



Economics of Sexed Semen



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Reproductive Variables



- CR for Holstein heifers: 34 to 83% (Avg. 56%) (DeJarnette et al., 2009)
- Sexed semen performance: 80% of conventional semen (Avg. 44.8%) (DeJarnette et al., 2009)
- CR decreases 2.5% for each additional service after first service (Kuhn et al., 2006)
- Conventional semen heifer calf rate: 46.7% (Silva del Rio et al., 2007)
- Sexed semen heifer calf rate: 89% (DeJarnette et al., 2009)



Economic Variables



- Premium paid for sex-sorted semen dose: \$30 (Olynk and Wolf, 2007)
- Heifer calf value: \$562 (Wisconsin USDA Market Report, 2008)
- Bull calf value: \$48 (Wisconsin USDA Market Report, 2008)
- Dystocia cost: \$28.53 (Dematawewa and Berger, 1997).
- Bull Dystocia cost: 1.57 times greater than female (Martinez et al., 1983)



Other Economic Variables



	Conventional and Sexed-Semen	Source
Heifer maintenance 15 to 20 mo old	\$2.4/day	Zwald et al., 2007
Weight of a 20-mo non-pregnant heifer	505 kg	NRC, 2001
Salvage value of 20-mo non-pregnant heifer	\$1.79/kg	Wisc. USDA (2008)
Value of 20-mo pregnant heifer	\$1,200	Wisc. USDA (2008)
Interest rate	12%/year	



Baseline Scenario



- Sexed semen is always be justified for the first service for any level of CR (Overall EV = \$30.10/heifer)

Reproductive Program	Low Conventional CR (34 %)	Average Conventional CR (56 %)	High Conventional CR (83 %)	Required Conventional CR to Justify the Number of Sexed Semen Service(s) %
	EV \$/heifer			
1 service with sexed semen	6.5 (Max)	49.3	100.0	31
2 first services with sexed semen	-3.4	57.8 (Max)	111.6 (Max)	36
3 first services with sexed semen	-23.1	46.4	96.1	41
4 first services with sexed semen	-48.9	24.7	71.7	48
All 5 services with sexed semen	-78.5	-2.7	43.9	58



