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Supplementary Material

Using mid-infrared spectroscopy to identify more fertile cows for insemination to sexed semen

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Supplementary Materials

Table S1. Comparison of calving rate from first artificial insemination, b) overall calving rate, and c) number of artificial insemination events amongst high, medium and low fertility subsets of cows, where subsets were defined based on highest or lowest probability of conceiving to 1st service (MFERT) or earliest or latest calving date (CDATE) and assignment via random number generator (RANDOM). Overall cohort averages and standard errors are given [^]

% assigned to High group	High			Medium			Low		
	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE
<i>Calving rate from first artificial insemination</i>									
5	38.8 (1.4) ^a	43.9 (2.4) ^b	40.7 (2.4) ^{ab}	38.8 (1.4) ^a	39.2 (1.5) ^b	39.2 (1.4) ^b	38.8 (1.4) ^a	26.2 (2.6) ^b	29.9 (3.0) ^b
10	38.8 (1.4) ^a	45.1 (2.2) ^b	41.7 (2.1) ^b	38.8 (1.4) ^a	39.4 (1.5) ^b	39.4 (1.4) ^b	38.8 (1.4) ^a	28.0 (2.3) ^b	31.6 (2.2) ^b
15	38.8 (1.4) ^a	45.7 (2.1) ^b	41.6 (1.9) ^b	38.8 (1.4) ^a	39.5 (1.5) ^b	39.7 (1.5) ^b	38.8 (1.4) ^a	28.8 (2.0) ^b	31.8 (2.0) ^b
20	38.8 (1.4) ^a	45.7 (2.0) ^b	41.5 (1.8) ^b	38.8 (1.4) ^a	39.6 (1.5) ^b	40.2 (1.5) ^b	38.8 (1.4) ^a	29.5 (1.8) ^b	31.8 (1.9) ^b
25	38.8 (1.4) ^a	45.6 (1.9) ^b	42.1 (1.7) ^b	38.8 (1.4) ^a	39.9 (1.6) ^b	40.2 (1.5) ^b	38.8 (1.4) ^a	29.9 (1.6) ^b	32.7 (1.8) ^b
30	38.8 (1.4) ^a	45.0 (1.8) ^b	42.0 (1.7) ^b	38.8 (1.4) ^a	40.0 (1.6) ^b	40.5 (1.6) ^b	38.8 (1.4) ^a	31.1 (1.6) ^b	33.2 (1.7) ^b
35	38.8 (1.4) ^a	44.3 (1.8) ^b	42.1 (1.6) ^b	38.8 (1.4) ^a	40.8 (1.7) ^b	40.1 (1.6) ^{ab}	38.8 (1.4) ^a	31.6 (1.6) ^b	34.4 (1.7) ^b
40	38.8 (1.4) ^a	43.9 (1.7) ^b	41.7 (1.6) ^b	38.8 (1.4) ^a	42.0 (1.7) ^b	39.6 (1.7) ^{ab}	38.8 (1.4) ^a	32.2 (1.5) ^b	35.5 (1.7) ^c
