



Sow Mortality: Concerns, Causes and Solutions



Group Sow Housing Seminar
Saskatoon Inn - June 29th, 2022
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Outline

- **Concerns** - more sows are dying ...especially gilts and younger SOWS
- **Causes & Factors** – *what do we know?*
- Canadian Survey and On-Farm study
- **Solutions**
 - *What can you do as a Producer?*
 - *What can we do as an Industry?*

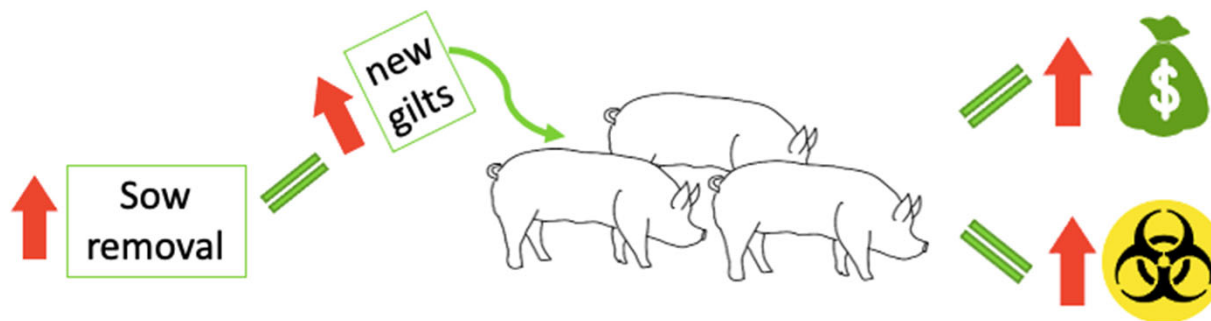


What's the current situation?

- High replacement rates - annual sow removal rates of 45 - 50% (or higher) are common
- Sow mortality is increasing (dead and euthanized)
 - Previous figures ~5%
 - Current levels ~10%

What's the current situation?

- Sow mortality has always been a concern, impacting animal welfare and economics of pig production (Tarrés *et al.* 2006; Sørensen and Thomsen 2016; Bradley *et al.* 2018)
- High removal rates increase farm costs:



(Stalder *et al.* 2004; Anil *et al.* 2008; Pluym *et al.* 2013)

Definitions

- **Removal**: A sow can leave the herd in three ways
 - **Culling**: poor production, old age
 - **Euthanasia**: lameness, injury (cannot be shipped)
 - **Natural death**: usually unexpected (prolapse, torsion, complex)

Mortality = **Euthanasia + Natural death**



Sow Mortality

- The majority of deaths occur around farrowing
- Mortality increases during summer

(Chagnon et al., 1991; Deen and Xue, 1999; Sasaki and Koketsu, 2008)

- **Over 30% of deaths** = gilts or single parity sows (PigChamp)
 - Break-even point is at 3rd parity
- Death losses are discouraging for staff- and hard work!



