



CLEAN AND HEALTHY HARVEST

New Roots Micro-Producer Academy: Module 6 of 8

Summary

This is Module 6 in a series of eight modules in the New Roots Micro-Producer Academy. This module introduces farmers to post-harvest handling, food safety, and farm rules to maximize food quality and safety. Farmers will demonstrate Standard Operating Procedures (SOPs) for market harvest days and will be able to identify which crops need and or do not need to be kept cool after harvest.

The need: Farmers need to understand basic harvest and food safety measures in order to be successful in all marketing operations.

Who made this guide?

Collaboration and Testing

ACKNOWLEDGMENTS: This teaching resource was developed by Aley Kent of IRC Food and Agriculture Technical Unit, Aaron Lee, Alex Young, and Grace Henley of IRC Salt Lake City in partnership with the Institute for Social and Economic Development (ISED Solutions). Refugee farmer training programs across the country provided feedback on this lesson, which is now integrated throughout the guide. From 2015 to 2017, ISED partnered with twelve refugee farmer training programs through a USDA BFRDP educational enhancement grant, to support the design and testing of new and shareable teaching resources for culturally and linguistically diverse farmers. To learn more about this project, or to access the whole list of newly developed teaching resources for refugee farmer training programs, see the [New American Resource Library at https://nesfp.org/new-american-resources](https://nesfp.org/new-american-resources). For more in-depth explanations of the teaching approaches and activities used in these materials, please see the '[Teaching Handbook: Refugee farmer training](#)'. While these resources were designed with refugee audiences in mind, they can be adapted and used in any farmer training or incubator setting.

VARIATION:

Throughout this guide, boxes (like this one) contain variations and adaptations that serve varying programs and farmers. They are suggestions and reflections from other programs based on how they made this workshop work for them.

TEACHING TIP:

Throughout this guide, boxes (like this one) contain teaching tips to help you better facilitate farmer learning. Most come from other programs who have tested and reflected on using this lesson.

DEVELOPER'S NOTE:

Throughout this guide, boxes (like this one) contain notes from this guide's developer that provide insight into how a lesson is typically taught at the developer's program.

ICONS: You will find the icons below throughout this guidebook. They are there so you are prepared for the activity and can get an idea of what it will bring at a glance.



POWERPOINT



FLASH CARDS



TALKING POINTS



DISCUSSION

Table of Contents

Adaptable except where noted.



4 IS THIS GUIDE RIGHT FOR YOU

- Audience and Objectives
- Resources needed

6 HARVEST AND HANDLING SLIDESHOW / ACTIVITY 1 30 MINUTES

- Farmers will be introduced to the basics of keeping vegetables fresh and clean, and learn about Standard Operating Procedures.

10 HIGH QUALITY HARVEST / ACTIVITY 2 / 30-40 MINUTES

- Participants will learn the best time of day to harvest certain vegetables for freshness, and will learn post-harvest handling steps and apply their knowledge to different vegetables.

12 KEEPING IT CLEAN / ACTIVITY 3 / 20 MINUTES

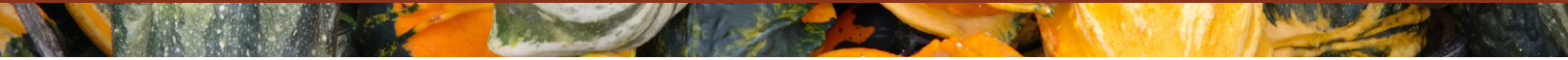
- Use the Keeping it CLEAN PowerPoint (or – better – real vegetables) to “quiz” farmers on which crops to wash and when to wash their hands.

WHAT TESTERS SAY: “After class, our gardeners reflected that they learned a lot and would carry the food safety practices forward, both in market and home settings. The Harvest and Handling Slideshow was particularly effective thanks to the visuals.”
- *International Rescue Committee in Tucson AZ*

“Having hands on activities seems to invite this kind of back and forth among participants and workshop facilitators especially well.”
- *South Side Community Land Trust, Providence RI*

Audience and Objectives

Adaptable except where noted.



