WHAT DOES IT TAKE TO START AN AI PROGRAM?

CLIFF LAMB
Artificial insemination (AI) is not suitable for every beef cattle producer!
What are the Advantages of AI?

Are you considering AI for the right reasons?
What are the Advantages of AI?

- The ability to use sires of superior genetic merit (the best bulls of the breed).
- Use of proven sires with high accuracy.
- Producers have the ability to mate specific sires to individual cows.
- AI provides an opportunity to reduce the number of herd bulls needed in cattle operation.
What are the Advantages of AI?

- Increased genetics of offspring.
- Improved reproductive performance of the cow herd. When used in conjunction with estrus synchronization the impact on reproductive performance of the cow herd is extensive.
What causes Anestrus in Beef Cows?

Suckling
Nutrition
Overcoming Postpartum Anestrus

![Graph showing progestrone levels over days]

- Progesterone (ng/ml)
- Day

Days: 15, 31, 42

Levels: 0, 1, 2, 3, 4, 5, 6
Overcoming Postpartum Anestrus

![Graph showing Progesterone (ng/ml) over days with GnRH or CIDR interventions.](image-url)
Items that are NOT Necessary for Establishing an AI Program!
You do not need to be proficient at AI.
There is no need to own a nitrogen tank for storing semen.
It is not necessary to have AI supplies, such as an AI kit with sheaths, AI guns, and sleeves available.
Why are these items not necessary for AI?
Estrus Synchronization and AI in Beef Cattle

**BEFEE COW PROTOCOLS - 2015**

**HEAT DETECTION**
- Select Synch

**HEAT DETECT & TIME AI (TAI)**
- Select Synch & TAI Heat detect at AI day 7 to 10 and TAI all non-responders: 72 – 84 hr after PG with CIDR at TAI.
- Select Synch + CIDR* & TAI Heat detect at AI day 7 to 10 and TAI all non-responders: 72 – 84 hr after PG with CIDR at TAI.
- PG 6-day CIDR* Heat detect at all days 0-3. Administer CIDR to non-responders and heat detect at all days 7-9. Protocol may be used in heifers.
- PG 6-day CIDR* & TAI Heat detect at AI day 7 to 10. Administration CIDR to non-responders & heat detect at AI days 9 to 11. Protocol may be used in heifers.

**FIXED-TIME AI (TAI)**
- 7-day CO-Synch + CIDR**
- 5-day CO-Synch + CIDR**

**BEFEE HEIFER PROTOCOLS - 2015**

**HEAT DETECTION**
- 1 Shot PG
- 7-day CIDR* - PG
- MGA* - PG
- MGA* - PG & TAI Heat detect and AI day 7 to 10 and TAI all non-responders: 72 – 84 hr after PG with CIDR at TAI.

**BEFEE HEIFER PROTOCOLS - 2015**

**HEAT DETECT & TIME AI (TAI)**
- Select Synch + CIDR* & TAI Heat detect at AI day 7 to 10 and TAI all non-responders: 72 – 84 hr after PG with CIDR at TAI.
- MGA* - PG & TAI Heat detect at AI day 7 to 10 and TAI all non-responders: 72 – 84 hr after PG with CIDR at TAI.
- 14-day CIDR* - PG & TAI Heat detect and AI day 30 to 35 and TAI all non-responders: 72 hrs after PG with CIDR at TAI.

**FIXED-TIME AI (TAI)**
- 7-day CO-Synch + CIDR**
- 5-day CO-Synch + CIDR**
- MGA* - PG

**LONG-TERM PROTOCOLS**
- 14-day CIDR* - PG

* The boxes listed for “Fixed-time AI” should be considered as the approximate average time of insemination. This should be based on the number of cows to inseminate, labor, and facilities.
TAI for Beef Cows

**Fixed-time AI (TAI)**

### 7-day CO-Synch + CIDR®
Perform TAI at 60 to 66 hr after PG with GnRH at TAI.

<table>
<thead>
<tr>
<th>Treatment Day</th>
<th>GnRH</th>
<th>PG</th>
<th>GnRH</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 5-day CO-Synch + CIDR®
Perform TAI at 72 ± 2 hr after CIDR removal with GnRH at TAI. Two injections of PG 8 ± 2 hr apart are required for this protocol.

