PREVALENCE OF WELFARE LESIONS AND PRACTICES AND ASSOCIATIONS WITH PORK QUALITY; KIAMBU, KENYA.

SENTAMU DERRICK NOAH (BVM, MUK; MVPH, UON)

ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

CGIAR

WORLD ANIMAL PROTECTION

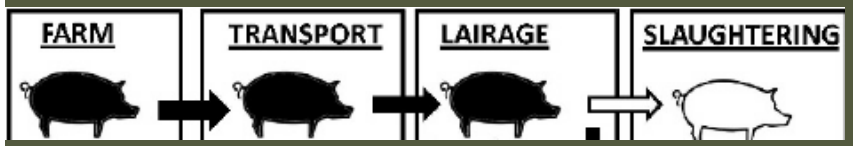
OHRECA One Health Centre in Africa

University of Nairobi

The Soulsby Foundation

UNIVERSITY OF LIVERPOOL

What point of the pork value chain did the study look at?



INTRODUCTION

- Animal welfare means the physical and mental state of an animal in relation to the conditions in which it lives and dies.

- Animals are sentient beings and have freedoms as stipulated by the OIE, they include;

(1) Freedom from hunger and thirst
(2) Freedom from discomfort
(3) Freedom from pain, injury, or disease
(4) Freedom to express normal behavior
(5) Freedom from fear and distress

- Animal welfare is also advocated for in the “One Welfare” framework, a concept similar to one health.

- This argues that the welfare of animals, humans and the environment are interconnected and therefore protecting animal welfare in turn preserves human and environmental welfare.

PIG WELFARE IN KENYAN LAW

- Pig welfare is recognised in the Kenyan legislature with laws such as (Prevention of Cruelty to Animals Act Cap360, 2012; Animal Disease Act Cap364, 2012).
- The Prevention of Cruelty Act is devoted to animal welfare recommending how animals should be treated and penalties in the case of contravention.
- The Animal Welfare and Protection Bill, 2019 was also tabled. This is entirely dedicated to animal welfare

Pre-slaughter handling and meat quality

- It's important to note that the way pigs are handled before slaughter affects the quality of pork.

- Pork can turn out normal (RFN), overly exudative (PSE & RSE) or with a bad appearance and high susceptibility to spoilage (DFD).

- These have financial implications especially at the point of product marketing and sale.

- Overly exudative meat leads to loss in weight of the meat with time while meat with bad appearance influences customer perception and decision and goes bad faster than other types of meat.

