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# Management of ESF (Electronic Sow Feeders)

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# Options Within Gestation Systems

Feeding	Floor	Grouping	Timing	Total
Floor				
	Slat		Wean	
Trickle		Static		
	<b>X</b> Partial	<b>X</b>	<b>X</b> Pre-Impl.	<b>= 72</b>
Feed-stall		Dynamic		
	Bedded		Post-Impl.	
ESF				

# Electronic Sow Feeders (ESF)





# Electronic Sow Feeders

## Pros

- Excellent control over individual feed intake

## Cons

- High capital cost
- Technical system



# Components

## Computer

- Central unit
- Manages information
- Controls feeding stations

Computer

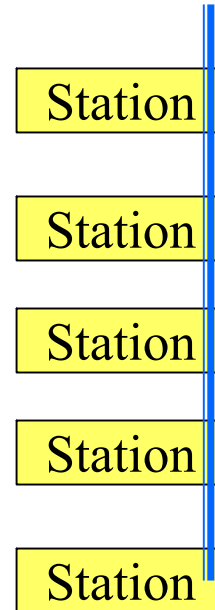


# Components

## Feeding Station

- Mechanics of system
- Feed lines
- Controls sows

Computer



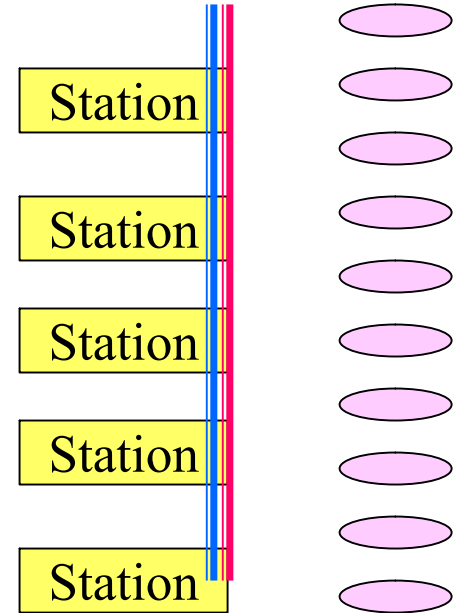


# Components

## Sows and Transponders

- Identity
- Individual animal
- Biological

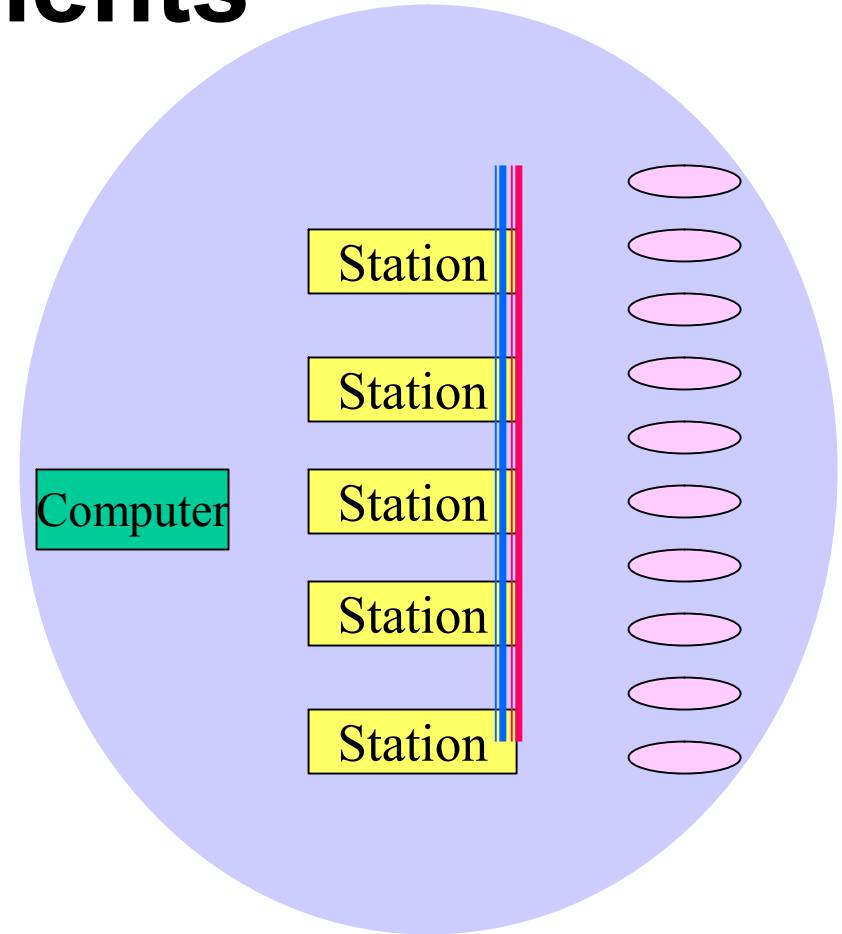
Computer



# Components

## Information

- Age, stage, feed requirements, location
- Record keeping





# Feeding

- Daily allocation
  - Based on age, body condition, stage of gestation
- Cycle initiation
  - We use 3 pm, many use midnight
- Drop rate
  - Include water
  - Sows eat faster than gilts

# Feeding

- Possibility of multiple meals
  - 65% of sows eat only once
  - 35% enter more often
- Total time use
