

## Selection for Production or for Show Can Change Breeds

D.P. Sponenberg, DVM, PhD

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Breeds come to us through a variety of pathways. Most breeds were developed to suit specific purposes. Varied purposes and environments shaped them into the wonderful array of breeds we have today. As breeds, especially rare breeds, become the target of increased interest, most breeders want to select for either main-stream production or show. Either sort of selection changes the breed, and the changes can either be good or can be a challenge. Selection goals need to be chosen carefully and wisely!

Selecting for production sounds innocent enough, but how to measure that production is the key important aspect. In benign temperate environments setting priorities is pretty easy, because animal survival is not all that challenging. The more challenging the environment, the more necessary it is to place emphasis on survival as a target of selection. In the most challenging environments, animal survival is right at the top of the list for selection goals, with any production secondary to that.

Production can be measured in different ways. If production (meat, milk, eggs) is ‘per individual animal’ the usual result is large, rapidly growing or heavily-producing animals. If production is ‘per unit of land area’ the result can be more moderate size, great fertility, and longevity. In some situations the outcome of selecting for fertility and longevity can yield smaller individual animals, but greater production per unit of area. This is a subtle sort of production, and is difficult to capture if one breed is compared against another.

When selection for production or show become intense, the result is to change the underlying genetic variability of a population. This needs to be done wisely, because selection goals can change over time, and in some situations can reverse. Changes require modification of goals, measurements, and selection practices. As a breed moves through temporary fads in either production goals or show-ring traits, it loses variation. Eventually it can lose enough underlying variation that future response to selection is hampered. That then dooms the breed to being irrelevant, and cast aside.

While showing can be productive and constructive, it often fails in both of these goals. Showing is an effort to predict overall merit, and this can be difficult to assess from a visual appraisal. In my own goat herd, my students periodically come out to do ultrasound examinations. Invariably they will manage to have two does side by side: one big, smooth, and lucky to raise a single; the other rough, moderate in size, and consistently producing twins or triplets. Asked “which goat is better?” they usually respond that the larger one is. But a herd of the smaller, rougher sort would out-produce those bigger ones every time!

Selection responds to goals, and goals therefore need to be set carefully. Breeders can shape and change breeds dramatically in just a few generations, so fads like blue eyes or specific color

patterns really do need to take a back seat to issues like adaptation, productivity, and general utility. And, don't forget temperament, which is highly heritable and either a source of joy or dismay!

*Dr. Sponneberg is technical advisor for The Livestock Conservancy, PO Box 477, Pittsboro, NC 27312 Phone (919)542-5704 [www.LivestockConservancy.org](http://www.LivestockConservancy.org)*