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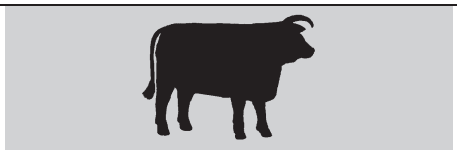

Comparison of Two Weaning Dates and Two Finishing Systems on Feedlot Performance, Carcass Characteristics, and Enterprise Profitability of Fall-born Steers[1]

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ABSTRACT

In a 3-yr study, 139 fall-born steers (Angus and Angus × Charolais; BW = 287 ± 31 kg in mid-April) were allotted to 1 of 4 treatments in a 2 × 2 factorial arrangement. Weaning date treatments were 1) mid-April at 212 ± 12 d of age (normal weaning; NW) and 2) mid-July at 300 ± 15 d of age (late weaning). Finishing system treatments were feedlot placement in 1) July, with a mean calf age of 310 ± 14 d (calf-fed; CF), and 2) October, with a mean calf age of 394 ± 15 d (yearling-fed; YF). Steers assigned to the NW treatment were returned to native tall grass prairie rangeland after weaning each year. Steers assigned to the YF treatment grazed abundant native tall grass prairie pasture for an additional 84-d period. The number of days on feed was greater ($P < 0.01$) for CF compared with YF. Late-weaned steers were 16 kg heavier ($P < 0.01$) at the time of feedlot entry compared with NW steers. No other differences ($P > 0.05$) for time of weaning were detected, nor were there any interactions ($P > 0.05$) between weaning and finishing system. Yearling-fed steers were heavier (34 kg; $P < 0.01$) at the time of feedlot placement, had greater ($P < 0.01$) DMI, and had greater ($P < 0.01$) feedlot ADG (1.80 vs. 1.68 kg) than CF, resulting in greater final BW and hot carcass weight ($P < 0.01$). No other differences ($P > 0.05$) were detected for any carcass traits measured. System economic analysis showed no differences in break-even selling price or system profitability.

Key words: carcass, fall-calving, feedlot, production system, weaning date

INTRODUCTION

In the Southern Great Plains, fall-calving systems provide cow-calf producers with numerous weaning and postweaning management options. Altering the time of weaning, the length of the backgrounding and growing period, or both can affect calf marketing options and enterprise profitability. Traditionally, fall-born calves are weaned at approximately 7 mo of age in April or May, which generally corresponds to mild weather conditions, high-quality forage availability, and high calf prices. Alternatively, some managers in this region choose to delay weaning until July or August, when calves are 10 to 11 mo of age. The primary goal of this late-weaning strategy is to increase weaning weights and gross revenue with little change in labor inputs. Indeed, Hudson et al. (2009) reported that fall-born calves weaned at 300 d of age weighed 93 kg more at the time

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of weaning than calves weaned at 210 d of age.

Producers may chose to market calves at the time of weaning or may attempt to add additional value by implementing a late-season stocker grazing program (Peel, 2006). Previous reports have documented daily BW gains of 0.7 to 0.8 kg when beef heifers or steers grazed native tall-grass prairie during late summer and early fall while receiving a protein supplement (Lalman et al., 2004, 2005; Purvis and Cox, 2005). Therefore, late-summer grazing with protein supplementation could be an important component of an efficient beef production system when market conditions encourage extended BW gain from grazing (Peel, 2006).

Within a systems context, it is important to understand the influence of time of weaning and production system (summer or fall grazing, or "yearling" vs. "calf-fed") on postweaning grazing and feedlot performance. Similarly, it is imperative to understand the impact of these management options on carcass characteristics and overall system profitability. Therefore, the purpose of this study was to determine the effects of time of weaning and finishing system on feedlot performance, carcass characteristics, and enterprise profitability of fall-born steers.

MATERIALS AND METHODS

This study was conducted at the Range Cow Research Center, North Range Unit, approximately 16 km west of Stillwater, Oklahoma, and at the Willard Sparks Beef Research Center (**WSBRC**), Stillwater, Oklahoma, in accordance with a protocol approved by the Oklahoma State University Animal Care and Use Committee. In a separate experiment, Hudson et al. (2009) reported the effects of weaning age on cow and calf performance in a fall-calving system. Here, we report the effects of the weaning age treatments and 2 finishing systems (Figure 1) imposed after weaning on postweaning performance and carcass characteristics of steer progeny from the study of Hudson et al. (2009).

