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Gilt Development & Management for Sow Retention

PIC Australia Benchmarking March 2022

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Gilt Management Programs

- In typical herd gilts may make up 15-30% of total sow numbers
- Replacement gilts often neglected
- Efficient management critical to reproductive performance of herd
- Sow replacement rates often exceed 50-60%
- Replacement gilts make a major contribution to the reproductive performance of the breeding herd

Replacement Gilt Development & Management

Broken into Six Stages

1. Management pre-weaning
2. Weaning-20 weeks of age
3. Gilt Pool management-20 weeks of age to selection
4. Selection to mating
5. Gestation
6. Lactation

Stage 1
Management Pre-weaning

Replacement Gilts at Birth

- Selection and development starts at birth
- Make sure all potential replacement gilts drink sufficient colostrum
- Gilts born to litters that have more females than males are better replacement females
- Good piglet growth rates during lactation (>125g/day) leads to improved reproductive performance in replacement gilts

Low Individual Birth Weight

- Several studies suggest that Low Birth Weight pigs will have more challenges in pre and post-natal development. Replacement gilts are not the exception.

  - LBW gilts will remain shorter time in production (Flowers, 2009). (LBW = <1.1 kg)
  - Birth weight <1.0 kg, negatively influence piglet production and longevity (Magnabosco et al., 2016)
  - Bortolozzo et all. Several studies. Federal University of Rio Grande do Sul. Brasil. (LBW = <1.0 kg)

Stage 2

Weaning to 20 weeks of Age

The best care IS the best management

- Where possible house or pen replacement gilts together
- Practice optimal care of both pigs and their environment daily to raise the ideal gilt

Stocking Density

As soon as the animal is weaned up to its final selection into the herd, it's growth and development can be challenged due to poor stocking densities

Provide adequate

- Feed
- Water
- Space
- Ventilation

Symptoms of over stocking

- Tail Biting
- Ear Necrosis
- Ear Biting
- Vulva biting
- Flank biting
- More variability in sizes
- Welfare

General Feeding Recommendations-Wean to 20 weeks

MANAGEMENT FACTOR	NURSERY	GROWER	FINISHER/GILT DEVELOPMENT
Water Sources	Clean and fresh always available;1 water source per every 10 gilts; When using fixed nipple drinkers, leveled to the height of the shoulder of the smallest gilts		
Water Flow rates	>1 litre/minute	>1.5 litres/minute	>2 litres/minute
Dry Feeder and Feeder Space – Linear Feeder Space/pig OR	2.5 cm	4.7-5.0 cm	
Dry Feeder and Feeder Space-Pigs per 38 cm Feeder Hole	15	8	
Wet/Dry Feeders-Linear Feeder Space/pig OR	2.5 cm	2.9-3.1 cm	
Wet/Dry Feeders-Pigs per 38 cm Feeder Hole	---	12-13	
Pan Coverage- During Feed Intake Training Period	Day 0-3 =50-70%	45-50% (1-2 days)	
Pan Coverage-After Training	Day > 3 = 40 - 50%	35 - 50%	
Feeding Strategy	Full feed; Avoid feed disruptions/feed outages		

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General Housing Recommendations-Wean to 20 weeks*

MANAGEMENT FACTOR	NURSERY	GROWER	FINISHER/GILT DEVELOPMENT
Temperature	It depends on weaning age, flooring and use of mats; to be on the safe side, consider room temperature at > 26.5°C	21°C	19°C
Ventilation	Minimum ventilation (cold): 2-5 cfm/head; Mild: 15 cfm/head; Maximum ventilation: 40 cfm/head	Minimum ventilation (cold): 5-10 cfm/head; Mild: 35-50 cfm/head; Maximum ventilation: 120 cfm/head	Minimum ventilation (cold): 12 cfm/head; Mild: 60 cfm/head; Maximum ventilation: 150 cfm/head
Humidity	65%		
Stocking Density	0.33 m^2/head	0.70 m^2/head	1.2 m^2/head
Flooring	Plastic floors only to end of nursery phase; Slatted floors: 2.5 cm or less opening, with straight edges; Solid floors: sloped to avoid manure and liquid build-up		

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Useful advice for care of the growing pig can be found in the "PIC Wean to Finish Guidelines" available from your PIC Representative