45	38.8 (1.4) ^a	43.8 (1.6) ^b	41.5 (1.5) ^b	38.8 (1.4) ^a	41.4 (2.1) ^a	39.8 (1.9) ^a	38.8 (1.4) ^a	33.2 (1.5) ^b	35.9 (1.7) ^c
50	38.8 (1.4) ^a	43.6 (1.6) ^b	41.6 (1.5) ^c	NA	NA	NA	38.8 (1.4) ^a	34.0 (1.5) ^b	36.0 (1.7) ^c
<i>Overall calving rate</i>									
5	65.1 (1.8) ^a	76.4 (2.5) ^b	73.6 (2.7) ^b	65.1 (1.8) ^a	65.8 (1.9) ^b	65.5 (1.8) ^b	65.1 (1.8) ^a	39.7 (3.1) ^b	47.9 (3.4) ^c
10	65.1 (1.8) ^a	76.5 (2.1) ^b	73.6 (2.7) ^b	65.1 (1.8) ^a	66.3 (1.9) ^b	65.7 (1.8) ^b	65.1 (1.8) ^a	44.0 (2.8) ^b	51.8 (2.8) ^c
15	65.1 (1.8) ^a	77.0 (2.0) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	66.5 (1.9) ^b	66.0 (1.8) ^b	65.1 (1.8) ^a	46.2 (2.5) ^b	53.5 (2.8) ^c
20	65.1 (1.8) ^a	76.3 (1.9) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	66.8 (1.9) ^b	66.4 (1.8) ^b	65.1 (1.8) ^a	48.4 (2.3) ^b	54.8 (2.7) ^c
25	65.1 (1.8) ^a	75.5 (1.9) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	67.2 (1.9) ^b	66.6 (1.8) ^b	65.1 (1.8) ^a	50.4 (2.2) ^b	56.1 (2.5) ^c
30	65.1 (1.8) ^a	74.7 (1.8) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	67.3 (2.0) ^b	66.7 (1.9) ^b	65.1 (1.8) ^a	52.4 (2.1) ^b	57.1 (2.4) ^c
35	65.1 (1.8) ^a	74.0 (1.9) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	67.6 (2.0) ^b	66.7 (1.9) ^b	65.1 (1.8) ^a	54.0 (2.1) ^b	58.2 (2.3) ^c
40	65.1 (1.8) ^a	73.2 (1.8) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	69.2 (2.0) ^b	66.5 (2.1) ^{ab}	65.1 (1.8) ^a	54.8 (2.1) ^b	59.3 (2.2) ^c
45	65.1 (1.8) ^a	73.0 (1.8) ^b	73.6 (2.7) ^c	65.1 (1.8) ^a	69.5 (2.3) ^b	67.0 (2.3) ^{ab}	65.1 (1.8) ^a	56.1 (2.1) ^b	60.0 (2.2) ^c
50	65.1 (1.8) ^a	72.9 (1.8) ^b	73.6 (2.7) ^c	NA	NA	NA	65.1 (1.8) ^a	57.3 (2.1) ^b	60.6 (2.2) ^c
<i>number of artificial inseminations</i>									
5	1.86 (0.05) ^a	1.85 (0.07) ^a	1.85 (0.06) ^a	1.85 (0.05) ^a	1.86 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.76 (0.08) ^b	1.89 (0.08) ^{ab}

