



Cattle Producer's Handbook

Genetics Section

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Composite Cattle for Commercial Cow-Calf Producers

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Composites, Synthetics, or Hybrids are names used somewhat interchangeably to signify new breeds or new lines of breeding. Two or more breeds are crossed with the intention of obtaining genetic superiority not found in any one breed. A carefully planned breeding program results in obtaining: (1) a combination of genetic merit from each breed and (2) hybrid vigor (heterosis) that can be maintained through successive generations without further crossbreeding. The breeding program should combine a balance of selection for reproduction, growth, and carcass traits so that the cattle will fit the most economical production and marketing environments.

Some breeders use the term "composite" to identify a closed breeding program (a fixed number of breeds with a certain percentage of genetic material from each breed). Other breeders use "synthetic" as an open breeding concept where new breeds can be added at any time and with no fixed percentage from each breed. "Hybrid" could imply either composite or synthetic cattle.

What distinguishes them from typical crossbreds is not their genetic makeup *per se*, but rather the way in which they are used. Composites are expected to be bred to their own kind, retaining a level of hybrid vigor we normally associate with traditional crossbreeding systems but without further crossbreeding with outside breeds.

For example, consider the standard black baldy cow. She is a hybrid, typically the result of mating a purebred Angus bull to a purebred Hereford cow, or vice versa. In all likelihood, she will be bred back to a purebred bull of one of the parent breeds or perhaps to a third breed.

Because she is to be used as part of a conventional crossbreeding system (e.g., a rotation of some kind), we would not consider her a composite animal.

If her owner, however, decided to breed her to black baldy sires, saving daughters and perhaps even sons as replacements, we would have to consider her a composite. She became a composite (as opposed to simply a crossbred) because the breeder chose to mate her to her own hybrid kind with the expectation of retaining a degree of hybrid vigor without further crossbreeding.

Admittedly, this definition leaves a little to be desired. What if a cattle producer has a herd of composite animals and one day that producer decides to breed them to terminal sires or make them part of a conventional rotational crossbreeding system? Are they still composite cows? Whether you answer "yes" or "no" depends on how strict you want to be in your definition of a composite. Being fairly liberal in this regard, we would say "yes" because these cows were bred to be part of a composite breeding system and still have that potential. Others may disagree.

"Composites" Comes from Plants

Most information and experience with composites comes from plants. Plant breeders developed composites as a practical way for farmers in third world countries to take advantage of hybrid vigor. The new plant populations were termed "synthetic varieties."

The analogous term in animal populations is "composite breeds." In keeping with the definition of a composite animal, a composite breed is then a breed that is made up of two or more component breeds and