



The African Postharvest Losses Information System

Presentation outline

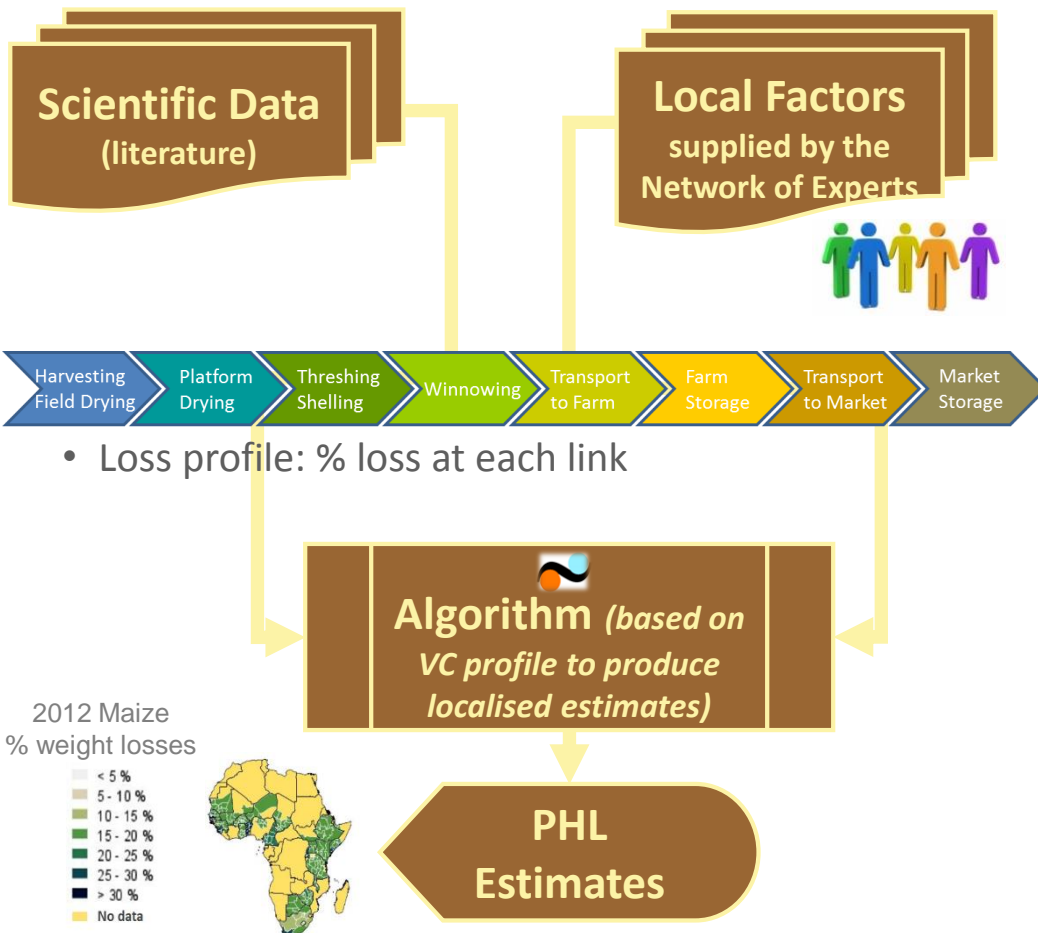


- What is APHLIS?
- What does APHLIS offer?
- Components of APHLIS
- The downloadable calculator
- What is APHLIS+?

What is APHLIS?



APHLIS estimates the annual % postharvest weight loss of cereal grains in Sub-Saharan Africa countries



APHLIS

- is based on PHL data from the scientific literature
- is contextualised using seasonal factors submitted by a network of local experts
- gives loss estimates by cereal, by country and by province
- loss estimates are updated annually
- is fully transparent for the method of calculation and the data used, and
- can improve over time as better loss data can easily be added to the system

What does APHLIS offer?



APHLIS loss estimates can be used to -

- Support agricultural policy formulation
- Identify opportunities to improve value chains
- Improve food security (cereal supply estimates)
- Monitor and evaluate loss reduction activities

