Pig Production in Uganda – Adapting to Climate Change

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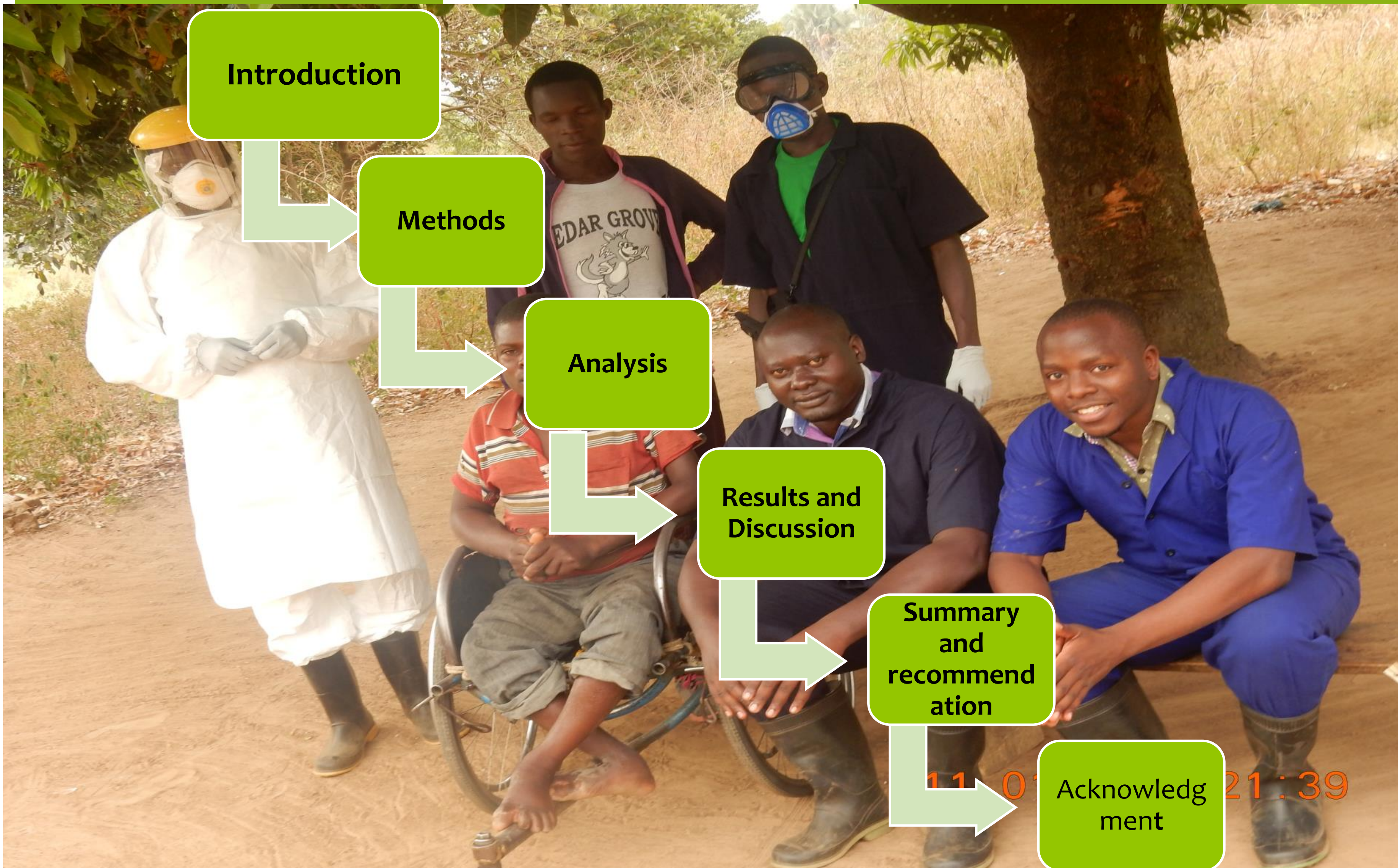
OUTLINE