Stage 3

Gilt Pool management- 20 weeks of age to selection

Gilt Pool Management Objectives

- Rule of thumb for gilt pool size is 10 unmated gilts /100 sows & mated gilts i.e. usually around 10% to 12% of the commercial sow herd inventory
- Select 10%-15% more than you need (after approx. 90% have cycled in response to boar contact cull the remainder)
- Gilt Pool should provide
    - a source of healthy, genetically superior cycling gilts
    - suitable quarantine and acclimatisation procedures
    - Housing/social environment to encourage oestrus, oestrus detection & mating/insemination
- To achieve all matings between 29-34 weeks of age

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Gilt Pool Management Objectives (continued)

- Provide 1.4m^2/gilt
- Farrowing Rate 85%, 12 BA/litter, less than 10% of gilts culled unmated
- Develop and implement a puberty stimulation program for all gilts
- Provide proper nutrition to condition gilts
- Gilt development programs introduce properly prepared gilts into the herd according to a structured plan. These are constructed according to individual farm systems.

Gilt Pool Basics (Correct Selection & Development)

- Select DON'T Sort
  - Select each gilt on her merits
  - Evaluate gilts against the average for that group
    - Check general appearance
    - Weight/size
    - Poor behavioural/physical traits (shivering, shaking)
  - Ideal selection weight at 20 weeks of age ~ 90kg
  - Select for sound feet and legs
    - Only assess feet and legs after watching gilts walk
  - Select gilts that have at least 14 fully developed teats
  - Don't select gilts that don't have an anus, or have hermaphrodite features or a juvenile or necrotic vulva
  - Make sure ALL vaccinations or exposures are completed at least 3 weeks prior to mating

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Gilt Pool Management

Need to start Oestrus Induction & Puberty

- Initiate puberty in large proportion of gilts
- Maintain regular cycles
- Synchronise pubertal oestrus
- Start record oestrus cycles

Nutrition as a rule of Thumb

- Preferably feed a gilt developer diet selection-mating
- Feed ad-lib

Housing and Social Environment

- Crowding has negative effect on attainment of puberty
  - *Stress, overcrowding (poor boar contact & harder to detect)*
  - *Provide 1.5-2.0 m^2/gilt*
- House gilts together with required space recommendation

Growth Rate

- Ensure good and even growth by providing recommended space and nutrition
- Gilts should grow between 620g/d – 700g/d

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Gaps in Oestrus Onset

Understaffing

- When understaffed, puberty management is too often the first casualty.
- Do the farms know what are the man-hours needed to do a world-class job.

Even if fully staffed

- Trained v/s untrained staff.
- Motivated v/s unmotivated staff

Check your heat checking boars

- Number of boars, age, body condition, feet status and libido
- Heat checking boars replacement rate
- Fence line exposure is not as effective as direct exposure