OBJECTIVES: Participants will

- Learn the best ways to pick, store, and pack various crops
- Understand the reasons for farm Standard Operating Procedures (SOPs)
- Be able to demonstrate basic food safety measures

TIME / SEASON: About 1.5 hours

PROGRAM STRUCTURE: Group activities, visuals and discussions

SIZE OF CLASS: Adaptable

INTENDED AUDIENCE: Aspiring and beginning farmers, English Language Learning farmers

Resources needed

Adaptable except where noted.

TIME: About 1.5 hours

STAFF / INTERPRETERS: 1-2 Staff Members and 1 Interpreter

LOCATION: Classroom / packing shed etc.

SUPPLIES: Each farmer should receive

- Harvest Post harvest handling chart for each participant
- Notepad/pen

Materials Needed for Trainer:

- Module 6 PowerPoint and script/notes (in this user's guide)
- Keeping it FRESH PowerPoint (script in this users guide)
- Vegetables for people to handle (and bring home)
- Keeping it CLEAN PowerPoint (script in this users guide)
- Indoor and outdoor classroom space
- Also useful for food safety section: SOPs for your farm site (it's good to combine this preview presentation with a real demonstration and practice session with your wash and pack procedures)



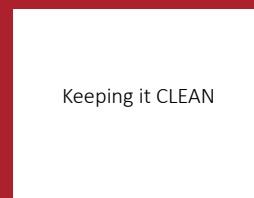
CLEAN & HEALTHY HARVEST PPT



KEEPING IT FRESH PPT



POST-HARVEST HANDLING CHART
FROM TRANSPLANTING TRADITIONS, NC



KEEPING IT CLEAN PPT

Harvest and Handling Slide Show

1

TIME: 30 minutes

OVERVIEW:

Quality matters: If your customers buy something bad from you once, chances are they will not come back. This PowerPoint will provide the overview for keeping things fresh and clean. Farmers will be able to apply their knowledge in Activities 2 and 3.

MATERIALS NEEDED:

- PowerPoint: Clean and Healthy Harvest

DEVELOPER'S NOTE:

Each talking point below corresponds to specific slides in the 'Clean and Healthy Harvest' PowerPoint.



STEP 1: COVER SLIDE

STEP 2: KEEP IT CLEAN AND FRESH

Who wants to eat the pepper on the right? Who wants to eat the pepper on the left? Today we will talk about getting the food that you have worked so hard to grow to your customers in ways that keep it clean and as fresh as possible.

What do we mean by "High Quality"?

What are some reasons to make sure the products you sell are "high quality?" (more than one right answer here):

- Spoiled food can spoil other food
- It looks more attractive
- If your customers buy something bad from you once, chances are they will not come back



STEP 3: WHY DO GOOD CROPS GO BAD?

#1: Too hot

Not cooling enough or fast enough

What to do:

- Chill harvested produce immediately: dunk produce in cold water before packing, or keep your cooler closed and layer with ice while you harvest.
- Harvest very early in the morning.
- Shade WHILE harvesting; Keep harvest bins in the shade.
- Harvest Cool Crops (crops that like cool weather) FIRST.
- Harvest Hot Crops (crops that like or can tolerate heat) LAST.

In general: Harvest your greens first, followed by crops that have more water in them.

- Frost damage: Basil

ICE or very cold refrigeration is not good for everything (including most of the "hot crops" on the last slide)

- Harvest into a vented box: do not harvest hot produce into an unvented closed container. (Why? – they will sweat and get soft, and rot faster.)

STEP 4: WHY DO GOOD CROPS GO BAD?

#2: Damaged

- Bruising or damaging can happen while harvesting

(What are some examples of this? Cuts from scissors, knives, or breaks from pulling or throwing into bins...)