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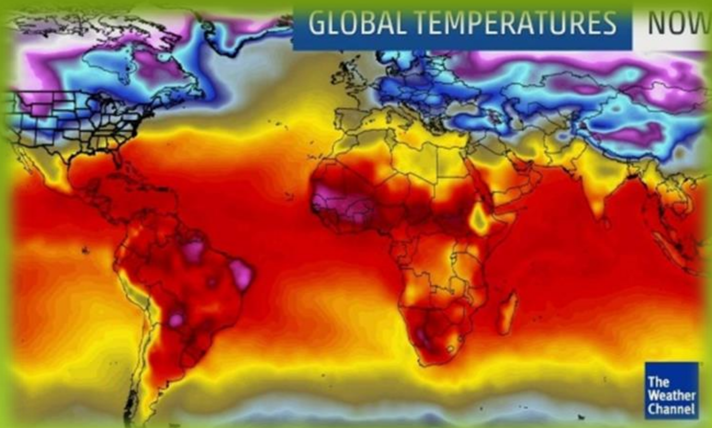
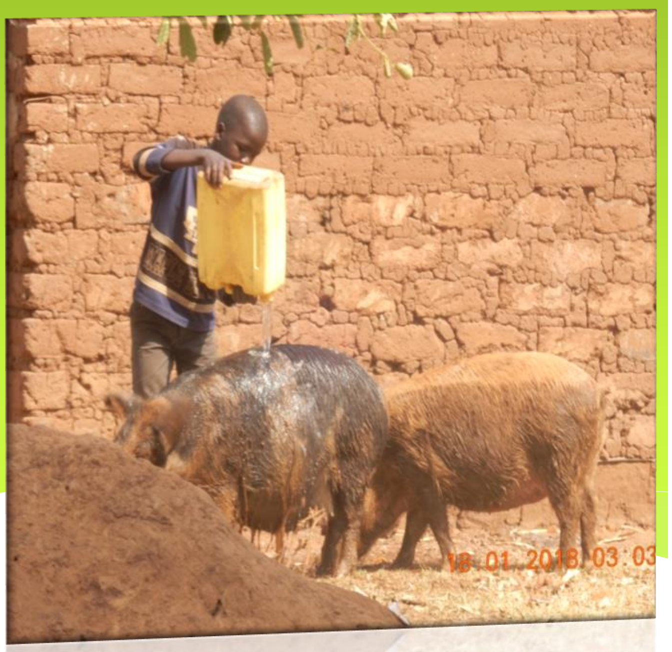
- Acknowledgment

Pig heat stress





There is limited attention to impacts of climate change on pigs in Uganda by stakeholders despite the potential vulnerability of pigs to climate change, especially heat stress.

Pigs are very sensitive to heat stress as they do not have functioning sweat glands (as other livestock species do)

and have small lungs which reduces their ability to disseminate heat by panting.

It will be worse in the future!!!!!

Aim

This study aimed to determine climate change impacts on pig farming with focus on heat stress

and explore the heat-stress adaptation options towards better pig production in Lira District, Uganda.

Specific Objectives

i) To determine heat stress status for pigs and the factors influencing heat stress in pigs in Lira District, Uganda

ii) To identify, rank and recommend adaptation options to heat stress and assess gender implications of adaptation options especially labour and decision making

Methods– Data collection

Lira has low pig density, high poverty level and expected heat stress throughout the year in Lira district.