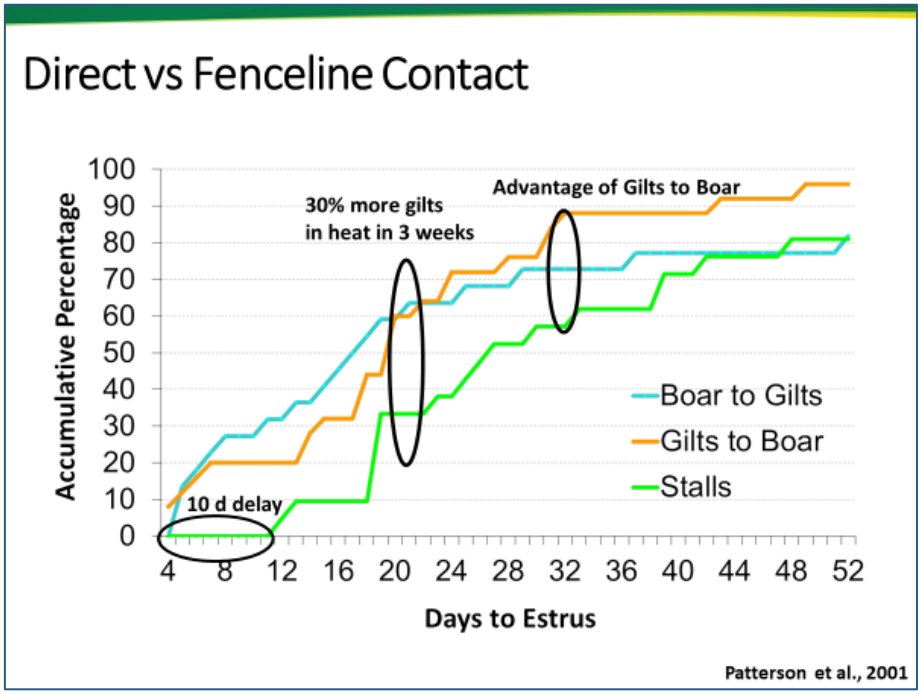
Weekends

- Lost opportunity on most farms, needs to be consistent with weekday routine.

Oestrus Induction & Puberty

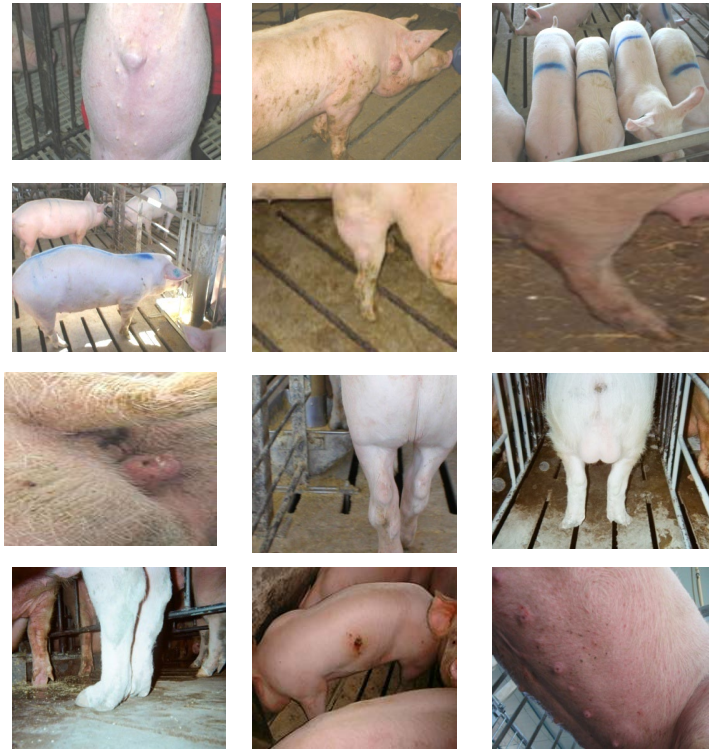
People and Boars Interface

- **Good execution** – Based on 4 interlinked columns: Boar exposure, heat induction, heat detection and heat recording, 7 days a week.
- **Direct contact is unbeatable –** Fence contact is not what it takes to trigger the best response rate quicker.



Stage 4
Selection to Mating

Gilt Selection



Make sure

- Right Gender
- Vices - Ear, flank, tail
- Naval - Ruptures
- Legs - Correct structure
- Hooves - Trauma/Uneven digits
- Conformation -Too fat/thin/dip-back
- Abscesses - Neck/leg
- Teats -14 normal
- Blind anus, juvenile vulva

Environmental factors

- Injury – anywhere on the body
- Plastic flooring at certain stages of life
- Feet – concrete burn, dewclaw/toe nail damage

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Gilt Selection

Select

Age and weight can vary. Generally defined as a 22-week minimum and 230 pounds (104 kg). Normal selection rate varies between 60% and 80%. If you are below or above this contact your PIC representative.

You will assess:

Reproductive Organs • Conformation • Health • Body Condition
Color • Legs • Movement • Umbillicus • Ears and Tail • Underlines

1. Practice optimal care of both pigs and their environment daily to raise an ideal gilt.

Food • Air • Water • Care

2. Walk pens daily. Ensure human-gilt interaction.

3. Choose a selection location with enough space for a thorough evaluation of each gilt.

4. Confirm proper age range.

Check barn records • Check ear tags

5. Assess the external reproductive organs and anus. Confirm presence of vulva.

Use your thumb to gauge vulva proper size.

6. Cull unthrifty, thin or sick animals. Roughly bottom 10% of size and weight range.

Compare animals against the group they are in.

