Measurement Photo Guide

Steps for In-field Sampling

This step-by-step guide shows how easy it is to collect data about the amount of product left in the field.

While the data can be entered into any system, using the SISC Food Loss Metric tool allows growers to access a summary dashboard, which automatically extrapolates the data and calculates the possible economic opportunity. This is low-cost and doesn't take much time (see Box 1).

Step 1: PREPARE FOR MEASUREMENT

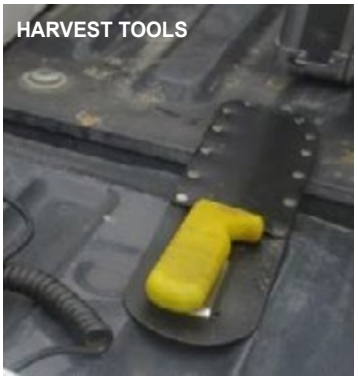
- Identify 1–2 people to undertake measurement
- Select field for sampling
- Review short 5-minute video tutorial on **Finding Opportunities in the Field** or the longer, in-depth **SISC Food Loss Metric tool metric tutorial**
- Download **SISC Food Loss Metric tool**
- Gather equipment

EQUIPMENT TO USE

1. Measuring tape
2. Flags (2)
3. Harvest containers
4. Harvesting tools (e.g., knife, gloves)
5. Scale
6. Clipboard / electronic device for notes and data


MEASURING TAPE + FLAGS


HARVEST CONTAINERS


HARVEST TOOLS


SCALE

Step 2: HARVEST SAMPLES

- Identify three rows representative of the field (**Box 2**)
- Go into the field
- For each row:
  - Measure row length from which to pull off all remaining product.
  - Mark beginning and end of the row with a flag.
  - Harvest all the product left on the plant, no matter the reason or condition. Put samples from each row in separate container.

BOX 1. TIME TO MEASURE PRODUCT LEFT IN-FIELD

Sampling and data collection in the field took ~ 1 hour for two people on average.

This includes:

- 20 minutes to gather the equipment
- 15 - 20 minutes per row to harvest samples

Sorting and weighing by the three categories, and analyzing the data took 1 – 1 ½ hour

TOMATO EXAMPLE

Measuring and marking rows

Harvesting

Product Harvested

LETTUCE EXAMPLE

Measuring and marking rows

Harvesting

Product Harvested

BOX 2. DETERMINING SAMPLE AREA

The Food Loss Metric tool recommends a sample area of 0.1% of the field area. If the strength of the estimate is important to you, your sample may even exceed this recommendation. This is your measurement, for your operation. Collecting samples should not become a burden. A number of growers simply sample three rows that are each 50 feet long, but if you decide that three sample rows of 10 feet each is sufficient, go with that.

The following shows how sample row length is calculated in SISC Food Loss Metric tool (to represent 0.1% of a field).

Calculating sample row length	**Example**
Field or Block size in acres	40 acres
x 43,560 Sq.ft/acre	x 43,560 Sq.ft/acre
x 0.1% sample	x 0.1%
= total field sample in SqFt	= 1742.4 sq. ft
Total field sample SqFt	1742.4 sq. ft
/ row spacing in Ft	/ 10 ft row spacing
/ 3 rows	/ 3 rows
= sample row length for 3 rows in Ft	**= 58.08 ft**

Step 3: SORT, WEIGH, AND ANALYZE MEASURED SAMPLES

- Determine sorting criteria and sort samples into three categories: marketable; edible but not marketable, and inedible. The data for each row should be recorded separately
- Weigh sample of each category from each sample row and record the weight (remember to subtract container weight)
- Find outlet for sampled product (e.g., return to field, give away edible food)
- Estimate the harvest potential across the entire field (using SISC Food Loss Metric tool, or other option)
- Review data to identify opportunities

Example for Recording Sample Weight by Category (snapshot of the data table in the SISC Food Loss Metric tool)

Sample Weights (lbs)	Sample 1	Sample 2	Sample 3	Average
Marketable				
Edible, Not Marketable				
Inedible Product				

Product in three sorted categories: Marketable; edible but not marketable [1]; and inedible.

1 What is potentially "edible but not marketable" is product that could be eaten (raw or processed) but falls outside of the marketable range for color, size, shape, or blemishes.

Sorting criteria (e.g. marketable size)

Optional: Further sorting by 2 Types of product that are “Not marketable”

Additional Examples of Sorting Fresh Produce into Quality Categories After Harvest

In order from left to right for the images above:

MARKETABLE

Meets current buyer specs but growers were unable to harvest because the price did not cover harvest costs.

EDIBLE BUT NOT MARKETABLE

Off-size, blemished, misshapen, or miscolored. Nutritious and safe for human consumption.

INEDIBLE

Damaged, diseased, or decayed. Not suitable for human consumption.

Marketable versus edible but not marketable (above)

From left to right: Marketable, edible but not marketable, inedible

Photos courtesy of Dr. Lisa K Johnson, Nikki Cossio & Kai Robertson