

STEVEN A. SARGENT, University of Florida (sasa@ufl.edu)

Extent of Food Loss and Waste

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FAO Report on Losses and Waste

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2050 World Population: How will we feed >9 billion??

World Population: Past, Present, and Future (move and expand the bar at the bottom of the chart to navigate through time)

Current World Population: **8,084,550,582**

TODAY		THIS YEAR	
Births today	220,731	Births this year	3,899,643
Deaths today	99,878	Deaths this year	1,764,547
Population Growth today	120,853	Population Growth this year	2,135,096

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Food losses and waste per capita – by region

Per capita food losses and waste (kg/year)

Region	Production to retailing (kg/year)	Consumer (kg/year)
Europe	~180	~100
North America and Oceania	~180	~120
Industrialized Asia	~150	~100
Sub-Saharan Africa	~150	~20
North Africa, West and Central Asia	~150	~50
South and Southeast Asia	~120	~20
Latin America	~150	~60

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Extent of World hunger

- 24,000 people die each day
- Mostly children
- 1 in 9 (821 million people) are hungry
- Progress since 1992:
 - 216 million fewer hungry people, but...
 - World population increased by 1.9 billion people!

World Food Programme, U.N.

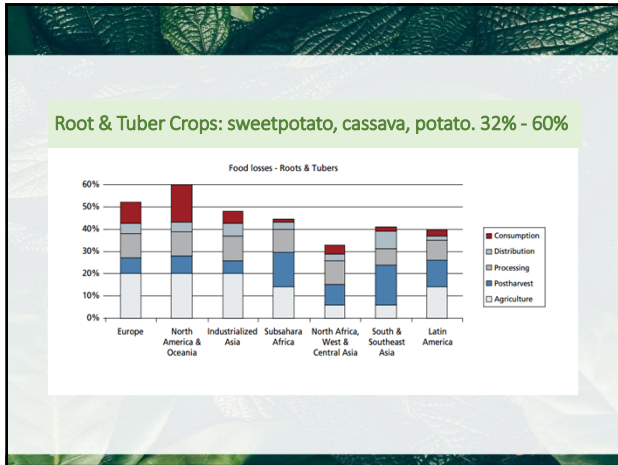
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Losses and Waste for Cereal Crops: wheat, rice. 20% - 35%

Food losses - Cereals

Region	Agriculture (%)	Post-harvest (%)	Processing (%)	Distribution (%)	Consumption (%)
Europe	~5	~5	~5	~5	~20
North America and Oceania	~5	~5	~5	~5	~20
Industrialized Asia	~5	~5	~5	~5	~20
Sub-Saharan Africa	~5	~5	~5	~5	~20
North Africa, West and Central Asia	~5	~5	~5	~5	~20
South and Southeast Asia	~5	~5	~5	~5	~20
Latin America	~5	~5	~5	~5	~20

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Reasons for food losses and waste

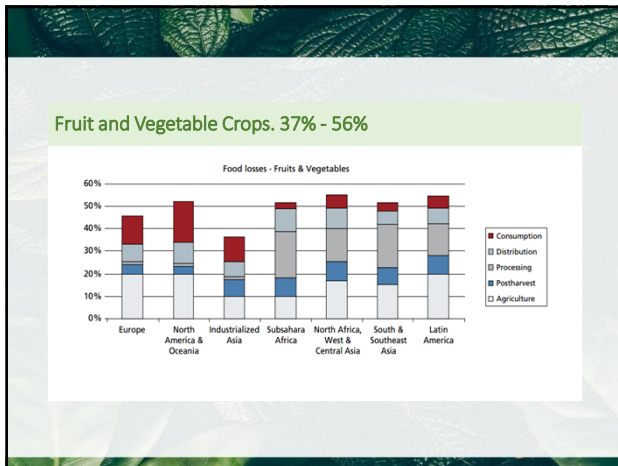
Industrialized Countries:

