

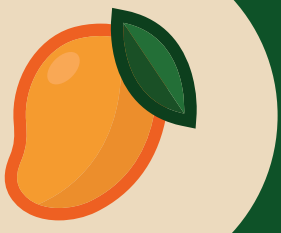
# 4

## Cross-Contamination in the Farm

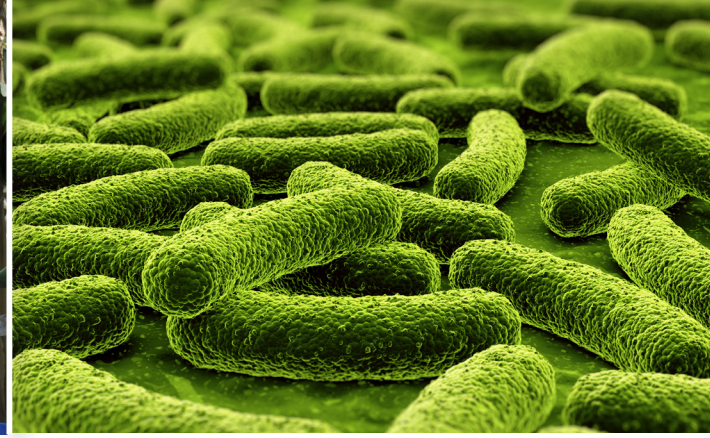


## The Mango Industry Food Safety Training Kit Farm





# Cross- Contamination



Let's remember that a contaminant is a physical, chemical, or biological agent present in food that can cause illness or injury to the consumers. Mangos are the only thing that should be present in a mango basket or box.

In this section, we will review what the concept of cross-contamination means, and we will see what actions we can take to protect mangos from cross- contamination.

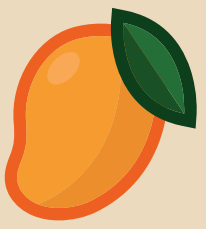
Cross-contamination is the transfer of substances, objects, microbes, or other contaminants from something that is DIRTY to something that is CLEAN. Cross-contamination can become a serious problem for mangos.

There are several practices in the field that could cause the cross-contamination of mangos. Avoiding these is a critical part of our job.

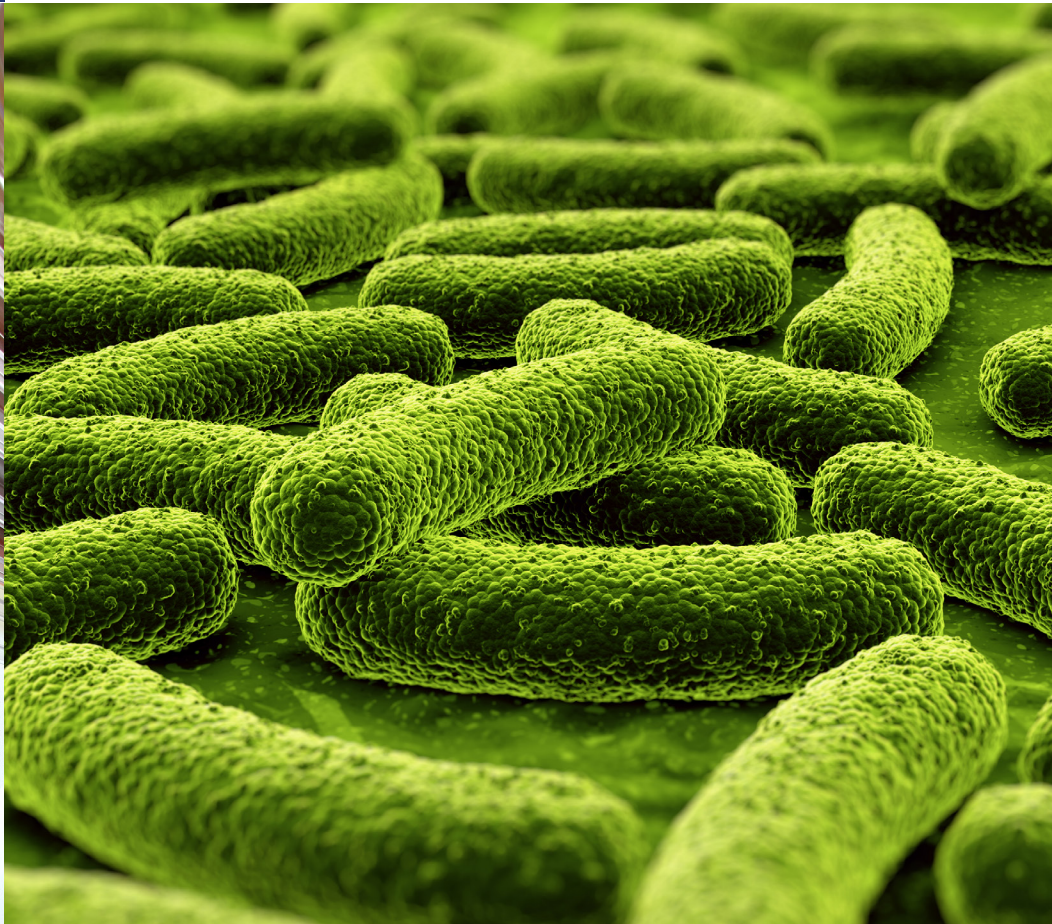
*[This section includes practices that not apply to all farms; you should show only the ones that are used or apply to your farm.]*