History of APHLIS

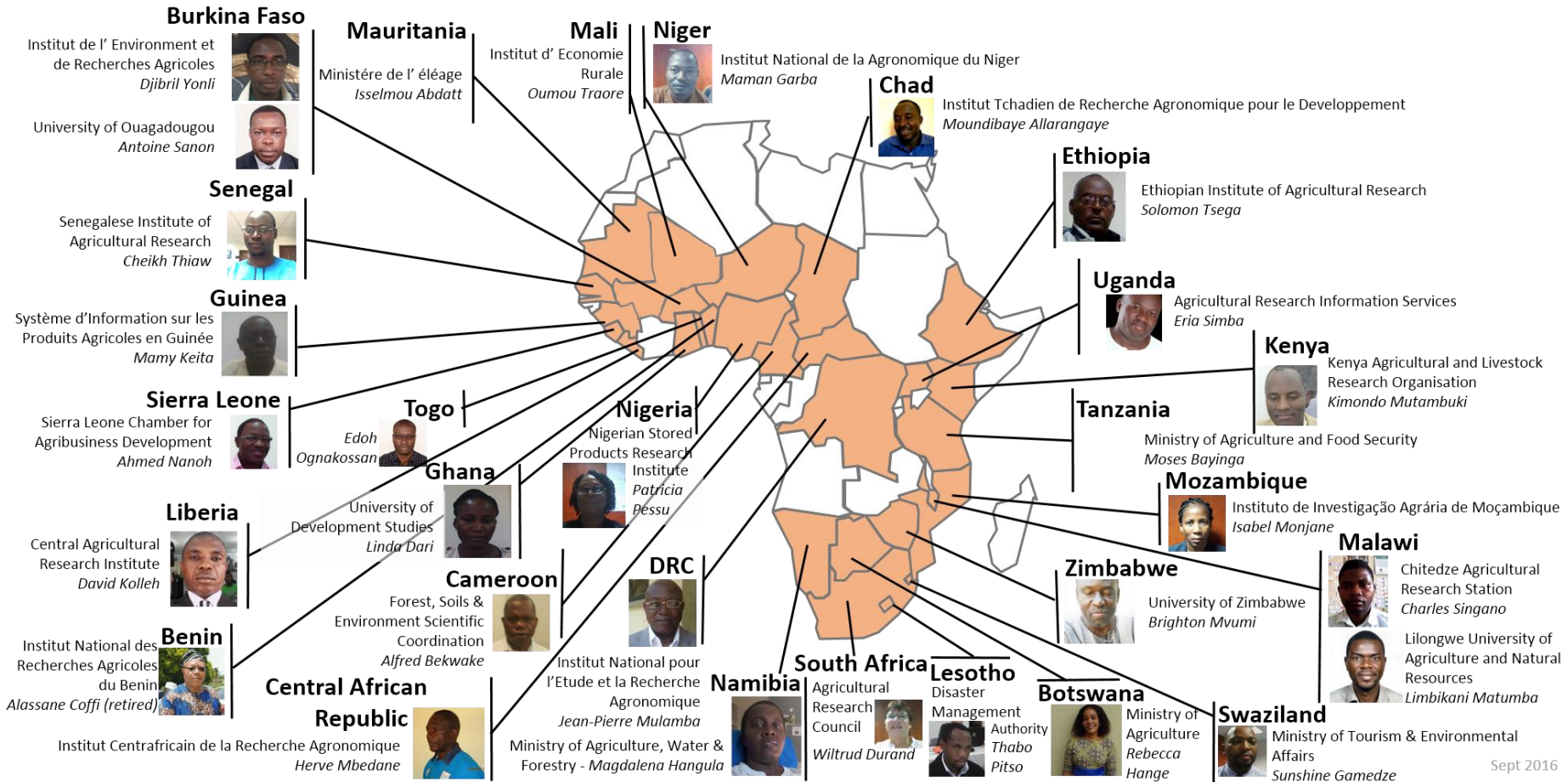


The 2008 food crisis led to increased recognition by the EU of the role of postharvest losses (PHLs) as a source of food insecurity

The EU wanted to know more about PHLs in order to:

- Direct loss reduction interventions at the
 - most affected areas (geographically)
 - the most affected links in the post harvest chain or those that would be most cost effective to address
- More reliably calculate cereal supply estimates from production estimates (cereal supply = production – PHLs)
- Improve rapid food security estimates, e.g. CFSAMs (Crop and Food Supply Assessment Missions)

APHLIS African Network of Experts



Sept 2016

- >30 African experts
- Provide seasonal factors to increase accuracy of estimates (*e.g. damp weather at harvest and drying, % of crop retained for farm storage, length of storage period, number of harvests, LGB infestation*)
- Provide seasonal crop production data
- Provide “country narratives” to give context
- APHLIS champions

