

NIGERIAN POST-HARVEST LOSS REPORT

Executive Summary

This report analyzes post-harvest losses (PHL) across Nigeria using regional, environmental, and logistical data. The average PHL is 19.3%, with rice recording the highest PHL percentage among all crops. Notably, PHL remains high despite training, indicating the need for more comprehensive interventions.

Technology use, especially hermetic bags, significantly lowers spoilage, while cold storage paradoxically results in higher spoilage, likely due to poor environmental control. Crates remain the most effective storage method. Trucks record the lowest spoilage among transport modes. Seasonality, environmental factors like temperature and humidity, and regional differences significantly impact spoilage and revenue loss. Notably, 2024 recorded the lowest average PHL_Percent compared to previous year, showing some improvements despite seasonal spikes.

NIGERIA POST HARVEST LOSS ANALYSIS

AVG_PHL
19.3
TOTAL REVENUE LOSS
₦41,415,461.0
TOTAL FARMERS
5000
REGIONS
6
CROP TYPES
6
SPOILAGE AMOUNT(KG)
193070.9

Average of PHL_Percent

Crops by Avg PHL_Percent

Crop_Type ▼

Crop_Type	Avg PHL_Percent
Yam	19.5
Maize	19.4
Tomato	19.3
Pepper	19.2
Cassava	19.1
Rice	19.5

Average of PHL_Percent

Training Received vs Avg PHL

Training_Received ▼

Training_Received	Avg PHL_Percent
TRUE	19.25
FALSE	19.35

Year

2023

2024

Harvest_Season

Dry Season

Rainy Season

Market_Access

Good

Moderate

Poor

Crop_Type

Cassava

Maize

Pepper

Storage_Method

Cold Storage

Crates

Open shed

Polyethylene bags

Youth_Involved

FALSE

TRUE

Region

North Central

North East

North West

South East

South South

South West

Average of PHL_Percent

Regions by Avg PHL_Percent

Region ▼

Region	Avg PHL_Percent
North Central	19.4
South South	19.35
South East	19.3
North West	19.4
South West	19.45
North East	19.45

Average of PHL_Percent

Tech Used vs Avg PHL

Tech_Used ▼

Tech_Used	Avg PHL_Percent
Hermetic Bags	18.75
Solar Dryer	19.1
Mobile App	19.2
None	19.4

Average of Spoilage_Amount_kg

SPOILAGE AMOUNT VS TEMPERATURE

Temperature range ▼

Temperature range	Avg Spoilage_Amount_kg
35-40°C	55
30-34°C	42
25-29°C	35
20-24°C	28

