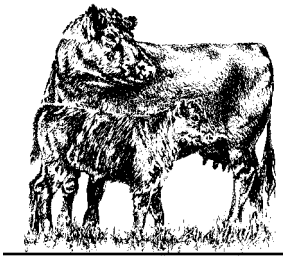

Western Beef Resource Committee

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Cattle Producer's Handbook

Management Section 760

Winter Stress in Beef Cattle

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The climatic conditions that exist in an area have a bearing on the competitive position of that area's beef producers. Stress factors that occur because of winter weather can be compensated for by one of two management strategies, however.

One method is to provide shelters that will create an environment to enable animals to maintain the same production with a given amount of energy intake. A second method is to increase the animal's energy intake to enable it to withstand stress conditions. Severe conditions may dictate which method to use, or possibly even that both management strategies should be used.

Factors Creating Stress

Many climatic factors can increase stress on beef cattle. Factors that create stress during the winter months are cold, wind, snow, rain, and mud.

An understanding of these climatic factors and their magnitude can help livestock producers and feeders make management decisions that will reduce additional costs due to stress.

Cold Temperature

Cold is an obvious stress factor that increases an animal's demand for energy. Two basic questions for cattle producers are:

1. At what temperature are cattle of various types and classes affected by cold?
2. How much energy (feed) is required in overcoming the effects of cold stress?

Healthy cattle with average condition and hair coat have a 20° to 30°F temperature range, called a thermoneutral zone (TNZ), where efficiency and rate of gain are maximal. In this comfort zone, energy requirements for body maintenance are minimal, permitting the maximum amount of energy to be expended for growth and functions other than body maintenance. The ideal or critical temperature varies according to hair coat, moisture conditions, age, size of cattle, length of time exposed to the temperature difference, and how much wind exists with a given temperature, according to studies at the University of Alberta.

For this paper, the thermoneutral zone (TNZ) is the range in effective ambient temperatures that permits maximum efficiency and performance (Fig. 1).

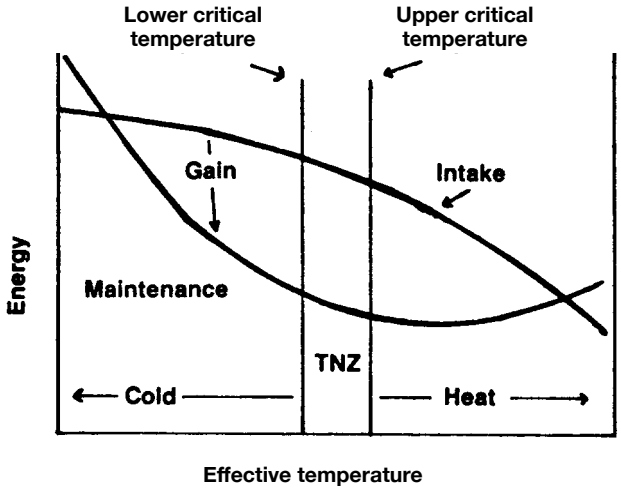

Fig. 1. Effect of temperature on rate of intake, maintenance energy requirement, and energy retained as product (gain).

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