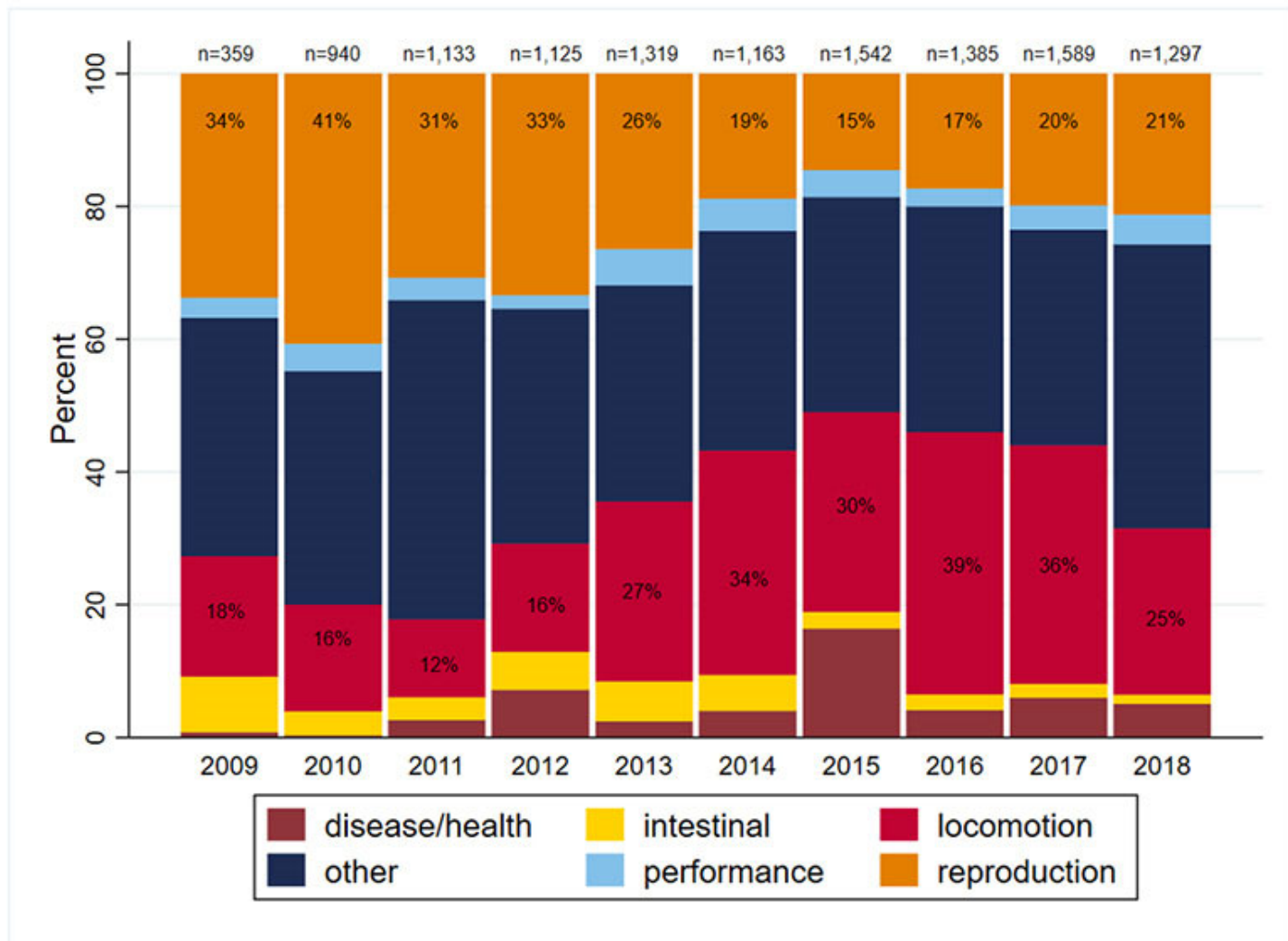


Sow Mortality

Removal reasons: (Ketchum et al. 2019)

- 1. Reproductive problems – prolapse, retained
- 2. Lameness
- 3. Intestinal - ulcers, torsion
- 4. Disease/health
- 5. Injury
- 6. Performance





Reproduction
(avg. 26%)

OTHER ??
(avg. 36%)

Locomotion
(avg. 25%)

Mortality in US Herds (PigChamp records. Kikuti et al, 2020)



OTHER? Pinning Down the Problem

- Identifying causes and Record keeping are two barriers to improving understanding

Identifying causes - *is harder than it looks!*

- What are the categories?
 - Not too many, not too few, clear definitions
- Are staff trained to identify causes consistently?
 - Training and time to record – *to what end?*
- Can the cause be determined?
 - Is it obvious? Necropsy is rarely done

Farm Factors

- Mortality has been linked to multiple factors:

(Rodriguez-Zas et al., 2003; Calderón Díaz et al., 2017; Sørensen and Thomsen, 2017; Kikuti et al., 2020a)

- Nutrition - eg. 'skip a day' feeding
- Housing – higher in group gestation
- Management – pen layout, handling
- Genetics – poorly studied (farm x genetics)
- Environmental factors – heat stress
- Herd size – higher in large herds
- Pathogens – PRRS, PEDv