Meat quality

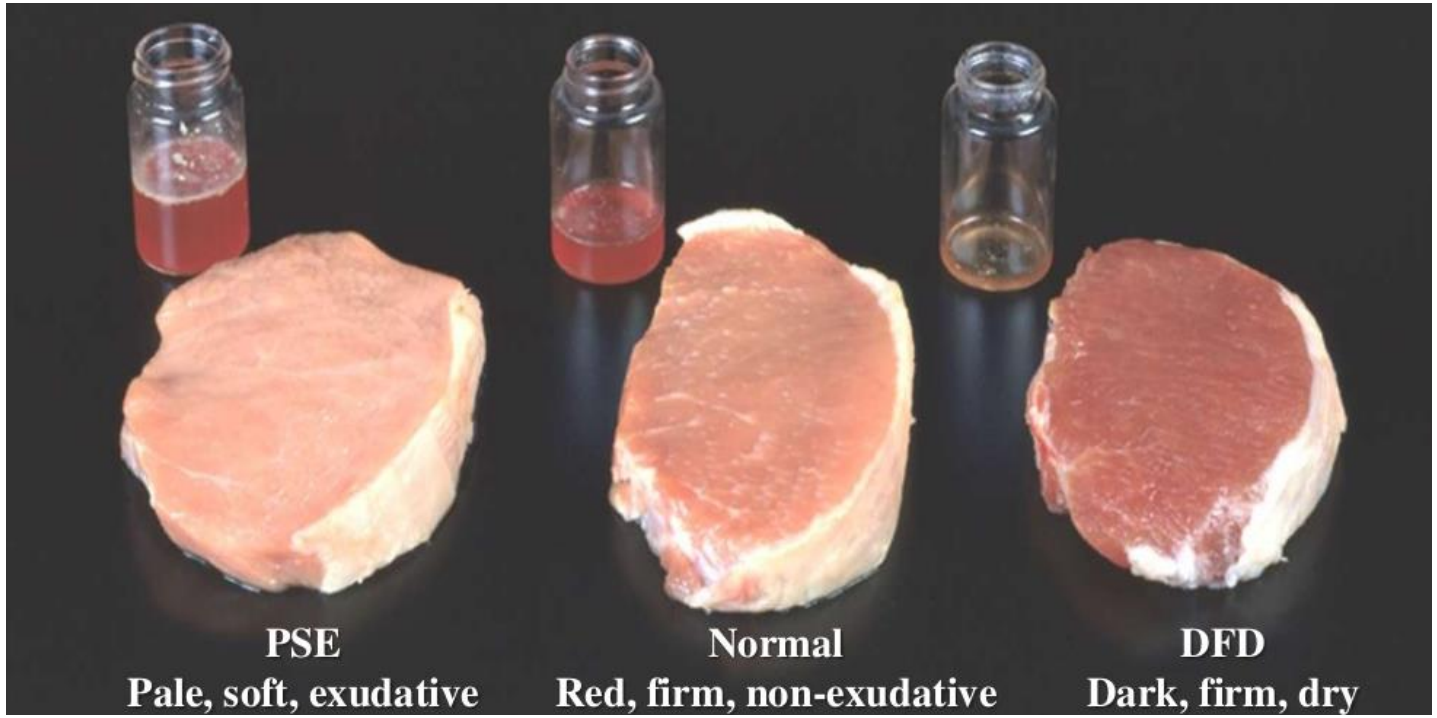


Photo credit; Dr. Floyd McKeith

Good/Poor Quality	Meat Description
Poor	Meat with bad appearance and high susceptibility to spoilage (DFD)
	Highly exudative meat (PSE, RSE)
Good	Normal meat (RFN)

Objectives of the study

Therefore the study aimed to;

1. Document and communicate the prevalence of welfare lesions and practices at porcine slaughter.

2. Analyse the relationships and associations between the various lesions and practices and technological meat quality.

Better lives through livestock

RESULTS

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

CGIAR

Results

Lesions and Practices	n/N*	Prevalence (%)	95% C.I.
Lesions			
Ear marks	373/484	77.07	73.00 – 80.69
Pleuro-pneumonia	94/344	27.33	22.75 – 32.42
Tail biting	35/484	7.23	5.16 – 10.00
Liver Milk spots	22/459	4.79	3.10 – 7.28
Loin Bruising	20/484	4.13	2.61 – 6.42
Hind limb Bursitis	16/484	3.33	1.97 – 5.46
Tether Lesions	11/484	2.27	0.01 – 4.15
Lacerations	6/484	1.23	0.50 – 2.82
Practices			
Poorly stunned	510/512	99.61	98.43 - 99.93
Transported as mixed batch	103/511	20.16	16.82 - 23.95
Transported at high loading density	135/492	27.44	23.59 - 31.65
Time between purchase and slaughter (>= 24hrs)	270/519	52.02	47.63 - 56.39

Meat categorization

- This was done according to a schemer by Warner *et al.*,1997.

Meat Category	n/N	Prevalence	95% C.I
DFD (Dark Firm Dry)	10/248	4.0	2.0 -7.5
PSE (Pale Soft Exudative)	10/248	4.0	2.0 -7.5
RSE (Red Soft Exudative)	44/248	17.7	13.3 – 23.1
RFN (Red Firm Non-exudative)	184/248	74.1	68.1 – 79.4

Significant Variables

- Using multinomial logistic regression, the following variables significantly affected the quality of pork harvested

Variable	PSE	DFD	RSE	P-value
Slaughtered on purchase day				0.017995 *
	OR 0.5756133	0.6166302	3.6588701	
	C.I 0.0978 – 3.386	0.136 – 2.797	1.440 – 9.300	
High loading density				0.002062 **
	3.940303	14.028279	1.853654	
	0.727 – 2.137	2.728 – 72.150	0.702 – 4.897	

OR – Odds Ratios, **C.I** – Odds Ratio Confidence Interval

Better lives through livestock

DISCUSSION

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

CGIAR

AW Practices – Transportation

Transport type	Total count of pigs transported	Average number of pigs transported
Pick up	441	6
Boda boda	37	2
Pro box	15	2
Saloon	14	2
Tuk tuk	6	4
Bicycle	2	1
Walk	2	2

Transportation

- Transport of animals on motor bikes exposes animals to fractures and increases the risk of mortalities before slaughter.
- Animals transported in the boots of small cars risk mortalities due to shortage of air.
- 27.44% of pigs were transported under conditions of high loading density where pigs are unable to stand or lie down in their natural positions
- This is a stressor to pigs and can lead to; fighting, heat stress and even mortalities.
- High loading density was significantly associated ($p<0.05$) with harvesting DFD pork.
- These are issues that are addressed in the Prevention of Cruelty to Animals Act, 1962.