- Production > Demand
 - Overproduce to ensure supply in case of bad weather, outbreaks
- Grade standards based on appearance
- Cheaper to dispose than divert to alternative market
- Lack of processing facilities due to seasonal supplies

Developing Countries:

- Premature harvest
 - Desperate for food (beginning of season)
 - Desperate for income (later in season)
- Lack of infrastructure
 - Transportation, storage/cooling facilities
- Lack of marketing system from wholesale to retail

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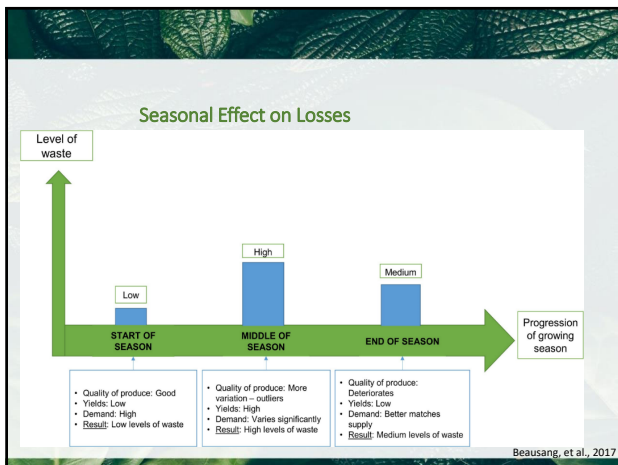
Study on waste in Brazil*

- Families waste 128.8 kg of food per year
- Most wasted food is rice (22%), followed by beans (16%) and chicken (15%)

**International seminar sponsored by Embrapa. Dec.2018.*

"Brasil - Perdas e Desperdício de Alimentos em Cadeias Agroalimentares: Oportunidades para Políticas Públicas"

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Food Waste in the U.S.A.

80 billion lbs
of food is thrown away each year in the US.

FOR REFERENCE
This is the equivalent of 1,000 Empire State Buildings.

NEARLY 40%
of the US food supply is wasted each year.

219 lbs
per person

\$1,600
per family

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The "same old story"- only 30 years later!!

It's Time To Get Serious About Reducing Food Waste, Feds Say

Food waste 'one of the great paradoxes of our times'

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Food Trends: Nutritious Crops

1. Eat five portions per day
2. High in vitamins, antioxidants (pigments, phenolics)
3. Low in carbohydrates
4. Natural fibers

Source: Emory Report

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United Nations – FAO – initiated the G20 Platform to document and reduce food loss

- Initiated in 2015 by Director-General Dr. José Graziano da Silva (designed Fome Zero program in Brazil)
- Served from 2012-19
- Goal: "End hunger, achieve food security and improved nutrition and promote sustainable agriculture"

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FRESH PRODUCE

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Means for reducing losses:

- Systems analysis to identify each point from "farm to fork" and where losses occur
- Traditional breeding and genetics programs
- Marker-assisted breeding programs
- Phenomics and other "omics"
- Remote sensing technologies

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Postharvest losses are cumulative

(U.C. Davis)

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Supermarket produce section

Worker removing unsalable produce: 6 to 9% loss ("shrink")



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Two Keys to Reducing Postharvest Losses

- Minimizing mechanical damage during harvest, handling operations
- Cooling the crop quickly to lowest safe temperature

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Postharvest losses are more than a complete loss:

1. Total loss
 - Discard, animal feed
2. Partial loss
 - Loss in value (defects cause loss in grade)
 - Lower price
 - Alternative: processing




A vegetable box from the agri produce company Malfo Market | Michael Roberts

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Cooling is critical to extend quality

After 24 hours at ambient:

- Note bruise
- Unseen losses:
 - ↓ flavor
 - ↓ Vit. C



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End of Sargent presentation on Thursday, January 11, 2024