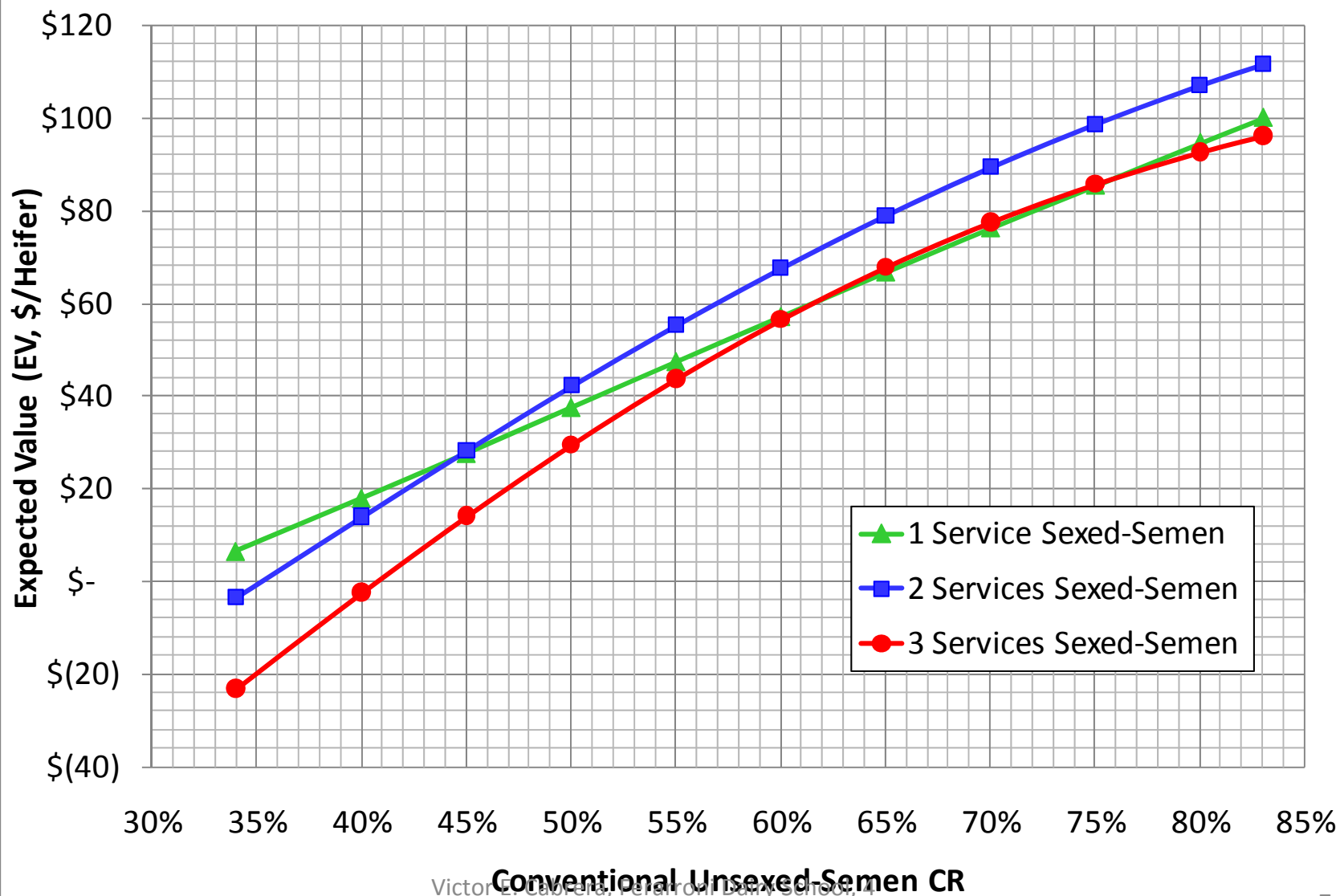
Optimal Treatment



Scenario	Number of Services with Positive and Maximum Expected Value (EV)		
	Low Conventional CR (34 %)	Average Conventional CR (56 %)	High Conventional CR (83 %)
Baseline	1	2	2
1) Sexed Semen CR at 85 % of conventional CR	1	2	2
2) Sexed Semen CR at 75 % of conventional CR	None	2	2
3) Sexed Semen to have 95 % heifer Calves	1	2	2
4) Sexed Semen to have 78 % heifer Calves	None	1	1
5) Male calf value at \$0	1	2	2
6) Female calf value at \$700	1	2	2
7) Female calf value at \$280	None	None	1
8) Dystocia cost at \$42.8	1	2	2
9) Dystocia cost at \$14.27	1	2	2
10) Premium paid for sexed-semen at \$40	None	1	2
11) Premium paid for sexed-semen at \$20	1	2	2
1) and 3)	2	2	2
3) and 6)	2	2	2
1) and 6)	2	2	2
1) and 3) and 6)	2	3	2
1) and 3) and 6) and 11)	3	3	2
2) and 4)	None	1	1
4) and 7)	None	None	1
2) and 4) and 7)	None	None	None



Optimal Treatment by CR



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Impact of Other Variables



Variable	Impact
Heifer maintenance cost (\$2.4/d baseline)	<u>-\$1.00 for every +\$0.1</u>
Salvage value (\$1.79/kg baseline)	<u>-\$1.00 for every +\$0.1</u>
Pregnant heifer value (\$1,200/heifer baseline)	<u>-\$2.84 for every +\$100</u>
Dystocia cost (\$28.53/heifer baseline)	<u>+\$1.44 for every +\$10</u>
Premium of sex-sorted semen (\$30 baseline)	<u>-\$14.50 for every +\$5</u>
Discount rate (12% baseline)	<u>-\$0.1 for every +10%</u>



Decision Support Challenge



- **Decision support system should be:**
 - **Visually attractive**
 - **Interactive**
 - **Robust**
 - **Preferably online**
 - **Self-contained**
 - **Scenario-driven**
- **Decision support system should have:**
 - **Secured calculations. Users characterize their situation by defining parameters**
 - **Clear instructions**
 - **Technical support available**



Decision Support Challenge



Economic Value of Sexed Semen Programs for Dairy Heifers

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1. Conception Rates (CR)

1.a. Conventional Semen CR (%)

Low CR	36
Average CF	56
High CR	83

1.b. Sexed Semen CR (% of Conventional CR)