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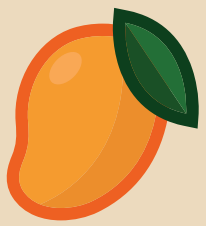




# Cross-Contamination







# Cleaning and Sanitizing of Harvesting Utensils



In the field, you should have chlorine or another sanitizing solution available and prepared to a determined concentration according to your farm procedures.

The supervisor is responsible for providing the sanitizing solution and monitoring its concentration. This solution is used to keep your tools clean while you're working.

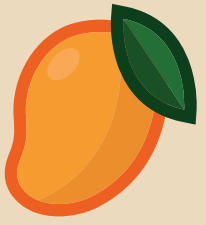
Sanitize your knife, scissors, and/or net at the beginning and end of each day.

You may need to sanitize your tools at other times during the day, such as when you return to work after breaks and/or meals, when you move from one field to another, or if any contamination occurs. You should always follow your farm's policies.

In the picture, you can see a three-step process for cleaning and sanitizing harvesting nets. The harvester cleans the net with a detergent and scrub it with a sponge; then he rinses it with water and finally immerses it in a sanitizing solution.

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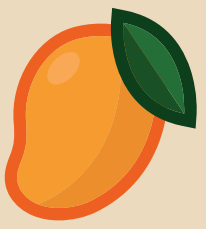




# Cleaning and Sanitizing of Harvesting Utensils







# Food Contact Surfaces (Picking Nets and Containers)



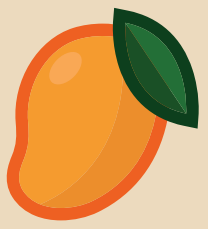
A food contact surface is a part of the equipment or a utensil with which mangos normally come into direct contact.

As part of your job, you must follow correct procedures for cleaning and sanitizing food contact surfaces to reduce the risk of cross-contamination.

Make sure that all cleaning and sanitizing procedures are effective. Document any visual, and if any, microbiological inspection of the sanitation process.

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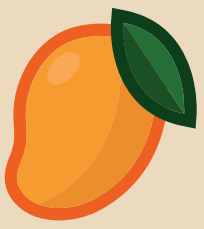




# Food Contact Surfaces (Picking Nets and Containers)







# Mangos on the Ground



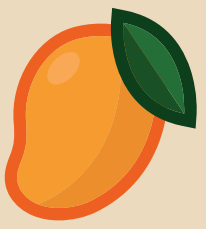
The ground or soil is an important potential source of contamination where disease-causing microbes can survive. Think about yourself for a moment: would you give your family food that was on the ground?

If the mango or a basket with mangos falls to the ground while harvesting, you need to **THROW AWAY** all the product that came in contact with the ground. Always follow your supervisor's instructions.

In the pictures, the harvester is shown placing a mango that fell to the ground back into the basket. This practice is unacceptable.

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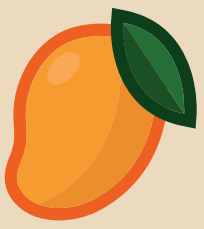




# Mangos on the Ground







# Containers/Packaging Materials



Packaging materials, containers, plastic crates, and boxes can be another source of cross-contamination for mangos.

NEVER use baskets or boxes that look extremely dirty or broken to store or transport mangos.

You can only use baskets, crates, or boxes that are reasonably clean, undamaged, and free of dirt, diesel, oil, and/or grease. Brushes or buckets also must be free of dirt, diesel, oil, and/or grease. Contaminated reusable containers need to be properly cleaned and sanitized.

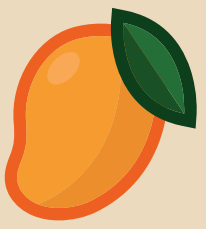
Also note that, in the picture, the baskets with mangos are placed on a wooden pallet, so they do not have contact with the ground.

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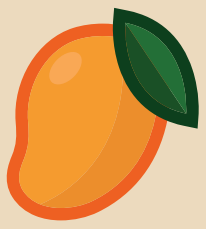




# Containers/Packaging Materials







# Crates/Baskets on the Ground



To prevent mangos from touching the ground and becoming contaminated, you can use a plastic blanket/ tarp, a wood pallet or a wood block/barrier to prevent the mangos from directly touching the ground. You can also use a buffer basket.