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10	1.86 (0.05) ^a	1.83 (0.06) ^a	1.85 (0.06) ^a	1.85 (0.05) ^a	1.86 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.82 (0.07) ^a	1.87 (0.07) ^a
15	1.85 (0.05) ^a	1.82 (0.05) ^a	1.82 (0.05) ^a	1.85 (0.05) ^a	1.86 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.86 (0.07) ^a	1.87 (0.07) ^a
20	1.85 (0.05) ^a	1.82 (0.05) ^a	1.83 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.84 (0.05) ^a	1.85 (0.05) ^a	1.87 (0.07) ^a	1.9 (0.06) ^a
25	1.85 (0.05) ^a	1.83 (0.05) ^a	1.82 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.85 (0.05) ^a	1.88 (0.07) ^a	1.89 (0.06) ^a
30	1.85 (0.05) ^a	1.84 (0.05) ^a	1.82 (0.05) ^a	1.85 (0.05) ^a	1.84 (0.05) ^a	1.83 (0.05) ^a	1.85 (0.05) ^a	1.88 (0.06) ^a	1.9 (0.06) ^a
35	1.85 (0.05) ^a	1.84 (0.05) ^a	1.82 (0.05) ^a	1.85 (0.05) ^a	1.83 (0.05) ^a	1.83 (0.05) ^a	1.85 (0.05) ^a	1.88 (0.06) ^a	1.9 (0.06) ^a
40	1.85 (0.05) ^a	1.83 (0.05) ^a	1.83 (0.05) ^a	1.85 (0.05) ^a	1.82 (0.05) ^a	1.83 (0.05) ^a	1.85 (0.05) ^a	1.89 (0.06) ^a	1.89 (0.06) ^a
45	1.85 (0.05) ^a	1.83 (0.05) ^a	1.82 (0.05) ^a	1.86 (0.05) ^a	1.82 (0.06) ^a	1.85 (0.06) ^a	1.85 (0.05) ^a	1.88 (0.06) ^a	1.88 (0.06) ^a
50	1.85 (0.05) ^a	1.83 (0.05) ^a	1.82 (0.05) ^a	NA	NA	NA	1.85 (0.05) ^a	1.87 (0.06) ^a	1.88 (0.06) ^a