<table>
<thead>
<tr>
<th>Treatment Day</th>
<th>GnRH</th>
<th>PG</th>
<th>PG</th>
<th>GnRH</th>
<th>AI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Fixed-time AI (TAI)** for *Bos Indicus* cows only

### PG 5-day CO-Synch + CIDR®
Perform TAI at 66 ± 2 hr after CIDR removal with GnRH at TAI. Two injections of PG 8 ± 2 hr apart are required for this protocol.

<table>
<thead>
<tr>
<th>Treatment Day</th>
<th>GnRH</th>
<th>PG</th>
<th>PG</th>
<th>GnRH</th>
<th>AI</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The time listed for “Fixed-time AI” should be considered as the approximate average time of insemination. This should be based on the number of cows to inseminate, labor, and facilities.

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Approved 12-01-13

*Beef Reproduction Task Force*

Cystorelin®, Farcrol®, Fertagyl®, OvaCyst®, estroPLAN®, Estrumate®, In-Synch®, Lutalyse®, ProstaMate®
TAI for Beef Heifers

**Fixed-time AI (TAI)**

**Short-term Protocols**

**7-day CO-Synch + CIDR®**
Perform TAI at 54 ± 2 hr after PG with GnRH at TAI.

**5-day CO-Synch + CIDR®**
Perform TAI at 60 ± 4 hr after CIDR removal with GnRH at TAI. Two injections of PG 8 ± 2 hr apart are required for this protocol.

**Long-term Protocols**

**14-day CIDR®-PG**
Perform TAI at 66 ± 2 hr after PG with GnRH at TAI.

**MGA®-PG**
Perform TAI at 72 ± 2 hr after PG with GnRH at TAI.

* The times listed for “Fixed-time AI” should be considered as the approximate average time of insemination. This should be based on the number of heifers to inseminate, labor, and facilities.
Effect of synchronization rate on pregnancy rates

![Graph showing the effect of synchronization rate on pregnancy rates. The graph plots the percentage of cows detected in estrus against the pregnancy rate, with a linear trend line indicating an increase in pregnancy rate as the synchronization rate increases.]
Effect of synchronization rate on pregnancy rates

![Graph showing the effect of synchronization rate on pregnancy rates. The graph plots the percentage of cows detected in estrus against the synchronization rate. The synchronization rates are 50 to 100%, and the corresponding pregnancy rates range from 33% to 65%. The graph compares estrus detection and TAI methods.](image-url)
Semen Sales in USA and Brazil from 1995 to 2012

Units of semen, $10^6$

Year

USA

Brazil

(NAAB and ASBIA, 2011)
Genetics Company Contacts

ABS Global, Inc., 1525 River Rd DeForest, Wisconsin, 53532
Phone: 608-846-3721

Select Sires, Inc., 11740 U.S. 42 North, Plain City, Ohio 43064
Phone: 614-873-4683

Genex Cooperative, Inc., 100 MBC Drive P.O. Box 469, Shawano, Wisconsin 54166
Phone: 715-526-2141 or 888-333-1783

Accelerated Genetics, E10890 Penny Lane, Baraboo, Wisconsin 53913
Phone: 608-356-8357 or 800-451-9275
What are Some Important Requirements to Developing a Sound AI Program?
Have an established breeding season
Breeding season pregnancy rates:

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR</td>
<td>81%</td>
<td>86%</td>
<td>84%</td>
<td>86%</td>
<td>82%</td>
<td>94%</td>
<td>92%</td>
<td>93%</td>
</tr>
<tr>
<td>Mean calving day</td>
<td>79.2</td>
<td>80.9</td>
<td>59.2</td>
<td>56.2</td>
<td>53.7</td>
<td>47.2</td>
<td>39.5</td>
<td>38.7</td>
</tr>
<tr>
<td>BS length</td>
<td>120</td>
<td>120</td>
<td>110</td>
<td>88</td>
<td>80</td>
<td>75</td>
<td>70</td>
<td>72</td>
</tr>
</tbody>
</table>
## Change in calf value:

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean calving day</td>
<td>79.2</td>
<td>80.9</td>
<td>59.2</td>
<td>56.2</td>
<td>53.7</td>
<td>47.2</td>
<td>39.5</td>
<td>38.7</td>
</tr>
<tr>
<td>Difference from 2006/2007</td>
<td>0</td>
<td>0</td>
<td>21.7</td>
<td>24.7</td>
<td>27.2</td>
<td>33.7</td>
<td>41.4</td>
<td>42.2</td>
</tr>
<tr>
<td>Per calf increase in value</td>
<td>0</td>
<td>0</td>
<td>$87</td>
<td>$99</td>
<td>$109</td>
<td>$135</td>
<td>$166</td>
<td>$169</td>
</tr>
<tr>
<td>Herd increase in value</td>
<td>0</td>
<td>0</td>
<td>$19,100</td>
<td>$29,700</td>
<td>$32,700</td>
<td>$40,500</td>
<td>$49,800</td>
<td>$50,700</td>
</tr>
</tbody>
</table>
Ensure that the nutritional status of the herd allows for cows to reinitiate estrous cycles soon after birth.

