

Sow Management: Exactly How Many Litters/Sow Should I be Targeting?

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Gilts to Sows 101
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Overview

- Identify “rules of thumb” for sow culling
- Examine sensitivity to:
 - Cost of replacement gilts
 - Feed ration prices
 - Conception rates
 - Weaned pig values

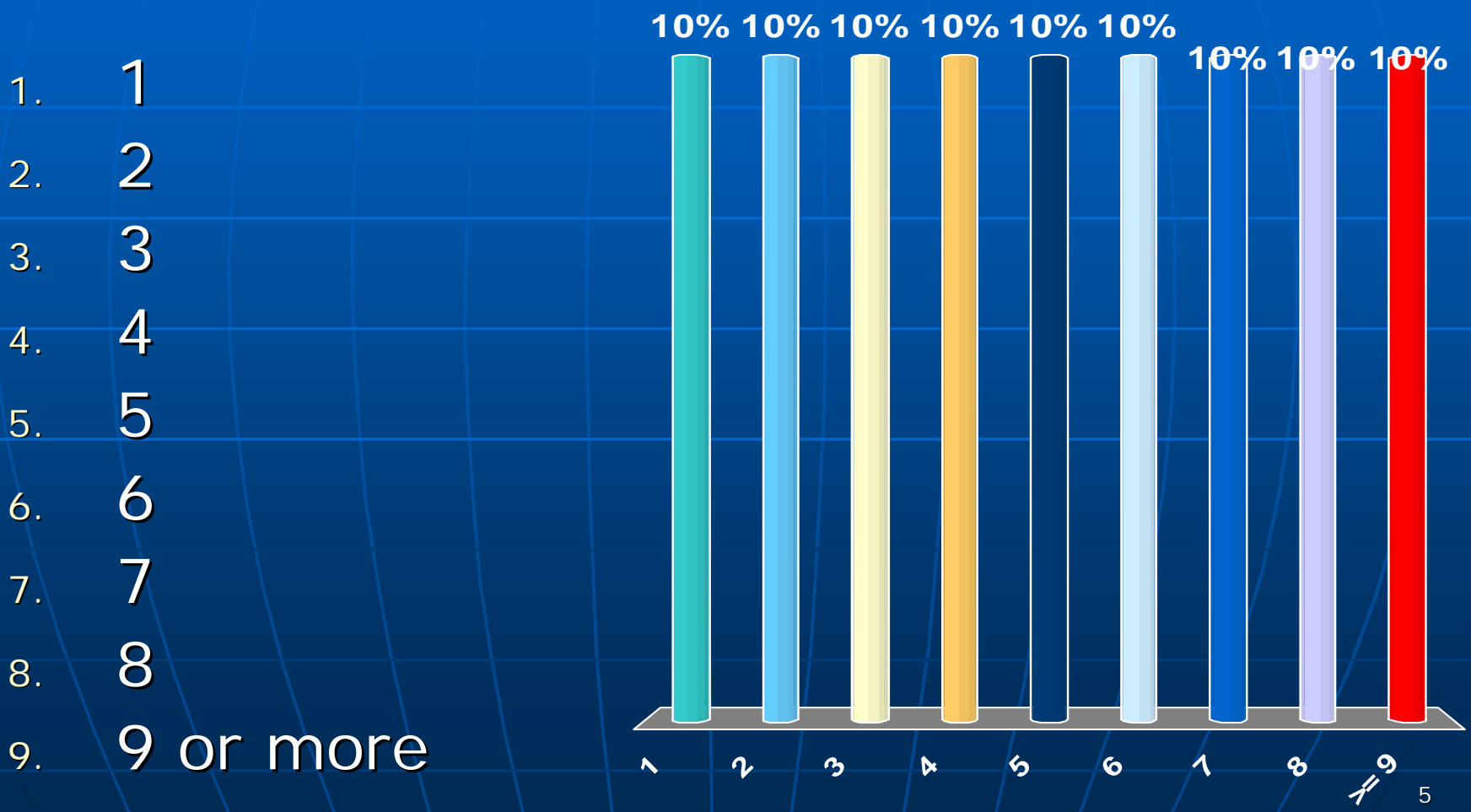
Parity Distribution

Parity prior to culling ^a	1	2	3	4	5	6	7	8	9	10
Percent of farrowings from each parity (steady-state parity distribution)										
Parity 1	100%	54%	38%	31%	26%	23%	21%	20%	18%	18%
Parity 2		46%	33%	27%	23%	20%	19%	17%	16%	15%
Parity 3			29%	23%	20%	17%	16%	15%	14%	13%
Parity 4				20%	17%	15%	14%	13%	12%	11%
Parity 5					15%	13%	12%	11%	10%	10%
Parity 6						11%	10%	10%	9%	9%
Parity 7							9%	8%	8%	7%
Parity 8								7%	7%	6%
Parity 9									6%	5%
Parity 10										5%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average parity ^b	1.00	1.46	1.90	2.32	2.70	3.07	3.40	3.76	4.05	4.32

Parity Distribution

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Parity 2		46%	33%	27%	23%	20%	19%	17%	16%	15%
Parity 3			29%	23%	20%	17%	16%	15%	14%	13%
Parity 4				20%	17%	15%	14%	13%	12%	11%
Parity 5					15%	13%	12%	11%	10%	10%
Parity 6						11%	10%	10%	9%	9%
Parity 7							9%	8%	8%	7%
Parity 8								7%	7%	6%
Parity 9									6%	5%
Parity 10										5%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Average parity ^b	1.00	1.46	1.90	2.32	2.70	3.07	3.40	3.76	4.05	4.32