The APHLIS website – www.aphlis.net

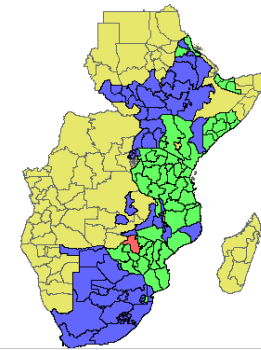


The website displays PHL estimates and key data

Weighted average according to reported figures

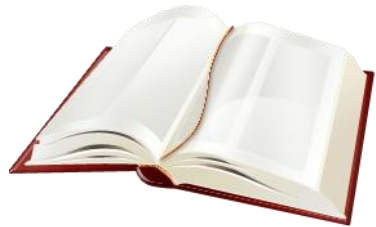
Regional total PHL for cereals				
2003	2004	2005	2006	2007
14.7	15.4	14.1	15	15.6

Regional PHL by cereal [%]				
Cereal	2003	2004	2005	2006
Wheat	5.5	5.5	11.4	9
Maize	16.4	17.3	16.8	17.9
Rice	11.7	11.7	11.7	11.7
Sorghum	12.4	11.1	11.8	12.2



Losses by crop
country & provinces

Maps of PHLs & other
data

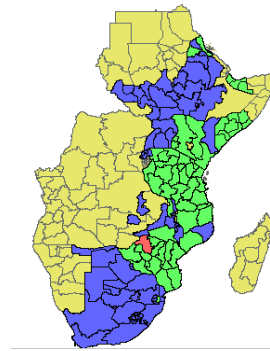


User guide
& other
documents



PHL calculator
spreadsheet

- Allows users to enter own figures



Losses maps

Weighted average according to reported figures

Regional total PHL for cereals				
2003	2004	2005	2006	2007
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Regional PHL by cereal [%]				
Cereal	2003	2004	2005	2006
Wheat	5.5	5.5	11.4	9
Maize	16.4	17.3	16.8	17.9
Rice	11.7	11.7	11.7	11.7
Sorghum	12.4	11.1	11.8	12.2

Losses data
tables

Accessing APHLIS loss estimates www.aphlis.net



APHLIS AFRICAN POSTHARVEST LOSSES INFORMATION SYSTEM

A TRANSNATIONAL NETWORK OF CEREAL GRAIN EXPERTS

English French

- Home
- System overview
- Losses tables
- Interactive losses maps
- Larger grain borer
- Downloadable calculator
- Postharvest reviews
- Understanding APHLIS
- Collecting new data
- Country narratives
- Literature
- APHLIS Network
- About us Contacts Links
- Information materials
- Login

Loss tables home

Two ways to get PHL estimates

- Consult the losses tables and/or maps on the website for PHL losses by region, country or province
- Download the PHL Calculator spreadsheet to enter user-preferred values for losses at a user-defined geographical scale

Weighted average regional PHL for cereals [% of total annual production]

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Regional total PHL for cereals [% of total annual production]	14.3	14.3	14.1	14.1	15.4	15.6	14.8	15.1	14.9	14.9	15	16	15.4	

Regional PHL by cereal [% of total annual production]

Cereal	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Wheat	5.6	5.5	13	9.9	12.8	12.6	15.1	14	13.1	12.9	15.2	13.3	13.3	-
Maize	16.8	16.8	16.8	17.3	18.4	19.9	17.8	18.6	17.9	17.9	18	17.8	17.6	-
Rice	11.8	11.8	11.7	11.8	11.8	12.1	12.1	12.6	12.1	14.2	11.9	12.5	12.4	-
Sorghum	12.3	11.9	12.1	12.3	12.3	13	12.5	12.5	12.4	12.4	12.4	12.5	12.5	-
Barley	9.8	4.9	9.4	9.4	9.4	9.5	10.9	10.1	9.7	9.7	10.5	-	-	-
Rye	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oats	-	-	-	-	-	-	-	-	-	-	-	-	-	-





Regional losses for all cereals and by cereal type

Estimated Postharvest Losses (%) 2003 - 2016

Weighted average according to reported figures



Regional total PHL for cereals [% of total annual production]													
2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
14.3	14.3	14.1	14.1	15.4	15.6	14.8	15.1	14.9	14.9	15	16	15.4	

