Reproductive Management of Beef Cows: 48-Hour Calf Removal

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Introduction
Research shows that reproduction, or simply weaning a marketable calf, is ten times more important than weaning weights and twenty times more important than carcass traits. Poor reproduction is one of the biggest issues facing range livestock operators throughout the west, particularly with young cows and during dry years.

Reducing the length of the anestrous period is a basic principal of reproductive management. Anestrous is the period from right after a cow gives birth, when her reproductive abilities are put on hold, until she resumes ovulation. During this period the cow’s body rebuilds energy reserves for future reproduction. The postpartum interval is the amount of time that the cow remains in anestrous, until her first estrous cycle. The postpartum anestrous period is the highest nutrient demanding biological period of the beef cow.

If a cow is in both poor condition and lactating, she probably will take months to rebreed. Also, if she is a two- or three-year-old cow, has a large-frame, or is a heavy-milking cow, she may not breed back at all. Lactation greatly exaggerates the effects of poor nutrition and can slow the return of estrous. When undesirably long postpartum anestrous periods occur, the producer should initially focus on possible deficiencies for animal nutrition and body reserves. Short-term calf removal has shown benefits in shortening post-partum anestrous.

The Suckling Response
Much like the complex hormonal processes that occur for ovulation and the estrous cycle, the hormonal processes of lactation and nursing directly influence the onset of estrous.

The degree of stimulation the cow receives from her suckling calf and her nutritional status during late gestation and early lactation greatly influence the extent of postpartum anestrous (Figure 1). However, lactation is the primary cause for the delay in the return of postpartum estrous. The onset of ovulation after a calf is born is triggered by the release of Gonadotropin Releasing Hormone (GnRH) from the pituitary gland in the brain. However, the GnRH supply is limited due to the suckling stimulus that signals the pituitary gland to submit prolactin for further milk secretion.
Short Term Calf Removal

Two-day calf weaning removes the nursing stimulus from the cow for 48 hours, hence the name “48 hour calf removal.” The care of the calf during those 48 hours simply requires the producer to provide the calf access to good feed and plenty of fresh water. However, calves will eat very little during this time due to the stress level incurred. Because of temporary weaning, it is extremely important to have good facilities. Fences and corrals must be strong enough to hold back a determined mother. If they are not adequate, do not attempt temporary calf removal.

Rebreeding rates of moderately conditioned (BCS=5) cows have been shown to improve by 6% (87.1% vs. 93%) when removing calves for 48 hours (Table 1).

This seemingly small improvement is large compared to the out-of-pocket investment.

Short-term calf removal cannot improve breed back success of thin cows. Cows with a body condition score of 4 or less may need to have calves weaned completely to allow the cow to recycle early in the upcoming breeding season. Cows that calve with a BCS of 6 or higher normally return to estrous early in the breeding season, and should have high rebreeding rates.

Two-day weaning does not adversely impact calf growth and health. Calves removed from the cows for 48 hours grew as rapidly and had similar weaning weights as those who were never removed from their mothers (Table 1).

Calf Removal and Estrous Synchronization

Forty-eight hour calf removal used in conjunction with estrous synchronization products has shown some benefits for increasing both the number of cyclic cows and pregnant cows in the herd. Researchers from the Texas Agricultural

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**Table 1. Effect of short term calf removal (48-hour) on reproduction and calf performance**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>No. Cows</th>
<th>% Pregnant at palpation</th>
<th>Calf Average Daily Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>101</td>
<td>87.1</td>
<td>1.60</td>
</tr>
<tr>
<td>Calf removal</td>
<td>86</td>
<td>93</td>
<td>1.63</td>
</tr>
</tbody>
</table>

*Reported by Simms et. al. (1982), KSU Cattleman's day.*
Experiment Station in Beeville compared how the use of “Syncro-Mate-B only,” calf-removal only, and Syncro-Mate-B in conjunction with calf removal influenced estrus (i.e. visible heat) and pregnancy rates in post-partum beef cows. Syncro-Mate-B is a synthetic progesterone implant administered in the ear and is removed after nine days.