  - Limits number of sows
  - Provide rest period
    - Needed by subordinate, timid sows



# Critical Tasks

- Enter sow information
- Training gilts/sows
- Daily printout (attention list)
  - Manage by exception
  - The computer 'sees' the sows eating







# Critical Tasks

- Enter sow information
- Training gilts/sows
- Daily printout (attention list)
  - Manage by exception
  - The computer 'sees' the sows eating
- Your first task each day is to check the attention list



# Other Tasks

- Vaccinate, preg check, move
- Paint or sort

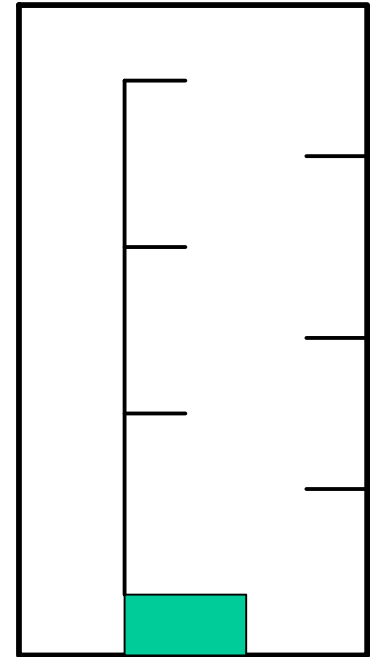


# Regular Tasks

- Calibrate feed stations
- Maintenance and repairs
  - Gates, air pressure, antennae
- Service

# Problems from the Past

- Lost collars or tags
- Back exit
  - Vulva biting
- Recycling
  - Lock out of feed trough
  - Lock out at entrance
  - Channel animals at exit





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## From 2005:

- Sows kept in gestation stalls have production performance that does not differ from that of sows kept in groups.
- Overall, gestation stalls do not induce a greater physiological stress response in sows than do group housing systems.
- Other aspects of health are predominantly affected by factors other than housing system.

AVMA, 2005



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# Options Within Gestation Systems