BCS 3

BCS 5

BCS 7
Facilities that allows producers to restrain cattle in such a way that they can administer pharmaceutical products and artificially inseminate cows
Know which traits are important for your herd and identify and purchase semen from proven AI sires

<table>
<thead>
<tr>
<th>TRAIT</th>
<th>CED</th>
<th>BW</th>
<th>WW</th>
<th>YW</th>
<th>RADG</th>
<th>YH</th>
<th>SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPD</td>
<td>+13</td>
<td>-0.8</td>
<td>+55</td>
<td>+102</td>
<td>+.22</td>
<td>+0.3</td>
<td>+1.72</td>
</tr>
<tr>
<td>ACC</td>
<td>.89</td>
<td>.95</td>
<td>.93</td>
<td>.91</td>
<td>.68</td>
<td>.90</td>
<td>.91</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRAIT</th>
<th>CEM</th>
<th>MILK</th>
<th>H/Dt</th>
<th>MW</th>
<th>MH</th>
<th>HP</th>
<th>DOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPD</td>
<td>+12</td>
<td>+26</td>
<td>229</td>
<td>+22</td>
<td>+0.4</td>
<td>+14.7</td>
<td>23</td>
</tr>
<tr>
<td>ACC</td>
<td>.76</td>
<td>.85</td>
<td>809</td>
<td>.71</td>
<td>.70</td>
<td>.34</td>
<td>.82</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRAIT</th>
<th>CW</th>
<th>MARB</th>
<th>REA</th>
<th>FAT</th>
<th>Carc</th>
<th>Str</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPD</td>
<td>+38</td>
<td>.57</td>
<td>.17</td>
<td>+.035</td>
<td>27</td>
<td>18</td>
<td>593</td>
</tr>
<tr>
<td>ACC</td>
<td>.71</td>
<td>.75</td>
<td>.74</td>
<td>.74</td>
<td>89</td>
<td>55</td>
<td>1702</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW</td>
</tr>
<tr>
<td>205</td>
</tr>
<tr>
<td>365</td>
</tr>
<tr>
<td>SC</td>
</tr>
<tr>
<td>YFS/FS</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Height</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>$ VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>$EN</td>
</tr>
<tr>
<td>$W</td>
</tr>
<tr>
<td>$G</td>
</tr>
<tr>
<td>$B</td>
</tr>
</tbody>
</table>

Born: 1/22/05
When possible, utilize semen from a major semen company rather than using custom collected semen.

ABS Global, Inc., 1525 River Rd DeForest, Wisconsin, 53532
Phone: 608-846-3721

Genex Cooperative, Inc., 100 MBC Drive
P.O. Box 469, Shawano, Wisconsin 54166
Phone: 715-526-2141 or 888-333-1783

Select Sires, Inc., 11740 U.S. 42 North, Plain City, Ohio 43064
Phone: 614-873-4683

Accelerated Genetics, E10890 Penny Lane, Baraboo, Wisconsin 53913
Phone: 608-356-8357 or 800-451-9275
Familiarize yourself with the pharmaceutical products used in the estrus synchronization protocol and be sure that the correct product is administered at the correct time.

**GnRH Products**
- Cystorelin®
- Factrel®
- Fertagyl®
- OvaCyst®

**PGF Products**
- estroPLAN®
- Estrumate®
- In-Synch®
- Lutalyse®
- Prostamate®

**Progesterone Products**
- Melegestrol Acetate (MGA)
- CIDR
Estrus Synchronization and AI in Beef Cattle

**BEEF COW PROTOCOLS - 2014**

**HEAT DETECTION**
Select Synch

**HEAT DETECT & TIME AI (TAI)**
Select Synch & TAI

Select Synch + CIDR®

PG 6-day CIDR®

**FIXED-TIME AI (TAI)**
7-day CO-Synch + CIDR®

5-day CO-Synch + CIDR®

Approved 12-01-13

**BEEF HEIFER PROTOCOLS - 2014**

**HEAT DETECTION**
1 Shot PG

7-day CIDR®-PG

MGA®-PG

**FIXED-TIME AI (TAI)**
7-day CO-Synch + CIDR®

5-day CO-Synch + CIDR®

MGA®-PG

*The times listed for “Fixed-time AI” should be considered as the approximate average time of insemination. This should be based on the number of heifers to inseminate, labor, and facilities.

