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The Importance of Matching Producer Goals and Resources with Genetic Selection

Dr. Matthew Garcia mgarcia@agcenter.lsu.edu

What is genetic predisposition?

Genetic predisposition is the inherited ability of an animal to perform, for specific production traits, based on the genetics it inherited from both parents. Although certain animals may have a highly valuable genetic predisposition, they still need to be managed correctly, and be managed in the correct production environment to reach their genetic potential. Furthermore, animals with differing genetic predispositions may require different resources, different management, and most likely will not be the optimal animal type in every beef production system. The evaluation of genetic predisposition, in correlation with a beef producer's goals and resources, is essential to having cattle that will perform in a specific production environment.

What is the optimal genetic predisposition?

The beef production system is very diverse for a number of reasons. First and foremost there are approximately 20 different breeds of cattle that are utilized in the United States. These breeds have been selected for and have a wide variety of traits. Secondly, the environments that beef cattle are raised in are extremely diverse. Beef cattle are raised in every part of the United States, with resources, carrying capacity and final marketing goals differing tremendously from region to region. As such, there is not a universal "optimal" genetic predisposition for every beef production system. The genetic predisposition that is optimal in the Southwestern United States will more than likely never be the optimal genetic predisposition in the Southeastern United States. Thus, the optimal genetic predisposition is going to be variable not only throughout regions of the United States but also within regions of the United States due to variable producer resources and goals. The optimal genetic predisposition for you as a producer may not even be optimal for your beef producing neighbor.

What happens when genetic predisposition does not match my production system?

Unfortunately, this happens quite often when integrating breeding replacement animals produced from another system into your own. Many producers question why an animal can be so high performing and have such a great appearance in a particular system, but fall apart in their system. The answer is simple as that animal was either selected through multiple generations (genetically predisposed) to be successful in that system, or that particular system had the resources to develop

an animal with that type of genetic predisposition. When an animal fails to perform in a particular system, either the resources are not right for that animal's genetic make-up, the management scheme was not right for that animal, or it may be that the resources did not exist in that particular management system to allow that animal to reach its genetic potential. Unfortunately, when an animal's genetic potential does not match a production system, the animal is typically culled or the producer has to allocate resources that decrease profitability to keep the animal in the production system.

How do I select for a genetic predisposition that is right for my operation?

The first way a producer can select for the proper genetic predisposition is to know the capabilities of their operation. What type of animal can you raise with your resources (land, labor, finances etc) without having to purchase resources outside of your operation to maintain that animal? Multiple trait selection is essential to answer this question. Producers need to evaluate multiple traits and the level of performance for those traits that they believe will produce optimal cattle with the resources they have available. Through the use of expected progeny differences (EPD's), test performance data, and production system data, producers have the ability to evaluate multiple traits that could effectively match their production capabilities and yield highly productive and long lived cattle in their operations.

Summary

As many beef producers know, a large component of success in the beef production industry is determined by a producer's ability to maximize their resources, while still remaining sustainable and profitable every year. If a producer constantly has to supplement above their resources in order to keep specific cattle in their production system, they do not have cattle that match their system. A cow should be able to produce a product every year, with little assistance, and with a producer's resources to cover her costs and the producer's. Identification of animals with this capability in an individual beef producers system is a major factor in remaining profitable and sustainable.