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Relationships of milk production of beef cows to postweaning gain of their calves

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Introduction In the U.S., live beef production is segmented into cow-calf, stocker/backgrounder, and feedlot phases. Efficiency in beef production systems depends on proper relationships between each of these segments. Since milk yield accounts for over 50% of the variation in calf weaning weight, cow-calf producers depend on higher milk production in their cow herds to produce calves that are heavier at weaning. Unfortunately, higher levels of milk yield in the cow and the corresponding greater milk consumption by calves during the preweaning phase may be associated with lower growth performance in the stocker/backgrounder production phase. The objective of this research was to evaluate the effects of preweaning milk yield of the cow, postweaning management of the calf, and sire breed of the calf on postweaning ADG during the stocker/backgrounding phase.

Materials and methods Milk yield from 157 Brangus cows bred to 6 breeds (Bonsmara, Brangus, Charolais, Gelbvieh, Romosinuano) was measured over a 3-yr period with a single-cow milking machine to estimate the relationship of actual milk yield of cows and their calves' postweaning average daily gain on two postweaning management systems (drylot or wheat pasture). Milk yield, linearly adjusted to a 24-h basis, was an average of six monthly measurements per year. Gains in each postweaning system were estimated from initiation of fall grazing (early to mid-November) on wheat pasture through late spring for an average of 166 d. Calf ADG was regressed on dam 24-h milk yield and interactions of linear and quadratic regression coefficients with sire breed of calf, sex of calf, and postweaning treatment (drylot, wheat pasture) were evaluated using mixed model least squares procedures (SAS 2000).

Results Analyses indicated a milk yield (linear) by sire breed of calf \times postweaning management interaction ($P < 0.01$). This suggests that the relationship of cow milk yield of the cow with calf postweaning gain depends on the sire breed of the calf and the postweaning management of the calf. The relationships of calf postweaning ADG to dam milk yield for drylot and wheat pasture management are given in Figure 1 for each sire breed of calf.

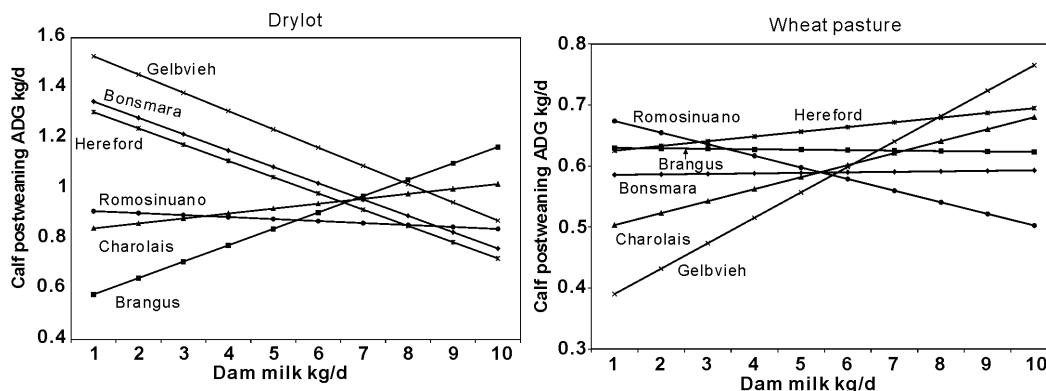


Figure 1 Relationship of calf postweaning ADG to dam milk yield for six sire of calf breed managed in drylot or on wheat pasture.

In drylot management, calves from Brangus and Charolais sires benefited, i.e., a corresponding increase in ADG, from higher levels of dam milk yield while calves from Bonsmara, Gelbvieh, and Hereford sires benefited from lower levels of dam milk yield. In the wheat pasture management, calves from Charolais and Gelbvieh sires benefited from higher levels of dam milk yield while Romosinuano-sired calves benefited from lower levels of dam milk yield.

Conclusions Milk yield of the dam preweaning influences postweaning growth of the calf, but the influence depends on the type of postweaning management for the calf as well as the sire breed of the calf. Consequently, integration of preweaning and postweaning phases for increased efficiency of production would require appropriate matches of preweaning maternal environment, sire breed of calf, and postweaning management system.

Reference

SAS Institute Inc., 2000. SAS/STAT, User's Guide, Version 8. SAS Institute Inc., Cary, NC.