- Eggplant - Always cut the stem with scissors to avoid breaking the fruit. Cut the stem as short as possible to prevent the stem from puncturing other fruit.
- Cucumbers - Always cut off the plants as close to the fruit as possible. Use scissors. This will prevent the skin from breaking which will cause the fruit to spoil faster.
- Beans - Always use two hands to break the stem off, making sure the bean stays whole. Broken beans will go soft very fast and people won't want to buy them.
- Another common mistake comes from filling crates too full, especially with **tomatoes**, or from dropping produce into the crate.
- Large Tomatoes - Pick very gently, don't squeeze the tomato, remove the green stem and place it on its shoulders in the crate. Put tomatoes in a single layer in the crate.
- Move your crate with you when you harvest so you won't have to throw produce.
- **Treat your produce like your baby!**

STEP 5: WHY DO GOOD CROPS GO BAD?

#3: Over ripe or old

Almost all vegetables benefit from frequent harvesting - the more you harvest, the more the plant will produce.

- Leaving vegetables on the plant and allowing them to get very large takes energy from the plant and will prevent the plant from producing more vegetables.
- This means you need to **harvest every vegetable off of a plant** when it is

ready - regardless of if you have a market for it or not.

- Do you know some plants that will produce more if you harvest more?
 - tomatoes
 - peppers
 - eggplants
 - cucumbers
 - summer squash
 - green bean
 - okra
- Example 1: Cucumber and Bitter Melon (cucumber family) – yellowing means it's over ripe. Harvest one time per week. (Unless your farmers or their customers LIKE yellowed cukes – ask your farmers!)
- Example 2: Beans – harvest twice per week to keep the plant producing and to keep them from getting woody or spongy.
- Example 3: Okra – Harvest three times per week. You don't want it to get too big.

STEP 6: WHY DO GOOD CROPS GO BAD?

#3: Food is Dirty

Don't put moldy or rotten/browned, dirty or damaged crop with good crop. One split tomato can make all the others in a crate split; mold on leaves will infect others.

- Remove Spoiled Produce (leave it in the field or compost bin)
 - Example 1: Eggplant. Brown spots can cause trouble for whole crate.
 - Example 2: Tomatoes. Same story. Avoid split tomatoes especially.
 - Example 3: Greens. leaves with insect holes are more bitter, and mold can spread to other leaves in the bunch.
- Introduce the "Post-harvest handling chart" as a resource for farmers. Use it to go through the next activities.
- Bunching greens for sale. This may vary according to individual markets. Consistency is important.

STEP 7: FOOD SAFETY

- Do everything possible to keep your produce clean. Why? Diseases that can be in feces, blood, insects, or in rotten produce can make us sick with the stomach flu or other conditions (which we don't want to happen to our customers).
- Food safety concerns common on the farm are moldy or rotten produce, animal waste (dog, cat, deer, and bird), and human fluids (blood).
- If you see anything like this it is important to:
 - Leave it in the field or dispose of in garbage can
 - Do not allow it to go into your harvest crate
 - Do not allow it to be washed at the washing station, and if it does, drain the water from the tub and start over
 - Wash your hands if you come in contact with it
 - Deal with first aid issues immediately
- Our hands and the soil on our crops can be dirty even if we can't see it.

STEP 8: HOW TO KEEP THINGS CLEAN?

- Wash hands with soap and water:
 - as soon as you get to the farm
 - after using the restroom
 - after eating
 - after smoking
 - If you touch something dirty (like animal waste)
- Don't come to the farm when you are sick, and don't bring family members that are sick.
- Always wash and sanitize your bins and coolers
 - What sanitizes/makes things clean?

STEP 9: WASHING CROPS

- What produce do we wash?
 - Lettuce, daikon radish, red radish, beets, carrots, bunched greens (amaranth, raio saag, kale, swiss chard)
- What produce does not need to be washed?
 - Cucumbers, green beans, eggplant, tomatoes, chilies, corn, munta (you can wipe off in the field. These are things people will wash or peel themselves before they eat.)
 - Use the post harvest handling chart to help you know what to do!
- How do we wash crops?
 - Always wash in clean water - never use canal or surface water
 - Use tubs or sink bins: Move produce from tub to tub until water is clean after washing
 - Use plastic gloves when on last wash and when bunching or bagging
 - Triple wash and spin dry any baby greens
 - Clean harvest tools, crates, and wash station after use. Remove any leftover produce after harvest, or by letting a staff member know when you see something that needs cleaning

DEVELOPER'S NOTE:

This is where you might modify the information below to fit your farm's SOP and specific site needs.

