



Mississippi Farm to Feedlot Program 13-year summary: Effects of steer age and morbidity on feedlot performance and carcass traits¹

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ABSTRACT

Records of steers ($n = 6,392$) consigned to the Mississippi Farm to Feedlot Program from 1993 to 2006 were used to assess effects of steer age and morbidity on feedlot performance and carcass traits and to describe characteristics of steers fitting certain carcass specifications by finishing net return quartile ranking. Morbidity rate, days treated, treatment cost, and mortality rate were dramatically greater ($P < 0.05$) for steers ≤ 180 d of age at feedlot entry than for older steers. These health-related variables were all least ($P < 0.05$) for cattle at least 361 d of age at feedlot entry. The percentage of steer carcasses grading Choice or better increased ($P < 0.05$) with advancing calf age. Healthy steers were older at feedlot entry ($P < 0.01$) and had greater ($P < 0.0001$) initial BW

than did treated steers. Marbling score, USDA QG, calculated YG, dressing percentage, and backfat thickness were greater ($P < 0.01$) for carcasses from healthy versus treated steers. Steers producing greater finishing net return had lesser ($P < 0.0001$) morbidity rate, days treated, and treatment cost and greater ($P < 0.0001$) initial BW, feedlot ADG, final BW, HCW, marbling score, USDA QG, backfat thickness, LM area, LM area per unit HCW, and calculated YG. Steer age at feedlot entry and morbidity affect finishing performance and carcass characteristics. Characteristics of the most profitable steers for finishing and slaughter include faster-growing, less morbid calves with heavier carcasses.

Key words: beef cattle, calf age, carcass, farm to feedlot, morbidity

information regarding retained ownership as a marketing alternative to beef cattle producers and often serves as an introduction to cattle finishing and slaughter production and marketing systems for these producers. The results generated from this extension-led program are used in both individual farm and aggregate forms to assist cattle producers in making breeding, management, and marketing decisions. Among the data gathered in this program are ages of calves at feedlot entry and information regarding calf health during finishing.

Age at feedlot entry has been shown to affect ADG and carcass characteristics, with earlier feedlot placement resulting in lesser initial ADG but then greater later ADG and greater QG but lighter carcass weights (Schoonmaker et al., 2002; Adams et al., 2010; Hudson et al., 2010). However, much of this information is presented by generic calf-fed versus yearling age groups instead of utilizing actual calf birth dates to provide a more detailed investigation of calf age in terms of days.

INTRODUCTION

The Mississippi Farm to Feedlot Program was established in 1993 to evaluate feedlot performance and carcass traits of steers produced in Mississippi. It provides educational

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Table 1. Descriptive statistics for Mississippi Farm to Feedlot Program, 1993 to 2006

Program year	Steers, No.	Farm of origin, No.	Mean steers per farm of origin, No.	Minimum steers per farm of origin, No.	Maximum steers per farm of origin, No.	Steer feeding groups, No.
1993 to 1994	384	49	7.8	5	39	3
1994 to 1995	495	52	9.5	5	50	4
1995 to 1996	518	52	10.0	5	75	5
1996 to 1997	530	41	12.9	4	74	4
1997 to 1998	576	38	15.2	4	98	5
1998 to 1999	642	47	13.7	3	118	7
1999 to 2000	575	43	13.4	3	142	6
2000 to 2001	607	39	15.6	3	153	6
2001 to 2002	484	33	14.7	2	135	5
2002 to 2003	615	36	17.1	2	111	11
2003 to 2004	424	25	17.0	2	57	7
2004 to 2005	258	23	11.2	2	42	5
2005 to 2006	284	19	14.9	2	49	5

Dhuyvetter et al. (2005) demonstrated enhanced calf value during finishing due to preconditioning. It has been documented that morbidity decreases ADG, marbling score, QG, YG, and finishing net returns (Gadberry and Troxel, 2006; Reinhardt et al., 2009), although the findings of Waggoner et al. (2007) dispute the marbling score and YG findings. Characteristics of more profitable steers in various finishing and slaughter systems have also been described (Gadberry and Troxel, 2006). The Mississippi Farm to Feedlot Program data set provides a unique opportunity to research these relationships among animals from multiple sources of origin and management programs over an extended period of time. Therefore, the objectives of the present study were to assess 1) the effect of steer age on feedlot performance and carcass traits; 2) the effect of morbidity on feedlot performance and carcass traits; 3) feedlot performance and carcass traits of steers dependent on whether or not they fit industry standards for USDA QG, YG, and carcass weight; and 4) characteristics of steers and their carcasses within finishing net return groups.

MATERIALS AND METHODS

Analysis Design

Records of steers ($n = 6,392$) consigned to the Mississippi Farm to Feedlot Program from 1993 to 2006 were used in this analysis. They represented 203 unique farms of origin and 73 feeding groups (Table 1). Each farm of origin participated in the program from 1 to 13 program years.

An on-farm preconditioning period was strongly suggested before shipment to the feedlot, but the details of the preconditioning program were left to the owner's discretion. The preconditioning program recommended by The Mississippi Farm to Feedlot Health Committee appears in Table 2. Calves submitted to the program were accompanied with an enrollment form. The form provided information regarding calf birth date and the owner's knowledge or estimate of sire and dam breed composition. Producers were encouraged to select calves that were representative of their breeding and management programs for enrollment in the Mississippi Farm to Feedlot Program.

Calves were required to have a minimum BW at shipment to the feedlot of 227 kg. Each program year, cattle were shipped to a feedlot (Hitch Enterprises, Garden City, KS, from program year 1993 to 1994 through

2003 to 2004; DM&M Farms Inc., Cimarron, KS, from program year 2004 to 2005 through 2005 to 2006) in autumn (dates ranging from August 21 to November 17, with 16 out of 23 shipment dates occurring between October 2 and October 26). On the day of shipment to the feedlot, calves were weighed and pooled into truckload (22,226 kg) lots at producer farms or Mississippi Agricultural and Forestry Experiment Station sites. Cattle were weighed before shipment to the feedlot, upon arrival at the feedlot (initial BW), and then again at the end of the feeding period. Cattle were processed and weighed individually. Calves that experienced morbidity were treated according to feedlot protocol.

Cattle were randomly sorted into feeding groups based on initial BW, frame size, BCS, and sex by trained feedlot personnel. Single-sex feeding groups were used. Feeding groups were composed of cattle from one or more farms of origin in one feeding group, and the number of steers sent per owner ranged from 2 to 32 steers. Cattle were offered a feed ration between 24 and 36 h after arrival to the feedlot. Cattle were fed a traditional feedlot diet with 4 diet changes until cattle were adapted to the finishing diet.

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