

## A.I. and Synchronization

# The Extra Efforts Improve Returns and Genetics

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**Table 1. Prostaglandin and Syncro-Mate-B Programs<sup>1</sup> (ABS Figures)**

No Females Entering Program	One-Injection Prostaglandin 55	Two-Injection Prostaglandin 55	Syncro-Mate-B 55
<b>Labor &amp; Misc. Costs</b>			
(a) ranch & labor	\$200	\$ 50	\$ 75
(b) A.I. technician	\$250	\$220	\$220
(c) misc. (equipment, supplies, facilities wear & tear)	\$100	\$100	\$100
Total Labor & Misc.	\$550	\$370	\$395
Total Cost/Female in Herd	\$10.00	\$6.72	\$7.18
<b>Drug Costs</b>			
Per Synchronization	\$3.50	\$7.00	\$9.00
Total Drugs Used	\$130	\$385	\$495
Total Cost/Female in Herd	\$2.40	\$7.00	\$9.00
<b>Semen Costs</b>			
Per Insemination	\$12.00	\$12.00	\$12.00
Total Semen Used	\$624	\$660	\$660
Semen Cost/Female in Herd	\$11.35	\$12.00	\$12.00
<b>Pregnancy Rates</b>	55%	55%	55%
<b>Estimated No. A.I. Calves</b>	30	30	30
<b>Estimated Cost/A.I. Calf</b> (Total cost/female in herd of labor & misc., drugs and semen + pregnancy rate)	\$43.18	\$46.76	\$51.24

<sup>1</sup>Assumptions for Table 1: One-injection program involves breeding for five days prior to injection, then breeding only at detected estrus following injection; two-injection program involves timed breeding only following second injection; all females in herd are cycling; well-managed herd.

The high use of artificial insemination in both the purebred and commercial herd has certainly boosted the genetics in today's beef cattle industry. The level of beef A.I. in the purebred industry exceeds 30 percent in most breeds and will continue to grow. The year 1990 could find the American Angus Assn. with over 50 percent of all calves registered resulting from A.I. Many breeds already have reached that level and all will experience more A.I. growth in the future.

Old drawbacks in areas of heat detection and labor limitations have been eliminated by synchronization products. These products have also allowed for more scheduling of breeding and calving that results in more

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live calves at lower costs. These products, however, will not take work and extra effort out of an A.I. program. The big question therefore is "Why do we A.I.?" For most people the answer is to increase the selling price because A.I. calves are worth more.

### Increased purebred value

In the Angus world today, breeders are no longer interested in running large numbers of cows and selecting only the top for sale to the commercial industry. Instead, emphasis is on getting the best possible calf out of a smaller group of cows. Of course by using bulls of choice through A.I., even small breeders now have the opportunity to compete with all herds in the United States. Just go to any show, bull test or sale and you'll see large numbers of paternal sibs from many different herds competing against each other.

Not only has this raised the genetic level of Angus cattle, it also has made purebred

**Table 2. Cost Per Calf, Natural Service**

	\$1,000	\$1,500	\$2,000	\$2,500	\$3,000	\$5,000	\$8,000
Bull Purchase	\$1,000	\$1,500	\$2,000	\$2,500	\$3,000	\$5,000	\$8,000
Less Salvage	800	800	800	800	800	800	800
Net Cost of Bull	200	700	1,200	1,700	2,200	4,200	7,200
Bull Maintenance* (3 years)	720	720	720	720	720	720	720
Interest on Purchase Price (15% for 3 years)	450	675	900	1,125	1,350	2,250	3,600
Risk (10%)	100	150	200	250	300	500	800
Total Cost	1,470	2,245	3,020	3,795	4,570	7,670	12,320
Cost per Calf (75 calves in 3 years)	\$19.60	\$29.93	\$40.27	\$50.60	\$60.93	\$102.27	\$164.27

\*Maintenance is based on income expected from the beef production of 1 1/2 cows that could be kept in place of a bull.

breeders money. Sale averages indicate that A.I.-sired calves—from the right bulls—sell for more money. (To me, one of the most amazing happenings in the Angus breed today is the first-time use of A.I. in herds just prior to a dispersion. All of a sudden the added value of the A.I. calf is attached to the selling price of the cow. I often wonder if the herd would have started an A.I. program earlier, would the dispersal have been necessary?)

Table 3 presents a list of possible advantages in worksheet form.

After studying the possible advantages listed, consider the various steps, one by one, to arrive at a figure that will help in making a decision to A.I. or not:

**A. Genetic Maternal Value**—Having superior replacement heifers has always been a primary reason for A.I. Bulls whose daughters have the ability to increase weaning weight 3 percent will add 15 lb. of calf. If

**D. Weight Advantage**—Look at the average Expected Progeny Differences (EPDs) of Angus bulls in A.I. On the average, an additional 25 lb. of weaning weight can be added to the remaining A.I. calves (those not accounted for in A or B). Here, the weight on 19 remaining calves at \$.70/lb. increases income by \$332.50.

