

**THE VALUE OF ESTRUS SYNCHRONIZATION & ARTIFICIAL
INSEMINATION IN THE HILLWINDS COW HERD**

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Hillwinds is a commercial beef cattle operation located in the Blue Ridge Mountains of Southwest Virginia. The operation began in 1988 and is owned and operated by Tim and Cathy Sutphin. The farm consists of 1055 acres owned and 825 acres of leased land. We currently run 640 Angus, Simmental cross cows of which 215 are fall calving and 425 are spring calving. The farm also includes a backgrounding operation of approximately 500 purchased calves, a ewe flock of 160 commercial Suffolk ewes and is also home to the Southwest Virginia Bull Test Station with 215 bulls on feed.

Estrus synchronization has been in practice on the farm since 1990 but only included the virgin heifers until 1999. Since that time, all cows and heifers have been synchronized and bred AI one time each year. Currently CIDRs are used with prostaglandin to synchronize heifers. The cow herd is on the OV-Synch program which we have used since 1999.

The value of the estrus synchronization and AI in the Hillwinds herd was calculated using the most current data that was available. Calving and breeding records include the spring 2005 group and calf performance data is included from the spring 2004 steer group which were fed and harvested in spring 2005.

To capture the added value from estrus synchronization and artificial insemination, the calf crop is retained in ownership through harvest and all replacement heifers are AI sired.

The following data is the actual field, feedyard, and harvest results of estrus synchronization and AI. The point needs to be made that synchronization and AI are part of a total system that has many facets each of which are dependent and complimentary to each other.

The cost to synchronize and breed a cow is as follows:

Semen	\$12/straw
Prostaglandin	\$2.15/5 cc Dose
GnRH	\$4 for 2 doses @ 1 ¼ cc dose
Chute Charge/Heat Detection	\$6/cow
Insemination	<u>\$2.50/cow</u>
	\$26.65

\$26.65/.65 estimated AI pregnancy rate = \$41 per AI pregnant cow

This figure compared to the cost to breed a cow to a natural service sire at Hillwinds Farm:

Purchase cost	\$3,000/bull
Salvage value of bull	<u>\$900/bull</u>
	\$2,100/Bull
Number of breeding seasons	4 years
Number of cows exposed to the bull	40 hd/year (includes Fall and Spring)
Bull Cost/Cow Exposed	\$13.13
Bull Maintenance Cost	
Feed, Vet, Housing	<u>\$450/yr or \$11.25</u>
	\$24.38
\$24.38/.90 pregnancy rate	\$27.09/natural service pregnant cow

The value of synchronization and AI is not limited to the increased value of a calf but also includes a higher pregnancy rate on Hillwinds Farm. Preg rates increased 2% due to an extra breeding plus a “jump start” in the estrous cycle for some cows.

The calving season is shorter and more concentrated at the start. In the spring 2006, the anticipated breakdown of the calf crop is 67% AI calves, 20% bred 1st natural service, 9% 2nd natural service, and 4% 3rd natural service. This will allow for 87% of the group to calve in approximately 30 days.

AI calves that are born at Hillwinds have required delivery assistance 1.3% of the time whereas as non-AI calves are assisted 2.9% of the time. The difference is due to higher accuracy on birth weight and direct calving ease EPDs for AI sires. Ninety percent of assists occur in first calf heifers.

AI sired calves from birth to harvest had a death loss of 3.5% compared to 5.5% for non-AI calves. This is due to closer observation at calving and lower birth weights of AI calves. In addition, the older AI calves have more resistance to pneumonia and scours. Losses occurring after weaning are not significantly different between the two groups.

In August 2005, the spring calving herd was pregnancy tested with the following results:

Virgin heifers received 2 shots of prostaglandin and heifers observed in standing heat were inseminated. The heifers then had a 45 day breeding season. 80% of the group were inseminated, of these 62% were determined to be AI pregnant. The pregnancy rate for the group was 91%. The open heifers were shipped to the feedyard. Heifers bred to clean-up bulls will be sold as replacements and heifers bred AI are retained in the herd.

The 2 year-old group was exposed to a teaser bull 45 days pre-breeding, synchronized using Ov-Synch, then cleaned-up for 70 days. 92% of the group was bred AI, 56% of these were checked pregnant to the AI breeding. The pregnancy rate was 100%.

Three through 5 year-olds are on the Ov-Synch program and afterwards natural service for 70 days. 98% of the cows were bred AI with 63% AI pregnant and a 97.5% pregnancy rate.

Cows over 5 years of age were synchronized with Ov-Synch then bred for 60 days. 96% were bred AI, of which 71% were called AI pregnant with a pregnancy rate of 95.7%.