- After washing and sorting produce check over your vegetables again to remove any damage that may have occurred during the washing and transporting of your crop.
- Pack it and cool it or bring to market!

TEACHING TIP:

One tester mentioned that "We will have to have follow-up lessons on harvesting SOP in the garden later in the season."

High Quality Harvest

2

TIME: 30-40 minutes

OVERVIEW:

Participants will the best time of day to harvest certain vegetables for freshness, and will learn post-harvest handling steps and apply their knowledge to different vegetables.

MATERIALS NEEDED:

- Keeping it Fresh PowerPoint
- Post Harvest Handling Chart from Transplanting Traditions, NC
- Vegetable flashcards

DEVELOPER'S NOTE:

The PowerPoint has visuals but an even better option is to bring in actual vegetable examples for this activity. And best to replace the examples below with crops that your farmers are growing.



STEP 1: POST HARVEST HANDLING CHART

Pass out the harvest post harvest handling chart and walk through it using examples:

PowerPoint: Which should I harvest first?

- Lettuce or beets?
- Peppers or corn?
- Fresh beans or watermelon?
- Summer squash or okra?

PowerPoint: Which likes colder temperatures?

- Lettuce or peppers?
- Broccoli or eggplant?
- Cucumber or cantaloupe?
- Tomatoes or corn?
- Mustard greens or eggplant?



STEP 2: DEMONSTRATE

Use visuals, or – better yet – bring in examples of what to look for in various crops, and demonstrate some of the wash/wipe clean and packing best practices in the guide.



STEP 3: INQUIRE

Hand out other vegetables (or photos of vegetables) to participants and ask them questions about it:

- Do you wash this crop?
- Can this crop be in very cold temperatures in a fridge?
- Is this crop easily damaged? How? What can you watch out for?
- Etc.

Using the same guide in the workshop that you will use on the farm is good practice for farmers to get familiar with it so it will be more useful to them on harvest days.

STEP 4: GROUP PARTICIPATION

Alternately, you can ask the whole room the above questions and everyone participates at once to avoid putting any one person on the spot:

- Raise your hand if the product you have should be harvested early in the morning?
- Raise your hand if you have a crop that likes to be dunked in water?
- Raise your hand if you have a crop that you can wipe clean? (And what can we do to make sure the crops that we don't wash stay clean/sanitary for our customers?)
- Etc.

Leave some time for Q&A on specific crops, or others that might not currently be in the chart.

TEACHING TIP:

"During workshops, it is often when participants are sharing their own experiences with each other as they relate to the presentation that the fullest understanding of concepts and implementation appear to be most deeply understood. The more they put the ideas into their own words the more those ideas are comprehended."

Keeping it CLEAN

3

TIME: 20 minutes

OVERVIEW:

Use the Keeping it CLEAN PowerPoint (or – better – real vegetables) to “quiz” farmers on which crops to wash and when to wash their hands.

MATERIALS NEEDED:

- Keeping it clean PowerPoint
- Post-harvest handling chart

DEVELOPER’S NOTE:

A variation that can work on farm is to pass out several vegetables and ask people to get into either a “do wash” or a “don’t wash” group depending on their vegetable. They can help each other, and then you can discuss what happened and make any “corrections” based on what happens.

TEACHING TIP:

Have participants use the Post-harvest handling chart during this activity to help get them more familiar with it as a tool they can use on the farm.

VARIATION:

One tester also used the ‘Keeping it FRESH’ activity to reinforce the use of the post harvest handling chart.



STEP 1: DO I WASH THIS CROP?

- Green Beans
- Lettuce
- Tomatoes
- Okra
- Kale

STEP 2: WHEN DO I WASH MY HANDS?

- As soon as you get to the farm
- After using the restroom
- After eating
- After smoking
- After handling money
- After using my mobile phone
- If I touch something dirty (like animal waste)
- Before harvesting
- Before packing