What number of litters/sow do you think maximizes returns over total costs?



- 1. 1
- 2. 2
- 3. 3
- 4. 4
- 5. 5
- 6. 6
- 7. 7
- 8. 8
- 9. 9 or more

Key Assumptions: Cost-Return Analysis

- Sow herd size is constant (1,200 hd)
- Conception rate is 86% of prior parity's
 - 80% for 1st parity sows; 20% for 10th
- Total pigs weaned/sow/year
 - Maximized at 8th parity; similar for 5th-10th

Cost-Return Budget

Parity Prior to Culling ^a	1	2	3	4	5
A. TOTAL VARIABLE COSTS	\$54.44	\$40.55	\$36.24	\$34.19	\$33.18
B. TOTAL FIXED COSTS	\$8.53	\$8.15	\$7.96	\$7.85	\$7.78
C. TOTAL COSTS PER PIG SOLD	\$62.97	\$48.70	\$44.20	\$42.04	\$40.96
D. GROSS RETURNS PER PIG SOLD	\$34.01	\$34.01	\$34.01	\$34.01	\$34.01
E. RETURNS OVER VARIABLE COSTS (D - A), \$/hd	(\$20.43)	(\$6.54)	(\$2.22)	(\$0.18)	\$0.83
F. RETURNS OVER TOTAL COSTS (D - C), \$/hd	(\$28.96)	(\$14.68)	(\$10.18)	(\$8.03)	(\$6.95)
G. NET RETURN ON INVESTMENT	-32.1%	-14.1%	-8.1%	-5.2%	-3.7%
Parity Prior to Culling ^a	6	7	8	9	10
A. TOTAL VARIABLE COSTS	\$32.48	\$32.17	\$31.93	\$31.88	\$32.04
B. TOTAL FIXED COSTS	\$7.73	\$7.71	\$7.69	\$7.71	\$7.74
C. TOTAL COSTS PER PIG SOLD	\$40.21	\$39.87	\$39.62	\$39.59	\$39.77
D. GROSS RETURNS PER PIG SOLD	\$34.01	\$34.01	\$34.01	\$34.01	\$34.01
E. RETURNS OVER VARIABLE COSTS (D - A), \$/hd	\$1.53	\$1.85	\$2.08	\$2.13	\$1.98
F. RETURNS OVER TOTAL COSTS (D - C), \$/hd	(\$6.20)	(\$5.86)	(\$5.61)	(\$5.57)	(\$5.76)
G. NET RETURN ON INVESTMENT	-2.7%	-2.2%	-1.9%	-1.8%	-2.0%