On a herd basis, 93% of the cows were bred AI, with a 63% conception to the AI breeding and an overall pregnancy rate of 96.1%.

In the spring calving group from 2004, the AI calves averaged 27 days older than the non-AI calves. The calf performance data is separated into 4 groups: calves sired by AI bulls and out of AI sired dams (AI on AI); calves sired by AI bulls and out of non-AI sired dams (AI on non-AI); calves sired by natural service bulls and out of AI sired dams (Non-AI on AI); or calves out of non-AI sires and dams (non-AI on non-AI).

The weight used for weaning was an individual weight taken just prior to shipment to the feedyard. The weight was taken 45 days post-weaning.

<u>Group</u>	<u>Average Weight</u>	<u>Age</u>	<u>Weight per Day of Age</u>
AI on AI	747 lbs.	230 days	2.92
AI on Non-AI	691 lbs.	223 days	2.76
Non-AI on AI	720 lbs.	205 days	3.15
Non-AI on Non-AI	625 lbs.	195 days	2.82
Overall	677 lbs.	214 days	2.81

The cattle in the feedyard were sold over a 30 day period on three separate dates.

<u>Group</u>	<u>Live Wt at Slaughter</u>	<u>Days of Feed</u>	<u>ADG</u>
AI on AI	1373 lbs	165	3.79
AI on Non-AI	1310 lbs	165	3.75
Non-AI on AI	1273 lbs	170	3.25
Non-AI on Non-AI	1258 lbs	180	3.52
Overall	1297 lbs	170	3.71

Carcass performance and net return to the cow are as follows:

AI on AI Angus Sires

Quality Grade	Yield Grade	Net Return
95.7% Choice or Better	#1 0%	1373 lbs
4.3% Prime	#2 52.2%	x .9575
34.8% CAB	#3 47.8%	- 270.55 feed cost
56.5% Choice	#4 0%	- <u>42.58 trucking</u>
4.3% Select		\$1001.51

AI on Non-AI Angus and Simmental Sires

Quality Grade	Yield Grade	Net Return
73.9% Choice or Better	#1 3.1%	1310 lbs
0% Prime	#2 46.2%	x .937
15.4% CAB	#3 46.2%	- 267.53 feed cost
58.5% Choice	#4 0%	- <u>39.39 trucking</u>
26.1% Select		\$920.55

Non-AI on AI Angus Sires

Quality Grade	Yield Grade	Net Return
84.6% Choice or Better	#1 0%	1273 lbs
7.7% Prime	#2 31%	x .947
15.4% CAB	#3 69%	- 239.01 feed cost
61.5% Choice	#4 0%	- <u>41.04 trucking</u>
15.4% Select		\$925.48

Non-AI on Non-AI Angus, Simmental, Simmental/Angus, or Balancer Sires

Quality Grade	Yield Grade	Net Return
71.0% Choice or Better	#1 4.3%	1258 lbs
1.1% Prime	#2 44.6%	x .9343
6.5% CAB	#3 46.7%	- 273.58 feed cost
63.0% Choice	#4 4.4%	- <u>35.63 trucking</u>
29.3% Select		\$866.14

Overall Spring 2004 Steers

Quality Grade	Yield Grade	Net Return
75.6% Choice or Better	#1 3.1%	1297 lbs
2.5% Prime	#2 45.1%	x .9386
13.5% CAB	#3 48.2%	- 272.72 feed cost
59.6% Choice	#4 3.6%	- <u>37.96 trucking</u>
24.4% Select		\$906.68

The value of estrus synchronization and AI at Hillwinds Farm:

The breeding cost is \$13.91 greater per AI calf.

The increase in live calves of 2% adds \$12.21 per AI calf.

An increase in pregnancy rate adds 2% more bred cows worth \$11.60 per AI calf.

Using the Hillwinds farm figures, a calf that is AI on AI compared to a non-AI calf is worth \$78.18 more at weaning and \$145.27 more if retained to harvest. An AI on non-AI calf compared to non-AI on non-AI is worth \$38.54 more at weaning and \$64.31 at harvest. Calves that are non-AI on AI versus non-AI on non-AI are \$53.59 more valuable at weaning and \$69.24 higher at slaughter.

The Hillwinds success depends on the performance of AI and synchronization to improve the genetic quality of the cow herd and to boost the net return. The benefits of estrus synchronization and artificial insemination are clear. To survive in an industry where average margins are low and competition is everywhere, Hillwinds Farm incorporates these tools as part of an overall plan to succeed and prosper.