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Beef Cattle Feeding in a Deep Bedded Hoop Barn: A Preliminary Report

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Beef Cattle Feeding in a Deep Bedded Hoop Barn: A Preliminary Report

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Summary and Implications

There is growing concern about more intensive runoff and environmental regulations for open beef cattle feedlots, particularly in the higher rainfall cattle feeding states like Iowa. A low-cost, versatile bedded hoop barn for feeding cattle may be a possible solution to this situation. The objective of this study is to quantify the environment in a bedded hoop used for finishing beef cattle and to compare beef cattle performance in hoops to conventional open feedlots.

In order to compare bedded hoop barns to outside feedlots for beef cattle feeding, a hoop barn (50 x 120 ft) is being constructed at the ISU Armstrong Research Farm, Lewis, IA that will house 120 head of steers in three pens with approximately 50 square feet per animal. The hoop barn will have a fenceline feedbunk with concrete apron and scrape alley. The remaining floor will use crushed rock over geotextile fabric. Cornstalk bedding will be used to facilitate solid manure handling. Manure will be composted during the summer and winter months for land application in spring and fall. The hoop system will be compared with an outside feedlot with shed, under common management. Data will be collected and summarized on the following items: facility cost, feed intake, feed efficiency, cost of gain, daily gain, bedding use, manure output, and labor requirement. The project is being conducted in western Iowa, an area with many outside beef cattle feedlots.

Design features and decisions included: a north-south orientation, 10 ft sidewalls, a fenceline bunk along the east edge of the hoop, a fabric covered overhang to shelter the fenceline bunk, three equal pens, a continuous open ridge vent, concrete paving along the bunks and for the scrape alley, and a curtain to close the west wall and north wall if needed.

Results of this study will be ongoing, beginning in 2005.

Introduction

The business, political, and environmental climate for beef production is changing rapidly. Beef finishing facilities with promising futures must be financially profitable, environmentally benign, legal, and socially acceptable to the community. Particular concern is currently focused on the water quality impacts of beef feedlots and evolving regulatory control. Outside feedlots have lower facility costs, but higher environmental control costs. Confinement systems have higher facility costs, but lower environmental costs. Producers would like options with low costs for both facilities and environmental controls. An ideal system is a system that incorporates low facility investment, no feedlot runoff, solid manure handling, low odor and dust, easy management, and good animal performance. A bedded hoop barn may meet many of these characteristics. However, hoop barns have not been widely used for feeding beef cattle and there is little or no objective information.

The objective of this study is to quantify the environment in a bedded hoop used for finishing beef cattle, and to compare beef cattle performance in hoops to conventional open feedlots.

Materials and Methods

In order to compare bedded hoop barns to outside feedlots for beef cattle feeding, a hoop barn (50 x 120 ft) is being constructed at the ISU Armstrong Research Farm, Lewis, IA that will house 120 head of steers in three pens with approximately 50 square feet per animal. The hoop barn will have a fenceline feedbunk with concrete apron and scrape alley. The remaining floor will use crushed rock over geotextile fabric. Cornstalk bedding will be used to facilitate solid manure handling. Manure will be composted during the summer and winter months for land application in spring and fall. The hoop system will be compared with an outside feedlot with shed, under common management. Data will be collected and summarized on the following items: facility cost, feed intake, feed efficiency, cost of gain, daily gain, bedding use, manure output, and labor requirement. The project is being conducted in western Iowa, an area with many outside beef cattle feedlots.

Results and Discussion

During spring and summer 2004, the hoop barn was designed. Design features and decisions included: a north-south orientation, 10 ft sidewalls, a fenceline bunk along the east edge of the hoop, a fabric covered overhang to shelter the fenceline bunk, three equal pens, a continuous open ridge vent, concrete paving along the bunks, and for the

scrape alley, and a curtain to close the west wall and north wall if needed.

A cornstalk bedding pack will be maintained over a crushed limestone base in the pens opposite the feedbunks. More detailed plans of the hoop barn are available in MidWest Plan Service publication Hoop Barns for Beef Cattle AED-50, 2004 (see figures 14, 15, and 16).

Plans are to complete the hoop barn, install environmental monitoring equipment, and stock the barn during the fall and early winter of 2004. Preliminary experiences, feeding trial results, and environmental data will be available in 2005. Also during 2005, the hoop barn will be featured in field days and education events.

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