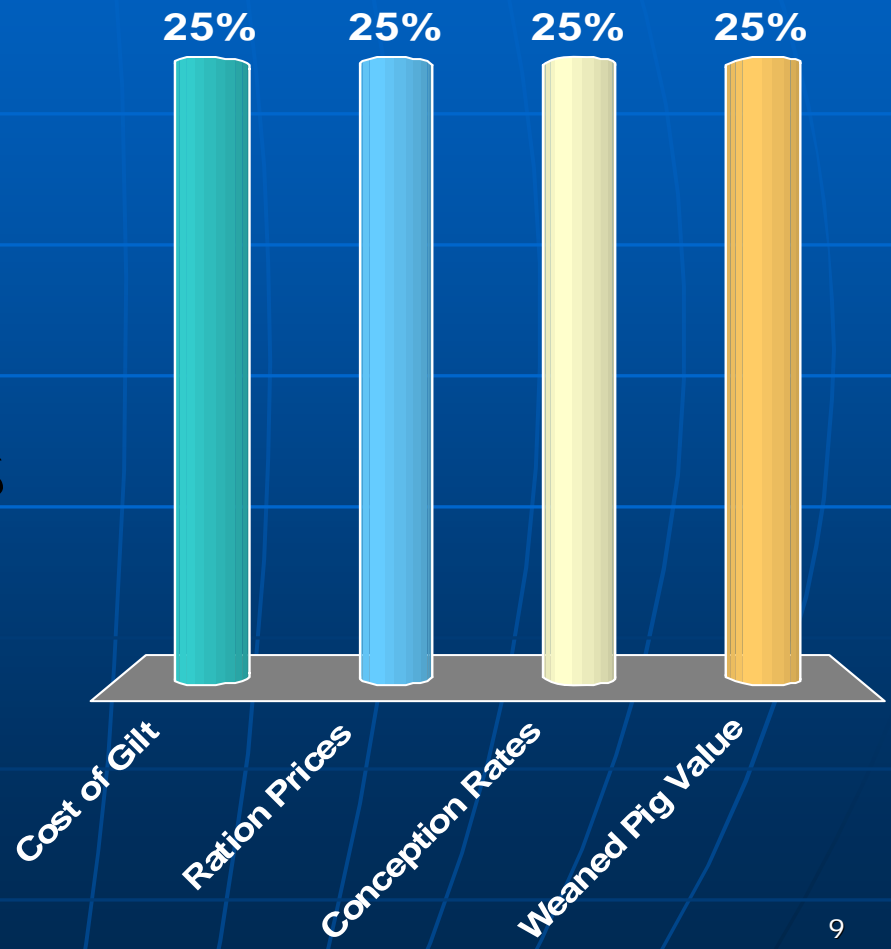
Cost-Return Budget

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G. NET RETURN ON INVESTMENT	-2.7%	-2.2%	-1.9%	-1.8%	-2.0%

Only \$0.10
between 7th &
10th parities

Which factor do you think most impacts the optimal # of litters/sow?

1. Cost of Gilt
2. Ration Prices
3. Conception Rates
4. Weaned Pig Values



Sensitivity Analysis: Cost of Replacement Gilt

	<u>Parity Prior to Culling:</u>				
	1	2	3	4	5
	<u>Return over Total Costs, \$/hd</u>				
Cost of Replacement Gilt (\$/hd) Sensitivity:					
\$169 (25% Lower)	\$ (19.64)	\$ (9.80)	\$ (6.73)	\$ (5.27)	\$ (4.56)
\$225 (Base)	\$ (28.96)	\$ (14.68)	\$ (10.18)	\$ (8.03)	\$ (6.95)
\$281 (25% Higher)	\$ (38.28)	\$ (19.57)	\$ (13.64)	\$ (10.78)	\$ (9.33)
	6	7	8	9	10
Cost of Replacement Gilt (\$/hd) Sensitivity:					
\$169 (25% Lower)	\$ (4.09)	\$ (3.91)	\$ (3.80)	\$ (3.87)	\$ (4.11)
\$225 (Base)	\$ (6.20)	\$ (5.86)	\$ (5.61)	\$ (5.57)	\$ (5.76)
\$281 (25% Higher)	\$ (8.31)	\$ (7.80)	\$ (7.41)	\$ (7.27)	\$ (7.41)