Preweaning Management and Weaning Age Treatments

Briefly, Angus cows (age = 2 to 11 yr) were randomly assigned to 1 of 2 weaning date treatments: 1) normal weaning in mid-April at 212 ± 12 d of age (**NW**), and 2) late weaning in mid-July at 300 ± 15 d of age (**LW**). Cows were retained in the herd each year (excluding open cows or cows with serious illness) and remained in the same weaning group as initially assigned. Pregnant cows were added to the study each spring either as rollovers from a spring-calving herd or as fall-born 2-yr-old replacements. The added cows were managed with the experimental herd for 10 mo and were equally and randomly assigned to either the NW or LW treatment before the April weaning date each year. Cows and calves grazed native tall grass prairie rangeland, primarily composed of big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*), with an average annual stocking rate of 4 ha/cow-calf unit. Prairie hay was fed only if standing forage was covered with snow or ice. Each year, cow-calf pairs received a cottonseed meal-based protein supplement (40% CP, as-fed basis) at the daily rate of 0.45 kg in September and October, 0.91 kg in November and December, and 1.36 kg in January, February, and March.

In mid-April, NW calves were separated from their dams and weaned using a fenceline weaning system (Price et al., 2003). Cows with LW calves and with NW calves grazed pasture adjacent to the dry lot where calves were maintained for 10 d postweaning. During the 10-d dry-lot weaning period, calves received daily a 20% CP supplement at a rate of 1.81 kg/d per animal and were given ad libitum access to bermudagrass hay and water. After the 10-d dry-lot weaning period, NW calves were placed on native tall grass prairie rangeland at a stocking rate of approximately 1.22 ha/animal. In mid-July, LW calves were separated from their dams and weaned using the same fenceline weaning system as described for NW cows and calves. All cows grazed pasture adjacent to the dry lot where LW calves were maintained for 10 d postweaning. Weaning management was the same as for NW calves. The NW calves continued grazing native tall grass prairie range-

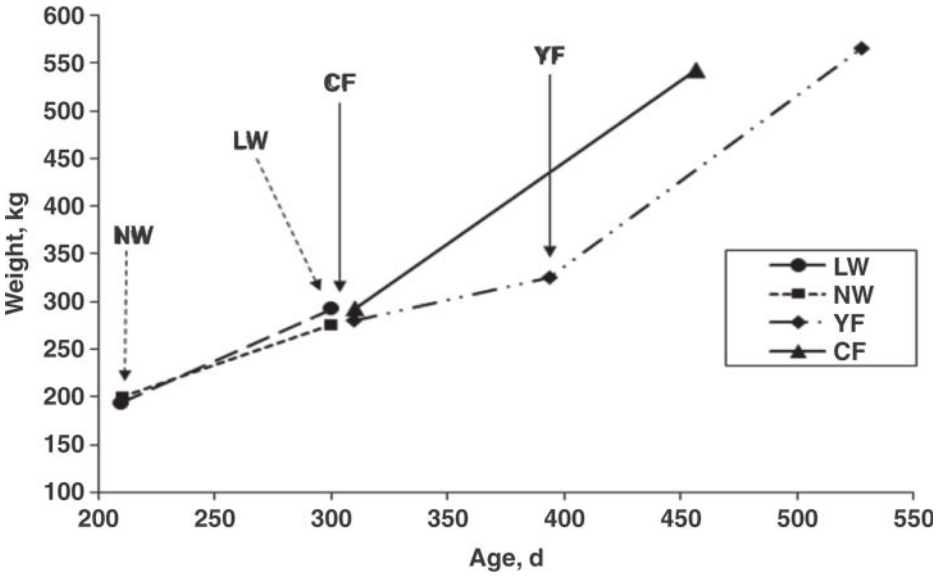

Figure 1. Growth curves throughout the experiment. The dashed arrows indicate time of weaning for normal-weaned (NW) and late-weaned (LW) calves. The solid arrows indicate the beginning of the feedlot phase for calf-fed (CF) and yearling-fed (YF) cattle.