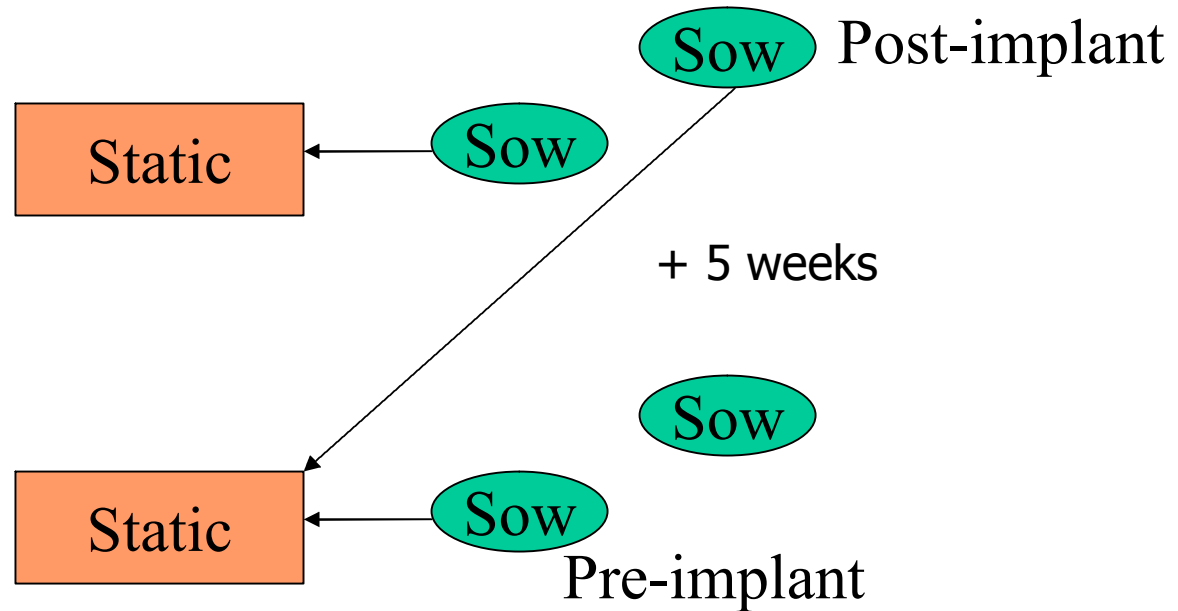
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ESF				



# Social Management in Electronic Sow Feeders

- Comparison of mixing pre- and post-implantation
- Comparison of Static and Large Group Dynamic management

# Pre vs Post Implantation





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# Farrowing Rate (% , 5 cycles)

	Stalls	Pre-implant		Post-implant	
		Static	Dynamic	Static	Dynamic
1 <sup>st</sup> parity	84.7	81.7	85.6	87.6	86.7
2 <sup>nd</sup> parity	83.8	81.4	81.7	80.0	89.2
Mature sows	87.8	83.7	79.5	86.1	88.3
Adjusted	86.0	82.6	81.6	85.1	88.1

## Live Piglets/100 Sows Bred (5 cycles)

	Stalls	Pre-implant		Post-implant	
		Static	Dynamic	Static	Dynamic
1 <sup>st</sup> parity	898	874	865	929	910
2 <sup>nd</sup> parity	922	879	956	896	1008
Mature sows	948	898	890	982	980
Adjusted	928	886	899	947	968

# Social Behaviour of Sows in ESF

- Pre-implant sows were more aggressive than post-implant, entered the feeder earlier in the day, and avoided sleeping on the slats
- Young sows experienced more scratching, entered the feeder later, and slept on slats more than older sows



# Australian Feeding Stall Study





# Pre vs Post Implantation

- Pre-implant sows had lower farrowing rates than stall sows
- Post-implant sows performed as well as stall sows
- Post-implant sows fought less at re-grouping than did pre-implant



