

REPRO TRACKS



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Postpartum anestrus and reproductive efficiency

After giving birth, all beef females go through a period in which they do not experience estrous cycles; this is known as postpartum anestrus.

This period of temporary infertility cannot be avoided, but it can be managed to ensure the cows return to a fertile state in a timely and economically efficient manner.

Postpartum anestrus is a result of several factors related to pregnancy and calving. A variety of factors influence the length of the postpartum interval, and the two primary factors are the suckling effect and nutritional status.

In addition, cows must complete uterine involution and may experience short estrous cycles during their postpartum period. While many factors influence the length of the postpartum period, there are four primary components associated with or responsible for postpartum anestrus: 1) uterine involution, 2) short estrous cycles, 3) effects of suckling and 4) nutrition. I will address each of these areas individually.

1) Uterine involution

Following calving, uterine involution must take place before estrous cycles

resume. Uterine involution is defined as the structural and functional regression of the uterus to a status that is capable of supporting another pregnancy. This includes returning to a nonpregnant size, shape and position, shedding of all fetal membranes, and repair of uterine tissues. This process is completed in approximately 20–40 days following calving if no complications arise. After cows overcome uterine

involution, it generally does not have a relationship to a cow's ability to successfully overcome postpartum anestrus.

2) Short estrous cycles

A majority of beef cattle normally experience one or more abnormal estrous cycles prior to initiating estrous cycles of normal length. These abnormal estrous cycles often occur without visual signs of estrus

being expressed and are shorter than normal.

This phenomenon is referred to as a short estrous cycle and is common in females overcoming postpartum anestrus. Use of exogenous progesterone sources, such as controlled intravaginal release devices (CIDR), can be useful tools in managing short



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estrous cycles. Therefore, tools that help producers successfully overcome anestrus and the incidence of short estrous cycles during the postpartum period include the implementation of estrous synchronization protocols and the administration of exogenous progesterone through a CIDR. It is important to note these tools should not be used unless the days postpartum are known.

Uterine contractions are an important component of uterine involution; administration of any progestin or progesterone within 21 days of calving could hinder this process.

3) Effects of suckling

The primary factor associated with nursing that limits resumption of the normal estrous cycle is not the energy demand of lactation. Rather, it is the actual suckling and presence of the calf that has the greatest effect on the length of postpartum anestrus.

Suckling triggers a complex system of neural responses and hormonal feedback loops that result in extended anestrus. Suckling has the greatest impact on females in poor body condition or first calf heifers.

Early weaning of calves decreases the length of postpartum anestrus

(Fig. 1) and improves reproductive performance in beef cows. Although effective, this can be a costly tool to use if not properly managed. Either calves will have to be sold at lighter weights or a producer needs to supplement them.

This is an option that needs to be evaluated if females are extremely thin or feed availability for the dams is insufficient. Early weaning should

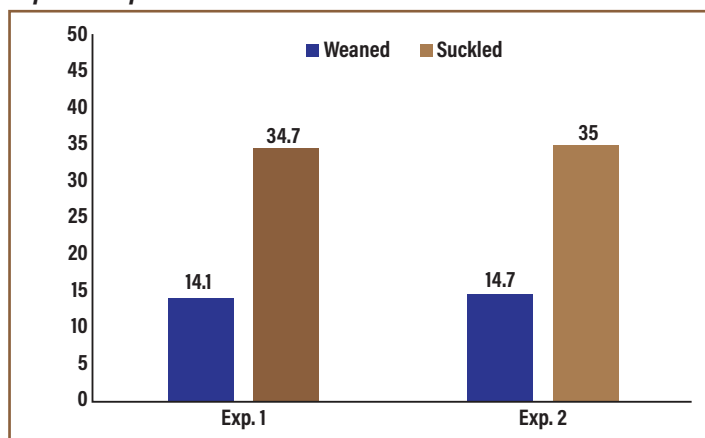
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be considered only in extreme cases and thoroughly researched prior to implementation.

4) Nutrition

Proper nutrition is essential for optimum performance in every aspect of beef cattle production, and overcoming postpartum anestrus is no exception. In practical production conditions, much of the variance in reproductive performance may be attributed to nutritional status or differences in energy intake and body condition.

Fig. 1: Days to initiation of postpartum estrous cycles in cows after weaning or cows that continued to suckle their calves from two separate experiments.



Reviews of literature from the past 15 years indicates four basic observations of nutrition's role in reproductive success:

- Prepartum (prior to calving) nutrition is more important than postpartum nutrition in determining the length of the postpartum interval.
- Inadequate dietary energy in late gestation will affect

reproduction even when sufficient energy is supplied during lactation.

- Body condition score (BCS) of at least a 5 or greater (on a 9-point scale) at calving ensures sufficient reserves to assist in overcoming negative nutritional balances associated with the postpartum interval.
- Further reductions in reproductive performance will occur if females remain in a negative energy balance during lactation.

Using strategic management, producers can limit how much postpartum anestrus affects the productivity of a beef cow herd.

With proper attention to BCS prior to calving, successful uterine involution, acknowledgment

of the suckling interaction and a reduction in short estrous cycles, the period of postpartum anestrus can be reduced for successful reproductive efficiency.

Producers must understand the available tools, weigh all aspects of implementing those tools and properly manage cattle through all phases

of production to aid in initiating estrous cycles and maintain a postpartum interval that will allow cows to calve annually.

All of these steps together will help to optimize the profitability of cow-calf operations.

Cliff Lab