

# Post-harvest loss reduction in Nigeria, pilot I

Results and observations of the effects and benefits from alternative product packaging in the tomato value chains

13 January 2018, IITA Ibadan, Nigeria

Christine Plaisier, WFBR & WeCR



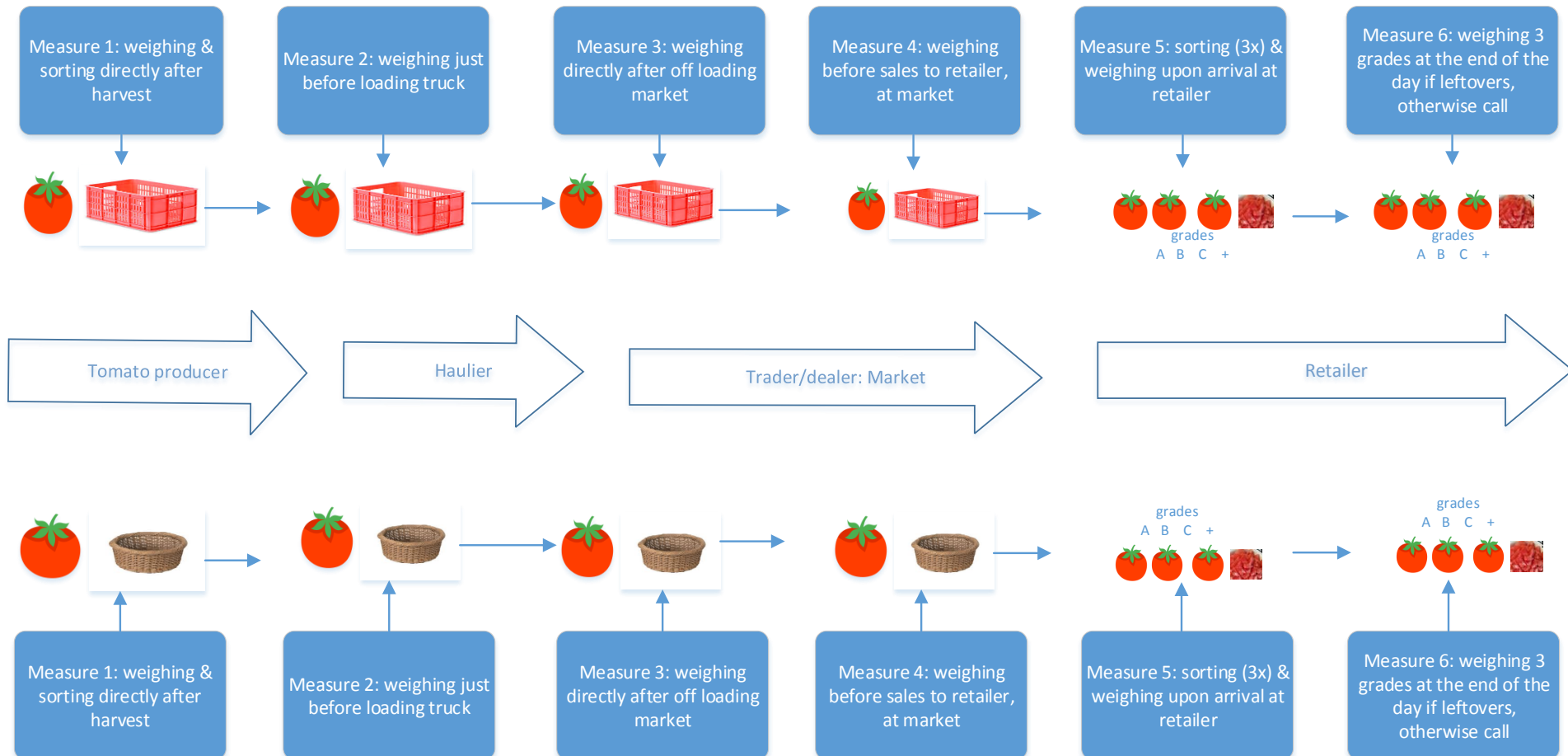
# Research approach & methodology (1)

- Living lab workshop in November: reduction of post-harvest losses in tomato → what to do?
- Workshop with stakeholders from 5 value chains
  - definition of value chains & participants
  - classification product quality
  - how to use the crates
- Measurement protocol:
  - how, what, when and where to measure
  - transfer of methodology to enumerators
- Feedback workshop with stakeholders:
  - Results measure
  - How to proceed?