Approved 12-01-13

Beef Reproduction Task Force
Estrus Synchronization Planner

www.iowabeefcenter.org/estrus_synch.html
Estrus Synchronization Planner

**Inputs**

- **Breed Type:** 1 = Bos taurus, 2 = Bos indicus influence
- **Date to start breeding:**
  - 12/1/2014
  - 8:30 AM
- **Time of day you want to breed:**
  - 3
- **Protocol:** 1 = Estrus AI, 2 = Estrus AI & Clean-up AI, 3 = Fixed-Time AI
- **Synchronization System:** select number from lists below:
  - GnRH product: 1 = Cystorelin, 2 = Fadco, 3 = Fortasyn, 4 = OvaCyst, 5 = Ovariabreed
  - PG product: 1 = Estrumate, 2 = Estralux, 3 = InSynch, 4 = Lutalaxa, 5 = ProactaMate
- **Days from last AI to bull turn in:** 26

**Output**

- **Expected Calving Date:** 9/8/2015
- **CIDR removal:** 11/23/14 2:30 PM
- **Trips Through Chute:** 3
- **Equivalent Heifer System:** 23

**Cost Comparison**

- Alternative System 1: 16
- Alternative System 2: 19

**Fixed-Time AI Cow Systems**

- 22 = 7 Day CO-Synch + CIDR with Fixed-Time AI - 65
- 29 = 5 Day CO-Synch + CIDR with Fixed-Time AI - 72
- Less Preferred Systems
  - 10 = CO-Synch with Fixed-Time AI
  - 13 = OvSynch
  - 35 = PG 6 Day CIDR with Fixed-Time AI - 69

**Fixed-Time AI Heifer Systems**

- 23 = 7 Day CO-Synch + CIDR with Fixed-Time AI - 54
- 27 = MGA + PG with Fixed-Time AI
- 32 = 14 Day CIDR + PG with Fixed-Time AI
- 38 = 6 Day CO-Synch + CIDR with Fixed-Time AI - 50
- Less Preferred Systems
  - 28 = CIDR Select with Fixed-Time AI
  - 36 = PG 6 Day CIDR with Fixed-Time AI - 66
# Estrus Synchronization Planner

**22 = 7 Day CO-Synch+CIDR with Fixed-Time AI - 66**

- **GnRH= Cystoelin**
- **PG= Estrumate**

<table>
<thead>
<tr>
<th>Date to start breeding:</th>
<th>12/1/2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean-up bull turn in date:</td>
<td>12/27/2014</td>
</tr>
<tr>
<td>Start of calving season:</td>
<td>9/8/2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CIDR removal:</th>
<th>2:30 PM</th>
<th>on</th>
<th>11/28/2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed time AI done @</td>
<td>8:30 AM</td>
<td>on</td>
<td>12/1/2014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/16/2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/17/2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/18/2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/19/2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/20/2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 11/21/2014 |         |        |         |           |          |        | * Insert CIDR device in all females
|           |         |        |         |           |          |        | * Inject Cystoelin - all females |
| 11/22/2014 |         |        |         |           |          |        |          |
| 11/23/2014 |         |        |         |           |          |        |          |
| 11/24/2014 |         |        |         |           |          |        |          |
| 11/25/2014 |         |        |         |           |          |        |          |
| 11/26/2014 |         |        |         |           |          |        |          |
| 11/27/2014 |         |        |         |           |          |        |          |
| 11/28/2014 |         |        |         |           |          |        |          |
| 11/29/2014 |         |        |         |           |          |        |          |
| 11/30/2014 |         |        |         |           |          |        |          |
| 12/1/2014  | * Cystoelin injection & Fixed time AI (60-66 hrs after Estrumate ) |        |         |           |          |        |          |
| 12/2/2014  |         |        |         |           |          |        |          |
| 12/3/2014  |         |        |         |           |          |        |          |
| 12/4/2014  |         |        |         |           |          |        |          |
| 12/5/2014  |         |        |         |           |          |        |          |
| 12/6/2014  |         |        |         |           |          |        |          |
Estrus Synchronization Planner App

http://estrussynch.com/
Herd Information
Breed Type:
- *Bos taurus*

Age:
- *Cow*

Head in group:
- 100

Breeding Program
Date to start breeding:
- 12/1/2014

Time of day:
- 7:00 AM

Insemination method:
- Fixed-Time AI

Days from last AI bull turn in:
- 10

Input Costs
Labor costs ($/hr):
- 13.50

PG ($/dose):
- 2.00

GnRH ($/dose):
- 2.90

CIDR ($/insert):
- 11.00

Semen ($/unit):
- 25.00
Recommended

- 7 Day CO-Synch-CIDR with Fixed-Time AI - 65
- 5 Day CO-Synch-CIDR with Fixed-Time AI