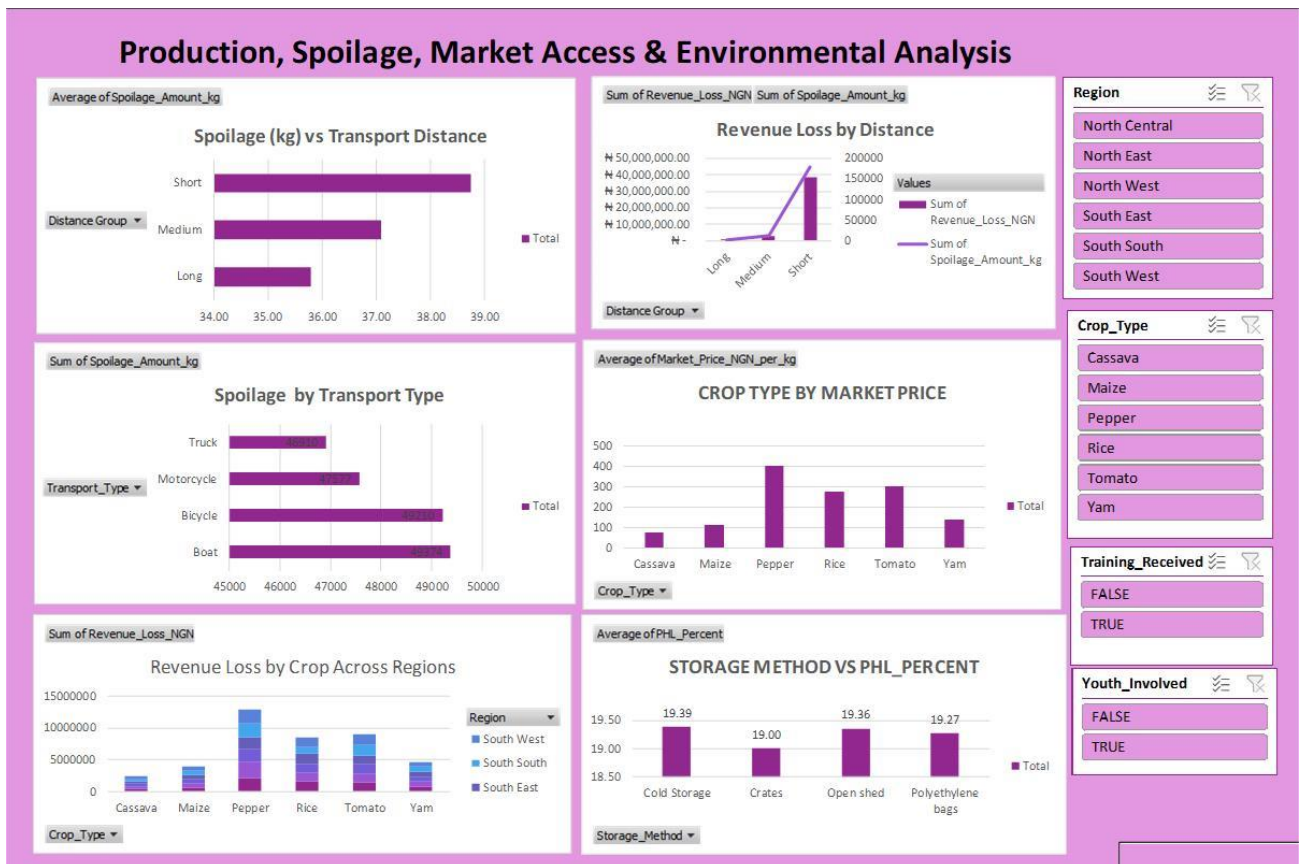
Sum of Spoilage_Amount_kg

STORAGE METHOD VS HUMIDITY

Storage_Method ▼

Humidity range ▼

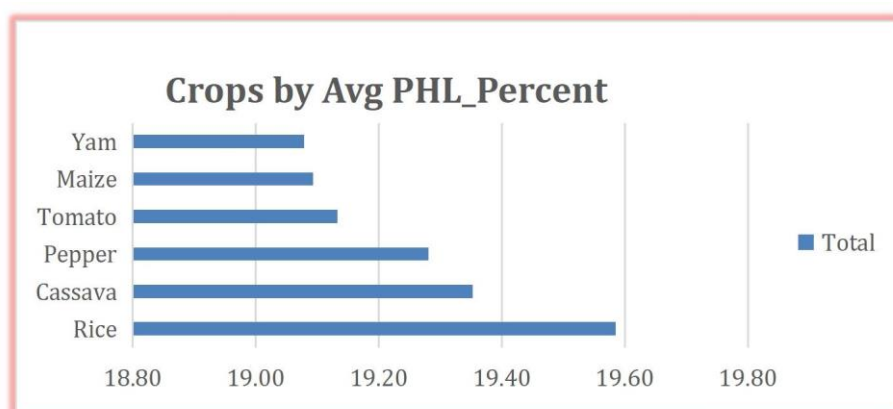
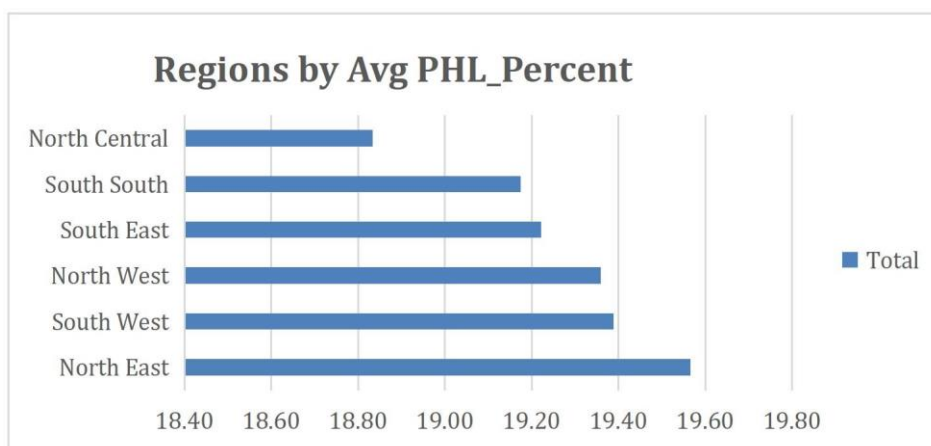
Storage_Method	Humidity Range	Sum of Spoilage_Amount_kg
Open shed	30-39%	3000
	40-49%	6000
	50-59%	10000
	60-69%	14000
Polyethylene bags	30-39%	3000
	40-49%	6000
	50-59%	11000
	60-69%	13000
Crates	30-39%	3000
	40-49%	7000
	50-59%	12000
	60-69%	12000
Cold Storage	30-39%	2500
	40-49%	7500