7. Assess health.

Eating and drinking | Lame, lethargic or needs moving | Head tilt, circling, or shaking

8. Assess conformation.

Straight back | Sway backs or humpbacks

9. Assess locomotion and leg conformation while gilt is moving. Is she fully weight-bearing on all four legs while standing and moving?

Front legs

Typical problems to be selected against are:
- Bent front legs - animal appears to be "going over" on its front legs or has flat front feet
- Stiff walking

Back legs

Typical problems to be selected against are:
- Weak back legs (sickle-hocked) - legs appear to "go under"
- Cow-hocked

Assess front and rear joints.
- Fluid filled, infected lumps
- Red or inflamed lumps
- Large, unsightly lumps
- Open sores
- Abscesses that are soft, red, or bigger than a grape

Assess leg and foot structure.
- Buckknees
- Sickle hocks
- Cracks, sores, inflammation or trauma on pads
- Heel pad contacts the floor
- Walking on tiptoes
- Uneven toes - Select against small inside toes or long outside hooves

10. Assess and feel the umbilicus.

Herniation | Abscess or rupture

11. Assess the mammary glands and underline. Record the total number of normal teats.

While you will see many gilts with 16-18 normal teats, the PIC minimum is 14.

Normal teats
- Everted and fully developed
- No tissue damage
- Uniformly sized compared to others on underline
- Slender, bell-shaped

Abnormal teats
- Pin nipples—small inflatible nipples
- Inverted teats—fibrous core
- Split teats—teat torn in half
- Very small rear teats on flank

Cull anything with less than 14 teats.

Washer teats - small ring of tissue around base of teat. Teat is good when end of nipple can be seen clearly protruding past the ring of tissue. Count as good teat if one can grasp teat and pull down. Count as bad teat if it slips between one's fingers.

12. Assess ears.

Crinkled ears

Double crinkled ears - cull.
Single crinkled ear lying flat - send.

Fluid filled ears - cull. | Healthy ears

13. Assess tail. Avoid animals with open wounds on tail.

Bitten tail - cull if infected.

Do not cull for tail length.
Report groups with short average tail lengths.

14. If she passes the above criteria, tag her, record her ID and she is selected.

Gilt Mating Management

- Gilts should be mated as a minimum at their 2nd recorded oestrus
- Goal: >95% of gilts bred at 2nd or 3rd recorded heat
- After 8 weeks of beginning boar exposure at 24-26 weeks old, >95% of gilts with HNS recorded.
- Weight at breeding 135-150 kg & between 29-34 weeks of age
- Older heavier gilts have a higher removal rate and if mated tend to have greater number of SB
- Always be gentle and quiet when handling gilts around the time of mating

Gilt Mating Management (continued)

- Check gilts targeted for mating/insemination in the morning
- Check for the “standing response” in front of a boar.
- If oestrus detection is done once daily
  - Mate gilts at 1st detection then 12 or 24 hours later
- If oestrus detection is done morning and night
  - Either delay mating gilts 12 hours after 1st detection or mate gilts at 1st detection then 12 or 24 hours later.
- Don’t try to introduce too many gilts to the boar at once as you run the risk of one or more of the gilts becoming refractory

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Gilt Eligibility for Breeding

If all targets are reached, proceed with breeding gilts

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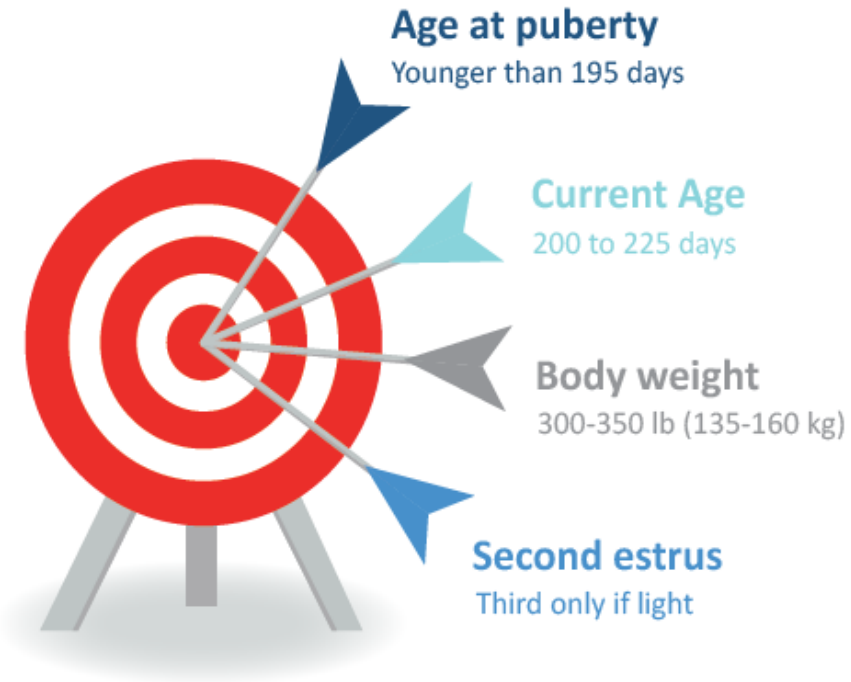