Regional PHL by cereal [% of total annual production]														
Cereal	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Wheat	5.6	5.5	13	9.9	12.8	12.6	15.1	14	13.1	12.9	15.2	13.3	13.3	-
Maize	16.8	16.8	16.8	17.3	18.4	19.9	17.8	18.6	17.9	17.9	18	17.8	17.6	-
Rice	11.8	11.8	11.7	11.8	11.8	12.1	12.1	12.6	12.1	14.2	11.9	12.5	12.4	-
Sorghum	12.3	11.9	12.1	12.3	12.3	13	12.5	12.5	12.4	12.4	12.4	12.5	12.5	-
Barley	9.8	4.9	9.4	9.4	9.4	9.5	10.9	10.1	9.7	9.7	10.5	-	-	-
Rye	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oats	-	-	2.1	2.1	2	2.1	2.1	2.1	2.1	2.1	2.1	-	-	-
Millet s	9.6	9.8	9.7	9.9	10.1	10.3	9.6	9.4	9.4	9.5	9.7	10	10.3	-
Fonio	11.7	11.7	11.7	11.7	11.7	12.1	12.5	12.3	11.8	11.9	11.7	11.7	11.7	-
Teff	11.7	11.7	12.5	12.5	12.1	12.5	12.5	12.5	12.5	12.4	12.5	-	-	-

Click

Losses tables by cereal type and country – updated to 2015



Loss tables home - Maize

Estimated Postharvest Losses (%) 2003 - 2016

Weighted average according to reported figures



Back														
Maize														
Country	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Angola	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	-	-	-	-	-
Nigeria	17.8	17.8	17.8	17.8	-	18	18	17.8	20.3	19.9	20	17.8	17.9	-
Rwanda	-	16.3	16.3	16.3	16.2	16.5	16.6	16.7	22.8	19.5	-	-	-	-
Senegal	-	-	16.4	16.7	16.5	17.5	16.6	16.6	16.9	19.9	16.9	17	17	-
Togo	17.6	17.6	17.5	17.6	17.6	30.7	30.7	30.7	30.7	30.7	18.6	18.8	18.7	-
Uganda	-	17.9	17.6	17.6	17.4	18.2	19.3	17.3	19.3	17.3	17.5	17.5	17.5	-
Zambia	-	14.7	16.1	15	14.9	-	-	-	-	-	-	-	-	-
Zimbabwe	-	15.2	15.2	15.2	18	17.9	18	18.4	17.5	19.3	18.7	17	17.2	-

Click

Losses tables by cereal type and province



[Loss tables home](#) - Maize - Uganda

Estimated Postharvest Losses (%) 2003 - 2016

for Maize in : Uganda

Provinces of Uganda



Click on a loss figure in the table below to see in detail how the figure was derived. Send us **your comments** if you have the feeling that the underlying data and assumptions could be improved.

Please sent your comments to [info\(at\)phlosses.net](mailto:info(at)phlosses.net).

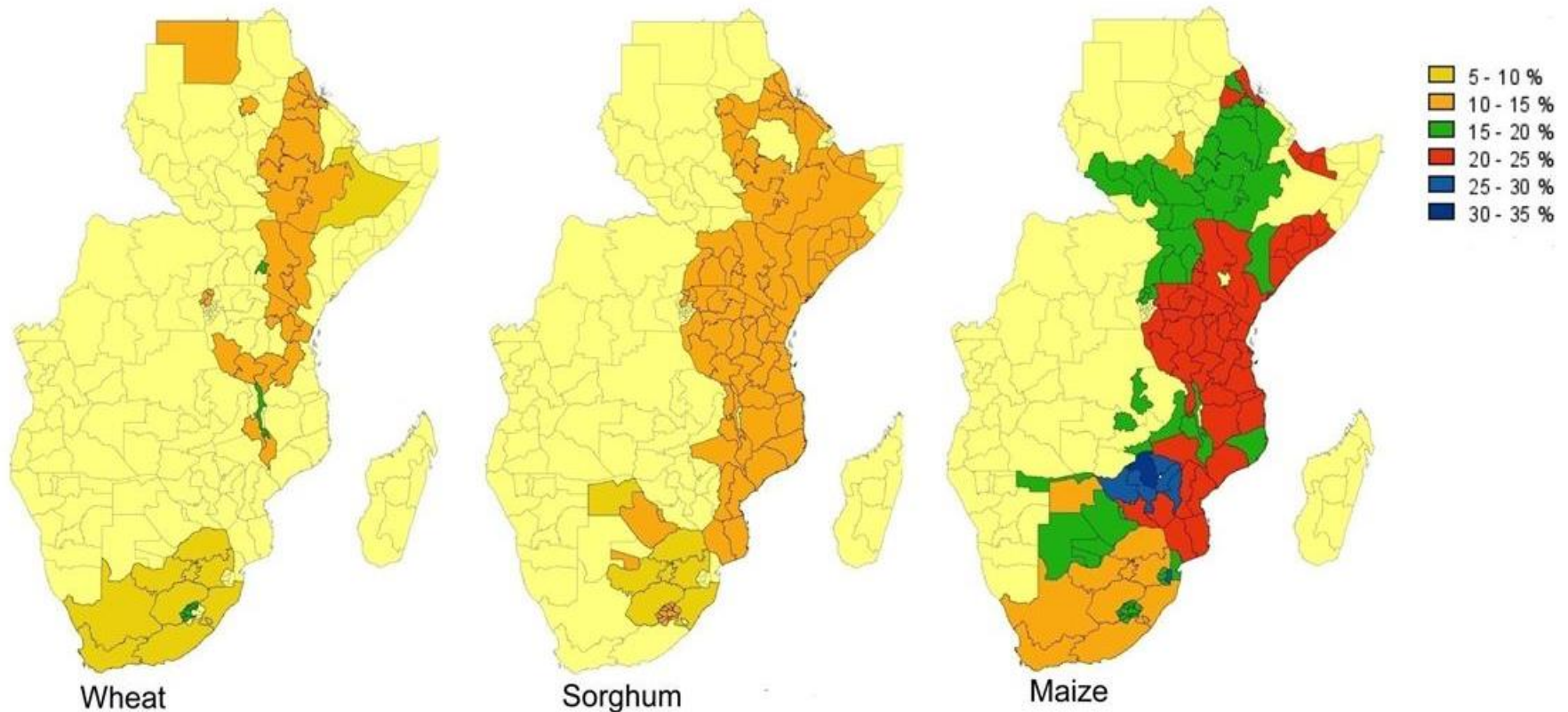
Province	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Back
Central Uganda	-	17.3	17.3	17.3	17.2	17.3	-	17.3	-	17.3	17.3	17.3	17.3	-	
Eastern Uganda	-	18	17.6	17.6	17.3	18.7	19.3	26.1	20.1	19.3	17.5	17.5	17.5	-	
Northern Uganda	-	18	17.7	17.7	17.6	18.2	-	-	-	-	17.5	17.5	17.5	-	
Western Uganda	-	18	17.5	17.5	17.2	17.5	-	-	17.6	25.1	17.6	17.6	17.6	-	