# Research approach & methodology (2)

- Measurement in the field:
  - load tracking from farmer to retailer
  - 2 measurement rounds per VC
  - 5 value chains / markets
  - 2 types of packaging: raffia basket and plastic crate
- Recording of data and observations in the field
- Analysis of data by WFBR and WEcR
- Preliminary reporting to AgroFair and stakeholders (this PPT)
- Final reporting to AgroFair

# Parallel measurement: basket vs crate







# Measurements

- In general very good data gathering by the enumerators
- Our compliments!

VALUE CHAIN NO.: 2		NAME FARMER: Hassan Zacharia		WAGeningen	
DATE: 25-12-17		VILLAGE or CITY: Iyapan		NAME RETAILER: Omelara Odoobale	
COLOUR LABEL: na		NAME WHOLESALER: Aliu Oni		WAGeningen MARKET: Saka	
<b>Colour label basket 1: White</b> 1. FARMER (before loading) 2. WHOLESALER / DEALER 3. RETAILER (at the wholesale market) 4. RETAILER (at arrival at shop) Time of measurement: 1pm/22.12.17 Time: 1pm/22.12.17 Time: 7:40 am/22.12.17 QUALITY WEIGHT (kg) WEIGHT (kg) WEIGHT: Dealer pass farmer (N/A) WEIGHT: Retailer pass dealer (N/A) QUALITY WEIGHT (kg) Buyer pass retailer (N/A) (kg) A-1 20.0 27.0 27.0 100 27.0 B-1 20.0 C-1 20.0 Total 27.0 27.0 27.0 27.0					
<b>Colour label basket 2: Red</b> 1. FARMER (before loading) 2. WHOLESALER / DEALER 3. RETAILER (at the wholesale market) 4. RETAILER (at arrival at shop) Time of measurement: 1pm/22.12.17 Time: 1pm/22.12.17 Time: 7:40 am/22.12.17 QUALITY WEIGHT (kg) WEIGHT (kg) WEIGHT: Dealer pass farmer (N/A) WEIGHT: Retailer pass dealer (N/A) QUALITY WEIGHT (kg) Buyer pass retailer (N/A) (kg) A-1 20.0 27.0 27.0 100 27.0 B-1 20.0 C-1 20.0 Total 27.0 27.0 27.0 27.0					
<b>Colour label basket 3: Green</b> 1. FARMER (before loading) 2. WHOLESALER / DEALER 3. RETAILER (at the wholesale market) 4. RETAILER (at arrival at shop) Time of measurement: 1pm/22.12.17 Time: 1pm/22.12.17 Time: 7:40 am/22.12.17 QUALITY WEIGHT (kg) WEIGHT (kg) WEIGHT: Dealer pass farmer (N/A) WEIGHT: Retailer pass dealer (N/A) QUALITY WEIGHT (kg) Buyer pass retailer (N/A) (kg) A-1 20.0 27.0 27.0 100 27.0 B-1 20.0 C-1 20.0 Total 27.0 27.0 27.0 27.0					
<b>Colour label crate 1: White</b> 1. FARMER (before loading) 2. WHOLESALER / DEALER 3. RETAILER (at the wholesale market) 4. RETAILER (at arrival at shop) Time of measurement: 1pm/22.12.17 Time: 1pm/22.12.17 Time: 7:40 am/22.12.17 QUALITY WEIGHT (kg) WEIGHT (kg) WEIGHT: Dealer pass farmer (N/A) WEIGHT: Retailer pass dealer (N/A) QUALITY WEIGHT (kg) Buyer pass retailer (N/A) (kg) A-1 20.0 27.0 27.0 100 27.0 B-1 20.0 C-1 20.0 Total 27.0 27.0 27.0 27.0					
<b>Colour label crate 2: Red</b> 1. FARMER (before loading) 2. WHOLESALER / DEALER 3. RETAILER (at the wholesale market) 4. RETAILER (at arrival at shop) Time of measurement: 1pm/22.12.17 Time: 1pm/22.12.17 Time: 7:40 am/22.12.17 QUALITY WEIGHT (kg) WEIGHT (kg) WEIGHT: Dealer pass farmer (N/A) WEIGHT: Retailer pass dealer (N/A) QUALITY WEIGHT (kg) Buyer pass retailer (N/A) (kg) A-1 20.0 27.0 27.0 100 27.0 B-1 20.0 C-1 20.0 Total 27.0 27.0 27.0 27.0					
<b>Colour label crate 3: Green</b> 1. FARMER (before loading) 2. WHOLESALER / DEALER 3. RETAILER (at the wholesale market) 4. RETAILER (at arrival at shop) Time of measurement: 1pm/22.12.17 Time: 1pm/22.12.17 Time: 7:40 am/22.12.17 QUALITY WEIGHT (kg) WEIGHT (kg) WEIGHT: Dealer pass farmer (N/A) WEIGHT: Retailer pass dealer (N/A) QUALITY WEIGHT (kg) Buyer pass retailer (N/A) (kg) A-1 20.0 27.0 27.0 100 27.0 B-1 20.0 C-1 20.0 Total 27.0 27.0 27.0 27.0					
<b>OBSERVATIONS RESEARCH TEAM</b> M FARMER H WHOLESALER Weight of the empty BASKET 1.2kg na Weight of the empty CRATE 1.8kg na Time of HARVESTING of the product 4 hours na Way of product HANDLING with care, (yes/no) Yes na Time of LOADING of the product (in minutes) 30 30 Method of STACKING in vehicle (code 1-3 (1 = worst, 3 = best)) 3 3 Ambient (air) TEMPERATURE (°C) (forecast for specific day) 60 na Tomato VARIETY 1001 na Presence of a SHED (yes or no) Yes na WEATHER: raining (no/little/heavy) No na					
<b>OBSERVATIONS RESEARCH TEAM during TRANSPORT</b> VEHICLE type (code 1-3, 1 = 1000cc (motor) truck, etc.) 1.2 na VEHICLE loading capacity in tone 0.2 1.6 Transport DISTANCE (km) 50 23.8 Transport TIME (minutes) 50 23.8 Waiting time at farm after harvest & before transport 50 23.8 Transport DELAYS during transport (yes/no, minutes) 50 23.8 Quality of the ROAD: village to highway (code 1-5 (1 = worst, 5 = best)) 50 23.8 Quality of the ROAD: code 1-5 (1 = worst, 5 = best) 50 23.8 Are the tomatoes loaded to another BASKET 50 23.8 Are the tomatoes loaded to another BASKET 50 23.8 OBSERVATIONS RESEARCH TEAM 50 23.8					







