Vet Call

▶ by **Bob Larson,** *Kansas State University*

Role of research for the future of beef production

Known cattle production efficiency and health problems, new challenges and opportunities, changing economic and societal situations, and human curiosity all drive the need for beef cattle research. Recognizing the need for research means cattle producers, scientists and many other stakeholders agree that there are opportunities to improve diverse areas of cattle health and well-being, production and economics.

35 Keys to Success
Research

More information and new tools

From a veterinary perspective, investigations of management, genetic selection and technology interventions to increase reproductive efficiency, improve forage utilization, increase disease avoidance, and enhance disease treatment effectiveness are exciting areas of research. Because of ongoing research, veterinarians and beef cattle producers can look forward to having more information and new tools to improve cattle health and well-being, production efficiency, and long-term sustainability.

Careful and accurate observation of cattle and their environments plays an essential role in scientific research, but observation alone will not lead to new understanding about how to improve cattle production. Research combines careful observation with specific strategies to account for the natural variation that occurs when different individual cattle are treated identically, and with methods to limit unintended biases from interfering with a true interpretation of how cattle behave and respond to different environments and treatments.

The reason cattle research must be carefully planned is that cattle health and well-being and production efficiency are influenced by a complex interaction of many biologic and economic factors. The biologic factors include cattle genetics, forage quality and availability, the presence and types of different disease risks, the varying impact of temperature, humidity, other environmental features on different cattle, how cattle respond to the stresses they encounter, and many other factors. Observations of relatively few animals or observations taken over a

short period of time often fail to allow a person to accurately understand the many factors that interact to cause an outcome.

Because of these challenges, even very well-planned research projects can only answer one or two fairly limited questions at a time. However, a long-term approach to solving the important questions facing cattle veterinarians and producers through a series of studies carried out on a variety of cattle types, ages and environments slowly allows researchers to build an understanding of the interacting factors that can be managed to improve cattle production.

Regardless of the area being studied, research is a slow, step-by-step process with very few leaps in new knowledge.

Research to watch

Some of the interesting areas being researched now include investigations into the role that genetics plays in which cattle are most likely to be resistant to various diseases, research comparing the ability of diagnostic tests to more accurately identify cattle that can spread disease to other animals, and comparisons between different methods of preventing or treating diseases that commonly affect cattle.

In addition, there are very interesting investigations that ask if managing cattle in certain ways will enhance their ability to graze and utilize available forages, other studies concerned with finding how cattle best utilize different types of feeds, and studies that investigate how nutrition at one stage of life affects other stages of life (even years later).

There are also exciting areas of research to improve reproductive efficiency of cattle by investigating more accurate ways to sort bulls into high- and low-reproductively sound classifications, to enhance the fertility of cows, and to reduce the risk of abortion in pregnant cows. Many studies are looking for ways to utilize new technologies such as computers, genetic testing, GPS tracking, and miniature robots to improve cattle production. Other areas of study include investigations of cattle behavior, grazing patterns, rumen function, growth efficiency, response to vaccinations, and resistance to disease based on time-tested production methods.

Compounded value

Regardless of the area being studied, research is a slow, step-by-step process with very few leaps in new knowledge. Yet the results of multiple well-planned research studies evaluated over time and across different production situations gradually add to our understanding of the factors that impact cattle health and well-being and production efficiency. Current cattle producers and veterinarians benefit from many decades of research that have provided valuable strategies and tools that are used daily. The research that is being conducted today will provide additional breakthroughs in the coming years.

EMAIL: rlarson@vet.k-state.edu

Editor's Note: *Bob Larson is professor of production medicine at Kansas State University.*