	50-59%	11500
	60-69%	13500



Key Findings

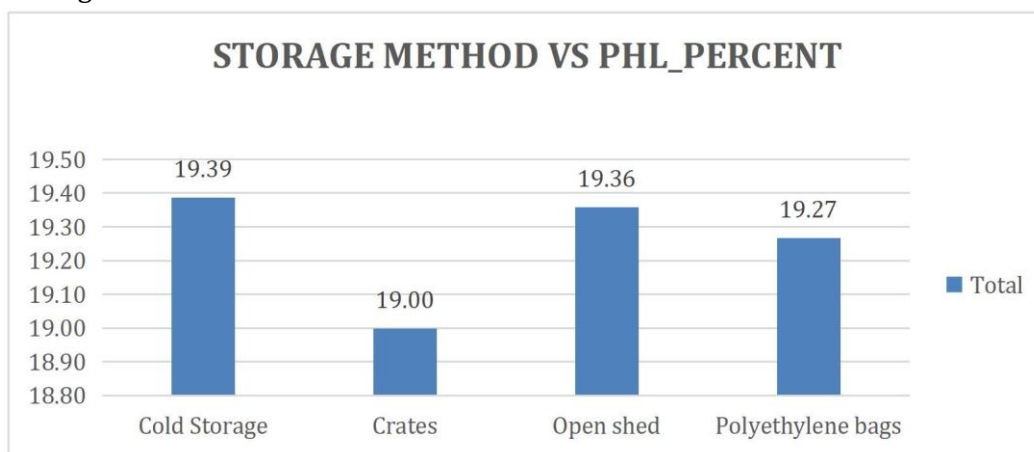
1. Production and Spoilage

- Average PHL: 19.3%
- Most affected regions: North East, South West, North West
- Top crop loss: Rice has the highest average PHL%
- Lowest loss crop: Yam
- PHL after training: Remains high, suggesting training alone is insufficient
- Technology: Use of hermetic bags results in the lowest PHL%; lack of tech leads to highest PHL%
- Seasonality: Dry season shows highest PHL% and revenue loss