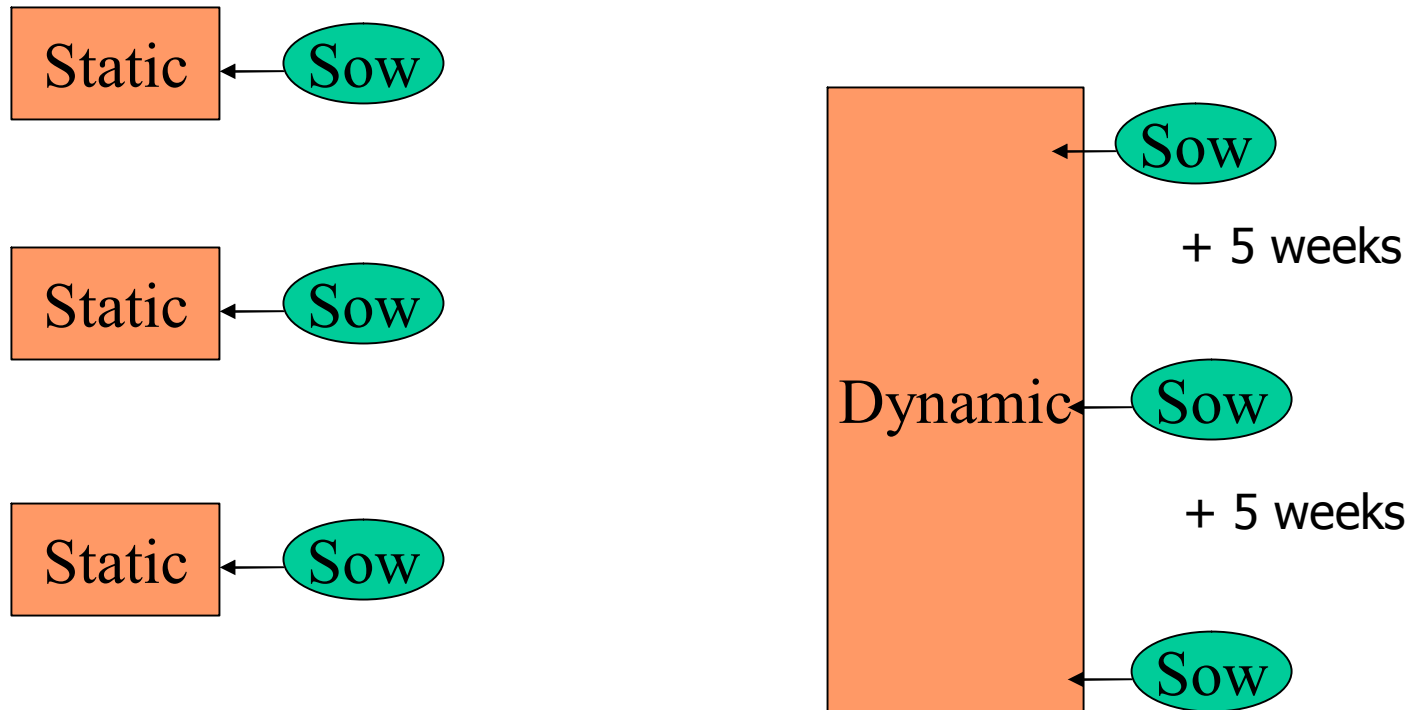
# Grouping at Weaning

- Comparison of G-Stalls and ESF
- All sows placed in group at weaning
- When detected in estrus they were bred naturally and placed in stall
- After second breeding they were assigned to treatment
- Sows were added to ESF 2-4 days after second breeding

# Grouping at Weaning

	ESF	G-Stalls
Return to estrus	94.5%	91.7%
Return to estrus (7 d)	72.0	68.4
Farrowing rate	94.3	89.4