Click on one of these figures to get details of the loss calculation

Estimated Postharvest Losses (t) 2003 - 2016

Province	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Back
Central Uganda	-	18807	21541	21913	21897	74617	-	86706	-	99824	100323	96648	102797	-	
Eastern Uganda	-	87943	98560	100262	99079	242932	0	0	266243	0	249197	240067	255344	-	
Northern Uganda	-	42640	48143	48994	48643	28509	-	-	-	-	17765	17115	18249	-	
Western Uganda	-	53931	60208	61248	60363	76276	-	-	104735	0	112712	108583	115492	-	

The PHLs are also displayed on maps




Postharvest cereal weight losses in East and Southern Africa estimated by APHLIS (<http://www.aphlis.net>)

The downloadable calculator



An Excel spreadsheet where you can enter **your own** seasonal factors
 Use the calculator to evaluate loss reductions in projects or to model 'what if' situations

	Cereals Post Harvest Loss Calculator for Africa									
	Home	Data Entry Area	PHL matrix	PHL estimates	Graphs 1	Graphs 2	Quality	Sources		
	Data Entry Area - Please modify the red figures									
Labelling	Area of observation Kola district					Year 2011				
	Enter another figure below to select a crop: 1=maize; 2=rice; 3=sorghum; 4=millet; 5=wheat; 6=bar									
Cereal n°	1									
Cereal	Maize									
	Enter another figure below to select a climate: 1=Tropical savannah (Aw) 2=Semi-arid (BSh) 3=Temperate - dry 4=Temperate - dry winter warm summer (Cwb) 5=Desert (BWh)									
Climate n°	1									
Climate	Tropical savannah (Aw)									
	1st season				2nd season					
Farm type	subsistence		commercial		subsistence		commercial		subsistence	
Production	20000	tonnes	10000	tonnes	50000	tonnes	30000	tonnes	0	tonnes
Marketed at harvest	4	% (0-100)	50	% (0-100)	0	% (0-100)	75	% (0-100)		% (0-100)
Rain at harvest	1	1=yes		1=yes		1=yes	1	1=yes		1=yes
Storage duration	6	months	6	months	9	months	9	months		months
Larger Grain Borer	1	1=yes	1	1=yes	1	1=yes		1=yes		1=yes

What is **APHLIS+**? A bigger and better **APHLIS**



Wider coverage

- Additional crops
- Financial loss estimates
- Nutritional loss estimates



New partnerships

APHLIS Steering Committee of international experts

APHLIS Technical Board for validating:

Data collection

Algorithms/models

Connection to numerous PHL Communities of Practice

Improved estimates

- Postharvest risk warnings (e.g. LGB or aflatoxin)
- New losses algorithms
- Better data collection
- Improved user interface
- Further development of the network of experts



APHLIS+ is funded by the
BILL & MELINDA
GATES *foundation*

Expansion to include new crops




and later if resources suffice

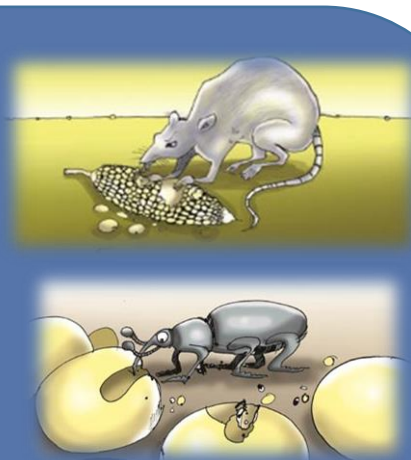
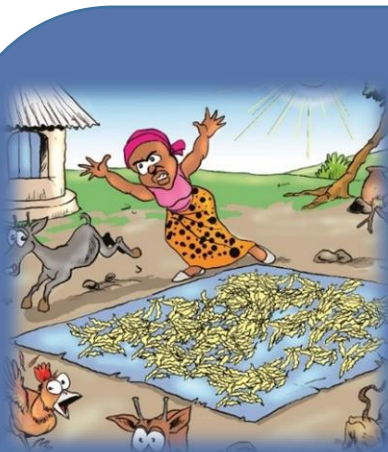


Adding new crops



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V			
1									St	Method	Include?	Root Tuber or Banana Crop													
2					PH Stage/ step	Sub-chain			0 = guestimate; 1 = measured	0 = exclude; 1 = include		Cassava	Sweetpotato	Yam	Bananas	Plantains	Irish (round) potato		Aw Tropical Savannah	BSh Hot Semi-Arid	Cwa Humid Subtropical dry winter	Csa Hot summer Mediterranean			
3	Average																								
4	Min		Number with 0																						
5	Max		Number with 1																						
6	Std		Number																						
7	#	Lead author	Year	Ref ID.	% wt loss figure																				
8																									
2		Wright, M.A.P.	1991	3	13.80	Storage - 120 days	Dry chips (cosettes)		1	1	1									1					
3		Wright, M.A.P.	1991	3	16.20	Storage - 150 days	Dry chips (cosettes)		1	1	1										1				
4		Wright, M.A.P.	1991	3	18.60	Storage - 180 days	Dry chips (cosettes)		1	1	1										1				
5		Wright, M.A.P.	1991	3	19.50	Storage - 210 days	Dry chips (cosettes)		1	1	1										1				
6		Hell, K.	2014	4	1.11	Storage in woven polypropyl	Dry chips (cosettes)		1	1	1										1				
7		Hell, K.	2014	4	3.03	Storage in woven polypropyl	Dry chips (cosettes)		1	1	1										1				
8		Hell, K.	2014	4	8.31	Storage in woven polypropyl	Dry chips (cosettes)		1	1	1										1				
9		Hell, K.	2014	4	12.50	Storage in woven polypropyl	Dry chips (cosettes)		1	1	1										1				

Quantitative and qualitative postharvest loss



Quantitative (physical) loss

when the quantity of commodity available is reduced

due to some not being collected at harvest, scattered during threshing, spilt, consumed by pests or livestock etc.

% weight loss



Qualitative loss

when the value/quality of commodity is reduced

due to damage or spoilage

lowered grade

financial loss, nutritional loss

Nutritional and financial value of PHLs

What factors are typically used to judge grain quality



Broken grains (due to shelling or insects)



Insect damage



Rodent damage

- Formal or informal standards present in every market
- If “top price” not received, some amount of **price discounting** occurring
- Also outright market rejection



**Foreign matter/
filth** (e.g. maize cores, tassels, stones, rodent droppings, dead insects)



Mould damage



Discoloured grain
(e.g. due to grain heating)



Estimating the nutritional value of crop postharvest losses



Physical loss

+

Nutritional change
due to deterioration

=

Nutritional
loss



Physical
% weight loss
(from APHLIS)



Food Composition
Database

(Crop: ___) * (Amount lost: ___)
= Energy X kcal; Protein Xg; Iron Ymg
etc...