Slaughtering pigs on the purchase day.

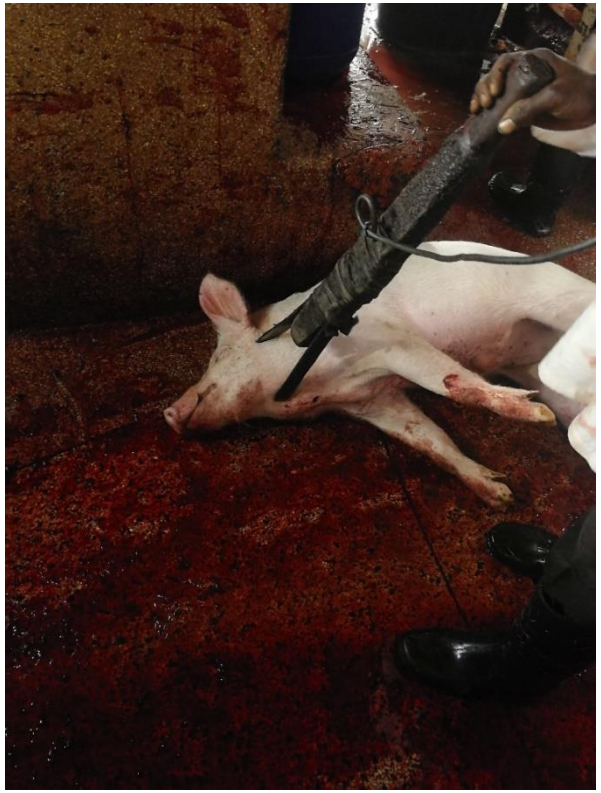
- 47.98% (95% C.I. 43.61 – 52.37) of pigs that were delivered in the morning and slaughtered on arrival.
- Slaughtering pigs immediately on arrival without rest was significantly associated with harvesting RSE pork
- Its advisable that pigs be rested for atleast 1 hour before slaughter, this allows them to recover from the stressful processes of transport, loading and unloading.
- Resting also calms pigs and eases their subsequent handling.

Pig identification.

- 77.07% of pigs were marked with sharp objects for easy identification in the slaughter line.
- This is unnecessary injury and pain caused to pigs.
- Prevention of Cruelty to Animals Act prohibits such practices.

Stunning

Not Well stunned	C.I.
99.6%	98.43 - 99.93



Animals that were not well stunned were known from;

- Vocalisations
- Bodily movements/shaking
- Rhythmic breaths
- Eye movements

Possible reasons for this;

- Stunning current was 0.3 – 0.4 A ; Recommended current is 1.3A.
- Low possibly due to poor maintenance of tongs (old and corroded, not cleaned daily)
- Wrong placement of the tongs – Ideally they should be placed behind the ears.
- No restraint before stunning.

Ideal stunning

- Ideal stunning should render the animal unconscious.
- Should be done with proper restraint to safeguard human life.
- It should be quick with minimal pain.
- There should not be post – consciousness signs

Implications of defective meat

Meat Category	Mean drip loss(%) (water lost in 24hrs)
Good meat (RFN)	2.54
Exudative meat (PSE and RSE)	6.79 & 6.86
Poor appearance (DFD)	1.45

Description	Meat Category	Implications to value chain stake holders
Highly Exudative Meat	Pale Soft Exudative (PSE) Red Soft Exudative (RSE)	Increased amounts of fluid lost from meat in a short period of time, this translates into money lost per unit of meat. *Illustration* – For 1kg of meat 6.86% (68.6g) lost per kg per day 22/= lost for every kg per day
Dry Meat	Dark Firm Dry (DFD)	• This affects appearance of pork at sale display. • Consumers prefer to buy good/fresh looking meat. • High susceptibility to spoilage due to microbial contamination, hence loss of income.

CGIAR

Conclusions.

High prevalence of welfare lesions and practices observed indicates need for;

- Educating pork value chain stakeholders that pigs are sentient beings; able to suffer and feel pain.
- Handling pigs inhumanely has consequences on their finances.
- That most practices observed in the handling of pigs are prohibited by the Prevention of Cruelty to Animals Act, 1962 with penalties clearly stated.
- Review of this law and fixing the gaps in its implementation.

Feedback from the study.

- Over 60 slaughterhouse workers and the administration from this abattoir were mobilised and given feedback.
- They were taught about animal welfare and proper animal handling practices.

THANK YOU

UNIVERSITY OF LIVERPOOL

The Soulsby Foundation

WORLD ANIMAL PROTECTION

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

CGIAR