIPMENT:

- **A.** Packinghouse equipment should always be maintained in clean condition.
- **B.** The remnants of product left on the belts, tables, lines and conveyors could provide a source for microbial growth; therefore, cleaning by scrubbing to remove particles should be part of the cleaning procedure.
- **C.** If it is deemed appropriate, sanitizing with a chlorine solution could be accomplished on corrosive-sensitive areas and equipment by spot spraying with hand sprayers.
- **D.** Knives, saws, blades, boots, gloves, smocks and aprons should be cleaned or replaced as needed.
- **E.** Loading material (bins, pallets and cartons) should be cleaned as needed.

V. PEST CONTROL

- **A.** A pest control program should be in place to reduce, as much as possible, the risk of contamination by rodents or other animals.
- **B.** In an open or exposed packinghouse operation, the best control is constant vigilance and elimination of any discovered animals and their potential nesting locations.
- **C.** Product and/or product remnants will attract pests; therefore, the daily cleaning of the packinghouse to eliminate the attractive food source should help in reducing pest activity.

VI. ENVIRONMENTAL SANITATION:

- **A.** Packinghouse cooling facilities have the potential for developing microbial growth on walls, tunnels, ceilings, floors, doors and drains. Scheduled wash down and/or sanitizing of the facility will reduce the potential for microbial growth.
- **B.** The cooling system should be monitored and cleaned as necessary depending on the type of system.

VII. TEMPERATURE:
Maintenance of proper holding room temperature could affect product quality and could be a factor in reducing microbial growth. Temperature should be monitored in order to ensure maintenance at established product parameters.

Voluntary Guidelines for In-Plant Processing of Watermelon

I. The food industry must continuously enhance sanitation and good manufacturing practices to control contamination. Fresh-cut watermelon processing is uniquely different from canning or freezing, where cooking acts to eliminate the bacteria that may be present.

For more information about pre-cut melons on an industry level, refer to the International Fresh-cut Produce Association's Food Safety Guidelines for the Fresh-cut Produce Industry, address 1600 Duke St. STE 440, Alexandria, VA 22314, or the NWPB's Fresh-cut Handling Report by contacting the board at: P.O. Box 140065, Orlando, FL 32814-0065.

Voluntary Guidelines for Control of Microbial Hazards in the Transportation of Product

I. TRANSPORTATION

The proper transport of watermelon from farm to market will help reduce the potential for microbial contamination.

Operators and others involved in the transport of watermelon are encouraged to scrutinize product transportation at each level in the system, which includes transportation from the field to the cooler, packing facility, and on to distribution and wholesale terminal markets or retail centers. The proper transport of watermelon helps reduce the potential for microbial contamination. An active and ongoing discussion with personnel responsible for transportation is essential for ensuring the success of any management program designed to deliver safe foods to the consumer.

A. Microbial Hazard

Microbial cross-contamination from other foods and nonfood sources and contaminated surfaces may occur during loading, unloading, storage, and transportation operations.

B.Control of Potential Hazards

Wherever watermelon is transported and handled, the sanitation conditions should be evaluated. Transporters should separate watermelon from other food and nonfood sources of pathogens in order to prevent contamination of the watermelon during transport operations.

1. General Considerations

   Workers involved in the loading and unloading of watermelon during transport should practice good hygiene and sanitation practices. Product inspectors, buyers, and other visitors should comply with established hygienic practices, such as thoroughly washing their hands before inspecting watermelon.

2. General Transport Considerations

   Growers, packers, shippers, brokers, exporters, importers, retailers, wholesalers and others involved in the transport of watermelon should help ensure that sanitation requirements for trucks or other carriers are met at the different steps within the transportation chain. Some specifics to consider are:

   a. Inspect trucks, pallets and packaging materials for cleanliness, odors, obvious dirt or debris before beginning the loading process.

   b. Keep transportation vehicles clean to help reduce the risk of microbial contamination of watermelon. Operators should be aware of prior loads carried in a transport vehicle and take this information into consideration when determining use of a vehicle. Trucks that were recently used to transport animals or animal products, for example, would

increase the risk of contaminating watermelon if the trucks were not cleaned and sanitized before loading watermelon. Consult local or state agencies or universities to determine the most appropriate cleaning and sanitation methods for individual operations.

c. Maintain proper temperatures to help ensure both the quality and safety of watermelon. Operators should work with transporters to ensure adequate control of transport temperatures from the loading dock to the receiving dock. Transporters should be aware of temperature requirements for watermelon being hauled and avoid delivery of mixed loads with incompatible refrigeration requirements.

d. Load watermelon in trucks or transport cartons in a manner that will minimize damage. All watermelon should be carefully loaded in trucks or transport cartons in a manner designed to minimize physical damage to the watermelon and to reduce the potential for contamination during transport. Watermelon should also be loaded so as to allow proper refrigerated air circulation.

Voluntary Guidelines for Retail, Wholesale and Foodservice Operations

The NWPB provides educational materials on watermelon handling and food safety guidelines for retail and foodservice. The following materials are available to the industry for free from the National Watermelon Promotion Board. To order supplies of the following items, call the NWPB toll-free at 877-599-9595.

Resource Guide for Produce Buyers: Contains critical components to a sound safety program, handling guidelines from the International Fresh-Cut Processors Association and the University of California-Davis and step-by-step sanitation and cutting procedures.