Sensitivity Analysis: Feed Ration Prices

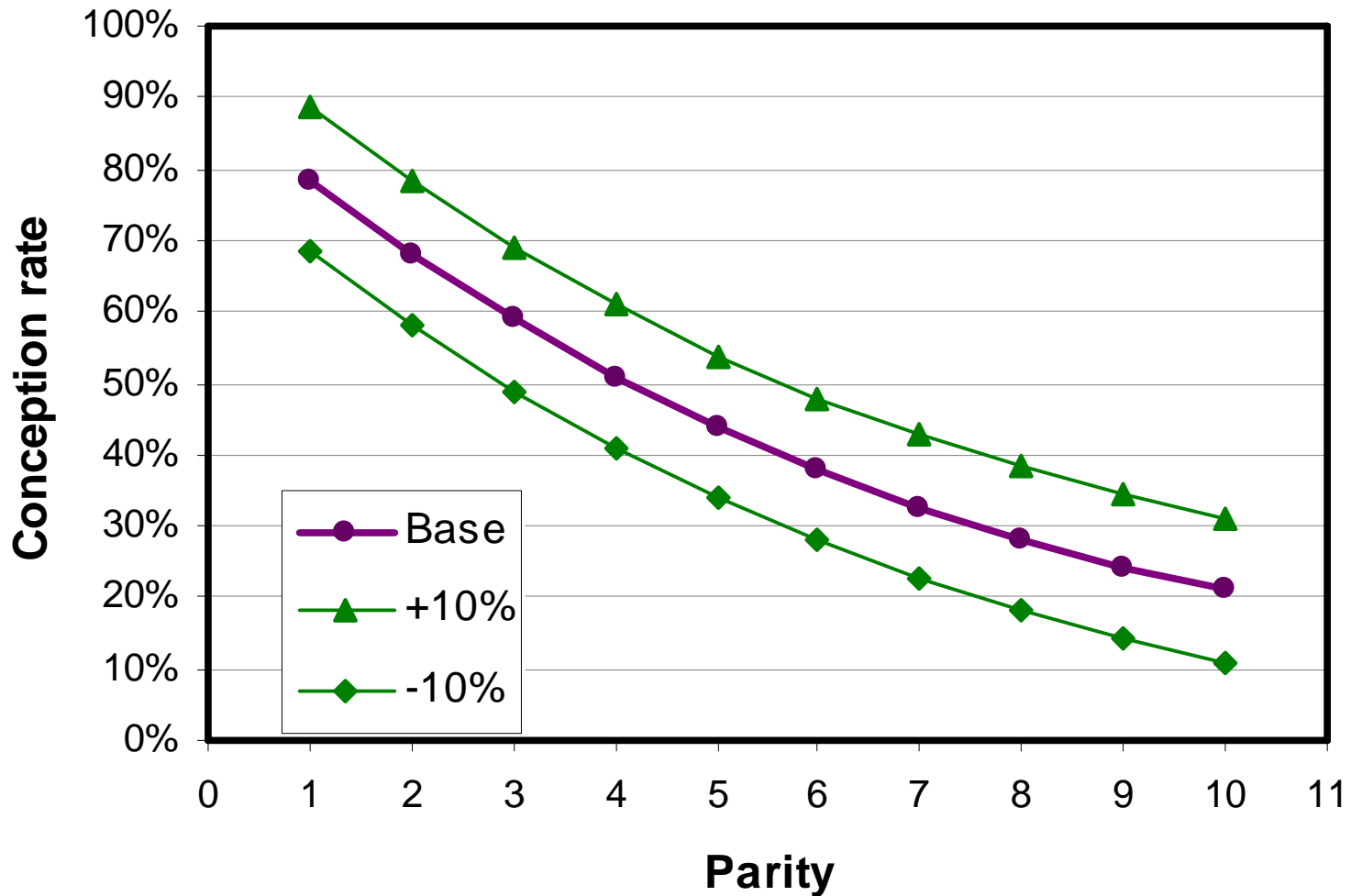
	<u>Parity Prior to Culling:</u>				
	1	2	3	4	5
	<u>Return over Total Costs, \$/hd</u>				
Cost of Diets (\$/ton) Sensitivity:					
Diets 25% Lower	\$ (26.09)	\$ (11.88)	\$ (7.39)	\$ (5.22)	\$ (4.12)
Base	\$ (28.96)	\$ (14.68)	\$ (10.18)	\$ (8.03)	\$ (6.95)
Diets 25% Higher	\$ (31.77)	\$ (17.43)	\$ (12.92)	\$ (10.77)	\$ (9.71)
	6	7	8	9	10
Cost of Diets (\$/ton) Sensitivity:					
Diets 25% Lower	\$ (3.35)	\$ (2.97)	\$ (2.69)	\$ (2.61)	\$ (2.75)
Base	\$ (6.20)	\$ (5.86)	\$ (5.61)	\$ (5.57)	\$ (5.76)
Diets 25% Higher	\$ (8.99)	\$ (8.68)	\$ (8.46)	\$ (8.47)	\$ (8.71)