Two-day calf removal alone resulted in a significantly larger proportion of the cows showing estrus and being pregnant (62% and 44%, respectively) 21 days after implant removal, compared to no method of estrus synchronization (31% and 17%) (Table 2). The combination of Syncro-Mate-B implants and calf removal resulted in 85% and 88% of the herd being in estrus 4 and 21 days after implant removal, respectively. The use of implants only resulted in 60% and 68% of the herd being in estrus at 4 and 21 days, respectively. There were no significant increases in percentage of cows pregnant when comparing the two treatments.

Table 2. Effect of calf removal and Syncro-Mate-B on estrus and pregnancy

| Treatment               | After implant removal Showing estrus (%) | Pregnant (%) | | | |
|-------------------------|------------------------------------------|--------------| | | |
|                         | 4 days                                   | 21 days      | 4 days | 21 days | | |
| Control                 | 11                                       | 31           | 8      | 17      | | |
| Calf removal only (CR)  | 19                                       | 62           | 18     | 44      | | |
| Syncro-Mate-B (SMB)     | 60                                       | 68           | 27     | 40      | | |
| SMB and CR              | 85                                       | 88           | 35     | 58      | | |

“Ov-Synch” and “Co-Synch” protocols combined with 48 hour calf removal have shown increases in pregnancy rates, when compared to the use of implants without calf removal. “Ov-Synch” is an estrus synchronization product that involves an injection of GnRH on day 1 and then an injection of prostaglandin on day 8. Calves can be removed 48 hours prior to the second injection of GnRH. The second injection is administered when calves are paired back up. Field experience has showed up to a 10% increase in pregnancy rates using this method.

“Co-Synch” is a similar product to “Ov-Synch,” but no heat-detection is needed, and cows are simply mass bred immediately after the last injection of GnRH. Calf removal 48 hours prior to breeding has shown up to a 10% increase in the number of cows pregnant in the herd.

Research conducted at Colorado State University found that 48-hour calf removal combined with the feed additive, MGA and a prostaglandin injection (MGA-CR-PGF) resulted in the highest pregnancy rate (Table 3). Including calf removal in the synchronization program increased pregnancy rates by 16%, compared to using only the feed additive and prostaglandin. Whether using calf removal or not, estrus rates were greater than using no form of estrus synchronization (Table 3). The control treatment (i.e., no estrus synchronization treatment) showed only 34.5% of the herd at estrus after 5 days, compared to 64.8% and 61.8% for the estrus synchronization treatments (Table 3).

Table 3. Effect of synchronization treatments on estrus and pregnancy rates.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>5-day estrus rate (%)</th>
<th>Synchronize conception rate (%)</th>
<th>25-day pregnancy rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>34.5</td>
<td>89.4</td>
<td>78.2</td>
</tr>
<tr>
<td>MGA-PGF</td>
<td>64.8</td>
<td>68.6</td>
<td>74.7</td>
</tr>
<tr>
<td>MGA-CR-PGF</td>
<td>61.8</td>
<td>85.3</td>
<td>90.9</td>
</tr>
</tbody>
</table>


Conclusion

Numerous studies have shown benefits of using 48-hour calf removal to induce post-partum estrous. Temporary removal of the suckling stimulus reduces the secretion of prolactin so as to increase GnRH secretion from the brain. This brings about a reduced anestrous period and promotes earlier breeding.

Less than 6% of beef cows in the United States are artificially inseminated. This is due largely to difficulties in estrus detection. Forty-eight hour calf removal, combined with estrous synchronization products, can aid in estrus detection and bring about increased conception rates when implementing an artificial insemination program. However, short term calf removal should only be implemented with good facilities. When
implemented, these reproductive advantages can potentially bring about a shortened calving period and a uniformly weaned calf crop at the market.

References