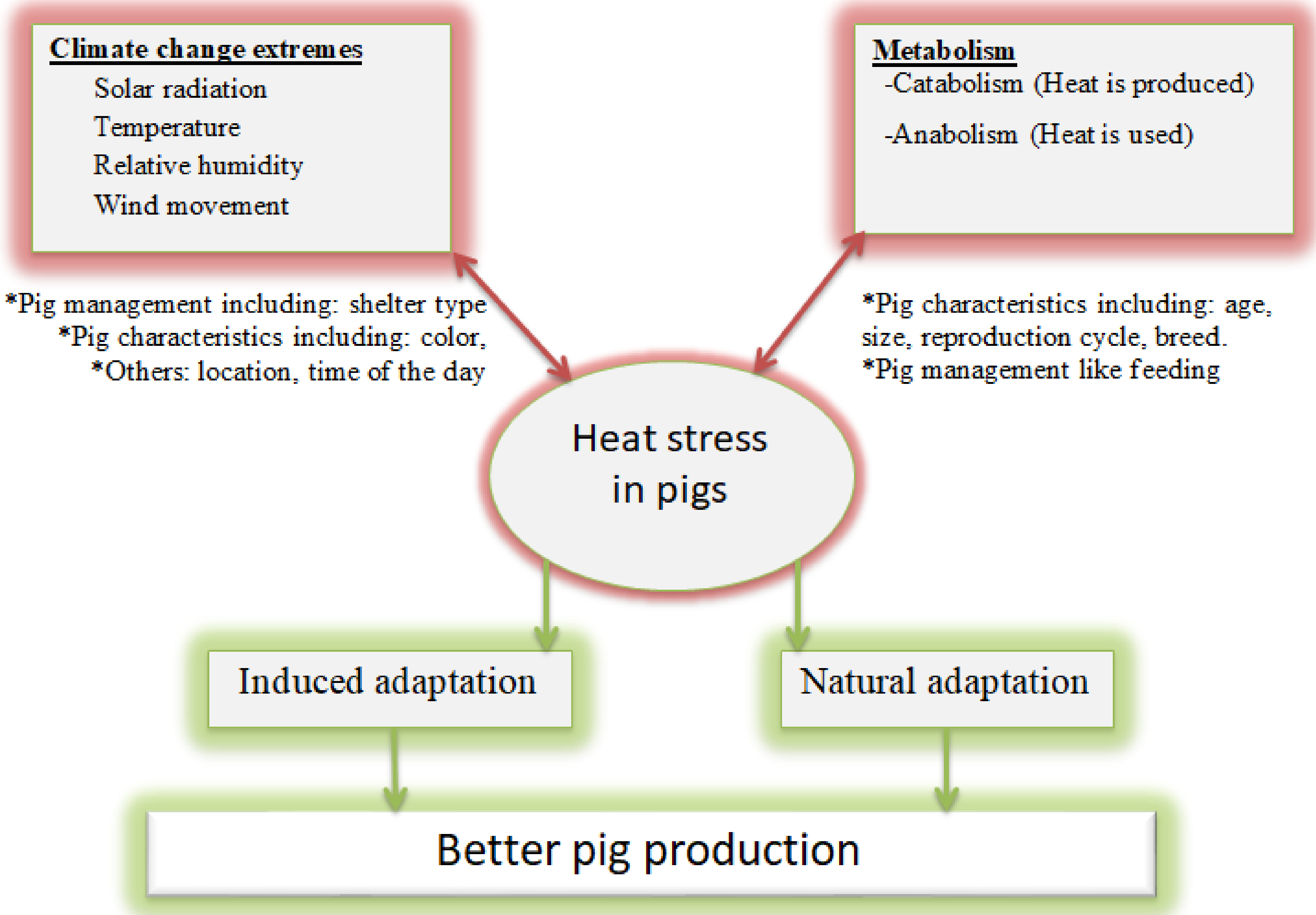
The data was collected from 104 households and 259 pigs in Lira district, Uganda .

More data was collected during the four focus group discussions held in Barr and Ojwina sub sub-counties.

Some of the meteorology data was obtained from the local weather station.

The heat stress indicators included rectal temperature and skin temperature

Conceptual framework



Analysis for objective 1

- The heat stress status were assessed basing on **farmers' perception and simple regression** with the heat stress indicators.
- The factors influencing heat stress were analyzed using **Stepwise elimination ordinary linear regression model**.

Analysis for objective 2

- The adaptation options rating was analysed by finding **average preference rating** by the participants in the focus group discussions
- **Qualitative data analysis** was done basing on the data recorded from the FGDs

RESULTS AND DISCUSSION

Heat stress status

According to the farmers, 48.45% of the pigs had no heat stress, 51.55% of the pigs were heat stressed and these groups were significantly different ($p<0.01$).