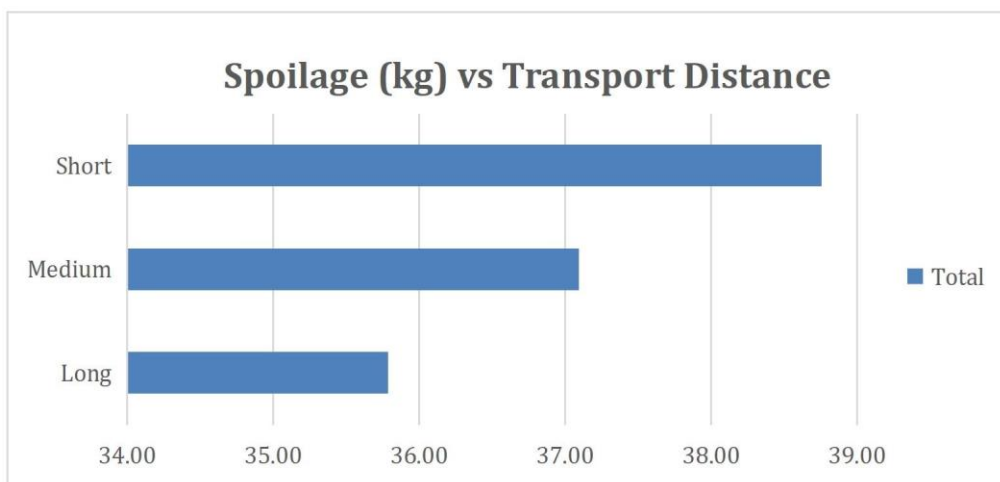
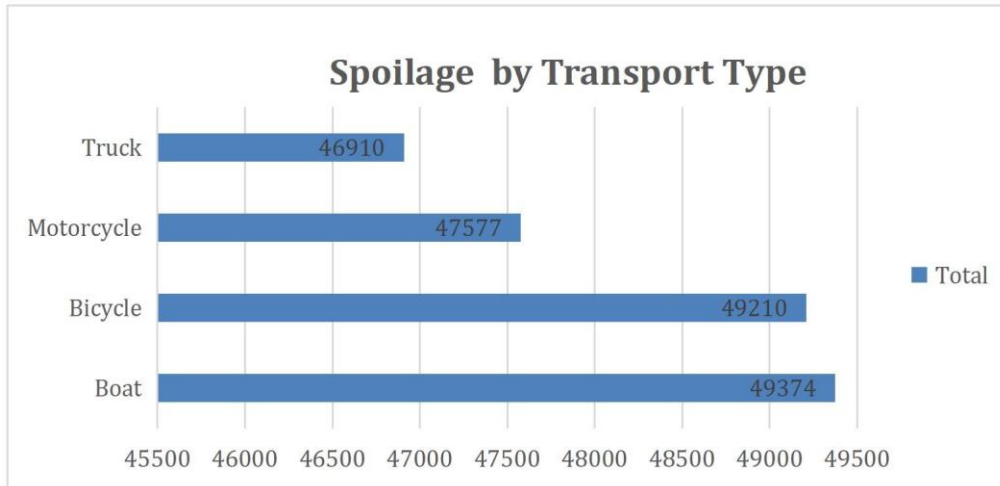
2. Storage Methods

- Best method: Crates have the lowest average PHL%
- Cold storage: Despite expectations, results in higher spoilage when not properly managed
- Polyethylene bags and open sheds show significantly higher spoilage
- Recommended: Crates over cold storage unless temperature and humidity are strictly managed