Average daily gain (ADG)	Breed gilts with ADG from birth to first breeding between 1.33 to 1.75 lb/day (600-800 g)
Immunity level	Allow 3+ effective weeks from last health procedure before breeding
Gilt selection/ quality control	Do not breed gilts with any structural/conformational defects that affect walking or standing and ultimately farrowing and nursing
Feed intake	Avoid feed outages; do not restrict feed in quantity nor quality within 14+ days prior to first breeding

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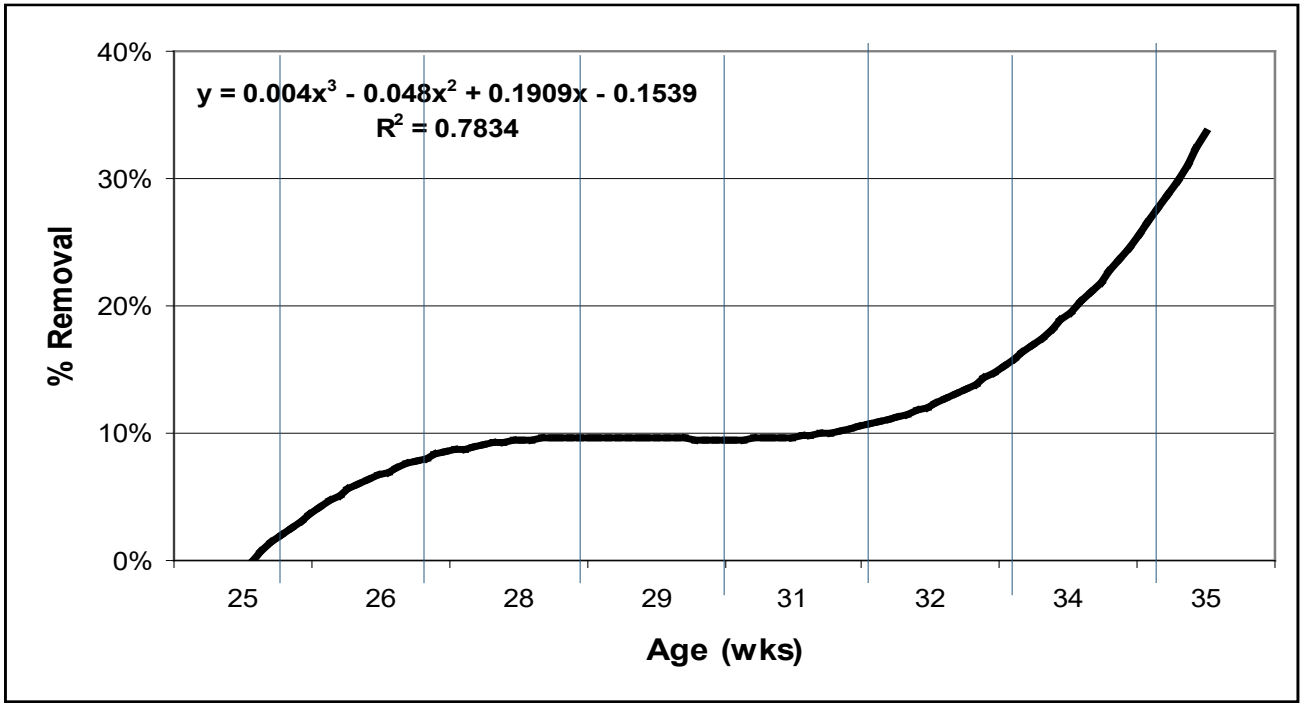
Heavier Gilts = Lower Sow Retention

Removal Rate in Gilts According to Age at First Breeding (age used here only as expression of body weight)



Source: Pinilla & Leczniescki (2010), Manitoba Swine Seminar.