SURVEY OF SOW MORTALITY

& ON FARM EVALUATION

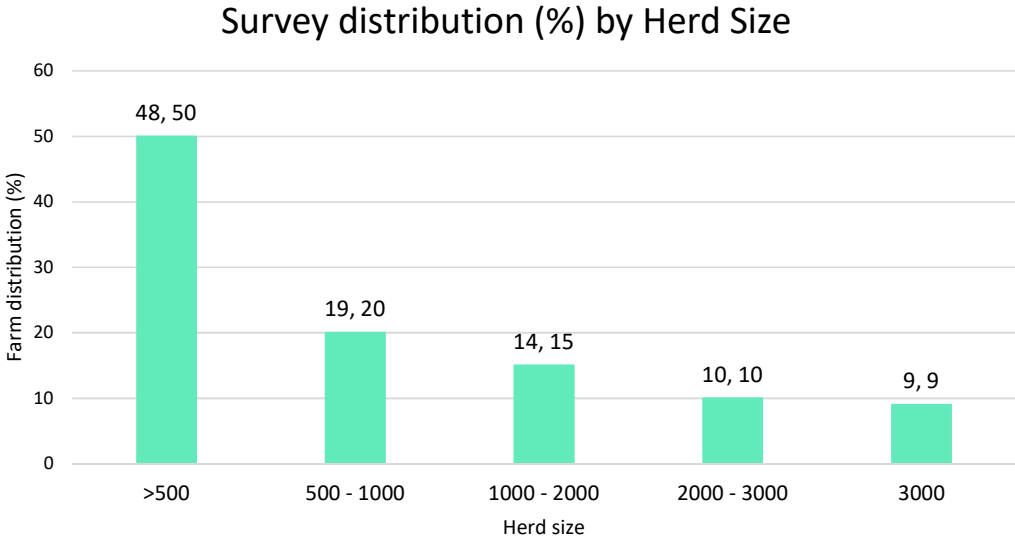


Materials and Methods

- **Survey (2019):**
 - **Electronic survey** sent to Canadian pork producers
 - 49 questions- on herd management, production and mortality
 - Approximately 660 farms received the questionnaire
 - **104 producers completed the survey**
- **On-farm evaluation (2020-21):**
 - **Researchers visited 5 farms in SK and 8 in QC** (13 farms)
 - **Sow observations:** ABM- lesions, lameness, BCS (based on CPC, PigCARE program)
 - ~100 sows observed per farm (1,389 in total)

Survey results

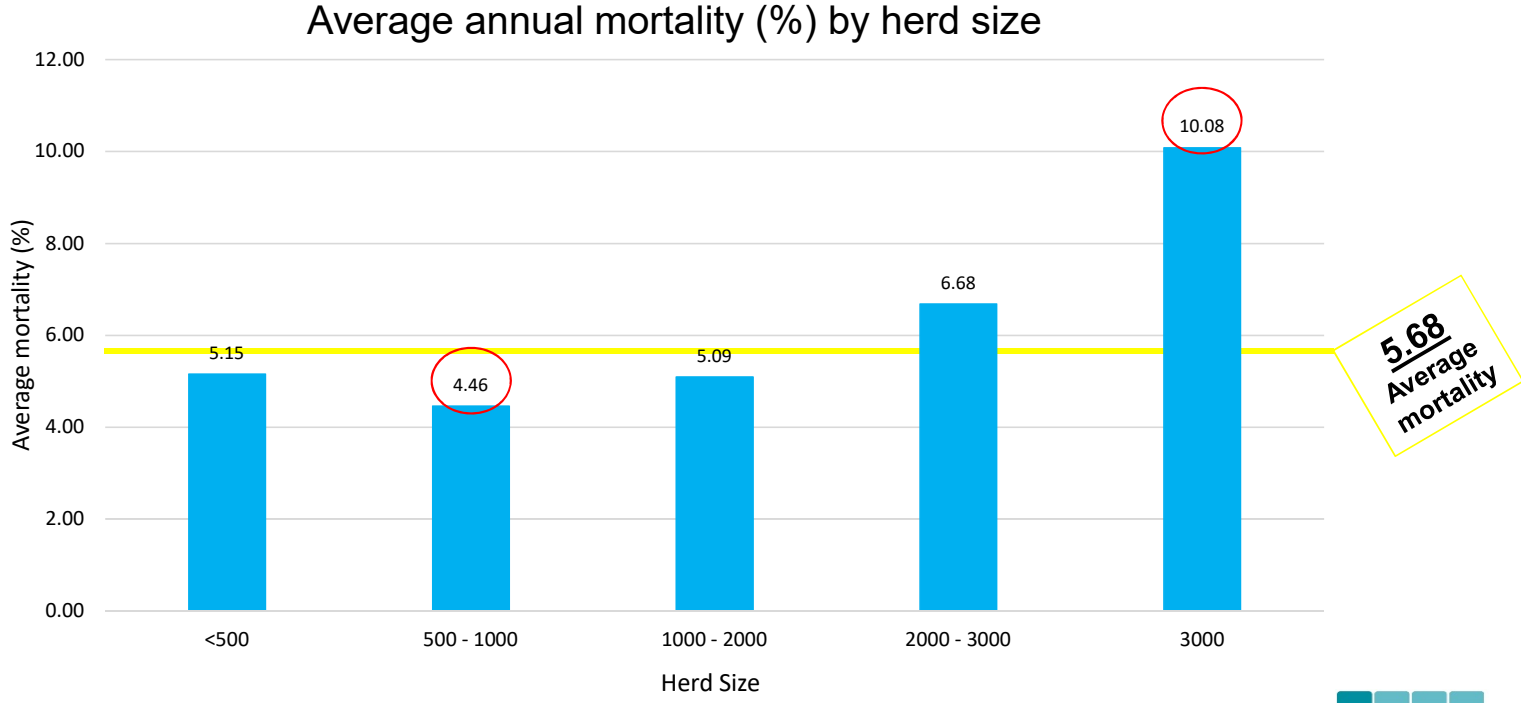
- About 50% of farms: Small herds (< 500 sows)
- Gestation housing: Stalls 42.3%, Groups 40.4%, Mixed 17.3%