Mean temperature	Not heat stressed (°C)	Heat stressed (°C)	P value
Rectal	38.75 (0.74)	39.31 (0.83)	0.01
Skin	35.85(1.88)	36.70 (2.02)	0.00

Other study: The upper critical rectal temperature for 60kg group-housed pigs fed ad libtum was between 24.6 °C and 27.1 °C (Huynh et al., 2005).

Factors influencing rectal temperature

Rectal temperature	Coef	Std error	t[1]
External THI[6]	0.056	0.020	2.83***
Housed[3]	-0.213	0.108	-1.97*
Pregnant[4]	-0.428	0.150	-2.85***
Young[4]	-0.409	0.209	-1.96*
Fully white[5]	0.182	0.106	1.71*
Heart girth	-0.008	0.004	-2.20**
Water quantity	-0.023	0.008	-2.89***
Thinner[2]	-0.293	0.125	-2.34**
Fatter	0.127	0.136	0.93
Time	0.085	0.028	3.03***
Constant	36.981	0.830	44.54***
N	= 225		
F(12, 212)	= 6.19		
Prob > F	= 0.000		

The results showed that rectal temperature is influenced by:

the external temperature humidity index, pig management system, pig category, color, heart girth,

water quantity given during day in dry season, pig's body condition score, and time of the day.

