Effect of sexed-semen use on Holstein conception rate, calf gender, dystocia, and stillbirth in the United States

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Traits

- Conception rate
- Calf gender
  - Male, female, single, twins
- Dystocia
  - Births reported as requiring considerable force or extremely difficult
- Stillbirth
  - Born dead or died within 48 hours

Data

- Holstein breedings from January 2006 through December 2008:

	Breedings	
Trait	All	Sexed semen
Heifers	1.3 million	116,846
Cows	10.6 million	24,239
Conception rate	All	All
Calf gender	12%	9%
Dystocia	12%	9%
Stillbirth	10%	9%

Extent of sexed-semen use

Year of breeding	Conventional semen		Sexed semen	
	Number	%	Number	%
Heifers				
2006	396,926	99	5,545	1
2007	394,660	91	41,186	9
2008	341,700	83	70,115	17
Cows				
2006	2,490,850	99.9	2,003	0.1
2007	4,105,396	99.8	7,951	0.2
2008	3,971,833	99.6	14,285	0.4

Sexed-semen breedings (%) by service number

Service number	Heifers	Cows	% of each service using sexed-semen: Heifers	Cows
1	82	67	12	0.4
2	14	20	6	0.2
3	3	8	3	0.1
≥4	1	5	1	0.1

Sexed-semen breedings (%) by service number

Service number	Heifers	Cows by parity: 1	2	3	4	5
1	82	42	14	7	3	1
2	14	11	5	2	1	1
3	3	4	2	1	1	0
≥4	1	3	1	1	0	0

Conception rate (%) by service number

Service number	Heifers	Cows
Conventional semen		
1	60	32
2	56	31
3	51	30
≥4	44	27
All	57	31
Sexed semen		
1	45	28
2	38	26
3	35	24
≥4	30	20
All	43	27

Conception rate (%) by service number

Service number	Heifers	Cows by parity 1	2	3	4	5
Conventional semen						
1	60	35	31	30	28	26
2	56	34	31	30	29	28
3	51	31	30	30	28	28
≥4	44	27	27	26	25	25
All	57	33	30	29	28	27
Sexed semen						
1	45	29	26	22	23	22
2	38	27	24	23	22	26
3	45	25	23	29	15	20
≥4	30	22	17	20	19	21
All	43	28	25	23	22	23

Calf gender (%)

	Heifers		Cows	
Gender	Conventional semen	Sexed semen	Conventional semen	Sexed semen
Single females	50	90	46	85
Single males	49	9	49	11
Twins	1	1	5	4

Dystocia incidence (%)

	Heifers		Cows	
Gender	Conventional semen	Sexed semen	Conventional semen	Sexed semen
Single females	4^{a*}	4^{a}	2^{a}	1^{a}
Single males	8^{b}	9^{b}	3^{b}	1^{a}
Twins	8^{c}	4^{c}	5^{c}	2^{b}
Weighted mean	6	4	3	1

*Different superscripts represent statistical differences within column ($P < 0.05$)

Stillbirth incidence (%)

	Heifers		Cows	
Gender	Conventional semen	Sexed semen	Conventional semen	Sexed semen
Single females	9^{a*}	10^{a}	4^{a}	3^{a}
Single males	11^{b}	15^{b}	4^{b}	4^{a}
Twins	15^{c}	13^{c}	8^{c}	8^{b}
Weighted mean	10	11	4	3

*Different superscripts represent statistical differences within column ($P < 0.05$)

Conclusions

- Increased use of sexed semen since 2006 when it became commercially available
- Primarily used for breeding heifers and first services of cows when conception rates are traditionally higher
- Mean conception rate with sexed semen lower than that with conventional semen by about 25% for heifers and 13% for cows

Conclusions *(cont.)*

- 90% heifer calves when using sexed semen
- No increase in incidence of dystocia with sexed semen, a reduction for twins
- Slight increase in stillbirths for single male calves born to heifers when sexed semen was used