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Stage 5
Gestation

Feeding the gilt in Gestation

- What are we trying to achieve?
  - Minimal embryo losses and maximise birthweights
  - Maximise lactational feed intake
  - Maximise subsequent litter production
  - Maximise colostrum and milk production in lactation
  - No more than 45 kg body weight gain during this first pregnancy
- Keep feeding routine simple
- Feed to condition (1.8-2.0 kg/day)
- Should gilts be bump fed (fed an extra kg from day 90-farrowing)?
  - Not for fat or over-conditioned gilts
  - Gilts in ideal body condition there is a fine line between over conditioning and increased stillborns & then there's the feed cost
  - Some evidence that it's the increased protein rather than Energy that makes the difference

General care of the gilt in gestation

- Can be summarised in two words…….MINIMISE STRESS
- This is done by
  - Checking pens and surrounds to make sure they are safe and don't require any maintenance
  - Ensuring that water is freely available and there is at least 1 working nipple drinker /10 sows with a flow rate of 2 litres/minute
  - Grouping pregnant gilts together as soon as possible after mating
  - Grouping gilts with other gilts or P1 sows only
  - Daily pen checking for individual sow care (non-eaters, lameness, abortions, bully sows, gilts keeping away from the other girls, ESFs are working)
  - Make sure vet's instructions for treatments or vaccinations are followed

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Stage 6
Lactation

General care of the gilt in lactation

- Move the gilt into the farrowing crate or pen a few days before to allow her to settle into her surroundings and be comfortable
- Make sure the crate/pen has been cleaned, disinfected and dried before she is moved in
- Examine the pen/crate after cleaning to make sure there are no sharp edges etc. that could hurt the gilt
- Ensure that the drinker works and the flow rate is at least 2 litres/minute and that the gilt knows where the drinker is
- Count the number of functional teats on each gilt
    - Record this on her card
    - After farrowing, make sure that the gilt has the same number of piglets as functional teats

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Feeding in lactation-PIC Australia's approach

- Feed a high fibre pre-farrow diet from entry to 2 days post farrowing
- 3kg per day – 2kg AM & 1kg PM. For exercise and energy spread
- From Day of farrowing we feed ad lib
  - Pre-farrow diet 2 days post – ad lib
  - Lactation diet – rest of lactation ad lib
- Benefits
  - Facilitate learning process for P-1s.
  - Mitigate negative nutritional balance for P-1s
  - Minimize savaging episodes.
  - Reduce overlays
  - Sows look very content and no jumpy sows
- In a 20-21 d lactation, target 7.25kg of consumption per day
- Make sure feed is always available to the sow without waste, Keep feed fresh to promote intake
- Ensure adequate water is available in each crate
- Cool room to 20°C by day 7 post farrowing.
  - Manage the room & the creep environment
  - Room for the sows & creep area for the piglets
- Do whatever is possible to maximize appetite and intake
  - Get shy females up to eat (P1s).
  - Identify sows that eat more and give them more or feed ad-lib