Sensitivity Analysis: Conception Rates

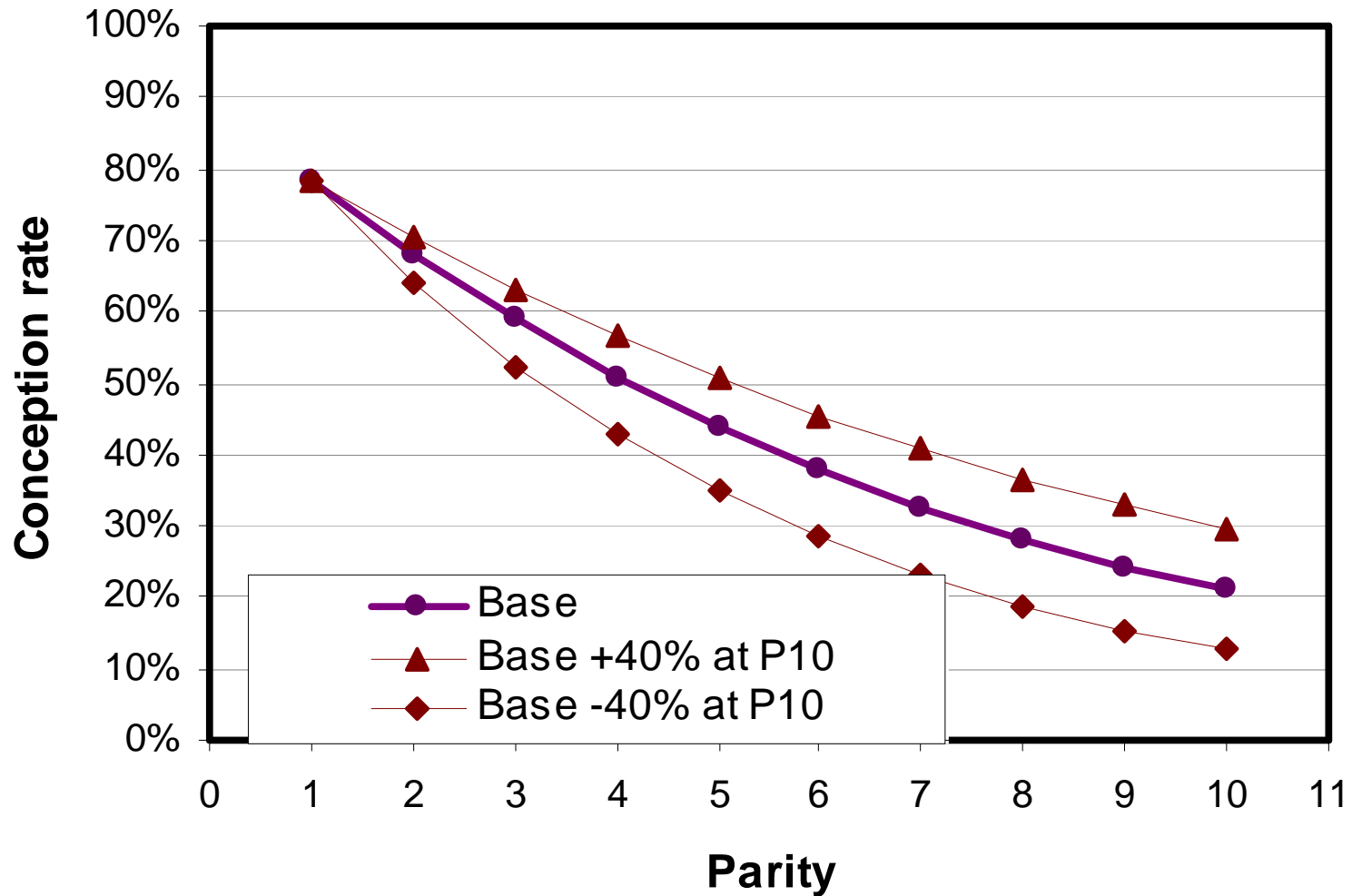
- 4 Scenarios Considered:
 1. 10% enhancement at all parities
 2. 10% reduction at all parities
 3. 40% enhancement at parity 10
 1. No change at P1, accelerating increase to P10
 4. 40% reduction at parity 10
 1. No change at P1, accelerating decrease to P10