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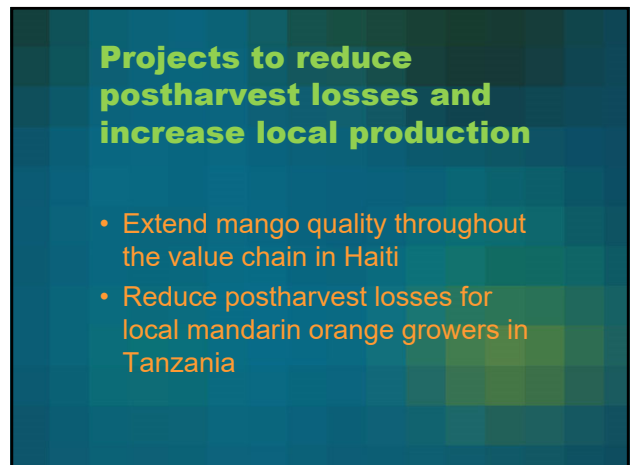
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UF UNIVERSITY of FLORIDA IFAS **USAID WINNER**
FROM THE AMERICAN PEOPLE AWARDED IN THE FISCAL YEAR 2018 NATURAL ENVIRONMENTAL RESOURCES

EVALUATION OF POSTHARVEST LOSSES AND POTENTIAL NEW METHODS FOR THE HARVEST, TRANSPORT AND TEMPERATURE MANAGEMENT OF HAITIAN MANGOS DESTINED FOR EXPORT MARKETS

ARTHUR J. BONICET
M.S. Research Project
In Horticultural Sciences

DR. STEVEN A. SARGENT
CHAIR.
DR. ARTHUR TEIXEIRA
C.MEMBER
DR. SALLY WILLIAMS
C.MEMBER
DR. JEFFREY K. BRECHT
C.MEMBER

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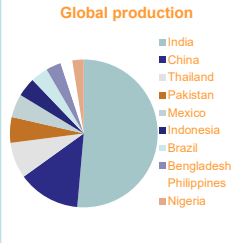
Background 

- Haiti grows > 100 var. - produces 0.2 MT
- Madame Francique variety accounted for >40,000 t (20%)
- Only M.F approved for export to US market
- > 10,000 t exported to US/Yr; Canada, EU & Dom. Rep
- Production area limited to 5 regions, Artibonite, west, center, South & Southeast
- Production season vary/ regions from late Nov-Sep.
- Export season to US starts mid-Mar ends mid-Aug.
- Haiti PH losses >50%, due lack training handling + heat treatment (grower, shipper estimates)
- GOAL of this research: reduce PH losses from harvest in Haiti through retail level in the U.S.**

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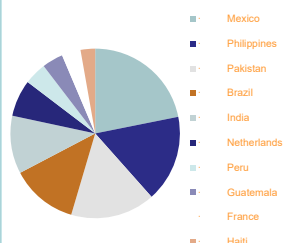
Top Mango Producing & Exporting Countries

Global production



- India
- China
- Thailand
- Pakistan
- Mexico
- Indonesia
- Brazil
- Bangladesh
- Philippines
- Nigeria


Global Exporting



- Mexico
- Philippines
- Pakistan
- Brazil
- India
- Netherlands
- Peru
- Guatemala
- France
- Haiti

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'Madame Francique' Production Areas



Adapted from JMB, SA

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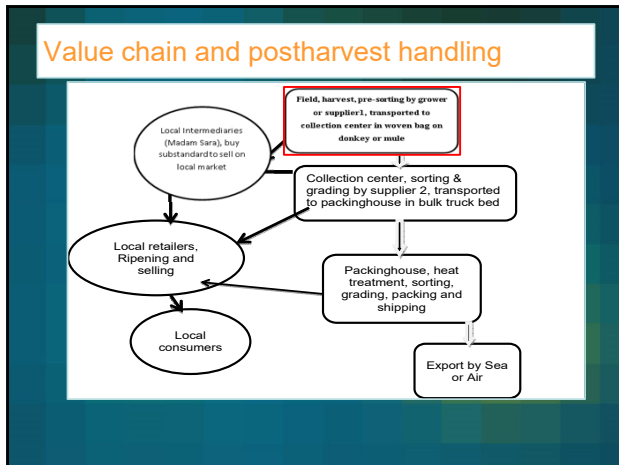
Postharvest Issues for Haiti