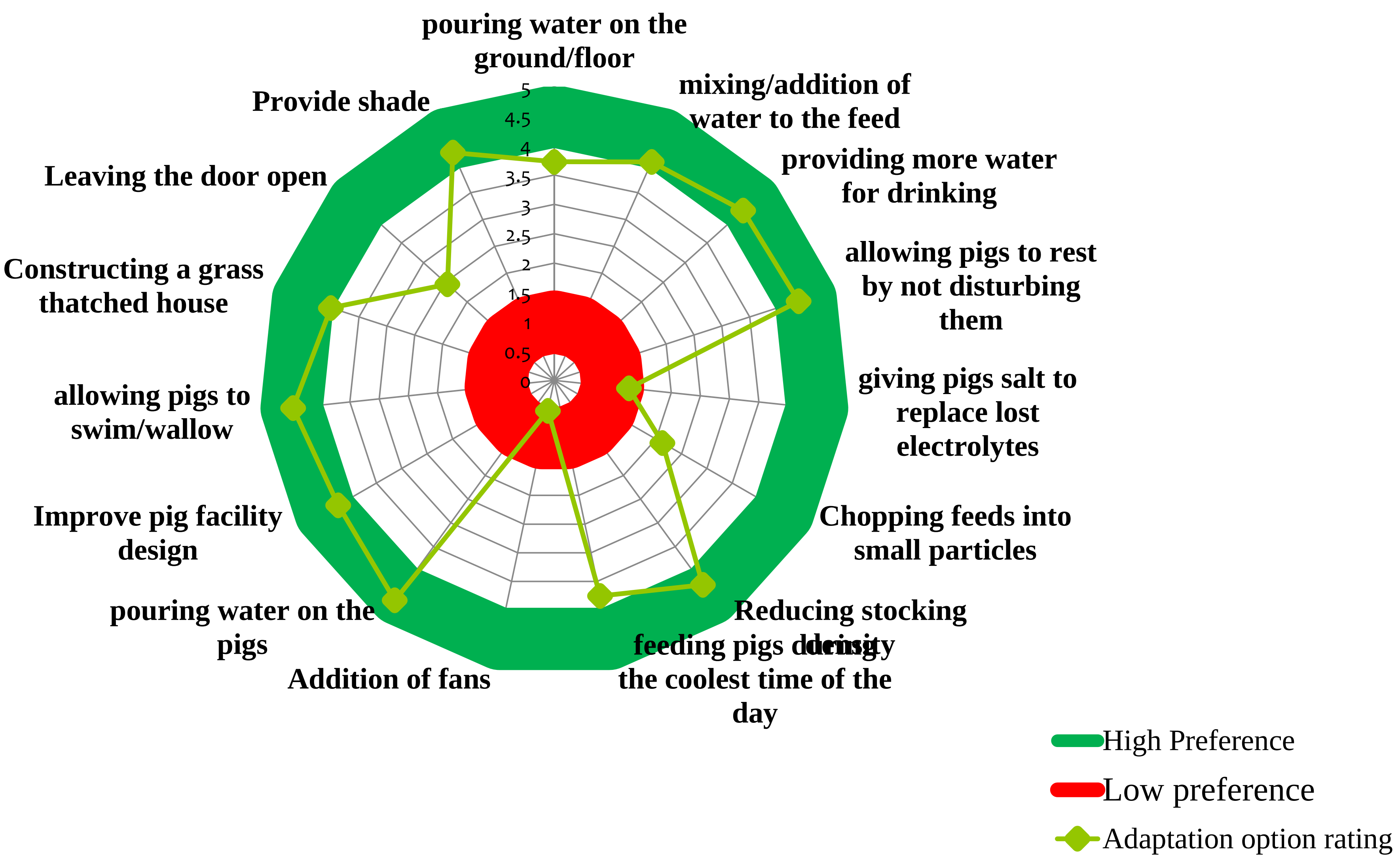
Factors influencing skin temperature

Skin temperature	Coefficient	Standard Error	t[1]
External THI	0.106	0.039	2.74***
Tethered[3]	0.590	0.548	1.08
Pregnant[4]	-0.933	0.362	-2.58**
Mixed Management[3]	0.530	0.299	1.77*
Time	0.239	0.068	3.53***
Thinner[2]	-0.554	0.275	-2.02**
Constant	30.524	1.612	18.94***
N	= 227		
F(6, 220)	= 6.32		
Prob > F	= 0.000		
R-squared	= 0.147		
Adj R-squared	= 0.124		
Root MSE	= 1.896		

1*** ** * denote significance at 1 %, 5 %, and 10 % level, respectively

The results showed that skin temperature is significantly influenced by external temperature humidity index, pig category, pig management, time of the day and body condition score.

Adaptation options preference



Implication to Gender

Labor and decision making for adaptation options are mostly done by female

Constructing pigsty (pig shelter)

Yes:
-Protect pig from bad environment
-From thieves, diseases, etc.