APHLIS can then convert the physical losses to
“Annual caloric requirement of XX people” or
“Loss of XX% of carbohydrates, protein etc” or
“Loss of the daily ‘carbohydrate’ requirement of XXX people”



Estimating the financial value of crop postharvest losses



Physical loss

+

Price loss/ discount
due to deterioration

=

Financial
loss



Physical
% weight loss
(from APHLIS)



Market price
information
system



\$\$



- Understanding how % damage relates to % weight loss in different crops
- And how % damage relates to price discounting, for different crops, places, and times during the season

Expanding APhLIS



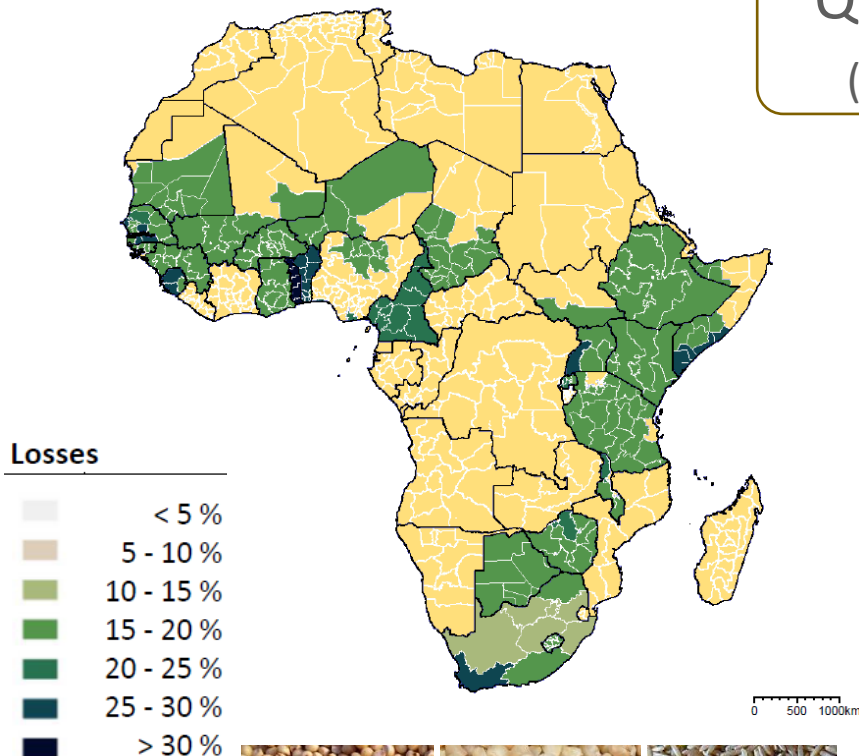
Quantitative loss estimate
(by % weight loss and tons lost)

+

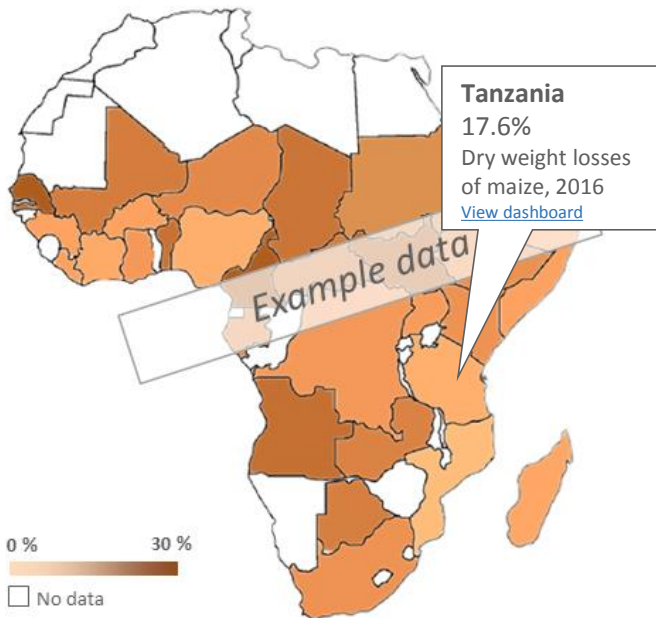
Financial loss estimate
(\$)

+

Nutritional loss estimate
(calories and change in selected nutrients)



Postharvest Losses Map – Dry weight losses of Maize (%), 2016



CROP

Cereals

- Wheat
- Maize**
- Rice
- Sorghum
- Barley
- Rye
- Oats
- Millets
- Fonio
- Tef

Legumes

- Common bean
- Groundnut
- Cowpea

Roots & Tubers

- Cassava
- Yam
- Sweetpotato

METRIC % |

- Dry weight losses**
- Financial losses
- Nutritional losses
 - Calories
 - Protein
 - Carbohydrates
 - Iron
 - Vitamin A
 - Zinc