Less Preferred

- CO-Synch with Fixed-Time AI
- OvSynch
- PG 5 Day CIDR with Fixed-Time AI - 69

This system works well in cows.
No estrus detection required.
Fixed time AI can be done at 60 to 86 hrs. post PG injection.
All females require a GnRH injection at fixed-time AI.
This system can initiate estrous cycles in some noncycling females.
Expect lower fertility in cows less than 50 days postpartum at time of PG injection.
Results

Program Selected:
7 Day CO-Synch+CIDR with Fixed-Time AI - 66

Trips through facility: 3
Labor estimate (hours): 43.8
Cost / female synchronized: $50.51
Total Cost: $5051.30

Synchronization and Breeding Schedule

1: Fri Nov 21 2014
   • Insert one CIDR device in each female.
   • Inject Gonadotropin Releasing Hormone (GnRH) to all females.

2: Fri Nov 28 2014
   • Remove the CIDR device from each female.
   • Inject Prostaglandin (PG) to all females at:
     • 1:00 pm

3: Mon Dec 1 2014
   • Inject Gonadotropin Releasing Hormone (GnRH) to all females.
   • Breed all females at time of GnRH injection at:
     • 7:00 AM
   • Processed 60 to 66 hours after PG injection.

4: Thu Dec 11 2014
   • Turn clean up bulls in with females.
   • Immediate addition of clean-up bulls could lead to questions about parentage.

back
Results

Program Selected:

7 Day CO-Synch+CIDR with Fixed-Time AI - 66

Trips through facility:
3
Labor estimate (hours):
43.8
Cost / female synchronized:
$50.51
Total Cost:
$5051.30

Synchronization and Breeding Schedule

1:
Fri Nov 21 2014
- Insert one CIDR device in each female.
- Inject Gonadotropin Releasing Hormone (GnRH) to all females.

2:
Fri Nov 28 2014
- Remove the CIDR device from each female.
- Inject Prostaglandin (PG) to all females at:
  1:00 pm

3:
Mon Dec 1 2014
- Inject Gonadotropin Releasing Hormone (GnRH) to all females.
- Breed all females at time of GnRH injection at:
  7:00 AM
Utilize good animal handling techniques.
Use good Beef Quality Assurance techniques
Have realistic expectations from your AI program!
Location/Herd Effects

(Larson et al., 2006)
Pregnancy Rates by Herds

Pregnancy rate, %

Herd

1 2 3 4 5 6 7 8

56.9 62.1 45.2 65.8 44.4 50.4 45.2 48.5
Distribution of Days Postpartum – Herd 1

Standard deviation:
Herd 1 – 5.6 days
Distribution of Days Postpartum – Herd 5

Standard deviation:
Herd 5 – 16.9 days
Cowculator

Semen
Description OFF
18

Artificial Insemination Technician
Description OFF
5

Cowculate
Reset

Decision Rule
Gain Per Exposed Cow:
$ 69.17

Derived Inputs
Increased Returns:
Description OFF
$ 64.17

Decreased Costs:
Product/Service
Simply insert information such as number of cows to be bred, expected calving rates, and some costs and the AI Cowculator will help you determine if it is financially feasible to AI your cattle.
### Bull Investment - Annual Bull and Per Cow Cost Calculator