Mortality Levels

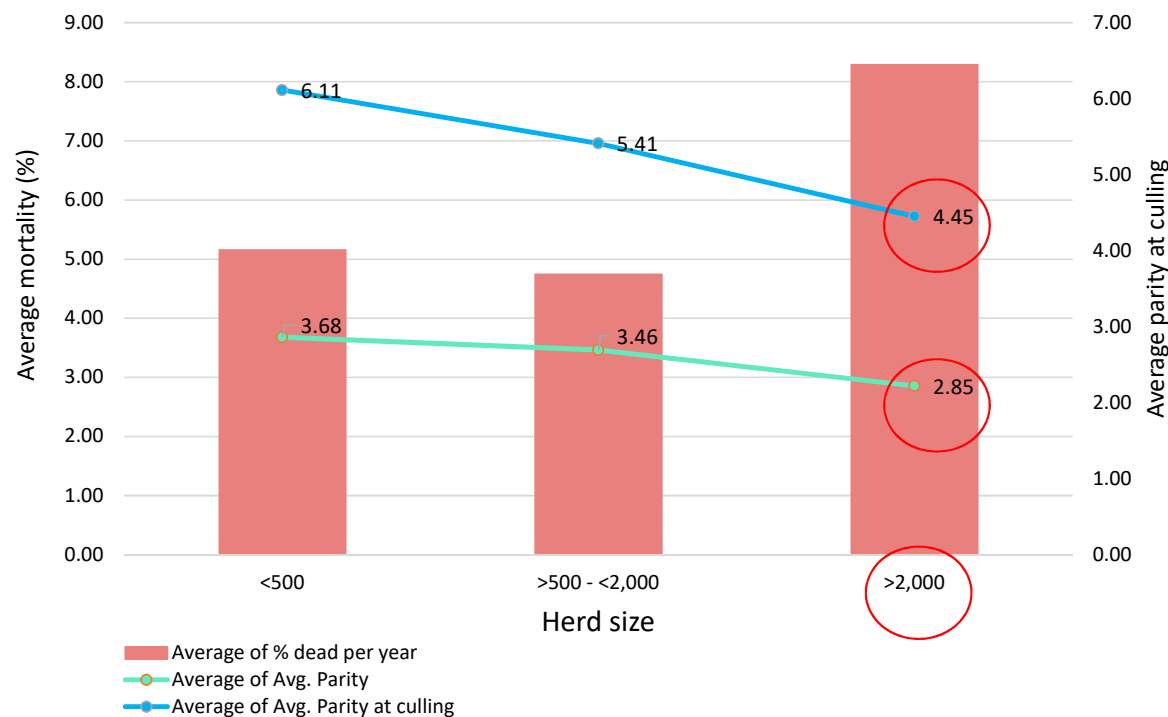
- Surveyed Canadian herds showed moderate mortality: **5.7%**
- **Other countries:**
 - **Spain 7.1%** (Lida et al, 2019)
 - **USA 9.1%** (Kikuti et al, 2020)
- **More moderate temps?** (esp. in Western Canada)

Mortality and Herd Size



Parity at Culling

- Larger herds have lower avg. parity and lower parity at culling



Larger herds often have their own gilt supply.

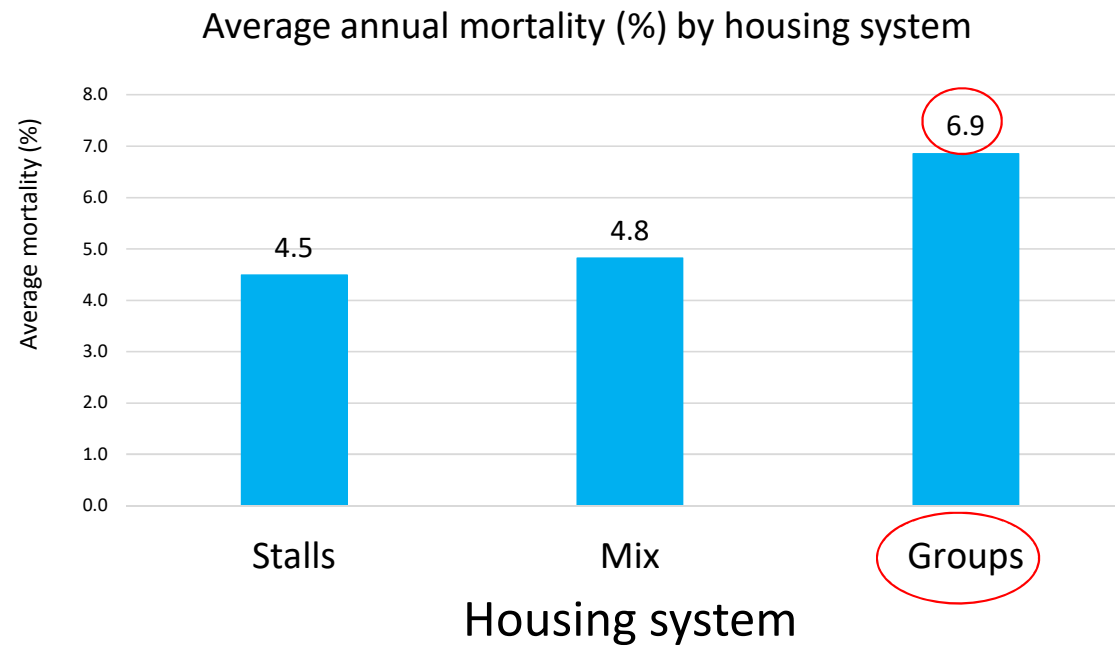
Does large gilt supply/lower cost drive early removals?