# Results

- More Grade A remains when using crates

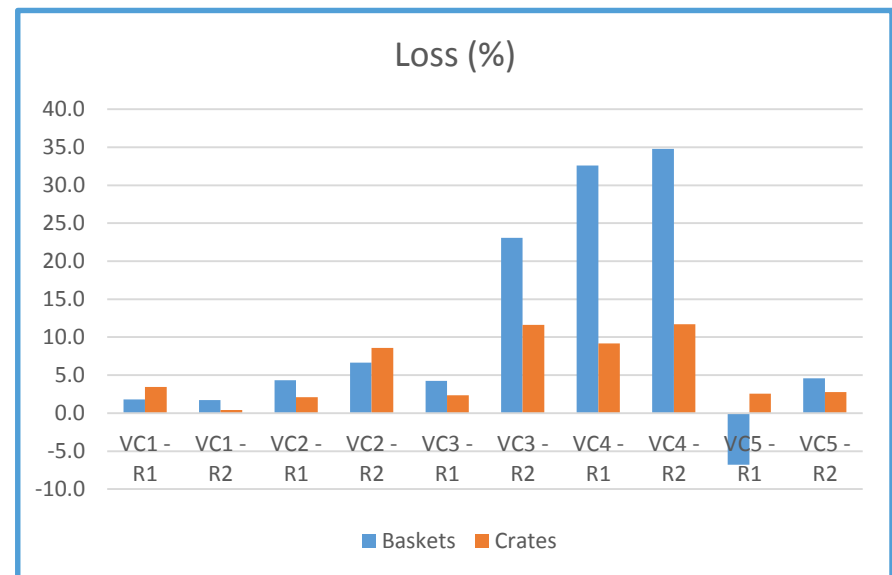
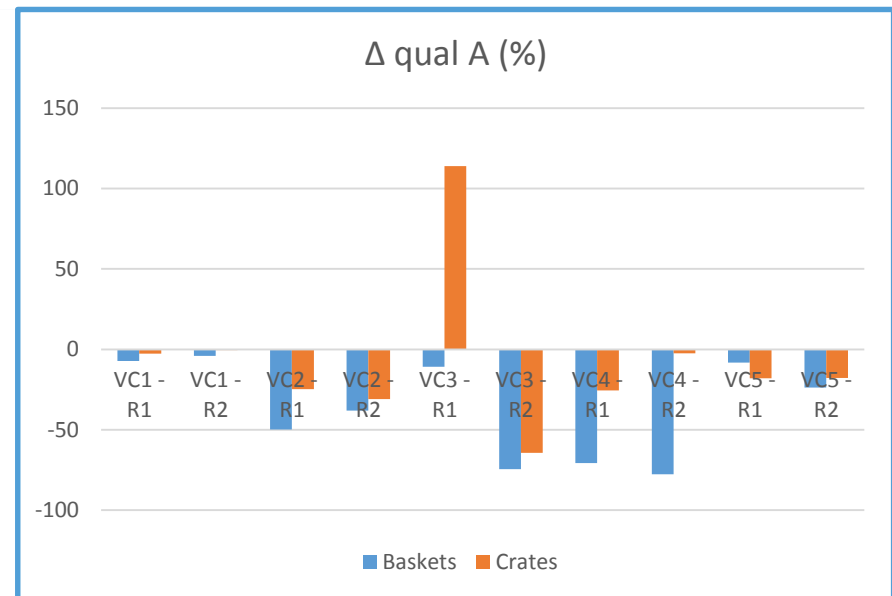
Baskets: 65%

