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## GAME (WILDLIFE) MEAT SAFETY: UNDERSTANDING THE GAME MEAT SUPPLY CHAIN AND THE ROLES OF ROLE-PLAYERS IN A MULTIFACETED CONTROL ENVIRONMENT

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Location: YMCA of the Rockies, Estes Park, Colorado, USA



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## ESTES PARK, COLORADO



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## WHAT IS A FOOD SUPPLY CHAIN?

The processes that describe how food from a farm ends up on our tables.

- Production, processing, distribution, consumption and disposal (**Farm to fork / Shot to the pot**)
- Every step requires human and/or natural resources.
- Is domino-like - when one part of the food supply chain is affected, the whole food supply chain is affected



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## Global change – a challenge to stakeholders?



- Political
- Economical
- Environmental
- Population
- Pubic / customer demands
- Industrial – e.g. food industry

Pressure on food security  
More animal protein needed  
New supply chains - in this case game meat industry





**WORLD HUNGER** (FAO, 2013)

2011–2013 - 1:8 people in the world (842 million) - suffering from chronic hunger

Number (Millions) and prevalence (%) of undernourishment for 2011 - 2013 (FAO, 2013)

Developed countries	15.7 (<5%)
Developing countries	826.6 (14.3%)
Africa	239 (22.9%)
Sub-Saharan Africa	234 (26.8%)
SOUTH AFRICA - 2014 SA National Health and Nutrition survey (Shisana et al. and the SANHANES-1 Team, 2014)	15.6 (26 % experience hunger) 28 % are at risk of hunger



Expected to grow to 60 Million by 2016 of which 62-65% will be urbanized (Stats SA, 2013)



Game meat increase in popularity because:  
Contribute to food security



**INTRODUCTION**

Many cattle farmers are changing over to game farming (Cloete et al., 2007; Carruthers, 2008) - game farming is the fastest growing agricultural industry in SA.

New SA game farmers enter: ± 8500 farmers in 2009 versus ± 12 000 in 2014

Meat production best opportunity for value development (van der Linde, 2012).

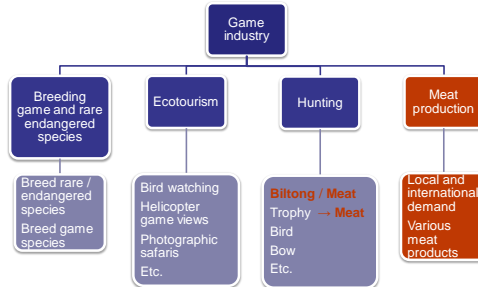
Meat production (Van der Linde, 2012)	Kg	Kg/Ha
Beef	11466	5.73
Game meat	11560	5.78



Currently game meat forms about 20% of local red meat market



**INTRODUCTION – Game industry sectors**



(Dekker and Van Wyk, 2002; ABSA, 2003; Van der Merwe and Saayman, 2005)



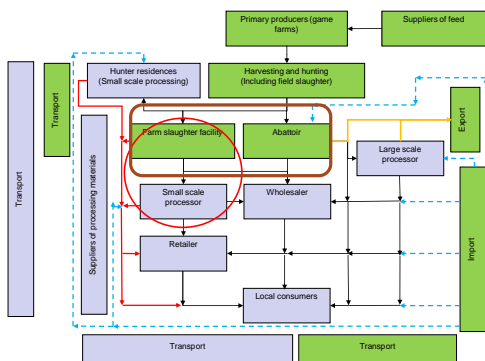


ROLE-PLAYERS	
<b>Consumers</b>	National Consumer Commission Consumer Goods Council of SA (CGCSA)
<b>Industry</b>	Game meat industry organizations and associations <ul style="list-style-type: none"> <li>• <i>Game farming</i></li> <li>• <i>Hunting</i></li> <li>• <i>Other e.g. taxidermy, tanneries</i></li> <li>• Processing, wholesale and retail</li> </ul>
<b>Research institutions</b>	Universities Agricultural Research Councils

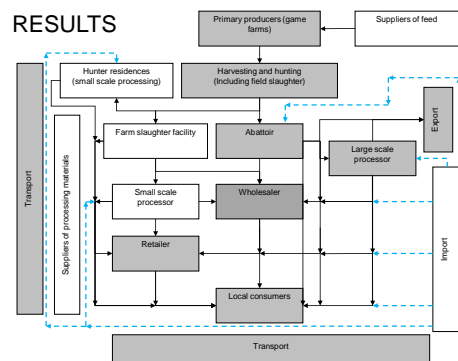


ROLE-PLAYERS (Continue)	
<b>Policy makers and enforcing authorities</b>	Department of Agriculture, Forestry and Fisheries (DAFF) <ul style="list-style-type: none"> <li>- <i>Relevant divisions</i></li> <li>- <i>Provincial representatives</i></li> </ul> Department of Health (DoH) <ul style="list-style-type: none"> <li>- <i>Directorate: Food control</i></li> <li>- <i>Directorate: Environmental Health</i></li> <li>- <i>Provincial representatives of Environmental Health</i></li> </ul>
<b>Legislation</b>	Department of Environmental Affairs (DEA) <ul style="list-style-type: none"> <li>- <i>National office</i></li> <li>- <i>Provincial representatives</i></li> <li>- <i>Wildlife forum</i></li> </ul> Department of Trade and Industry Metropolitan and District municipalities