Retail Merchandising Video: Includes a food safety section showing cutting and sanitation procedures for fresh cuts.

Handling Poster: Provides handling and food safety tips and can be posted in the back-room or kitchen prep area.

Foodservice Merchandising Kit: Provides guidelines for handling and preparation.

Voluntary Guidelines for Customer-Pick Operations and Road-Side Watermelon Stands

I. Growers who have a customer-pick operation should consider the good agricultural practices presented in this guide regarding water quality and the use of manure. Growers who allow the public to pick their own fruits and vegetables in the field or who sell their own watermelon directly to consumer should also consider the following good agricultural practices.

A. Promote good hygienic practices

Encourage customers to wash hands. Provide convenient, properly equipped handwashing stations in the field. Hand-washing stations should be equipped with a basin, water, liquid soap, hand drying devices (such as single-use paper towels) and a waste container.

B. Provide clean, properly supplied and convenient toilets for customer use

Provide an adequate supply of toilet paper.

C. Provide good handling/processing practices

Encourage all customers to thoroughly wash all fruits and vegetables to be eaten raw.

Voluntary Guidelines for Traceback Procedures

I. Traceback

A. The ability to identify the source of a product can serve as an important complement to good agricultural and management practices intended to minimize liability and prevent the occurrence of food safety problems.

B. Traceback is the ability to track food items, including watermelon, back to their source (growers, packers, etc.). A system to identify the source of fresh watermelon cannot prevent the occurrence of a microbiological hazard that may lead to an initial outbreak of foodborne disease. However, the ability to identify the source of a product through traceback can serve as an important complement to good agricultural and management practices intended to prevent the occurrence of food safety problems. Information gained from traceback investigation may also be useful in identifying and eliminating a hazardous pathway.

II. Challenges facing the watermelon industry

A. Watermelon, with a relatively short shelf life, is often gone by the time an outbreak is reported, making it extremely difficult to identify the item causing foodborne illness. If watermelon is linked to an outbreak, current industry practices in the marketing and distribution systems, such as using recycled shipping crates and co-mingling during distribution or at retail, make a direct identification of the source of a product very difficult. If an implicated source (for example, a field or packing facility) is identified, the source of contamination may no longer be present when investigators arrive on the scene. This variability and lack of a direct determination of cause have resulted in a high degree of uncertainty, and, in some cases, false associations. The economic burden of a false association is especially troublesome for those industry segments that may later be proven not to have been involved in the actual outbreak.

III. Advantages of an effective traceback system

A. Despite the best of efforts by food industry operators, food may never be completely free of microbial hazards. However, an effective traceback system, even if only some items carry identification, can give investigators clues that may lead to a specific region, packing facility, even field, rather than an entire commodity group. Narrowing the potential scope of an outbreak could lessen the economic burden on those industry operators not responsible for the problem.

B. From a public health perspective, improving the speed and accuracy of tracing implicated food items back to their source may help limit the population at risk in an outbreak. Rapid and effective traceback can also minimize the unnecessary expenditure of valuable public health resources and reduce consumer anxiety. Tracing implicated food items may also help public health officials to determine potential causes of contamination, thereby providing data for growers, shippers, and others for identifying and minimizing microbial hazards.

IV. Instituting effective traceback systems

A. Because of the diversity of handling practices throughout the watermelon distribution and marketing chain, a traceback system may be more easily implemented for some commodities. For example, traceback systems may be more easily implemented for larger operations that have more direct control over a greater number of steps in the growing/packing/distribution chain. However, industry associations, growers, and operators are encouraged to consider ways to provide this capability, where feasible.

B. Operators should examine current company procedures and develop procedures to track individual containers from the farm, to the packer, distributor, and retailer, in as much detail as possible. At a minimum, an effective traceback system should have documentation to indicate the source of the watermelon and a mechanism for marking or identifying the watermelon that can follow the product from the farm to the consumer. Documentation should include:

1. Date of harvest
2. Farm identification
3. Who handled the watermelon from grower to receiver

C. Many growers, especially smaller operations, have little control over what happens to watermelon after it enters the distribution and marketing chain. Therefore, it is critical that growers, packers, and shippers work with their partners in transportation, distribution, and retail to develop technologies that allow grower/packing facility identification to follow watermelon from the grower to the retailer and consumer. Some industry trade groups are developing technologies (such as bar codes, stamps, stickers, tags, etc.) to identify the source of watermelon and software to assist retailers in providing more accurate traceback to the grower/packer level.

Voluntary Guidelines for Safe Pesticide Handling

I. Depending on different cultural practices and specific local needs, pesticides may or may not be used in the production and handling of watermelons. If an application of pesticides must be made, instructions on the pesticide label must be followed.

II. Pesticides should be stored, handled, mixed, transported and applied in a manner that prevents the potential cross-contamination of fields, equipment, packing facilities and product.

CONCLUSION

As outlined in this guide, analyzing the risk of microbial contamination includes a review of five major areas of concern. These involve:

1. water quality
2. manure
3. worker hygiene
4. field, facility, and transport sanitation
5. trace-back

Watermelon growers, packers, shippers, retailers, and foodservice operators should consider the variety of physical characteristics of watermelon and practices that affect the potential sources of microbial contamination associated with their operation, and decide on which combination of good agricultural and management practices are most effective and cost-efficient for them.