PERSPECTIVES

# Outside the Box

►by **Tom Field,** *University of Nebraska*

## Limits

***Effective managers understand that success is dependent on the ability to recognize boundaries and avoid the negative consequences of exceeding them. The law of diminishing returns states that there comes a point at which additional inputs yield levels of productivity that are not profitable and, in some cases, actually lower overall production. Biological systems also have limits. For example, grassland systems cannot sustain unlimited stocking rates. Excessive levels of performance in traits such as birth weight, milk production and mature weight ultimately result in undesirable physiological consequences.***

### Future limitations

I am concerned that the beef industry is approaching a series of systems limitations in the relentless pursuit of increasing individual animal productivity. Every preharvest sector of the industry has been focused on increasing the growth rate of cattle. Economic signals have favored increasing weight and the acceleration of input costs has not slowed this trend as managers attempt to spread costs over more units of productivity.

Declining herd inventories have contributed to the quest for increasing individual animal productivity to offset declining cattle numbers. Historic comparisons of herd size and total beef production show that, to date, this strategy has been an effective route to maintaining beef production tonnage (see Fig. 1).

The industry has been able to offset inventory losses by selecting for larger mature weights and higher growth rates, increasing levels of muscularity, and implementing a number of production strategies that employ technologies such as improved vaccines, precise ration formulations and growth enhancement technologies.

### NBQA findings

The net result has been remarkable as the most recent National Beef Quality Audit (NBQA) found that nearly 60% of fed-cattle carcasses exceeded 800 pounds (lb.) with 40% yielding dressed weights in excess of 850 lb. On the cow side of the equation, mature weights in excess of 1,350 lb. are now considered commonplace.

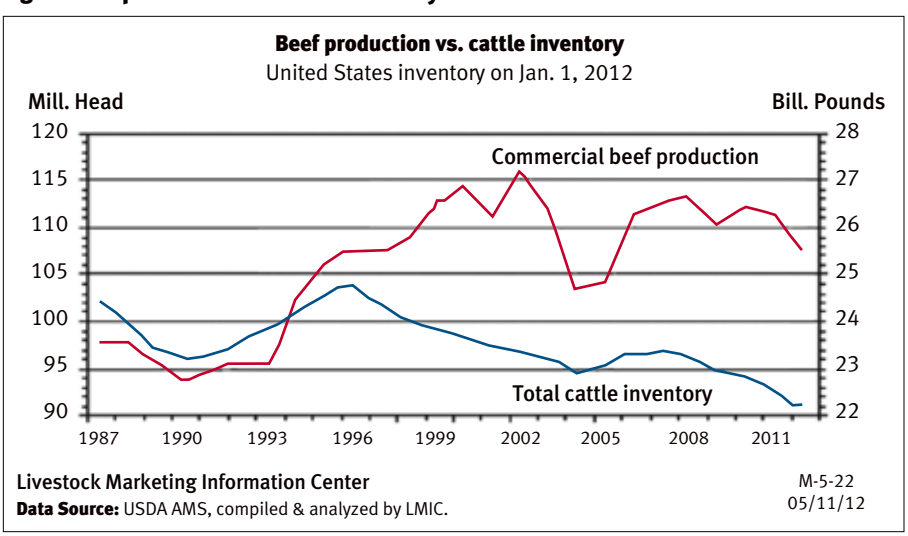
However, the question must be asked: How far can we go? Perhaps, more importantly, how far should we push for additional productivity on an individual animal basis? Reproductive efficiency in the cow herd has not been substantially improved, particularly in regard to rebreeding rates of second-calf heifers. In addition, many accounts would suggest that longevity and durability have slipped.

The dairy business provides a very clear example of pushing individual cow productivity to the limit. Dairy herds typically face significant challenges in maintaining high levels of herd fertility, longevity and soundness. Strikingly, these challenges are presented in a feed environment in which dairy cows receive an abundant total mixed ration (TMR), as well as free-stall housing with engineered shade and ventilation systems. In other words, the law of diminishing returns is at play in dairy production.

There are also demand limits to be considered. Carcass weight variation continues to be a concern of the beef fabrication sectors, while all postharvest sectors viewed eating satisfaction and product integrity as the two most fundamentally important attributes of beef required to sustain beef demand as reported in the 2011 NBQA Executive Summary. Furthermore, retailers and foodservice providers expressed growing concern about the impact on demand from consumer perceptions about production technologies.

The industry must deal with the reality that consumers are increasingly sensitive to the production practices and technologies incorporated by the industry, as well as factors affecting flavor, tenderness and overall palatability.

**Fig. 1: Beef production vs. cattle inventory**




### Food for thought

Now is the time for a thoughtful, honest and visionary discussion about boundaries. How much more productive can we make individual animals without creating reduced performance in reproductive rates, soundness and, ultimately, sustained profitability? In the midst of the chaos of these times, it is difficult to take our shoulders from the wheel long enough to question the assumptions upon which we have based our strategies. However, we must summon the energy to construct a path of action that sets a course toward a successful future. Perhaps the following questions will help to stimulate such a conversation.

►What are the critical limits in our

respective enterprises, and what are the consequences of exceeding them?

- What are the full impacts of increasing weight on cost of production?
- What is the full spectrum of impact of various production technologies — positive, neutral and negative — on productivity, profitability and long-term consumer demand?
- Does cattle size affect the performance of facilities and infrastructure — number of head per loaded truck, chute and alley capacity, load-bearing capacity of a packinghouse rail and trolley system?
- Is our approach to choosing technology more strategic or one-size-fits-all?
- What decisions will improve the opportunities for beef cattle producers in the future?

The industry has been able to maintain beef production in spite of declining herd inventories by increasing individual animal performance. Unfortunately, this strategy has limits and we are fast approaching the boundaries.

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