^a differing subscripts within a fertility subset in the same row indicate results were significantly ($p < 0.05$) different from one another in Wilcoxon signed rank test

Table S2. Net benefit (\$/cow) in Breeding Program 1 (using sexed semen at first service and conventional dairy semen for subsequent inseminations in a variable (5-50%) proportion of cows within a cohort) where 3 strategies were used for ranking cows to allocate semen, allocated using probability of conceiving to 1st service (MFERT), calving date (CDATE) and assignment via random number generator (RANDOM), assuming no change, a 5% decrease or, a 10% decrease in sexed semen conception rates relative to conventional semen. Overall cohort averages and standard errors are given ^A

% to sexed semen	no change in conception rate with sexed semen			5% decrease in conception rate with sexed semen			10% decrease in conception rate with sexed semen		
	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE
5	34.56 (3.62) ^a	34.82 (3.60) ^b	34.68 (3.61) ^b	34.33 (3.62) ^a	34.56 (3.6) ^b	34.43 (3.6) ^b	34.1 (3.61) _a	34.3 (3.59) ^b	34.19 (3.6) ^b
10	34.91 (3.68) ^a	35.53 (3.66) ^b	35.18 (3.65) ^{ab}	34.45 (3.67) ^a	34.99 (3.65) ^b	34.69 (3.64) ^{ab}	33.99 (3.65) _a	34.46 (3.63) ^b	34.19 (3.63) ^{ab}
15	35.26 (3.74) ^a	36.24 (3.71) ^b	35.65 (3.72) ^b	34.57 (3.72) ^a	35.42 (3.69) ^b	34.91 (3.7) ^b	33.87 (3.70) _a	34.61 (3.67) ^b	34.17 (3.68) ^b
20	35.60 (3.80) ^a	36.92 (3.75) ^b	36.11 (3.76) ^b	34.68 (3.77) ^a	35.83 (3.73) ^b	35.12 (3.74) ^b	33.76 (3.74) _a	34.74 (3.71) ^b	34.13 (3.71) ^b
25	35.95 (3.85) ^a	37.53 (3.82) ^b	36.72 (3.84) ^b	34.8 (3.82) ^a	36.18 (3.78) ^b	35.47 (3.8) ^b	33.64 (3.78) _a	34.83 (3.75) ^b	34.22 (3.77) ^b
30	36.31 (3.91) ^a	38.02 (3.86) ^b	37.2 (3.89) ^b	34.92 (3.87) ^a	36.42 (3.82) ^b	35.7 (3.85) ^b	33.53 (3.82) _a	34.82 (3.79) ^b	34.21 (3.81) ^b
35	36.63 (3.97) ^a	38.43 (3.94) ^b	37.7 (3.95) ^b	35.01 (3.92) ^a	36.59 (3.89) ^b	35.95 (3.9) ^b	33.4 (3.87) _a	34.75 (3.84) ^b	34.2 (3.85) ^b
40	37.00 (4.03) ^a	38.90 (4.00) ^b	38.07 (4.0) ^b	35.15 (3.97) ^a	36.81 (3.94) ^b	36.08 (3.94) ^b	33.3 (3.91) _a	34.72 (3.89) ^b	34.1 (3.89) ^b
45	37.32 (4.08) ^a	39.43 (4.05) ^b	38.46 (4.04) ^c	35.24 (4.02) ^a	37.09 (3.98) ^b	36.24 (3.98) ^c	33.17 (3.95) _a	34.74 (3.92) ^b	34.02 (3.92) ^c
50	37.66 (4.14) ^a	39.95 (4.11) ^b	38.99 (4.09) ^c	35.35 (4.07) ^a	37.35 (4.04) ^b	36.52 (4.02) ^c	33.04 (4.00) _a	34.75 (3.97) ^b	34.04 (3.95) ^c