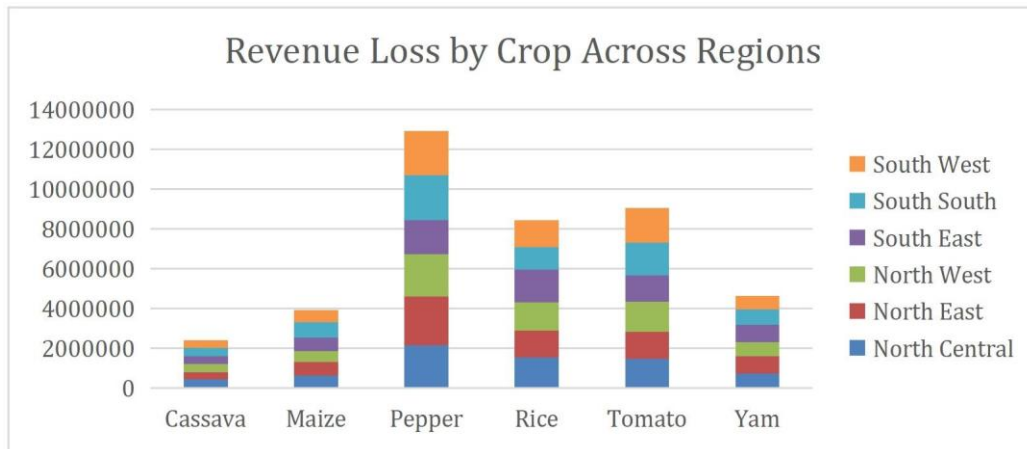
3. Logistics and Transport

- Best transport method: Trucks have the lowest spoilage
- Worst: Boats show the highest spoilage amount
- Short distances have high spoilage due to poor handling
- Optimal: Truck and proper handling regardless of distance



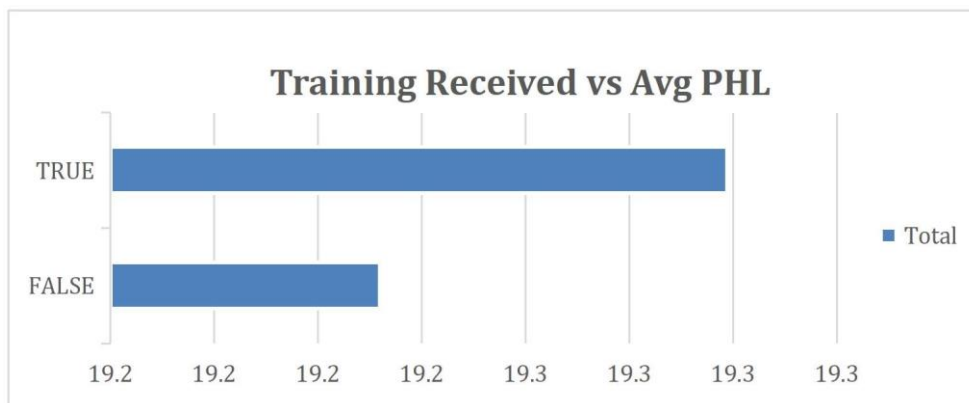
4. Market and Revenue

- Highest revenue loss crop: Pepper
- Market access effect: Moderate access has higher revenue loss than poor access
- Market prices: Pepper has the highest market price across regions; Cassava has Lowest market price
- Market access does not significantly reduce revenue loss