Results – Herd Size

- Larger herds had higher average sow mortality/year
 - Large herds (>2,000 sows): **8.3%**
 - Small herds (<500 sows): **5.2%**
- **Similar results to other studies**
- ***What are the issues with large herds?***
 - Staff workload, turnover and training – time to observe/treat sows
 - Greater availability of replacement gilts?
 - (Different reporting ?)

Mortality and Gestation Housing

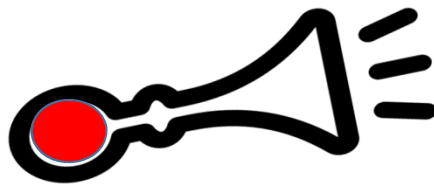
- Higher mortality in group gestation





Results – Group Gestation

- Farms with group gestation had higher annual mortality than sows housed in stalls
- Lameness and reproduction problems (stress – related)
- **More research needed-** follow-up studies to address challenges of group housing



Group Gestation

- The transition to group housing is ongoing...
- Need to track and compare different group gestation systems
- What works & what doesn't
- **PROBLEM AREAS**
- Large vs Small groups?
- Competitive vs Non-competitive feeding?
- Flooring and Pen design? Feed delivery?



Group Gestation

ESF

Short stalls





On-Farm Evaluations

Saskatchewan (n=5)

- Mid-size herds
 - (500-1000 sows)
- Stall gestation
- More BCS 2
- More Injury

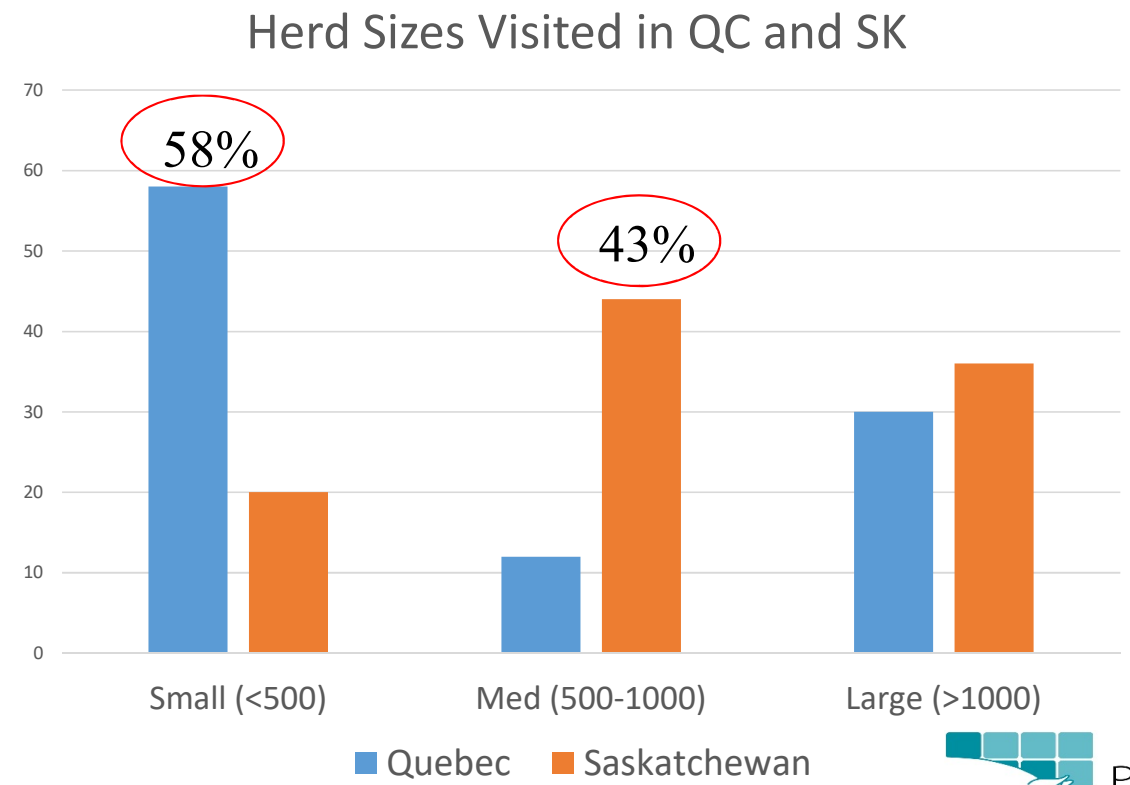
Quebec (n=8)