^A differing subscripts within a conception rate grouping in the same row indicate results were significantly ($p < 0.05$) different from one another in Wilcoxon signed rank test

Table S3. Net benefit (\$/cow) in Breeding Program 2 (targeted usage of sexed semen and beef semen in a variable proportion of cows within a cohort), assuming dairy-beef calf values of \$100 and beef semen costs of \$10, \$15 and \$20 per straw. Three strategies were used for ranking cows to allocate semen, the probability of conceiving to 1st service (MFERT), calving date (CDATE) or assignment via random number generator (RANDOM) assuming, no change, a 5% decrease or 10% decrease in sexed semen conception rates relative to conventional semen. Overall cohort averages and standard errors are given^A

% to sexed semen	\$10			\$15			\$20		
	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE
<i>no change conception rate with sexed semen</i>									
10	32.56 (3.56) ^a	34.51 (3.51) ^b	33.7 (3.51) ^c	31.63 (3.57) ^a	33.14 (3.52) ^b	31.88 (3.51) ^c	30.71 (3.58) ^a	30.66 (3.54) ^b	29.02 (3.53) ^c
20	30.89 (3.55) ^a	34.41 (3.48) ^b	32.83 (3.48) ^c	29.03 (3.58) ^a	32.54 (3.51) ^b	30.93 (3.50) ^c	27.18 (3.61) ^a	30.66 (3.54) ^b	29.02 (3.53) ^c
30	29.23 (3.54) ^a	33.49 (3.47) ^b	31.83 (3.49) ^b	26.46 (3.58) ^a	30.68 (3.51) ^b	28.98 (3.53) ^c	23.68 (3.63) ^a	27.86 (3.56) ^b	26.13 (3.58) ^c
40	27.56 (3.53) ^a	32.28 (3.47) ^b	30.29 (3.46) ^c	23.86 (3.59) ^a	28.51 (3.53) ^b	26.52 (3.52) ^c	20.15 (3.65) ^a	24.73 (3.59) ^b	22.74 (3.58) ^c
50	25.92 (3.53) ^a	30.86 (3.47) ^b	28.86 (3.43) ^c	21.31 (3.61) ^a	26.19 (3.55) ^b	24.18 (3.51) ^c	16.70 (3.69) ^a	21.53 (3.62) ^b	19.49 (3.59) ^c
<i>5% decrease in conception rate with sexed semen</i>									
10	32.10 (3.54) ^a	33.97 (3.5) ^b	33.21 (3.5) ^c	31.17 (3.56) ^a	32.32 (3.50) ^b	31.13 (3.49) ^c	30.25 (3.57) ^a	29.57 (3.51) ^b	28.04 (3.50) ^c
20	29.96 (3.52) ^a	33.32 (3.45) ^b	31.84 (3.45) ^c	28.11 (3.55) ^a	31.45 (3.48) ^b	29.94 (3.48) ^c	26.26 (3.58) ^a	29.57 (3.51) ^b	28.04 (3.50) ^c
30	27.84 (3.49) ^a	31.89 (3.43) ^b	30.33 (3.45) ^b	25.07 (3.54) ^a	29.07 (3.47) ^b	27.48 (3.49) ^c	22.30 (3.58) ^a	26.26 (3.51) ^b	24.63 (3.53) ^c
40	25.71 (3.47) ^a	30.19 (3.41) ^b	28.31 (3.40) ^c	22.01 (3.53) ^a	26.42 (3.47) ^b	24.53 (3.46) ^c	18.30 (3.59) ^a	22.64 (3.53) ^b	20.76 (3.52) ^c
50	23.61 (3.45) ^a	28.26 (3.39) ^b	26.39 (3.36) ^c	19.00 (3.53) ^a	23.59 (3.47) ^b	21.70 (3.43) ^c	14.39 (3.61) ^a	18.93 (3.55) ^b	17.02 (3.51) ^c
<i>10% decrease in conception rate with sexed semen</i>									
10	31.64 (3.53) ^a	33.43 (3.49) ^b	32.72 (3.48) ^c	30.71 (3.54) ^a	31.51 (3.48) ^b	30.39 (3.47) ^c	29.79 (3.56) ^a	28.48 (3.49) ^b	27.05 (3.48) ^c
20	29.04 (3.49) ^a	32.23 (3.43) ^b	30.85 (3.43) ^c	27.19 (3.52) ^a	30.36 (3.46) ^b	28.95 (3.45) ^c	25.33 (3.55) ^a	28.48 (3.49) ^b	27.05 (3.48) ^c
30	26.45 (3.45) ^a	30.28 (3.39) ^b	28.83 (3.41) ^b	23.68 (3.49) ^a	27.47 (3.43) ^b	25.98 (3.45) ^c	20.91 (3.54) ^a	24.66 (3.47) ^b	23.13 (3.49) ^c
40	23.86 (3.41) ^a	28.11 (3.35) ^b	26.32 (3.35) ^c	20.16 (3.47) ^a	24.33 (3.41) ^b	22.55 (3.40) ^c	16.45 (3.53) ^a	20.55 (3.47) ^b	18.77 (3.46) ^c
50	21.3 (3.38) ^a	25.66 (3.32) ^b	23.91 (3.29) ^c	16.69 (3.46) ^a	20.99 (3.39) ^b	19.22 (3.36) ^c	12.08 (3.54) ^a	16.33 (3.47) ^b	14.54 (3.44) ^c