Crates: 85%

- Less total loss in weight from farmer to retailer

Baskets: 11% loss

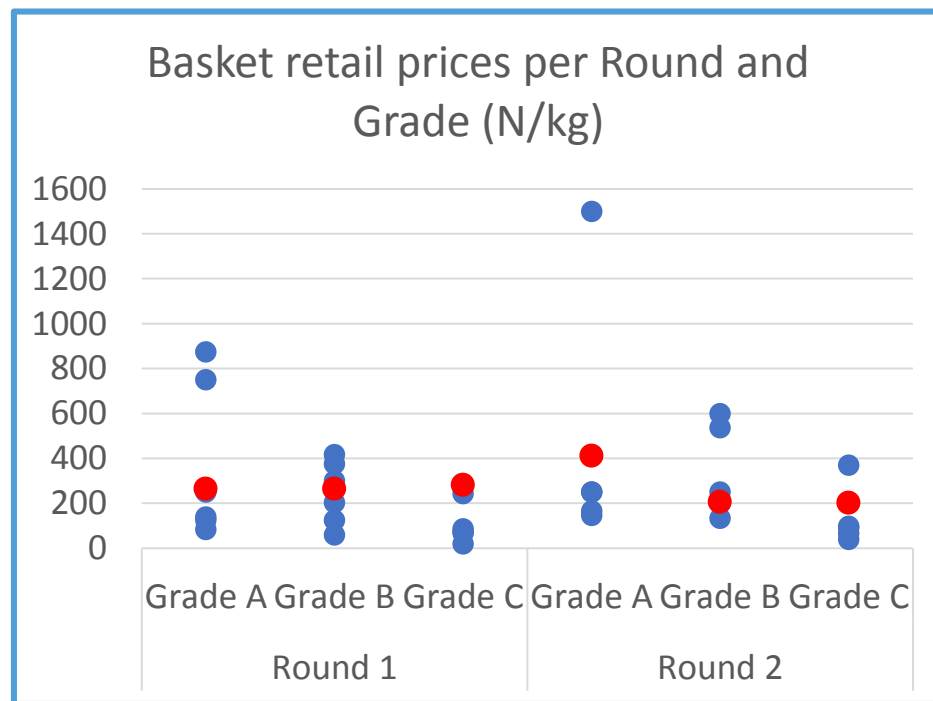
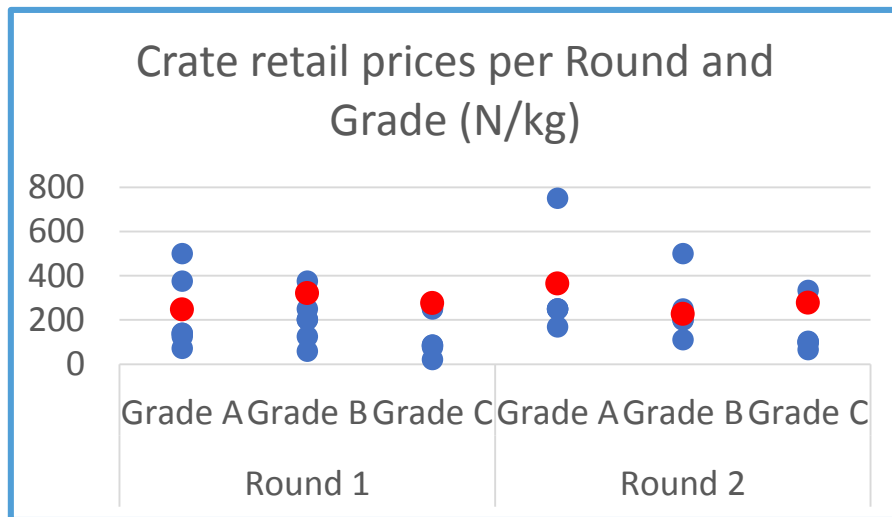
Crates: 5% loss