- Small herds
 - (<500 sows)
- Group gestation
- More BCS 4
- More Lameness



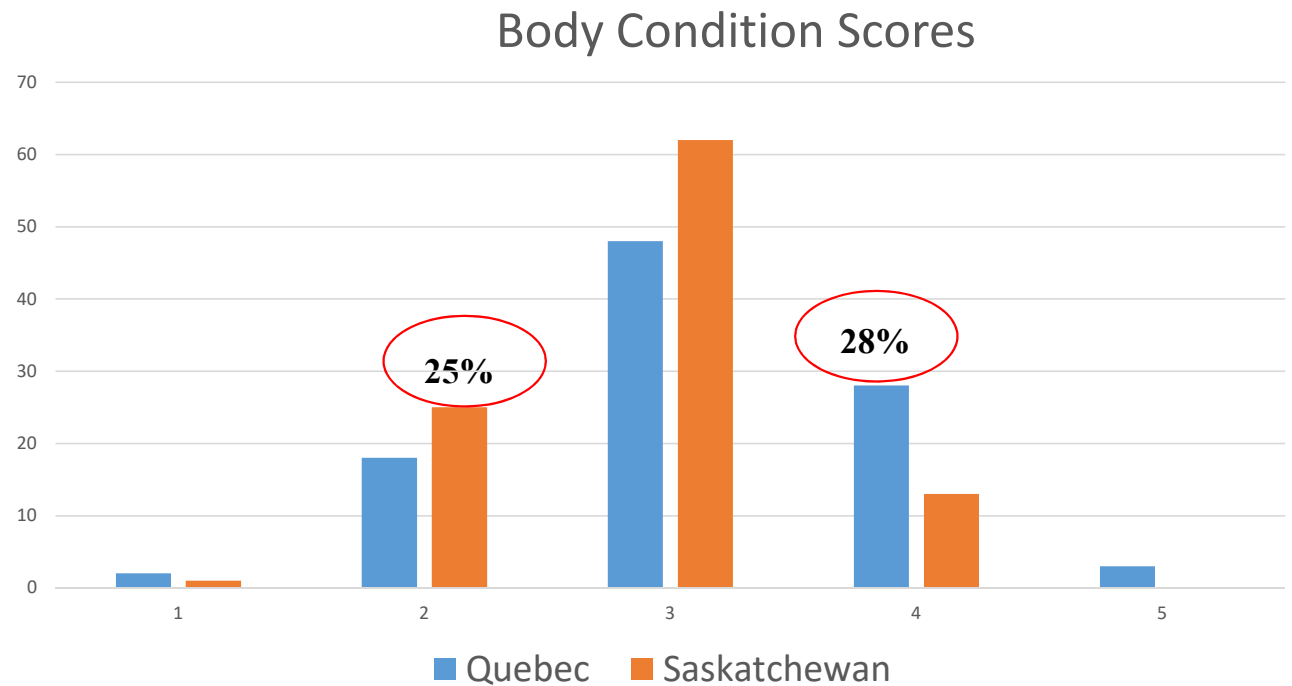
Herd Sizes Visited

- **QC:** 58% of herds <500 sows
- **SK:** 43% of herds 500 – 1000 sows



Body Condition Scores

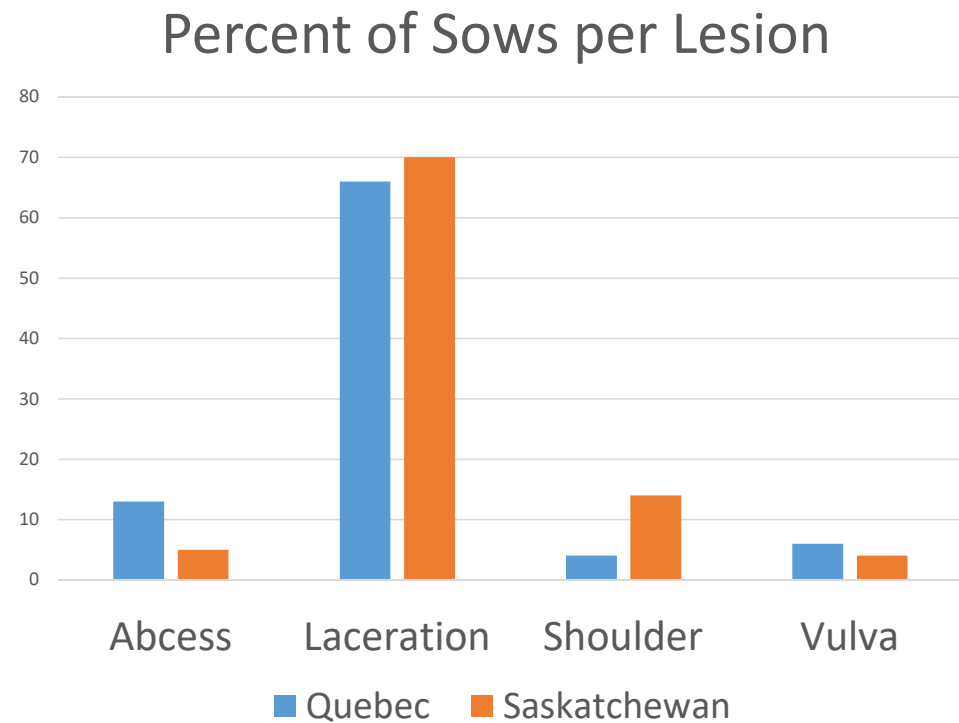
- **Score 1 - 4**
- BCS 3 (ideal) most common
- More fat sows in QC
- More thin sows in SK