^A differing subscripts within a semen price grouping in the same row indicate results were significantly (p<0.05) different from one another in Wilcoxon signed rank test

Table S4. Net benefit (\$/cow) in Breeding Program 2 (targeted usage of sexed semen and beef semen in a variable proportion of cows within a cohort), assuming dairy-beef calf values of \$200 and beef semen costs of \$10, \$15 and \$20 per straw. Three strategies were used for ranking cows to allocate semen, the probability of conceiving to 1st service (MFERT), calving date (CDATE) or assignment via random number generator (RANDOM) assuming, no change, a 5% decrease or 10% decrease in sexed semen conception rates relative to conventional semen. Overall cohort averages and standard errors are given^A

% to sexed semen	\$10			\$15			\$20		
	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE
no change conception rate with sexed semen									
10	39.05 (3.71) ^a	38.89 (3.70) ^a	38.87 (3.70) ^a	38.12 (3.72) ^a	40.08 (3.79) ^a	39.89 (3.81) ^a	37.20 (3.73) ^a	40.33 (3.88) ^a	39.98 (3.9) ^a
20	43.91 (3.85) ^a	44.08 (3.82) ^a	43.78 (3.85) ^a	42.06 (3.87) ^a	42.21 (3.85) ^a	41.88 (3.88) ^a	40.20 (3.90) ^a	40.33 (3.88) ^a	39.98 (3.9) ^a
30	48.75 (3.99) ^a	49.20 (3.97) ^a	48.95 (4.01) ^a	45.98 (4.03) ^a	46.38 (4.00) ^a	46.10 (4.04) ^a	43.20 (4.07) ^a	43.57 (4.04) ^a	43.25 (4.08) ^a
40	53.60 (4.14) ^a	54.19 (4.14) ^a	53.99 (4.14) ^a	49.90 (4.19) ^a	50.42 (4.19) ^a	50.21 (4.19) ^a	46.20 (4.24) ^a	46.64 (4.24) ^a	46.44 (4.24) ^a
50	58.33 (4.28) ^a	59.35 (4.27) ^b	59.02 (4.26) ^b	53.72 (4.34) ^a	54.68 (4.33) ^b	54.33 (4.32) ^b	49.11 (4.41) ^a	50.02 (4.39) ^b	49.65 (4.38) ^b
5% decrease in conception rate with sexed semen									
10	38.59 (3.69) ^a	38.36 (3.68) ^a	38.38 (3.69) ^a	37.66 (3.71) ^a	39.27 (3.77) ^a	39.15 (3.79) ^a	36.74 (3.72) ^a	39.24 (3.85) ^a	38.99 (3.87) ^a
20	42.98 (3.82) ^a	42.99 (3.80) ^a	42.80 (3.83) ^a	41.13 (3.85) ^a	41.12 (3.83) ^a	40.89 (3.85) ^a	39.28 (3.87) ^a	39.24 (3.85) ^a	38.99 (3.87) ^a
30	47.36 (3.95) ^a	47.59 (3.93) ^a	47.45 (3.96) ^a	44.59 (3.99) ^a	44.78 (3.96) ^a	44.60 (4.00) ^a	41.82 (4.03) ^a	41.97 (4.00) ^a	41.75 (4.04) ^a
40	51.75 (4.08) ^a	52.11 (4.08) ^a	52.00 (4.09) ^a	48.05 (4.13) ^a	48.33 (4.13) ^a	48.23 (4.14) ^a	44.35 (4.18) ^a	44.55 (4.18) ^a	44.45 (4.19) ^a
50	56.01 (4.21) ^a	56.75 (4.20) ^b	56.54 (4.19) ^b	51.41 (4.27) ^a	52.09 (4.26) ^b	51.85 (4.25) ^b	46.80 (4.33) ^a	47.42 (4.32) ^b	47.17 (4.32) ^b
10% decrease in conception rate with sexed semen									
10	38.13 (3.68) ^a	37.82 (3.67) ^b	37.88 (3.68) ^{ab}	37.21 (3.69) ^a	38.45 (3.75) ^b	38.41 (3.77) ^{ab}	36.28 (3.71) ^a	38.16 (3.83) ^b	38.01 (3.85) ^{ab}
20	42.06 (3.79) ^a	41.90 (3.77) ^a	41.81 (3.80) ^a	40.21 (3.82) ^a	40.03 (3.80) ^a	39.91 (3.83) ^a	38.36 (3.84) ^a	38.16 (3.83) ^a	38.01 (3.85) ^a
30	45.97 (3.91) ^a	45.99 (3.89) ^a	45.95 (3.92) ^a	43.20 (3.94) ^a	43.18 (3.93) ^a	43.10 (3.96) ^a	40.43 (3.98) ^a	40.37 (3.96) ^a	40.25 (3.99) ^a
40	49.90 (4.02) ^a	50.02 (4.03) ^a	50.02 (4.04) ^a	46.20 (4.07) ^a	46.24 (4.08) ^a	46.24 (4.08) ^a	42.50 (4.12) ^a	42.46 (4.13) ^a	42.47 (4.13) ^a
50	53.70 (4.14) ^a	54.15 (4.13) ^a	54.06 (4.13) ^a	49.09 (4.20) ^a	49.49 (4.19) ^a	49.37 (4.19) ^a	44.49 (4.26) ^a	44.82 (4.25) ^a	44.69 (4.25) ^a

^A differing subscripts within a semen price grouping in the same row indicate results were significantly (p<0.05) different from one another in Wilcoxon signed rank test

Table S5. Net benefit (\$/cow) in Breeding Program 2 (targeted usage of sexed semen and beef semen in a variable proportion of cows within a cohort), assuming dairy-beef calf values of \$250 and beef semen costs of \$10, \$15 and \$20 per straw. Three strategies were used for ranking cows to allocate semen, the probability of conceiving to 1st service (MFERT), calving date (CDATE) or assignment via random number generator (RANDOM) assuming, no change, a 5% decrease or 10% decrease in sexed semen conception rates relative to conventional semen. Overall cohort averages and standard errors are given¹