Sensitivity Analysis: Conception Rates

Uniform 10% Changes



Sensitivity Analysis: Increasing Conception Rates Changes (0-40%)



Sensitivity Analysis: Conception Rates

	<u>Parity Prior to Culling:</u>				
	1	2	3	4	5
	<u>Return over Total Costs, \$/hd</u>				
Conception Rate Sensitivity:					
Base	\$ (28.96)	\$ (14.68)	\$ (10.18)	\$ (8.03)	\$ (6.95)
Base +10%	\$ (25.88)	\$ (12.89)	\$ (8.89)	\$ (6.94)	\$ (5.77)
Base -10%	\$ (33.05)	\$ (17.07)	\$ (12.13)	\$ (9.59)	\$ (8.31)
Base to +40% at P10	\$ (28.96)	\$ (14.35)	\$ (9.65)	\$ (7.53)	\$ (6.25)
Base to -40% at P10	\$ (28.96)	\$ (15.29)	\$ (10.98)	\$ (9.02)	\$ (7.98)
	6	7	8	9	10
Conception Rate Sensitivity:					
Base	\$ (6.20)	\$ (5.86)	\$ (5.61)	\$ (5.57)	\$ (5.76)
Base +10%	\$ (5.01)	\$ (4.80)	\$ (4.56)	\$ (4.75)	\$ (4.75)
Base -10%	\$ (7.63)	\$ (7.38)	\$ (7.16)	\$ (7.17)	\$ (7.15)
Base to +40% at P10	\$ (5.46)	\$ (5.09)	\$ (4.90)	\$ (4.84)	\$ (4.95)
Base to -40% at P10	\$ (7.44)	\$ (6.95)	\$ (6.82)	\$ (6.82)	\$ (7.10)