75

Instructions

Manage Scenarios

Print

DairyMGT Webpage

2. Expected Females (%)

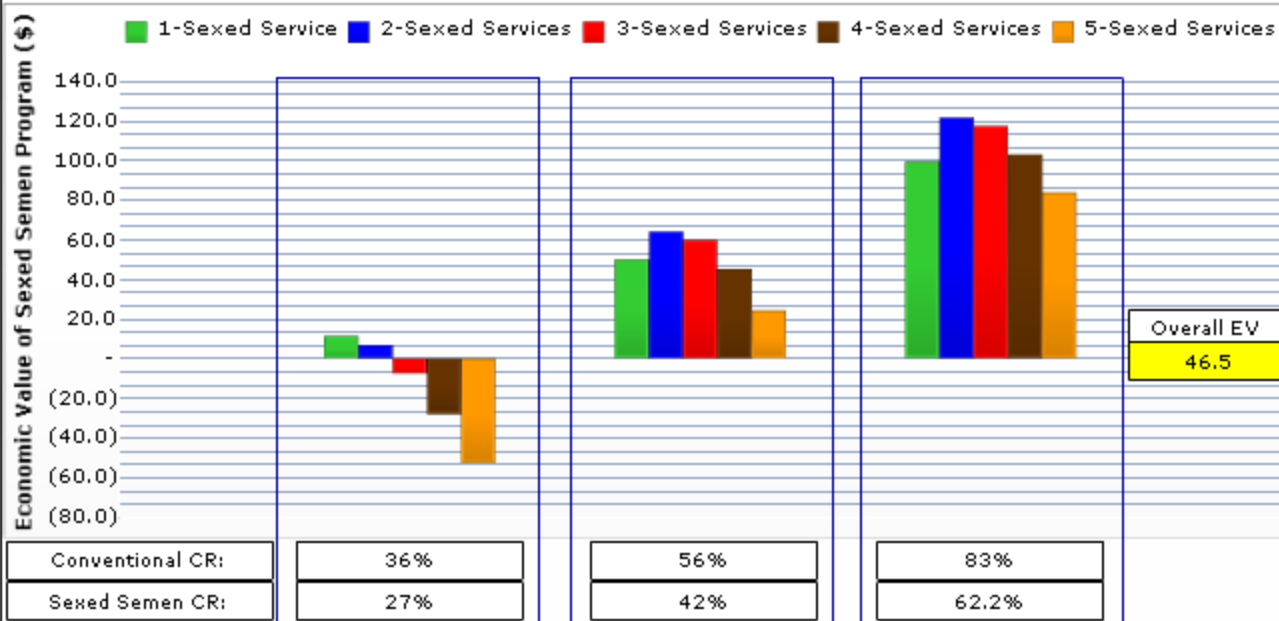
Conventional	46.7
Sexec	89.8

3. Semen Cost (\$)

Conventional	15
Sexec	35

4. Other Economic Parameters

Discount (%/yr)	12	Raising Cost (\$/c)	2.4
Female Calf (\$)	562	Salvage Value (\$/kg)	1.79
Male Calf (\$)	48	Dystocia Cost (\$/heifer)	28.53
		20-mo Pregnant Heifer (\$)	1200





Thanks



UW Extension

Welcome to Dairy Management UW-Extension

This site is designed to support dairy farming decision-making focusing on model-based scientific research. The ultimate goal is to provide user-friendly, computerized decision support systems to help dairy farms improve their economic performance.

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Some Active Projects

- Success for Small Beginning Dairy Farmers
- Strategies of Pasture Supplementation on Organic and Conventional Grazing Systems: Assessment of Economic, Production and Environmental Outcomes
- Assessment of Goats Margin Insurance versus Traditional Price Risk Management Strategies under Alternative Biofuels and Predicted Climatic Conditions: Implications for Wisconsin Dairy Farms
- Development of a Dairy Economic Decision Support System for Wisconsin

Opportunities in Dairy Cattle Management

- Student, intern, and postdoc positions available

August 21, 2009

Dairy Decision Management Tools

Dairy Ration Feed Additive Breakeven Analysis

Estimates the breakeven milk production needed to pay for a ration ingredient

Flash Online Tool (Play)
 Documentation (Download)

Optigen® Evaluator

Calculates the economic value of using Optigen® with lactating cows. Optigen® replaces a user-defined source of protein and adds a user-defined source of energy.

HTML Online Tool (Open)

Cost-Benefit of Accelerated Liquid Feeding Program for Dairy Calves

Evaluates the use of accelerated heifer feeding programs with respect to conventional feeding programs

Flash Online Tool (Play)
 HTML Online Tool (Open)
 Documentation (Download)
 Demonstration (See)

Economic Analysis of Switching from 2X to 3X Milking

Estimates the economic benefit (or loss) of a change in the milking frequency from 2 times a day (2X) to 3 times a day (3X) based on user-defined parameters

Flash Online Tool (Play)
 Flash Download (Download)
 Documentation (Download)

Economic Value of Sexed Semen Programs for Dairy Heifers

Estimates the difference of the net present value of various sexed semen reproductive programs and a conventional semen reproductive program

Flash Online Tool (Play)
 Documentation (Download)
 Demonstration (See)

Income of Feed Supplement Cost

Maximizes the income over feed supplement cost (IOFSC) for a fixed amount of forage used in the diet and graphs the IOFSC to a substitution of two selected feed supplements

Excel Spreadsheet (Download)

<http://www.uwex.edu/ces/dairymgt/>

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