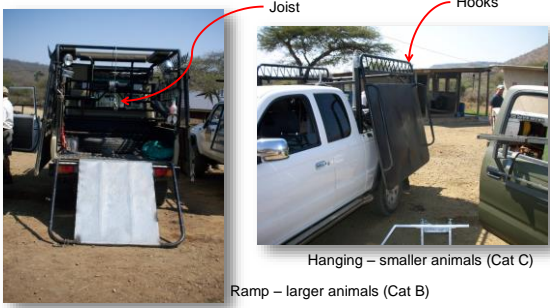
Game meat supply chain & control responsibilities



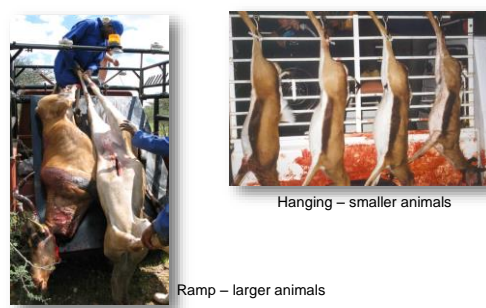
Harvested game meat chain



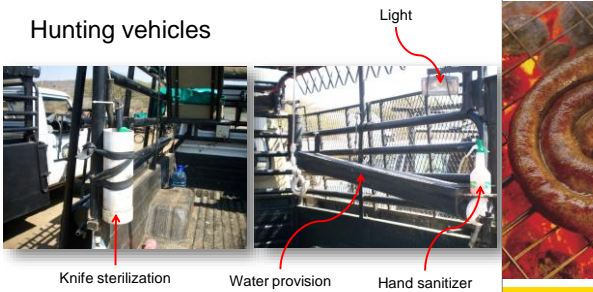
### Harvesting vehicles



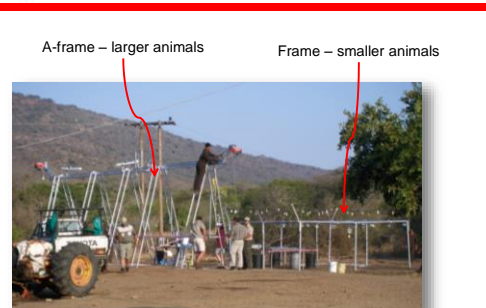
### Bleeding on vehicles



### Hunting vehicles



### Setting up of field depot



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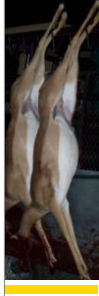
Frame – Small animals



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Frame – Small animals



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A-frame – larger animals



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Slaughter and evisceration

Personal hygiene



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### Meat inspection



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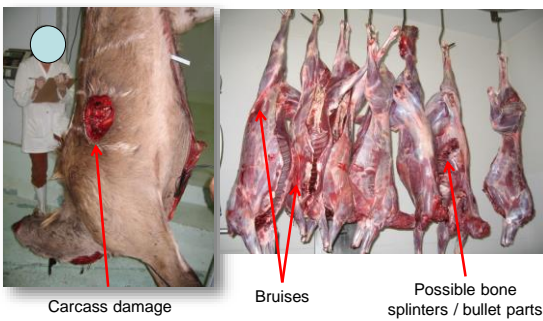
### Identification of parasite



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### Damage to carcasses (helicopter)



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### Sterilization equipment



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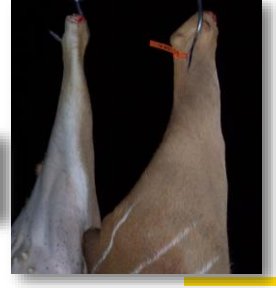
Food grade chemicals



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Carcass identification



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Chilled vehicle



- Temperature control – data loggers
- Seal truck with seal number
- Documentation accompanying the vehicle



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On arrival at game abattoir

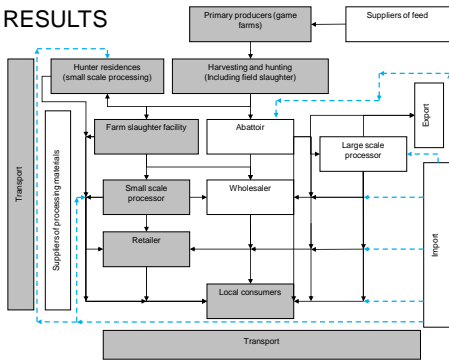


- Origin data checked
- Break seal
- Temperature checks

Loaded into chillers

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RESULTS



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ESSENTIAL FOOD SAFETY MANAGEMENT POINTS ON THE GAME FARM

- Compliance with national & international law
- Implement animal health plan
- Control of animal feeds
- Hunting and hunter control
- Field slaughter depot / farm abattoir approval
- Small processor identification and approval
- Establish hygiene management programs
- Establish traceability procedures
- Water control
- Training of staff (slaughter, processing & meat inspectors / examiners)
- Conduct hazard analysis (HACCP)



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ESSENTIAL FOOD SAFETY MANAGEMENT POINTS AFTER THE FARM

- Compliance with national & international law
- Transport control throughout supply chain
- Registration of abattoirs and processors (large and small)
- Programs for GHP's and GMP's
- Training of slaughter and processing staff
- Training of health and VPH officials
- Implement traceability procedures
- Packaging and labelling control
- Conduct hazard analysis (HACCP)
- Establishment of procedures and policies by relevant authorities





RESULTS



Conclusions

Game meat supply chain differences

- Game animals are killed and partially dressed on the game farm (mostly in the field) - not in abattoir.
- Slaughter facilities mostly on farms
- Little meat inspection
- Hunters often take meat direct to local butcheries
- Further processing (butcheries / small scale processors) are on farms



Conclusions

*Sustainable practice can only be achieved when we understand our support systems and interdependence*



Easy questions or kind comments please !