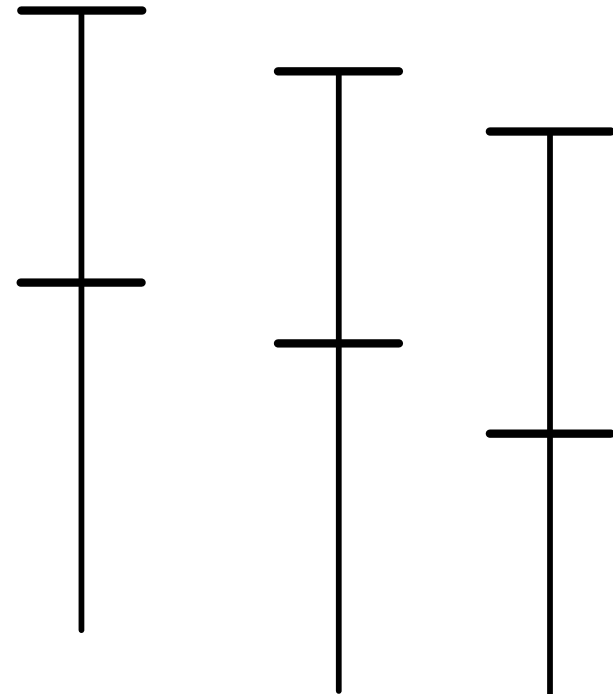
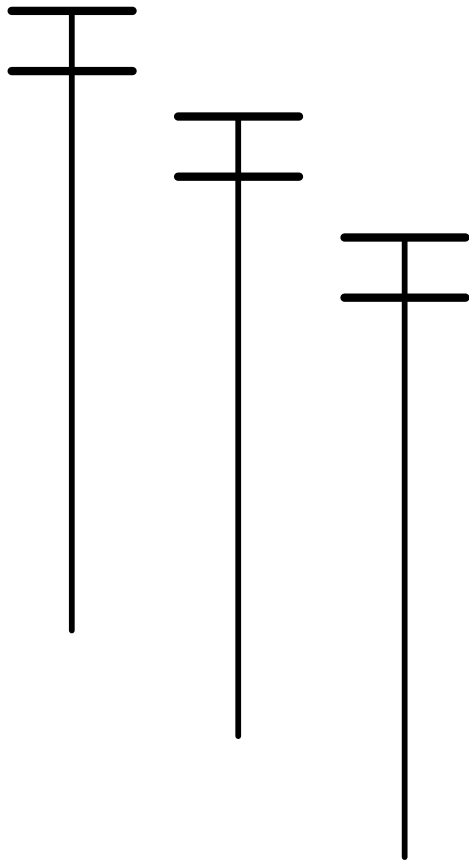
# Static vs Dynamic



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# Alternative Dynamic Management



Avoid 'double' re-grouping  
during implantation



# Australian Feeding Stall Study





# Injuries and Lameness in Gestation vs Feeding Stalls

	Week	G-stalls	F-stalls	Sign.
Scratches	1	0.60	1.38	*
	15	0.34	0.84	*
Abrasions	1	0.21	0.03	*
	15	0.22	0.00	*
Cuts	1	0.05	0.05	
	15	0.10	0.03	
Lame	9	7.0%	0.7%	*
	15	13.8%	0.8%	*
	culled	4.1%	0.7%	*

Karlan et al., 2004

# Lameness and Culling

	ESF	G-Stalls
# of sows	206	176
Culled for lameness	11	1
% culled lame	5.3%	0.5%

Fighting among newly introduced sows on slatted floors without bedding is likely to result in a high incidence of lameness.



# Post-Grouping Lameness

- Is it due to:
  - Injuries associated with aggression
  - Weakness due to several weeks in stalls



# Floor Space

- Start at 24 sqft and adjust for system
- Reduce for ESF
- 18-20 may be possible
- We went as low as 18, but returned to 20
  - Injuries and missed feedings



# Feeder Space

- Drop rate: min/sow
  - 15-20 for sows plus possible delay
  - Must be wet to speed eating
- Free time: 4-8 hr/day
- Sows @ 15 min for 18 hr yields 72 sows/station
- Gilts take longer to eat
  - Stock at 2/3 that of sows or 48
- Watch for missed feedings by timid sows



# Our Failures

- Staff turnover
- Minor problems become big
  - Portable reader failed
  - Printer went down
  - Failed to enter data
- Too 'busy' to health check, treat, train
- Flooring slots were too narrow, pit management, slippery floors, lameness



# Who Should Consider ESF

- Those who consider control of feed intake essential
- Those with technical interest
- Those with quality staffing

*A well run ESF is second to none in terms of animal care and productivity.*

*A poorly run ESF can be a disaster.*