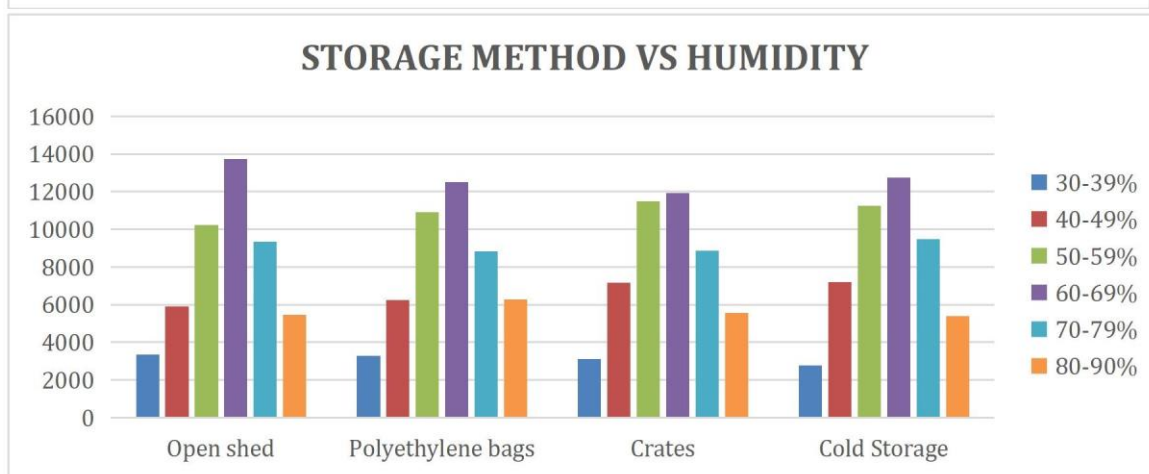
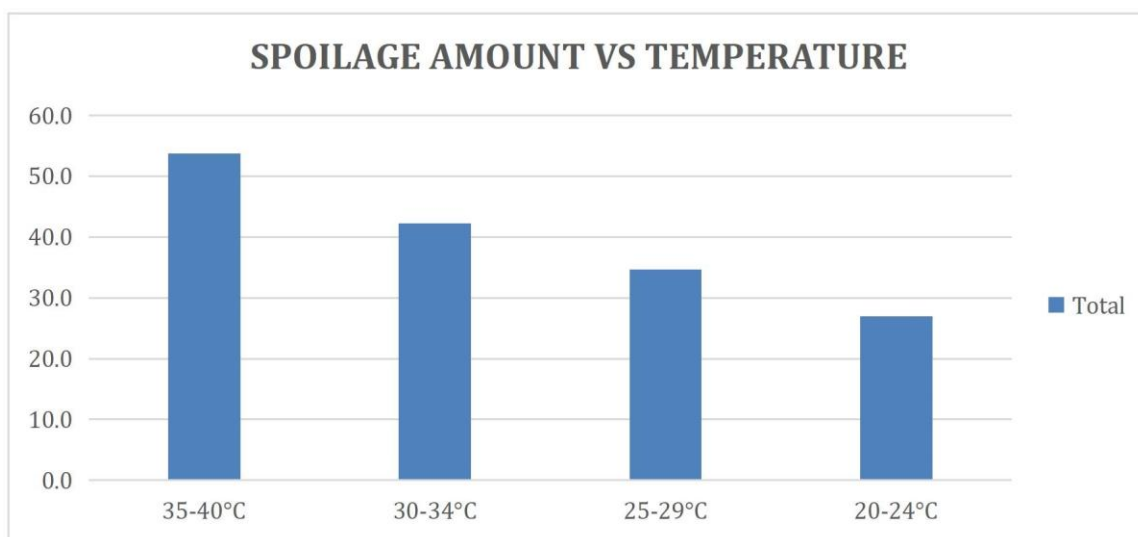
5. Youth Involvement & Training

- Youth involvement: No significant difference in PHL%
- Training: No significant difference in PHL%
- Conclusion: Youth involvement and training alone are not sufficient



6. Environmental Factors

- Humidity: 60–69% shows Highest spoilage; 30–39% has Lowest spoilage
- Temperature: Spoilage increases sharply from 20°C to 40°C
- Best storage performance under 20–24°C
- Crates & cold storage perform best under controlled conditions



Identifying Best Practices

Ideal Combination:

- Crop: Cassava or Yam
- Storage: Crates
- Transport: Truck
- Region: North Central
- Tech: Hermetic bags
- Environment: Low humidity (30–39%), low temperature (20–24°C)

Recommendations

Storage

- Prioritize crates for all regions.
- Use cold storage only when temperature and humidity can be tightly controlled.

- Avoid polyethylene bags and open sheds.

Transport

- Promote the use of trucks due to lower spoilage rates.
- Improve packaging and handling techniques during transit.

Technology

- Encourage the use of hermetic bags.
- Avoid relying solely on training or youth participation without supportive technology.

Environmental Management

- Monitor and manage storage temperature and humidity.
- Educate farmers on affordable methods to reduce environmental spoilage risks.

Policy & Investment

- Direct resources toward physical infrastructure (e.g., crates, ventilation).
- Promote awareness on best practices, especially during dry season peaks.