Sensitivity Analysis: Weaned Pig Values

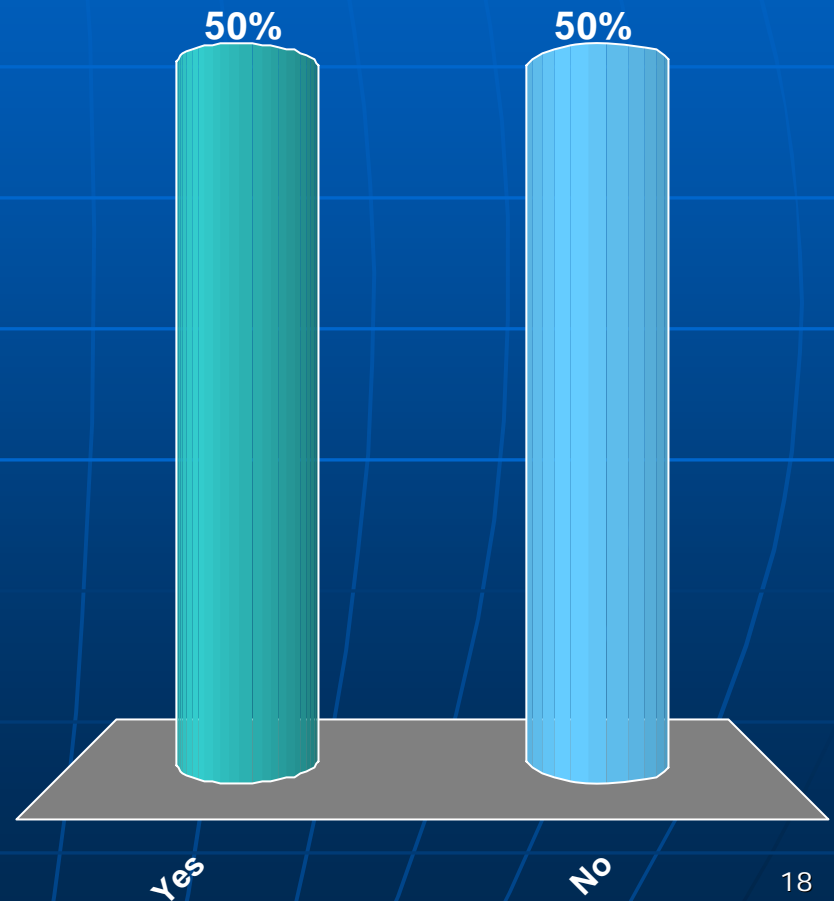
	<u>Parity Prior to Culling:</u>				
	1	2	3	4	5
	<u>Return over Total Costs, \$/hd</u>				
Weaned Pig Value (\$/hd) Sensitivity:					
\$25.50 (-25%)	\$ (37.47)	\$ (23.20)	\$ (18.70)	\$ (16.54)	\$ (15.46)
\$34.01 (Base)	\$ (28.96)	\$ (14.68)	\$ (10.18)	\$ (8.03)	\$ (6.95)
\$42.50 (+25%)	\$ (20.47)	\$ (6.20)	\$ (1.70)	\$ 0.46	\$ 1.54
	6	7	8	9	10
Weaned Pig Value (\$/hd) Sensitivity:					
\$25.50 (-25%)	\$ (14.71)	\$ (14.37)	\$ (14.12)	\$ (14.09)	\$ (14.27)
\$34.01 (Base)	\$ (6.20)	\$ (5.86)	\$ (5.61)	\$ (5.57)	\$ (5.76)
\$42.50 (+25%)	\$ 2.29	\$ 2.63	\$ 2.88	\$ 2.91	\$ 2.73

Summary

- 9th Parity Strategy = max ROTC
 - Little difference between 7-10 parities
- Sensitivity analysis
 - Returns certainly effected;
 - But selection of parity schedule is rather insensitive

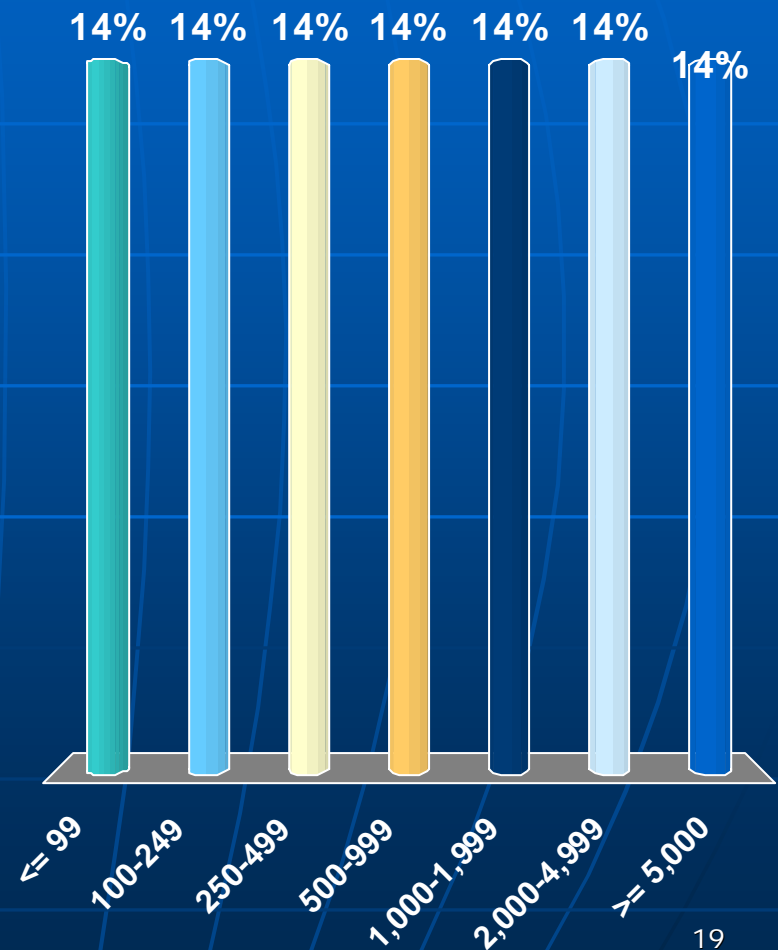
Are you the only representative (co-workers, employees, etc.) from your operation using a “clicker?”