**E. Age Advantage**—We used Syncro-Mate-B in our synchronization program and gained nine additional days on the average age of our calves. All cows were bred in a single day, so the calves will be older than if we had used natural service. Considering this age advantage on the 19 head sold at \$.70/lb. income increases \$263.

**F. Bull Reduction Advantage**—Assuming it costs \$1/day to keep a bull and bull numbers can be reduced 50 percent or one bull, another \$365 benefit is added.

**Table 3. Increased Income Per Synchronized A.I. Calf\***

A. Genetic Maternal Value = 10 A.I. heifers saved for replacement × \$54 extra value over natural service heifers	\$540
B. Breeding Stock Advantage = 1 A.I. calf sold for breeding stock, club calves, etc. × \$100 extra value over natural service breeding stock	100
C. Live Calf Advantage (calving ease and group calving) = 1 increased live birth × \$375 calf value at weaning	375
D. Weight Advantage (genetic or crossbreeding) = 30 A.I. calves - 11 calves used in 9A and 9B (19) × 25 lb. gain/calf × \$.70 price/lb. gain	332.50
E. Age Advantage = 30 A.I. calves - 11 calves used in 9A and 9B (19) × 9 days** advantage × 2.2 lb. gain/day × .70 price/lb. gain	263.34
F. Bull Reduction Advantage = 365 maintenance costs/bull × 1 bull not needed	365
Total Increased Income (Sum of A,B,C,D,E & F)	<b>\$1,975.84</b>
Total Increased Income/A.I. Calf = \$1,976 total increased income ÷ 30 A.I. calves	<b>\$65.86</b>

\*This example assumes a 55 percent first-service conception rate in a herd of 55 cows, or 30 A.I. calves. Substitute appropriate figures for those in bold print to calculate specific values for your herd or operation.

\*\*Use 4 days and 8 days, respectively, for single and double injection prostaglandin systems and 9 days for SMB system.

More information on bulls through the use of National Sire Evaluation Reports and Estimated Breeding Values (growth and maternal) has allowed Angus breeders to expand the use of breed-improving bulls with A.I. The fact that progeny of such bulls bring top prices pays a big return and makes the investment in time, labor, drugs, semen and A.I. certificates a profitable venture. How many herds today expect the top selling price on progeny of pasture bulls? Most people today are counting on the A.I. program to keep them in business.

#### The basic costs

Now let's take a look at the situation in the commercial industry. What does the commercial cowman face today? He knows he must impregnate cows, either through A.I., with bulls or a combination of both.

With normal labor, drug and semen costs and a 50 percent pregnancy level, a commercial producer's cost will run between \$43 and \$51 per A.I. calf (see Table 1). To this he must compare the price of a bull and cost per pregnancy. As shown in Table 2, the cost figure will be somewhere between \$30 and \$40 per calf with \$1,500 to \$2,000 bulls. Simply by comparing the costs listed here we see a \$15 to \$25 advantage with a bull over our A.I. program. At this point, producers often go no further and turn out the bulls.

#### Advantages to consider

Now let's go through and see if we have any advantages from our A.I. program that need to be examined. Is there additional income to be gained from the progeny of the A.I. bulls as compared to pasture bulls on hand or to be purchased?

these daughters produce an average of five calf crops, we can add a total of 75 lb. in increased production. If that extra 75 lb. is worth \$.70/lb., we can realize an extra \$54 worth of production from these A.I.-sired replacements.

**B. Breeding Stock Advantage**—Many producers have the opportunity to sell a special outstanding calf at a premium price as a show steer or heifer. In our example we sell one calf for a \$100 bonus over the per pound price.

**C. Live Calf Advantage**—A.I. allows you to use top calving-ease sires to keep calving difficulty to a minimum, and with synchronization you also have a large number of calves in a short time period. Being able to observe these cows and heifers more closely should result in additional calves weaned in the fall. In our example we add one extra live calf with a weaning weight of 536 lb. At \$.70/lb., we increase the advantage \$375.

#### Total increased income

Return to Table 1 and look at the cost of SMB A.I. calves. There we calculated a cost of \$51 per A.I. calf and a cleanup bull cost of \$30/calf with a \$1,500 natural service bull (Table 2). From Table 3 work we determine calves from our A.I. program returned \$66 more income than the natural service sired calves and cost us \$51 each. Thus we have a \$15 return over expenses on the A.I. calf.

Now let's consider whole herd benefit. In our A.I. breeding program we have the following breeding costs:

30 A.I. calves at \$15 advantage (66-51)	= \$450
25 cleanup calves at \$30 cost	= \$750
Total Breeding Cost	= \$300

As calculated here, a cost of \$5.45/cow (300 ÷ 55) in this A.I. program compares favorably to natural service alone.

For the entire herd, natural service alone costs \$1,650 (55 × \$30). The A.I./synchronization breeding benefit is therefore the difference between the true costs or \$1,350 (\$1,650 - \$300) for the sample herd of 55 cows, or \$25 per cow (\$1,350 ÷ 55).

No wonder so many herds have found such synchronization programs combined with A.I. breeding to be an increasingly popular method of improving beef cow profits while also improving herds genetically.

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