Injury Scores

- **28% of sows:** some injury
- Laceration was most common
- Similar levels in QC & SK







Lameness

- **87% of sows: no lameness**

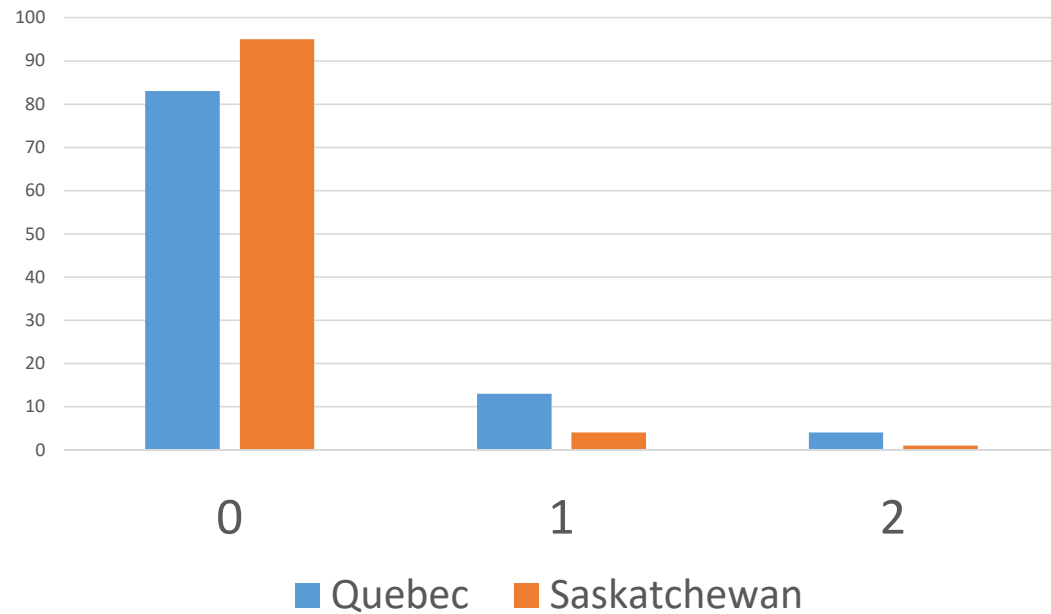
0= none

1= mild

2= obvious

- Higher freq of scores 1 and 2 in QC

Lameness Scores



Conclusions

- Research during the pandemic...
- Data analysis is ongoing
- **Farm records** are the best data for studying removals and death loss
- **BUT- farm records are often inaccurate**
- **Better record keeping with staff education/support is key to understanding and improvement**



Farm Recommendations

- Removal reasons vary from farm-to-farm
- Standardize recording methods:
 - Recognize the importance of good/consistent records
 - For your farm and for industry benchmarking
 - **Removal reasons: Record Culls & Mortality (Euthanized, Dead)**
- Facilitate
 - Management decisions
 - Study of sow removal
 - Understanding and reduction of sow deaths

Farm Recommendations

- Recording removals- Step 1: A. Cull, B. Euthanized, or C. Dead?

SEVEN REMOVAL REASONS: (adapted from Ketchem et al., 2020)

| | |
|-----------------------|---|
| Reproduction | Prolapse, retained, repeat |
| Locomotion | Lameness |
| Disease/health | PRRS, Mycoplasma |
| Intestinal | Ulcer, torsion |
| Production | Old age, small litter, poor doing piglets |
| Injury | Lesions |
| Other | Unknown or 'none of the above' |



Farm Recommendations

Ketchum et al, 2019. National Hog Farmer

- Train staff to detect illness and injury and to treat appropriately
 - Antibiotic or pain control (Meloxicam)
 - Treating isn't always medication; could be removing them from a pen or applying a topical treatment
- Work with your vet on list of treatment options for common illnesses and injuries
- Get females up every day. Even if eating, she may be developing an illness or injury that hasn't impacted intake yet