# Results

- Weighted averages show Grade B sometimes more sold at higher price than Grade A → probably selling strategy retailer? (to start with Grade B)
- VC3 excluded in graphs

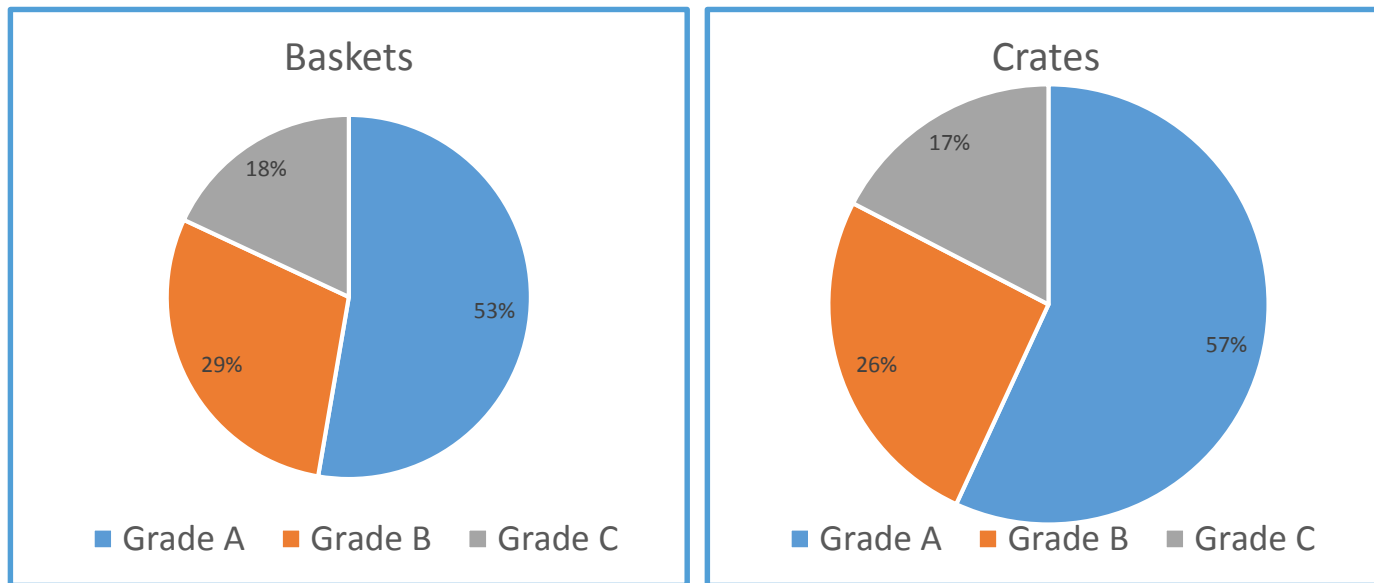


- Weight between baskets (small ones and large ones) differ a lot
- Distances and road conditions cannot be linked to losses due to low amount of measurement in

