

Endocrine Factors Affecting Feedlot Performance of Heifers

By D. E. Ray

Nutritional experiments at land grant universities have contributed significantly to the efficiency of commercial cattle feeding operations. The importance of the proper balance between the various nutrients and micro-nutrients has thus been brought into focus, with resulting practical application to feedlot operations.

Most beef animals fed and slaughtered are steers. This is due to the simple fact that there are many more males surplus to a breeding herd than females — polygamy is the rule! Since this is the case, most research has been concerned with efficiency of growth and finishing of steers, and justly so.

The Forgotten Bovine

Yet there is a large portion of beef derived from the other sex. For example, approximately 39 percent as many heifers as steers were slaughtered in 1965. There has been a tendency to neglect the heifer in feedlot research.

Many feeders actually prefer not to

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shown in Table 2. Strain E8 was relatively resistant to herbicides but was killed by the most effective treatments. Strains W11 and W21 were more susceptible to all treatments.

Repeated applications of all herbicide treatments in this test were required to kill any of the strains. A minimum of five applications was needed to kill the most susceptible strain with the most effective treatment.

Control Effort Inefficient

When herbicides have been applied to Johnsongrass under field conditions, the control has often been poor. Failures should not be blamed on resistant Johnsongrass. Poor control is usually caused by misapplication, insufficient herbicide applied, too long a time between applications, and not enough applications.

Survival of the Toughest

When a Johnsongrass control program is not successful, the more susceptible strains may be destroyed,

feed heifers. There are several reasons for this discrimination. Heifers periodically come in heat, they may be pregnant, they generally gain slower than steers, they require more feed per pound of gain, and they sell at a lower price than steers.

These factors all point to the need for more research on factors influencing growth in heifers. A series of experiments is being initiated at the Yuma Branch Experiment station to study endocrine factors related to growth of heifers under feedlot conditions.

It Is Control Center

Why look at endocrine factors? The endocrine system, in conjunction with the nervous system, is primarily concerned with regulation and synchronization of functions of the animal body. It may speed up or retard certain body functions in order to achieve a balance between all activities occurring in the body. The endocrine system accomplishes this regulatory function through the secretion of hormones. Therefore, this series of experiments

leaving the more resistant strains. An inadequate control effort may alter the Johnsongrass infestation, resulting in a highly resistant population the following year that is more difficult to control than the original.

In most crops, repeated applications of herbicides for Johnsongrass control are not recommended or possible. Where cropland is fallow because of weeds or crop-acreage restrictions, it may be possible to use repeated applications of herbicides to control established Johnsongrass. Such applications would be most useful in desert valleys (such as the Sulphur Springs) where summer rainfall may make mechanical cultivation impossible.

In most areas, repeated applications of the best herbicide would be faster than — and economically competitive with — mechanical fallow for control of established Johnsongrass. Where both annual weeds and established Johnsongrass must be controlled, a combination of mechanical and chemical controls would be most effective.

is designed to evaluate the effect of various hormones on growth.

The initial experiment will involve three "sexes": intact heifers, spayed heifers, and steers — with 32 animals in each group. One half of each "sex" group will receive a hormone in the feed. The other half will serve as controls. The inclusion of steers will serve as a baseline from which to evaluate performance of the heifers. Rate of gain and feed conversion will be evaluated during the feeding trial.

At the end of the finishing period, all cattle will be slaughtered and their carcasses evaluated for quality of meat and proportion of edible cuts.

Thus, information will be obtained on two important aspects of cattle production — efficiency of feedlot performance and carcass desirability.

Why Spayed Heifers?

The question may arise as to why spayed heifers are being studied. There are several reasons for this. First, the removal of the ovaries eliminates the major source of two hormones normally secreted by these organs. This will allow an evaluation of the importance of these natural hormones on growth and carcass traits.

Secondly, the response of an animal to an "outside" hormone can be very dependent on the hormones its own body is producing. The spayed heifer may react quite differently from the "normal" heifer when treated with a hormone. Most of the feeding comparisons involving spayed heifers were conducted 20 to 30 years ago. It will be worthwhile to evaluate performance of spayed heifers with modern animal nutrition techniques. Finally, spaying accomplishes two more functions — it eliminates heat periods and eliminates pregnant heifers!

A progress report will be made at the termination of the initial trial.

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