<table>
<thead>
<tr>
<th>Natural Service Sire Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bull Maintenance Costs</td>
<td>$600.00</td>
</tr>
<tr>
<td>Average Purchase Cost of Bull</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Useful Life</td>
<td>4</td>
</tr>
<tr>
<td>Salvage Value</td>
<td>$105.00</td>
</tr>
<tr>
<td>Salvage Weight, Lb.</td>
<td>1,800</td>
</tr>
<tr>
<td>Interest Rate Used, %</td>
<td>6.0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Cowherd Related Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Of Cows In The Herd</td>
<td>34</td>
</tr>
<tr>
<td>Number Of Natural Service Bulls</td>
<td>2</td>
</tr>
<tr>
<td>Expected Bulls For Clean-Up To AI</td>
<td>1</td>
</tr>
<tr>
<td>Weaned Calf Crop, %</td>
<td>87.5</td>
</tr>
<tr>
<td>Average Expected Weaning Weight, Lb.</td>
<td>500</td>
</tr>
<tr>
<td>Expected Price Of Weaned Calf, Per Cw</td>
<td>$165.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increased costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Labor</td>
<td>$4.10</td>
</tr>
<tr>
<td>Facilities &amp; Equipment</td>
<td>$0.00</td>
</tr>
<tr>
<td>Estrous Synch Products</td>
<td>$13.08</td>
</tr>
<tr>
<td>semen</td>
<td>$18.00</td>
</tr>
<tr>
<td>Artificial Insemination Technician</td>
<td>$5.00</td>
</tr>
</tbody>
</table>

### Partial Budget

<table>
<thead>
<tr>
<th>Decision Rule</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain/Loss Per Exposed Cow</td>
<td>$69.17</td>
</tr>
<tr>
<td>Gain/Loss Per Herd</td>
<td>$2,351.78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Derived Inputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Returns</td>
<td>$64.17</td>
</tr>
<tr>
<td>Decreased Returns</td>
<td>$0.00</td>
</tr>
<tr>
<td>Decreased Costs</td>
<td>$45.18</td>
</tr>
<tr>
<td>Increased Costs</td>
<td>$40.18</td>
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</tbody>
</table>

### Resources

- [Facebook](http://www.facebook.com/AICowculator)
- [Twitter](http://twitter.com/AICowculator)
- [Zoetis](http://www.zoetis.com)
- [CME Group](http://www.cmegroup.com)

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- Vitor R.G. Mercadante
- Paula M. Mercadante
- Darren D. Heneghan
- Francine Messias
## Change in Value Based on Herd Sire Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Bull Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$3,000</td>
</tr>
<tr>
<td>Increased returns (increased value of AI calves)</td>
<td>$97.22</td>
</tr>
<tr>
<td>Decreased costs decreased costs of clean-up bulls</td>
<td>$32.11</td>
</tr>
<tr>
<td>Decreased returns (Attributed to fewer clean-up bulls included in decreased costs calculation)</td>
<td>$0.00</td>
</tr>
<tr>
<td>Increased costs additional labor, semen, AI supplies, etc.</td>
<td>$44.60</td>
</tr>
<tr>
<td>Gain per cow exposed to AI</td>
<td>$84.73</td>
</tr>
<tr>
<td>Gain per 34 head operation</td>
<td>$2,881</td>
</tr>
<tr>
<td>Gain per 100 head operation</td>
<td>$7,446</td>
</tr>
<tr>
<td></td>
<td>$6,000</td>
</tr>
<tr>
<td>Increased returns (increased value of AI calves)</td>
<td>$97.22</td>
</tr>
<tr>
<td>Decreased costs decreased costs of clean-up bulls</td>
<td>$61.35</td>
</tr>
<tr>
<td>Decreased returns (Attributed to fewer clean-up bulls included in decreased costs calculation)</td>
<td>$0.00</td>
</tr>
<tr>
<td>Increased costs additional labor, semen, AI supplies, etc.</td>
<td>$44.60</td>
</tr>
<tr>
<td>Gain per cow exposed to AI</td>
<td>$113.97</td>
</tr>
<tr>
<td>Gain per 34 head operation</td>
<td>$3,875</td>
</tr>
<tr>
<td>Gain per 100 head operation</td>
<td>$9,434</td>
</tr>
<tr>
<td></td>
<td>$10,000</td>
</tr>
<tr>
<td>Increased returns (increased value of AI calves)</td>
<td>$97.22</td>
</tr>
<tr>
<td>Decreased costs decreased costs of clean-up bulls</td>
<td>$100.34</td>
</tr>
<tr>
<td>Decreased returns (Attributed to fewer clean-up bulls included in decreased costs calculation)</td>
<td>$0.00</td>
</tr>
<tr>
<td>Increased costs additional labor, semen, AI supplies, etc.</td>
<td>$44.60</td>
</tr>
<tr>
<td>Gain per cow exposed to AI</td>
<td>$152.97</td>
</tr>
<tr>
<td>Gain per 34 head operation</td>
<td>$5,201</td>
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<tr>
<td>Gain per 100 head operation</td>
<td>$12,086</td>
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</tbody>
</table>