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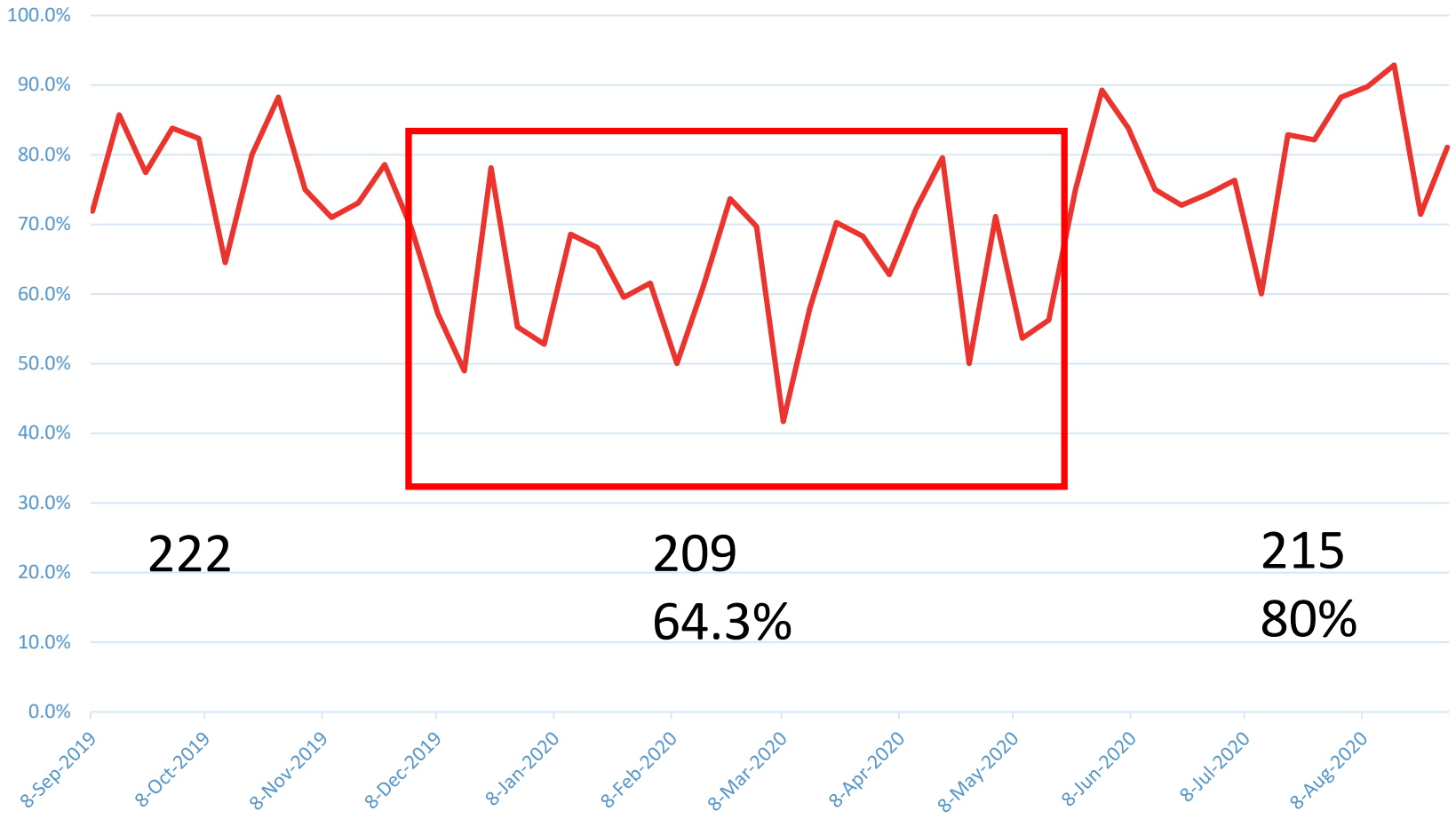
Case Study

Case Study Overview

- Gilts getting to heavy before mating, resulting in a heavy sow
- Management decision made to reduce gilt size – through slight reduction in age and restrict feeding
- Result was unexpected, this is why

Gilt Farrowing Rate



Gilt Performance

Period Date	3/11/2019 - 30/5/2020	31/5/2020-25/11/2020
Age at first Service	180-209	210-239
Number of services	896	721
Return Services	197	102
Return %	21.99%	14.15%
Farrowing Rate	67.41%	80.44%
Total Born Avg	11.3	11.5
Born Alive Avg	10.4	10.5
Stillborn Avg	0.8	0.9
Mummies Avg	0.0	0.1
Wean pig Avg	9.4	9.5