% to sexed semen	\$10			\$15			\$20		
	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE	RANDOM	MFERT	CDATE
<i>no change conception rate with sexed semen</i>									
10	42.29 (3.78) ^a	41.09 (3.79) ^b	41.46 (3.80) ^b	41.37 (3.80) ^a	43.55 (3.93) ^b	43.90 (3.97) ^b	40.45 (3.81) ^a	45.17 (4.06) ^b	45.46 (4.10) ^b
20	50.42 (4.00) ^a	48.92 (4.00) ^b	49.26 (4.06) ^b	48.57 (4.03) ^a	47.04 (4.03) ^b	47.36 (4.08) ^b	46.72 (4.05) ^a	45.17 (4.06) ^b	45.46 (4.10) ^b
30	58.51 (4.23) ^a	57.05 (4.23) ^b	57.51 (4.28) ^b	55.73 (4.26) ^a	54.24 (4.26) ^b	54.66 (4.32) ^b	52.96 (4.30) ^a	51.43 (4.30) ^b	51.81 (4.35) ^b
40	66.62 (4.45) ^a	65.15 (4.49) ^b	65.84 (4.51) ^b	62.92 (4.50) ^a	61.37 (4.54) ^b	62.06 (4.56) ^b	59.22 (4.55) ^a	57.60 (4.58) ^b	58.29 (4.60) ^b
50	74.53 (4.68) ^a	73.60 (4.70) ^b	74.09 (4.71) ^{ab}	69.92 (4.73) ^a	68.93 (4.75) ^b	69.41 (4.76) ^b	65.31 (4.79) ^a	64.26 (4.81) ^b	64.72 (4.82) ^b
<i>5% decrease in conception rate with sexed semen</i>									
10	41.83 (3.77) ^a	40.55 (3.78) ^b	40.96 (3.79) ^b	40.91 (3.78) ^a	42.74 (3.91) ^b	43.16 (3.95) ^b	39.99 (3.80) ^a	44.08 (4.03) ^b	44.47 (4.07) ^b
20	49.50 (3.97) ^a	47.83 (3.98) ^b	48.27 (4.03) ^b	47.64 (4.00) ^a	45.95 (4.01) ^b	46.37 (4.05) ^b	45.79 (4.02) ^a	44.08 (4.03) ^b	44.47 (4.07) ^b
30	57.12 (4.19) ^a	55.45 (4.19) ^b	56.01 (4.24) ^b	54.35 (4.22) ^a	52.64 (4.23) ^b	53.16 (4.28) ^b	51.58 (4.26) ^a	49.82 (4.26) ^b	50.32 (4.31) ^b
40	64.77 (4.40) ^a	63.06 (4.44) ^b	63.85 (4.46) ^b	61.07 (4.44) ^a	59.28 (4.49) ^b	60.08 (4.50) ^b	57.37 (4.49) ^a	55.51 (4.53) ^b	56.30 (4.55) ^b
50	72.22 (4.61) ^a	71.00 (4.63) ^b	71.61 (4.65) ^b	67.61 (4.66) ^a	66.33 (4.69) ^b	66.93 (4.70) ^b	63.00 (4.72) ^a	61.67 (4.75) ^b	62.24 (4.76) ^b
<i>10% decrease in conception rate with sexed semen</i>									
10	41.37 (3.76) ^a	40.01 (3.77) ^b	40.47 (3.78) ^c	40.45 (3.77) ^a	41.92 (3.89) ^b	42.41 (3.93) ^b	39.53 (3.78) ^a	42.99 (4.01) ^b	43.48 (4.05) ^b
20	48.57 (3.94) ^a	46.74 (3.96) ^b	47.29 (4.01) ^b	46.72 (3.97) ^a	44.87 (3.98) ^b	45.38 (4.03) ^b	44.87 (4.00) ^a	42.99 (4.01) ^b	43.48 (4.05) ^b
30	55.73 (4.14) ^a	53.85 (4.16) ^b	54.51 (4.20) ^b	52.96 (4.18) ^a	51.03 (4.19) ^b	51.66 (4.24) ^b	50.19 (4.22) ^a	48.22 (4.23) ^b	48.82 (4.27) ^b
40	62.92 (4.34) ^a	60.97 (4.39) ^b	61.87 (4.41) ^b	59.22 (4.39) ^a	57.20 (4.43) ^b	58.09 (4.45) ^c	55.52 (4.44) ^a	53.42 (4.48) ^b	54.32 (4.50) ^c
50	69.91 (4.54) ^a	68.40 (4.57) ^b	69.14 (4.59) ^c	65.30 (4.59) ^a	63.73 (4.62) ^b	64.45 (4.64) ^c	60.69 (4.65) ^a	59.07 (4.68) ^b	59.77 (4.70) ^c

^a differing subscripts within a semen price grouping in the same row indicate results were significantly (p<0.05) different from one another in Wilcoxon signed rank test