

# Food Safety in Blueberry Production

Allianz Risk Consulting

## Introduction



As with all "Farm to Table" fruit and vegetable operations, it is imperative that all people involved in the process understand the risks and preventative solutions to mitigate and minimize the risk of product contamination by water and air borne pathogens, chemicals, pesticides, and animal waste.

Education and training is the key. All owners, managers, crew leaders, and employees should all be trained in good management practices and all aspects of food safety. Remember that pathogen reduction is the goal, complete elimination is unachievable.

### The areas of concern are

- Water quality
- Proper use of fertilizers and pesticides
- Worker hygiene
- Equipment and container sanitation
- Plant sanitation and pest control
- Storage and transportation
- Packaging and Labeling
- Traceability, audits, and mock recalls

## Water Quality

All water is contaminated to various degrees by coliforms and pathogens. These include E-coli, Salmonella, and a host of others. They all have the potential of food borne illness.

Irrigation systems that use surface water such as irrigation ponds, streams, wells, etc. should be tested at least twice per year during the harvest season. Potable or municipal water should be tested annually. Tests should be done for total coliform/microbial counts. If these counts are unacceptable then action should be taken. Actions such as water treatment, sanitizing wells with appropriate chemicals, or even discontinuing use of the water resource are options. Potable water is preferred for all irrigation systems because of lower coliform counts. However, it can be cost prohibitive or unavailable.

Wellheads should be well drained and located safely away from any potential runoff. Irrigation ponds should have this protection as well.

Irrigation water should never come in contact with livestock. Wildlife, such as deer, ducks, and geese should be deterred, as much as possible from using the water sources. Propane noise cannons, high grass buffers, or scarecrows may aid in the control of wildlife access.

All irrigation should occur in the morning during harvest season. Fruit should never be picked when wet. The drier the berry the lower the bacteria counts. Sunshine from Mother Nature is the best disinfectant.

Allianz Risk Consulting  
North America  
+ 1.888.527.6872

 [AGCS\\_Insurance](https://twitter.com/AGCS_Insurance)  
[www.agcs.allianz.com](http://www.agcs.allianz.com)



### **Pesticides: Herbicides – Insecticides**

Chemical compounds called pesticides are designed to control insects, fungus, rodents, or undesirable weeds. They can be a useful tool in promoting good, healthy crop production. However, they must be handled properly or they can become detrimental to food safety.

Use pesticides/herbicides/insecticides in a program approach or as needed. Haphazard use of pesticides is dangerous to the food and water supply.

Always strictly follow label directions as prescribed by the manufacturer and dictated by the EPA, USDA, FDA, WPS Standard, and state law. Use only pesticides/herbicides/insecticides approved for the crop being sprayed. Blueberries should not be harvested until the proper residual time has been established.

Pesticides/herbicides/insecticides should only be handled, mixed, sprayed, and disposed of by a certified, trained, licensed applicator. Potable water is the preferred mixing agent. Spray equipment should be calibrated on a regular basis. Employees and visitors should be restricted from the treated areas until pesticide/herbicide/insecticide residuals reach an acceptable level.

### **Worker Hygiene**

Employee hygiene is the most important aspect impacting food safety on blueberry farms. The health and hygiene of employee in the fields or at the plant is most important for keeping the blueberries safe from contaminants directly affecting the consumer.

In the field there should be at least 1 portable toilet for every 20 workers. They should be located in close proximity of where work is being performed. (¼ mile is the rule.) Hand washing facilities should also be at the toilet location. Soap and sanitizer should be readily available there. Potable water should always be used. Since hands are used for manual picking this step must not be taken lightly.

At the packing plant, workers should be trained in good hygiene practices. Bathrooms should always be clean. Workers should remove aprons, hair nets, gloves, etc. before using the facilities. Hand washing is a critical point in decreasing the chance of berry contamination.

Workers who show any signs of illness should not be permitted to work on the farm or the plant until they are well and cleared by management to return to work. Workers should avoid rubbing their eyes, wiping their nose, or any contact with bodily fluids. If so, they should wash their hands immediately.

Workers should be trained in good hygiene practices before the harvest season begins and retrained as the season progresses. These training sessions have to be documented.

For U-pick operations the same rules apply. Pickers should be funneled through a main entrance to the fields. At the entrance, rules and regulations should be posted. Young children and pets should not be allowed inside the operation. Pickers should not be allowed to bring their own picking containers due to cross contamination concerns.

### **Equipment & Container Sanitation**

Harvesting equipment can harbor pathogens and chemical residues. The equipment should be cleaned and sanitized daily or at a minimum before moving to a new field. Biofilms and residues can build up on equipment and aid in the spread of contamination.

Totes and containers used in the field to harvest blueberries can become a source of cross contamination if not managed properly. Containers should be washed daily or at a minimum as noticeable dirt and grime become evident. These containers should never touch the ground as this can contaminate berries in other totes as they are stacked and transported. Damaged containers should be taken out of service and discarded.

### **Plant Sanitation**

The packing and processing areas should be cleaned and sanitized daily after each production run. Only potable water should be used for washing. Cleaners designed to remove biofilms, dirt, and grime should be used for the first stage clean up. The second step, disinfectants/sanitizers should be used to reduce any pathogens still present. Remember, you cannot disinfect a dirty surface; it has to be clean in order for the disinfectant to work properly.

## Storage and Transportation

Once the berries are harvested, it is critical to cool the product in a pre-cooler room where temperature is maintained around 58-60 degrees. It will take several hours for the freshly picked berries to achieve this temperature. Once the product reaches target temperature they will enter the processing packing room where the temperature will be slightly cooler than the pre-cooler. Once the berries are packed, berries enter the chiller room where the temperature is maintained at 34 degrees Fahrenheit. In turn, the refrigerated trailers that haul the products are maintained at the same temperature as the chiller room.

This step down cooling process helps to keep the berries fresh while maintaining or decreasing pathogen levels present in the berries. It also helps maintain the integrity and shelf life of the berries. Berries, post-harvest, should never undergo a rise in temperature as this degrades the products quality and can cause a rise in pathogen levels.

## Labeling

Since most blueberry operations do not wash the product before packing. Labeling is a critical point. Processors and packers do not wash the berries because it causes the "bloom" or protective outer layer of the berry to shed causing the berries to lose luster and color. Washing potentially limits shelf life and increases the chance of pathogen replication.

Each "clam shell" (what the container is called that the consumer purchases at a retailer) should be clearly, noticeably, labeled to wash the berries before human consumption. Ignorance or not following label directions can greatly increase the risk of product contamination and food borne illness.



## Tracability

In case of an outbreak of food borne illness, documentation and record keeping are of utmost importance. It can be instrumental in avoiding any suspicion of negligence.

Blueberries should be clearly traceable from the time and date of harvest, the individuals or crew that picked them, time and date of processing, the temperatures at the plant (coolers and chillers); temperatures on the refrigerated trucks; down to the conditions at the retailer. All of these data points should be documented as an ongoing process in case of product recall. Internal audits of the harvesting and the packing process should be done routinely with documentation. Audits from customers, regulators or government agencies both state and federal should be welcomed and supported.

"Mock Recall" audits done internally are a good practice to identify any weaknesses in the processes and documentation practices. Records should be kept.

In summary, Consumer Safety is the Number One Goal. As with most things, education, training, experience, and documentation is the key to mitigate any exposure.