Retention Rate

	180-209	210-239
Parity 1	86%	93%
Parity 2	71%	73%
Parity 3	57%	60%

Summary

Gilt Development for Sow Retention Starts Early

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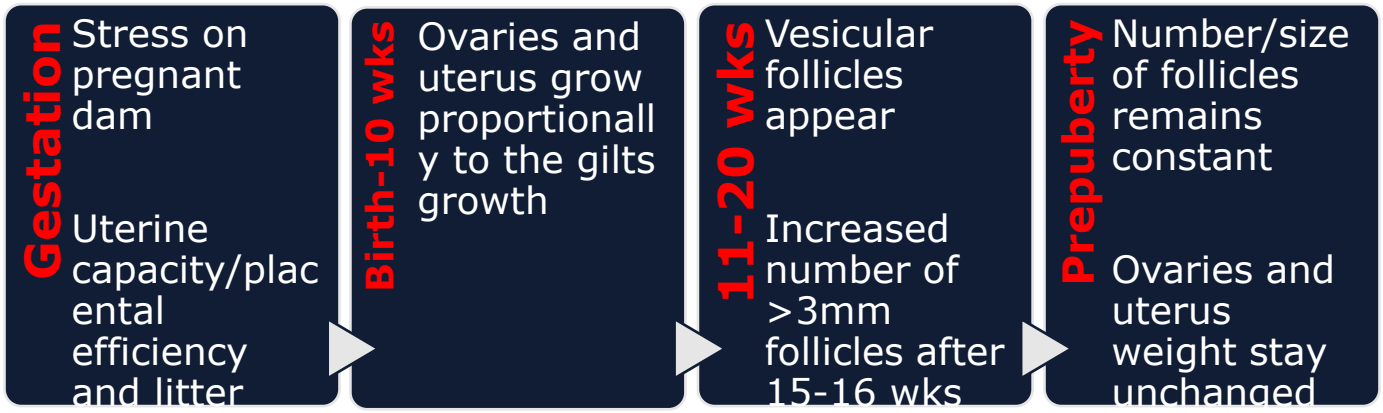
It is wrong to consider that reproductive management starts with the boar exposure.



1. Feed in early gestation
2. Movements in early gestation
3. Late gestation immunization

1. Scours control and treatment
2. Weaning older (?)/select suboptimal ones out.
3. Avoid overcrowding
4. Hooves integrity

1. Selection
2. Lameness treatment

1. Boar exposure and heat induction
2. Acclimation and full feed >15 d
3. 3 wks from last vaccine

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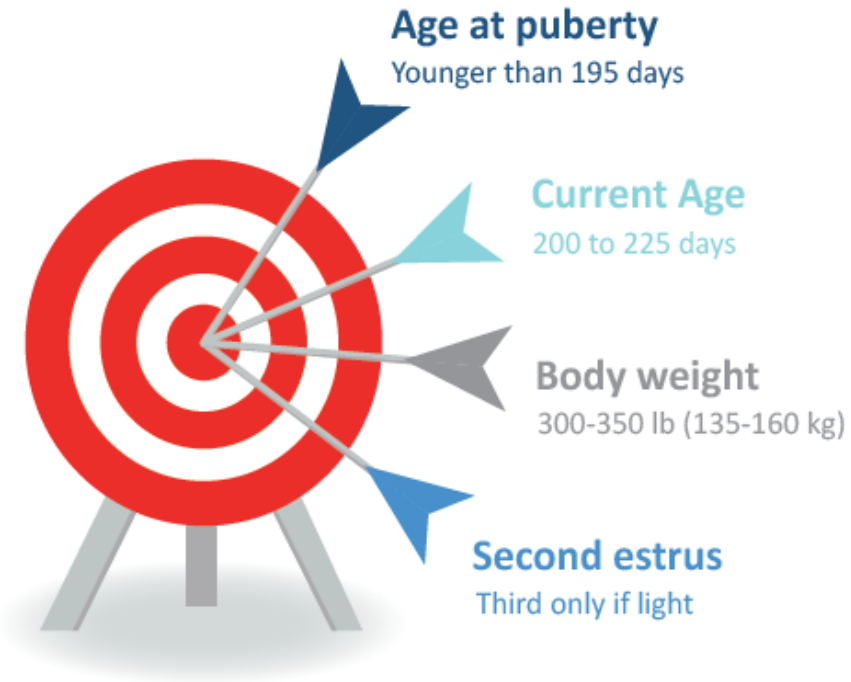

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Conclusions

- **Gilts are the foundation -** Healthy grown and introduced gilts will assure consistent productivity and longevity.

- **Gilts are not Grower Pigs** – Treat gilts as if they are your future herd as this is the fact of the matter.

- **Inconsistency in Gilt Management** – Leads to poor herd performance and adversely effects sow retention.

"You don't do things right once in a while…you do them right all the time" (Vince Lombardi).

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