	VC 1	VC 2	VC 3	VC 4	VC 5
average weight Baskets (total all qualities)	5.7	25.0	6.1	7.5	23.3
average weight Crates (total all qualities)	20.8	22.5	20.0	22.9	22.5
distance F-W	140	80	300	5	210
distance W-R	0.5	15	5	245	33

# Results

- Calculations based on and average of Value Chains 1,2,4 and 5
- Crates tend to have more Grade A at a retailer
- Total value of produce increases with 5%





# Observations - Popularity

- “Popularity grows, even just being introduced”
- “Importance in term of reduction of wastage was noticeable and the innovation was fully lauded”
- “The drivers find it easier to load using the crates”
- “The amount of grade C was more reduced using the crates”
- “products from the crates especially grade B deteriorates slower”



# Observations – Seasonality

- Currently limited capacity to plant this season (due to lack of irrigation system)
- Season is coming to an end -> low amount of produce
- Northern varieties are in this season more popular, retailers do not want buy the variety of tomatoes from the south.
- In round 2 not all actors are involved due to low amount of produce (and fuel price)
- Low produce -> effect of bulking and packing during transportation is less, however still present





# Observations – Concerns 1

- “The retailers need more education about the amount of tomatoes in a crate, some do not believe 3 small baskets fit in one crate”
- “Retailers are concerned around the ready availability and the cost per unit of a crate”
- “The farmer shows concern about the extra cost moving the crate back to him”
- “The driver believes he cannot load more using crates meaning increase transportation cost”





# Observations – Concerns 2

- “The wholesaler had a tough time convincing the retailers using crates because of quantity comparisons”
- “The retailers are willing to adopt the plastic crates when cost effective”
- “The retailers perceive an increase in cost of moving the crates back to the wholesalers”
- “A paradigm shift can happen when it is clear how much produce fits in a crate compared to a basket”



# Observations – Difficult circumstances

- 2<sup>nd</sup> round had some difficulties:
  - Harvested amount too small, no normal transportation possible
  - The prices skyrocketed due to fuel prices and yuletide season
  - The journey was tedious but successful”
  - “There was a grid lock of vehicles couples with high fuel scarcity, I had to carry the tomatoes on my head for 500m”



# Validity of the results

- Due to low produce in this season few baskets and crates are harvested, prices fluctuate and effects can not be well monitored -> measurements are therefore not well comparable.
- The results are not usable for investment calculations
- They give a good insight in the performance of crates compared with baskets



# Conclusions

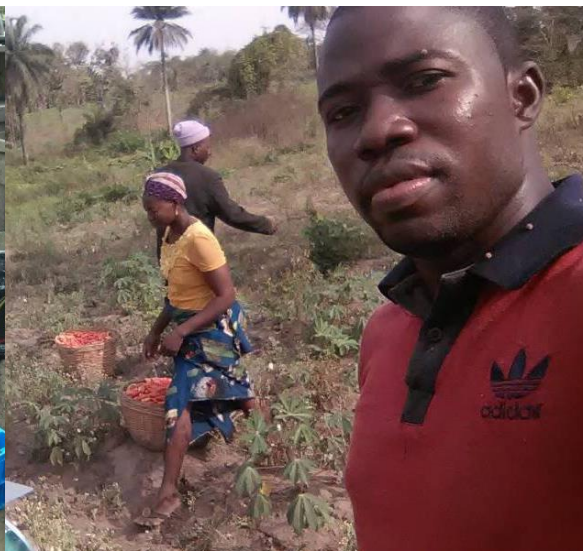
- When using crates:
  - Less loss
  - More Grade A to sell, higher sales
  - Easier to handle
  - Awareness of volume of crates and baskets can be improved (introduction of kilogram system?)
  - Measurements in high season improve validation



# Discussion on data collection

## ■ Improvements:

- Measure in high season
- The same person should grade at farm and retail level the same way
- Results can only be compared well when measurements take place from farm to market



# Discussion on intervention

- Less losses with crate use
- More Grade A to sell with crate use
- Total value of produce increases

Attention:

- Weighing: pricing in kg
- Grade B > price than grade A at retailer level
- Who benefits from the increased value?
- Return, costs & ownership of crates?



# And now what? Prospects

1. Formulation of a business model
2. How to upscale?

-000-

3. Willing and able to continue in June?
4. Second measurement basket – crate

# Thank you all!



# Paradigm shift?!