1. Yes
2. No



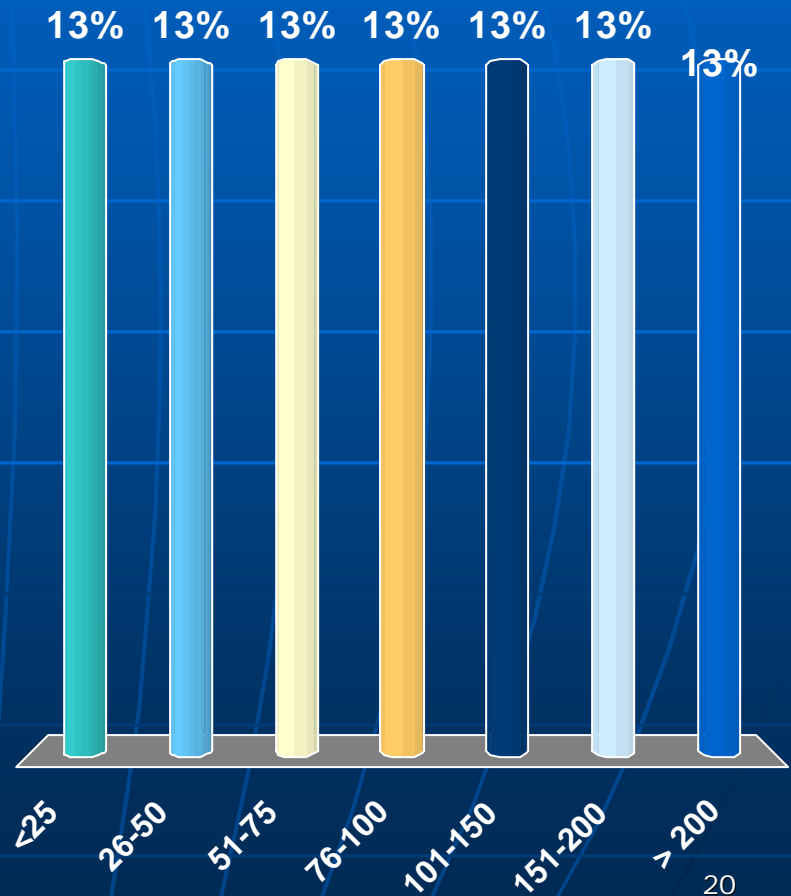
How many sows/gilts do you currently have in your operation?

1. ≤ 99
2. 100 - 249
3. 250 - 499
4. 500 - 999
5. 1,000 - 1,999
6. 2,000 - 4,999
7. $\geq 5,000$



How far did you travel to attend this meeting?

1. < 25 miles
2. 26 – 50 miles
3. 51 – 75 miles
4. 76 – 100 miles
5. 101 – 150 miles
6. 151 – 200 miles
7. > 200 miles



The quality of information provided by this program was “excellent.”

1. Strongly Disagree
2. Disagree
3. Somewhat disagree
4. Somewhat agree
5. Agree
6. Strongly Agree

What value do you place on this program in terms of improvements in your operation?

1. \$0
2. \$1-\$100
3. \$101-\$499
4. \$500-\$999
5. \$1,000-\$4,999
6. \$5,000 or higher

Overall, how useful was the
*Sow Management: Exactly How Many
Litters/Sow Should I be Targeting*
presentation to you and your operation?

1. Entirely Useless
2. Useless
3. Somewhat Useless
4. Somewhat Useful
5. Useful
6. Extremely Useful

Questions ???

Tonsor's website:

<http://www.msu.edu/user/gtonsor/>