- Only about 5% of production are exported
- Mango exported to rich countries, U.S., E.U...
- PH losses 20-50% for fruit & vegetable
- PH losses due poor harvest, transport & temperature management
- With good PH management Loss could reduce to 10-25%, no zero PH loss possible!

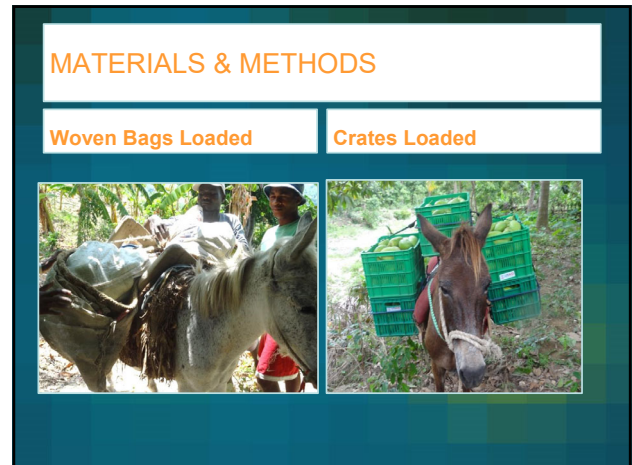
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1) Field to Collection Center: MATERIALS & METHODS:

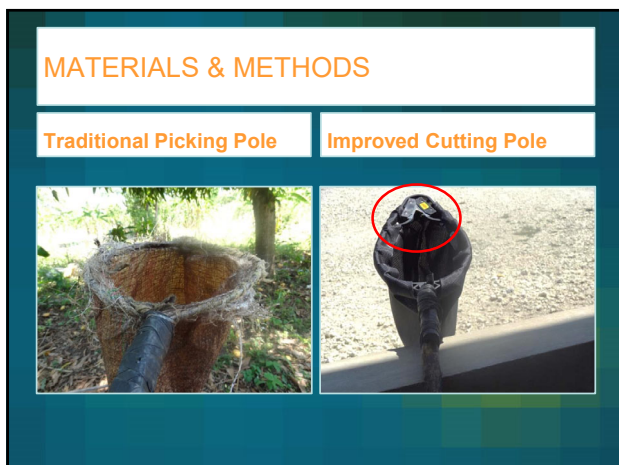
- Mature mango from many isolated farms in Cabaret (Matheux) were bought from growers.




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RESULTS

Effect of tree height and harvest aid type on fruit harvested with stems (n=100).

Tree height (m)	% with stem, H1 ^Z	% with stem, H2 ^Y	% Improvement
10	15	75	400
12	19	70	268
15	10	54	440
Mean	15	66	340
Std. error.	0.99	0.99	

^Z H1= traditional harvest aid without cutter (picking pole).
^Y H2=fruit harvested with harvest aid with cutter (cutting pole).

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RESULTS

Rate of rejection at the collection center for woven bag-loaded vs crates-loaded in animal transport system.

Distance(km)	% with Woven bag	% with Crates	% of Improvement
2	8.53	4.62	46
3	12.60	5.11	59
4	15.50	7.54	51
Average 3	12.21	5.76	53

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Collection Center to Packinghouse: MATERIALS & METHODS

Bulk truck loaded



Crates truck loaded



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Results

Total rate of rejection at the packinghouse bulk loaded truck VS crates-loaded truck.

Distance (km)	% with Bulk truck loading	% with Crates truck loading	% Improvement
54	19.5	9	54
60	23	10	56
Average	21	9.50	55

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