

POINTERS ON HOW TO PRODUCE A TRUE-BREEDING

HERD OF POLLED HEREFORDS OR SHORTHORNS

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It is a well-known fact that Aberdeen-Angus cattle breed true for the polled characteristic. By that I mean that they never produce a calf with horns. Sometimes a purebred Angus bull will have scurs, but from a genetic standpoint he is still considered a polled animal. Scurs are objectionable and could be bred out of the Angus breed if no scurred bulls were ever used for breeding purposes. Removing the scurs with caustic does not change a bull's breeding qualities.

Since the Aberdeen-Angus cattle breed true for polled, one might get the idea that it would be easy to produce a true-breeding strain of polled Herefords or Shorthorns. Such is not the case, however. The method used in learning more about the inheritance of the polled characteristic is to cross true-breeding polled animals, like the Angus, with horned cattle. If the inheritance were simple, all of the offspring from such a cross would be clean-polled, but they are not. A clean-polled Angus bull mated to horned cows will have daughters all of which are clean-polled, but amongst the sons there may be a few that have horns, and also a few that have scurs. Most of the sons, however, will be clean-polled. The sons with scurs or horns inherit these characteristics from their horned dams. Only a few horned dams produce sons of the above type, but there is no method known at present whereby they can be distinguished by their appearance from the horned dams that have only clean-polled sons in matings with clean-polled Angus bulls.

Before going any further, it may be worth while at this point to describe what would happen if a clean-polled bull that does not breed true for polled were mated to horned cows. Instead of all of his daughters being clean-polled, only one-half of them will be, and the other half will be horned. Less than one-half of his sons will be clean-polled, and more than one-half of the sons will be either horned or scurred. Many of the clean-polled bulls at present in polled Hereford or Shorthorn herds are of the kind that do not breed true, and would breed like the bull described above when mated to horned cows.

One criticism made of present day polled Herefords or Shorthorns is that they are inferior from the standpoint of conformation to the horned animals of these breeds. There is no reason whatever for assuming that the polled animals are inferior because they are polled. Being polled does not seem to have any bad effect on the conformation of the Aberdeen-Angus breed.

With the preceding statements as a background, I shall try to show the various steps that should be taken by a breeder having a herd of horned cattle, and who is interested in converting his herd into one breeding true for polled. The first step is to use a clean-polled bull of his breed on his cows. If the cows in the herd have good conformation there is a possibility that some of the polled daughters will be fairly good animals even if the polled bull is somewhat deficient. If the clean-polled bull used is not of the true-breeding kind, one would nevertheless expect, at least one-half of the daughters to be clean-polled.

If the polled daughters are not satisfactory from the standpoint of conformation and size, the next step is to mate them to a good horned bull in order to improve the conformation. Here again, half of the daughters will be polled and should have a better conformation than their dams.

When the conformation is satisfactory, the next step is to attempt to produce a true-breeding polled herd. If a polled animal has one parent that is polled and the other is horned, there is no possibility that such an animal will breed true for polled. When both parents are polled there is a possibility of at least some of the polled offspring breeding true.

We will suppose that the breeder has been crossing his polled cows to good horned bulls and has finally succeeded in producing polled animals of good conformation. All of these polled animals, whether males or females, will be of the non-true-breeding kind. If he is not afraid of inbreeding he can mate his best polled bull to the polled cows. If he does not wish to inbreed, he can use a bull produced by some other breeder who has used breeding methods similar to those used by himself.

When a non-true-breeding polled bull is mated to polled cows that are also of the non-true-breeding kind, one-fourth, at least, of the offspring will be horned or scurred. The remainder will be polled. Of these, one-third will be of the true-breeding kind, and two-thirds of the non-true-breeding kind. There is no way of distinguishing these two kinds of polled animals by their appearance.

The next step is for the breeder to secure a true-breeding polled bull to use on the two kinds of polled cows. There is no way of knowing whether you have a bull of this type unless you test him by mating him to horned cows. Only one out of every three of the polled bulls obtained in the mating described in the previous paragraph will be true-breeding. Therefore a number of bulls should be tested by mating them to horned cows. As soon as one of these bulls sires a horned daughter it means that he is of the non-true-breeding kind, and he should not be retained in the herd. He would, however, probably be very acceptable to another breeder who had not started as yet to make his herd true-breeding. As the tests continued, one or more of the polled bulls would prove to be true-breeding by the fact that they each produced 10 or more daughters, all of whom were clean polled. As stated previously, a true-breeding polled bull might have one or more horned sons when mated to horned cows, but this can be disregarded.

It was also stated previously that, when both polled parents are of the non-true-breeding kind, one-third of the polled offspring are true-breeding kind, and the remaining two-thirds are non-true-breeding. Cows made up of these two kinds are now mated to the clean-polled bull that has been tested and shown to be true-breeding. In a mating of this sort there will be a great increase in the number of true-breeding polled offspring. Instead of one-third, there will now be two-thirds that are true-breeding and only one-third that does not breed true.

When a second tested true-breeding bull is used on the offspring of the first tested bull, 5 out of 6 will be true breeding and only 1 out of 6 will be non-true-breeding. When a third tested true-breeding polled bull is used on the

daughters of the second bull, 11 out of 12 of the offspring, whether male or female, will be true-breeding and only 1 out of 12 will be non-true-breeding. With the fourth tested bull it will be $\frac{47}{48}$ of the offspring that will be true

breeding and only $\frac{1}{48}$ that will be non-true-breeding. At this point one would expect, that practically any bull in the herd when tested would prove to be true-breeding.

If the breeder should get this far, and then get careless, using a non-breeding polled bull on his herd, only one-half of the offspring will be true-breeding for polled and the other half will be polled animals that do not breed true.

There are several other pointers that should be kept in mind. Occasionally it will be found that when a true-breeding clean-polled bull is mated to clean-polled cows he may have a son that is horned. This is due to the fact that a polled cow may carry the determiner for horns and not show them herself, but her son will be horned if he gets this determiner from his dam. Similarly, a clean-polled cow may carry this determiner for scurs, but, if she passes on this determiner to her son, he will have scurs. The reason for not using a sire with scurs is that if he is mated to true-breeding clean-polled cows, at least one-half of his sons will have scurs, and possibly a few of his daughters.

One other point. If a clean-polled bull has been tested and is thought to be true-breeding, he should never have a horned daughter when he is mated to polled cows. If a polled bull does have a horned daughter, it is a sure sign that he is of the non-true-breeding kind.