The protection should always be placed under a pile of baskets or boxes of mangos to prevent them from having direct contact with the ground.

The rule is simple. EVERY TIME you are harvesting or working with mangos, you must use a protective surface to prevent the baskets or crates containing mangos from coming into contact with the ground.

ALWAYS place the baskets, crates, and packing materials on pallets, trucks, or trailers; never let them stand directly on the ground. If the plastic blankets/tarps are reusable, they will need to be cleaned and sanitized regularly following the procedure used by your farm.

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# Crates/Baskets on the Ground







# Mangos Left on the Sun



Prolonged exposure to the sun can damage mangos that have already been harvested. You must never leave the baskets of harvested product in a place where the sun can damage it.

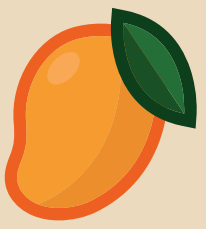
Place the baskets with product under the shade.

This is not a food safety issue; it is a matter of quality. Our customers have high-quality standards, and our work is to always provide the best possible product. Keeping mangos away from sunlight will help us meet our customer's requirements.

Your supervisor, as shown in the example in the photo, has a duty to remind you of this issue when this situation happens on the farm.

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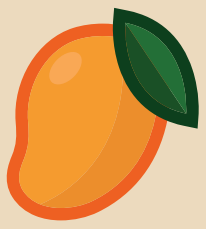




# Mangos Left on the Sun







# Inadequate Use of Containers



Baskets, crates, or boxes should only be used to transport the harvested product. Non-food materials, such as soda cans, food, tools, nails, and clothes, etc., should not be placed in or on the mango baskets or crates.

In this photo, you can see an employee using a basket incorrectly.

The baskets or plastic crates should only be used for holding mangos.

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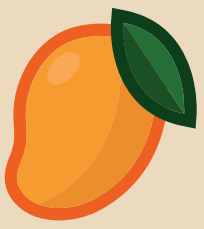




# Inadequate Use of Containers







# Animals in the Field



Both domestic and wild animals should not have access to production areas in the field. In some cases, fences or barriers should be placed to prevent domestic and wild animals from accessing the fields. If there isn't a fence, you must conduct a detailed environmental assessment of the block to be harvested to assess whether there is a potential contamination risk. The farm's supervisor or manager must document this evaluation.

ALWAYS be alert and report any evidence of any animals in the block that is going to be harvested to your supervisor.

It is strictly prohibited to keep pets or domestic animals next to the harvesting or active production areas, as this may represent a potential source of contamination.

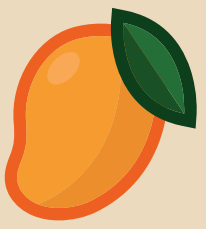
In the pictures, you can see some examples of bad practices related to animals being in or near production areas.

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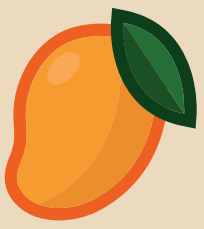




# Animals in the Field







# Fecal Matter in the Field



Fecal matter is a dangerous source of contamination for mangos.

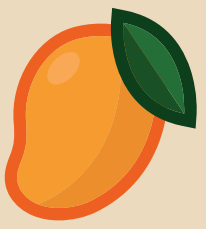
What happens if you see fecal matter in the field right in the area where you will be harvesting mangos?

If you find any evidence of fecal matter, immediately report it to your supervisor. The supervisor must conduct a food safety assessment supported by qualified personnel and document the assessment.

Do not harvest any product that has contact with fecal matter and do not put baskets or crates with mangos near fecal matter.

**Notes:** \_\_\_\_\_  
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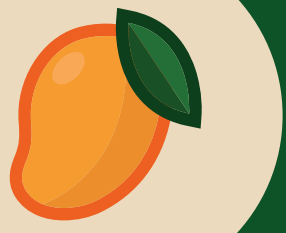




# Fecal Matter in the Field







# Mangos with Blood



If you cut your hand while working, make sure you do not need medical attention. If the cut is not serious, wash your hands, put on a bandage, and then cover it with a glove. Tell your supervisor about the incident. However, if the cut is severe, and you cannot stop the bleeding, seek medical attention. Your supervisor will decide if you can return to work.

You and your supervisor must ensure that blood did not contaminate any of your work equipment or utensils. If blood or another bodily fluid fell on the harvesting equipment or packaging materials, they must be discarded or cleaned and sanitized following your company's policy for cleaning off blood.

If blood fell on the mangos, they should be discarded immediately. If mangos are contaminated with blood or any other bodily fluids, they must be disposed of as directed by your supervisor.