YEAR

- 2017
- 2016**
- 2015
- 2014
- 2013
- 2012
- 2011
- 2009
- 2008

Alerts

Aflatoxin

These regions are currently at high risk for aflatoxin:

- Country A
- Country B
 - District, District, District
- Country C
- Country D
- Country E
 - District, District, District, District, District
- Country F

[View aflatoxin alert map](#)

Larger Grain Borer

Regions currently at risk of larger grain borer outbreaks:

- Country V
- Country W
 - District, District, District
- Country X
- Country Y
 - District, District
- Country Z
 - District, District

[View larger grain borer alert map](#)



How APHLIS calculates loss

APHLIS uses a combination of peer-reviewed literature and seasonal factors provided by a network of local postharvest experts to create its estimates.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

[Read more](#)

News

12/3/2017 Aflatoxin risk warnings updated

Benin, Ethiopia and Lesotho added to countries at risk.

[Read more](#)

6/3/2017 Tanzania 2016: Context & Analysis

Read our country narrative for

Postharvest Losses Dashboard - Maize, Iringa, Tanzania, 2012, Dry weight losses



CROP

Cereals

- Wheat
- **Maize**
- Rice
- Sorghum
- Barley
- Rye
- Oats
- Millets
- Fonio
- Teff

Legumes

- Common bean
- Groundnut
- Cowpea

Roots & Tubers

- Cassava
- Yam
- Sweetpotato

METRIC

Weight loss

- Financial loss
- Nutritional loss
 - Calories
 - Protein
 - Carbohydrates
 - Iron
 - Vitamin A
 - Zinc

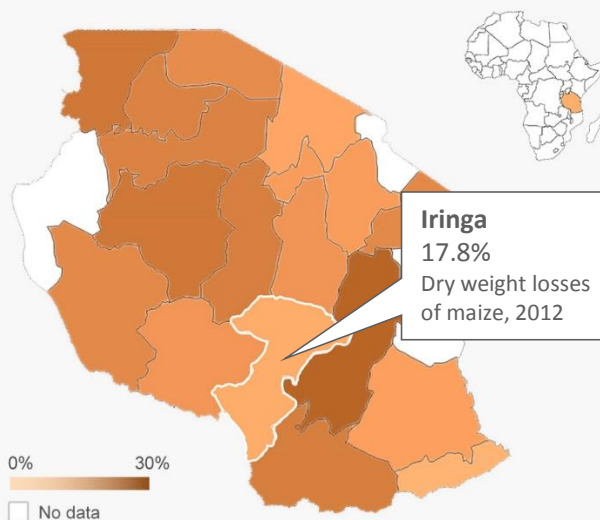
Did you find what you were looking for?

Please share any feedback, comments or suggestions here

TIMELINE

- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012**
- 2013
- 2014
- 2015
- 2016
- 2017

GEOGRAPHY



Filter results

- SOUTH SUDAN
- SWAZILAND
- TANZANIA**
 - Arusha
 - Dar es Salaam
 - Dodoma
 - **Iringa**
 - Kagera
 - Kaskazini-Pemba
 - Kaskazini-Unguja
 - Kigoma
 - Kilimanjaro
 - Kusini-Pemba
 - Kusini Unguja
 - Lake Victoria
 - Lindi
 - Manyara
 - Mara
 - Mbeya
 - Mjini-Magharibi

VALUE CHAIN - Maize, Iringa, Tanzania, 2012, Dry weight losses

Percentage (%) | Weight (tonnes, t)

Production: 636,409 tonnes (100%)

Production Harvesting & field drying Platform drying Threshing & shelling Winnowing Transport to farm Farm storage Transport to market Market storage

Stored on farm > 3 months



Who is **APHLIS** for? End-users of loss estimates



APHLIS serves:

- development partners
- policy-makers
- practitioners
- academics
- NGOs

Providing them up-to-date, comprehensive and expert-validated loss data

APHLIS data for SDG 12: as part of the *GLOBAL FOOD LOSS INDEX*

Outputs include:

- Loss estimates
 - Losses tables
 - Losses visualisations
 - Country narratives
 - Alerts
- Statistical models
 - Decision support systems
 - Scenario planning
 - Monitoring & evaluation
 - Training tools
- Open data API

***APHLIS⁺ user / potential user survey** – get involved to help APHLIS⁺ meet **your** needs*

English: www.tinyurl.com/APHLIS

French: www.tinyurl.com/APHLIS-FR

Can also be found on the Food Loss Reduction Community of Practice: <http://www.fao.org/food-loss-reduction/>



The African Postharvest Losses Information System

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www.aphlis.net

APHLIS+ is funded by the

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