NUTRITIONAL INFLUENCES ON REPRODUCTION: ENERGY AND PROTEIN

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Reproduction is the single most important factor associated with the economic success of the cow/calf producer.
Management cycle of a beef cow

- To have 1 calf every 365 days, a cow has ~83 days from calving to conceive.
- The interval of postpartum anestrus will dictate if she can accomplish this.
Factors that affect the postpartum interval

- The postpartum interval is dependent upon many factors and is very difficult to predict.

- Nutrition
- Age
- Calving difficulty
- Calving season
- Genetics
- Suckling of calf
- Body Condition (fatness)
Anestrus in US beef cattle at start of synchronization

Lucy et al., 2001; Larson et al., 2006
Effect of calving date on the number of cows calving the following year (adapted from Burris and Priode, 1958)
Factors effecting reproduction in beef cows

- #1 is Nutrition
  - Fat reserves (BCS) at calving and start of the breeding season
  - Weight loss between calving and breeding = long PPI

- Recommendations:
  - **Mature cows:** BCS 5 - 5.5 at calving and maintaining this BCS during the breeding season
  - **2 year-old cows:** BCS 5.5 - 6 at calving and maintaining this BCS during the breeding season
BCS is a practical indicator of nutritional status and its effect on reproduction in the postpartum cow

Short et al., 1990; Williams, 1990; Wagner et al., 1988; Randel, 1990
Body Condition Scores

- 1 - Emaciated
- 2 - Very thin
- 3 - Thin
- 4 - Moderately thin
- 5 - Moderate (ideal)
- 6 - Moderately fleshy
- 7 - Fleshy
- 8 - Very fleshy
- 9 - Obese
BCS Examples

BCS 3: To Thin

BCS 5: Ideal

BCS 8: To Fat
Fat (% of carcass) and Fat Cover (in) estimates in beef cows relative to body condition score.
Energy Reserves and Reproduction

- Rapid weight gain is difficult after calving
  - especially late calving cows
  - need to reach target by calving

- Cows in good to moderate BCS
  - can lose some weight (BCS) after calving

- Thin cows at calving
  - must have ↑ postpartum E
  - Economics (sell or feed?)
Effect of body condition score (BCS) at calving on postpartum interval.

<table>
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<tr>
<th>BCS</th>
<th>Postpartum Interval</th>
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<tbody>
<tr>
<td>3</td>
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<tr>
<td>4</td>
<td>69.7</td>
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<td>5</td>
<td>59.4</td>
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<td>6</td>
<td>51.7</td>
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<td>7</td>
<td>30.6</td>
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Adapted from Houghton et al., 1990

Adapted from G. Selk, Oklahoma State Univ.
Relationship of BCS with Calving Interval
(Adapted from Kalkenny, 1978)
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