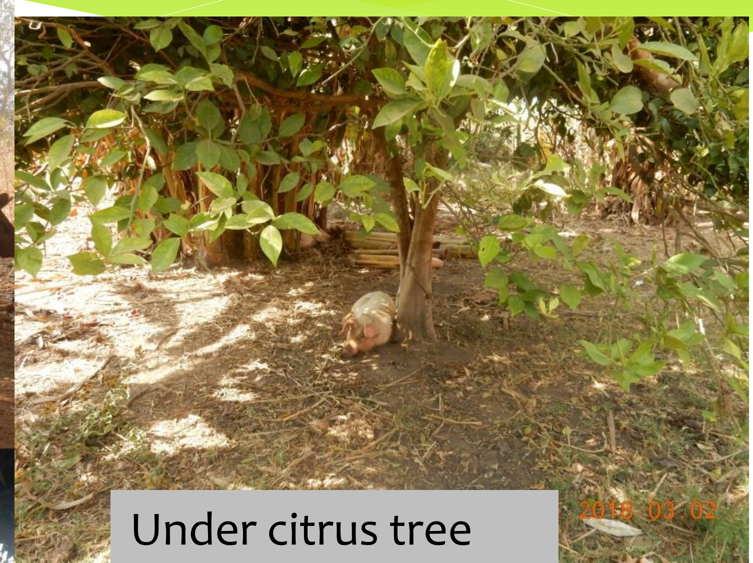
Just like; *Kamal et al., 2018*

No:
-Expensive to construct
-Poor designs

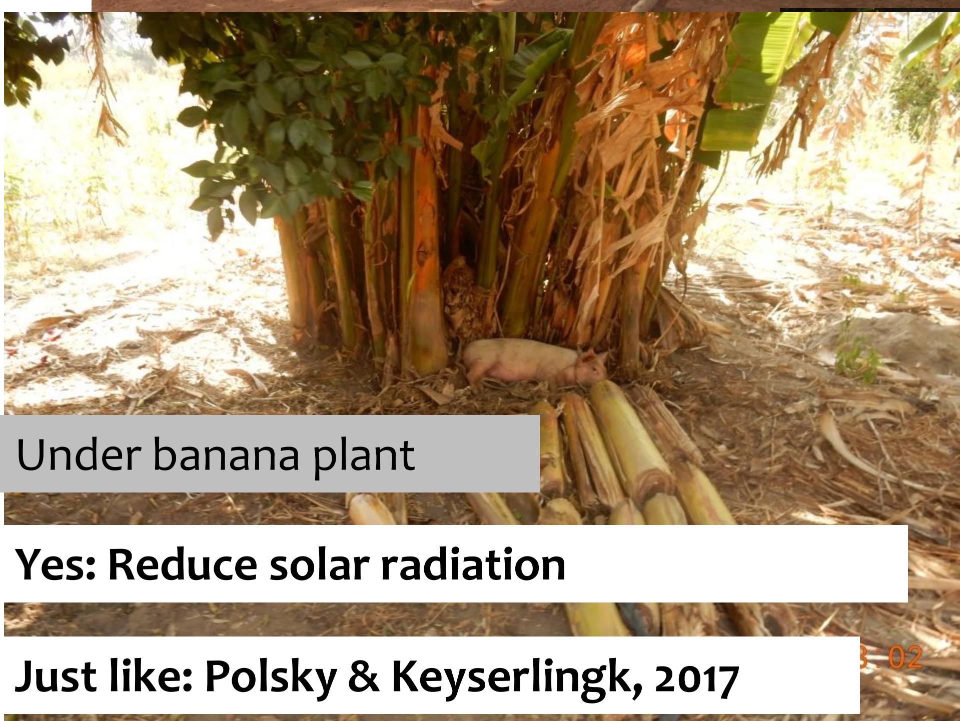
But only 52% have ever used a pigsty

Providing shade

Under mango tree



Under citrus tree



Under banana plant

Under mango tree

Yes: Reduce solar radiation

Just like: Polsky & Keyserlingk, 2017

What some advanced pig farmers use?

Using fans, misters, showers, and sprinkler systems to cool animals is among the advanced animal cooling mechanisms (**Polsky & von Keyserlingk, 2017**)

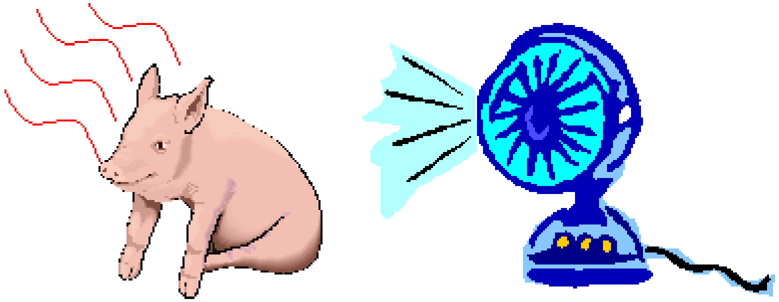


Photo:https://projects.ncsu.edu/project/swine_extension/healthyhogs/book2001/bottcher1.htm

Recommendations

- Farmers should be vigilant when the day is hot
- Pig shelters should be designed to minimize overcrowding
- Incorporating ways to improve air flow and evaporative cooling by having a high roof, and / or using grass.
- Availing water ad lib or even mixing water in the feed
- Allows pig swimming/ wallowing and pouring water on the pigskin
- More awareness about the locally suitable adaptation option to heat stress

Acknowledgements

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I WELCOME ANY COMPLIMENT, QUESTION AND COMMENT

Thank You!
Merci!
Danke!
Asante Sana!
Webale Nyo

For your attention

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