Farm Recommendations

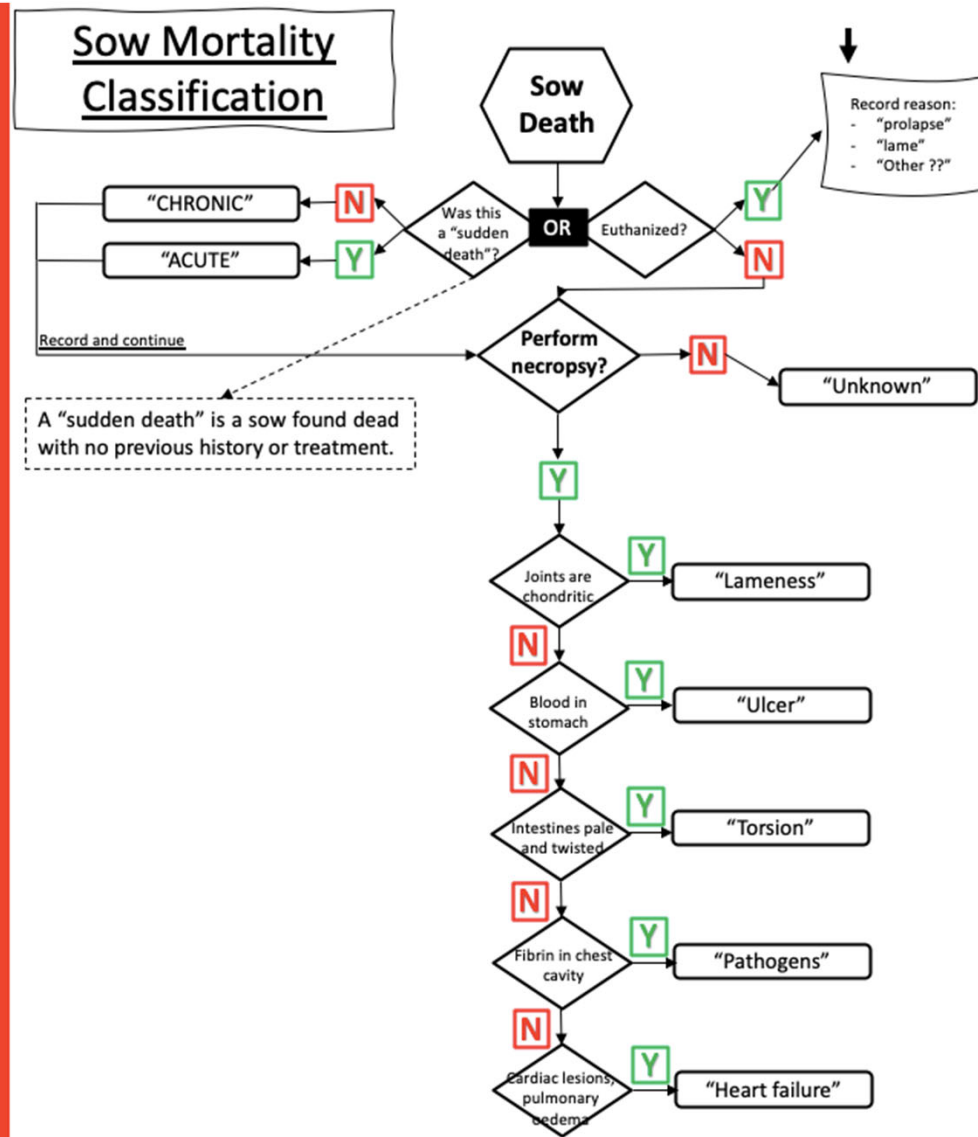
- Care of growing gilts. *The future of the farm depends on them!*
 - Feed a diet that will set them up for success. Provide a good environment and extra space
- Be critical of new animals entering the farm. If gilts are not structurally correct, sow death loss will increase... the cycle continues
- Trim toes and dew claws as needed (esp. groups on slats)
- Check the temperature of sows after farrowing. By checking their temperature, fever and infection can be detected sooner

Treatment & Handling

- **Sow treatment**
- **Identify problems.** Basic animal husbandry = daily observation
- **Treatment.** proactive, use of pain control, rubber mats
- **Group housing. Use** hospital pens/stalls for recovery

- **Handling**
- **Sows are large.** avoid injury, don't work alone!
- **Euthanasia.** Training on restraint, captive bolt use and maintenance
- **Moving lame sows.** lift strap

Sow Necropsy- decision tree





Industry Recommendations

- **Research in needed-** ongoing benchmarking/software
- **Promote standard reasons & definitions** across production software systems
- **Farm records** are the most reliable source of information.
 - Promote education on importance of removal records and training for farm staff
- **Focus on gilt development and selection**
- **Genetic selection** for group housing – lameness, temperament

Acknowledgements



**Saskatchewan
Ministry of
Agriculture**