**Notes:** \_\_\_\_\_  
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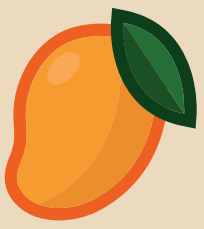




# Mangos with Blood







# Glass

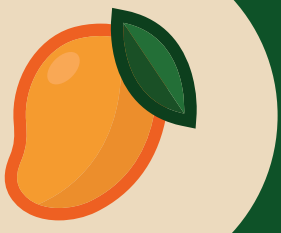


It is prohibited to bring glassware, such as bottles, glasses, and watches to active production areas of the farm.

If you notice that glass fell on the mangos, do not just remove the piece of glass from the container; you **MUST** discard or dispose of the affected mangos and report the incident immediately to your supervisor, so that appropriate measures can be taken based on your company's glass policy.

**Notes:** \_\_\_\_\_  
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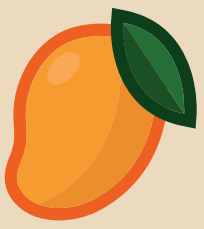




# Glass







# Chemical Contaminants



Chemical contamination occurs when the mangos come into contact with improperly used chemicals.

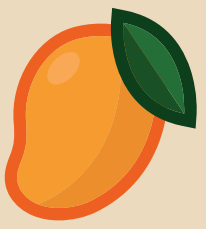
Chemicals that can be found in the field, which could become potential chemical contaminants, include:

- Pesticides
- Cleaning chemical products
- Sanitizers
- Machine oils and lubricants

If you see any chemical product being used or stored incorrectly, report it to your supervisor. Remember to **ALWAYS** follow the correct procedures whenever you handle chemical products.

**Notes:** \_\_\_\_\_  
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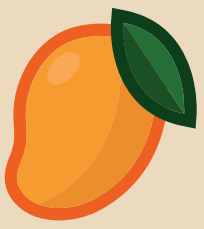




# Chemical Contaminants







# Trash and Debris



Let's talk about another area that will also help to prevent cross-contamination.

Waste and garbage are sources of contamination and, therefore, must always be placed in the designated containers. Throw away all trash in designated locations!

Assigned personnel should empty trash containers or cans daily or as often as necessary.

Eat food in designated areas only and do not leave any trash that could end up on the field and increase the risk of mango contamination. Food debris can attract pests and rodents to the field.

Remember to always wash your hands after handling waste or garbage.

**Notes:** \_\_\_\_\_  
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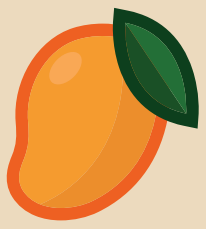




# Trash and Debris







# Water for Washing Mangos in the Field



There are some farms that clean and rinse mangos in the field just after harvesting. If the water is not properly managed or is contaminated, it can become a source of cross-contamination. Make sure the water you use has the proper sanitizing concentration included in your farm's policy.

In addition, if you use cloths or rags to clean the mangos, when not in use these should be kept in a chemical sanitizer solution at the concentration indicated by your supervisor. Cloths or rags should be cleaned and sanitized daily or more often.

**Notes:** \_\_\_\_\_  
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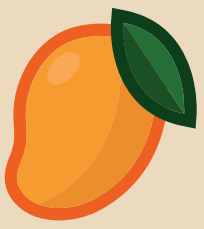




# Water for Washing Mangos in the Field







# Visitors



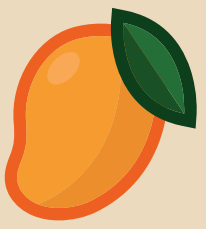
The farm must have a system to record the entry and exit of visitors. This will help ensure that visitors are accounted for, which will assist in preventing intentional mango contamination or some other unwanted situation on the farm.

All visitors must abide by the farm's food safety policies and procedures.

If you see any suspicious behavior by a visitor that may cause mango contamination, report it to your supervisor.

**Notes:** \_\_\_\_\_  
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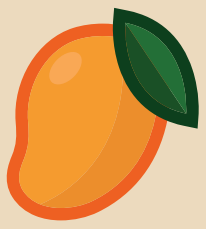




# Visitors







# What Did We Learn?



To finish, we are going to review what we learned in this lesson:

- What cross-contamination is and what we can do to avoid it.
- The importance of using equipment that is clean and in good condition.
- Why baskets or plastic crates must not have any contact with the ground.
- Why the product must not have any contact with the ground.
- The importance of avoiding animals on the farm.
- How to handle wounds and cuts and what to do if mangos come in contact with blood and any other bodily fluids.

This is the end of our training in cross-contamination. Do you have any questions? Thank you for your participation. Please remember to sign the attendance sheet.

**Notes:** \_\_\_\_\_

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# What Did We Learn?

