

# what is breed? what is purity?

## and why does it matter?

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Domesticated animals are fascinating entities that occupy a peculiar nook where natural, human, and agricultural environments overlap. Issues confronting breed definition and breed maintenance are therefore complex, and involve biological, philosophical, and political components. No one of these components can drive breed maintenance by itself — all three should work in concert to foster the continuation and improvement of domestic animal genetic resources as the useful treasures that they are. This includes suri and huacaya alpacas.

A useful definition of “breed” is that a breed is a group of domesticated animals that are similar enough (usually by appearance, production, or origin) to be logically grouped together, and following mating within the group produce offspring typical of the group.

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That is, breeds breed true. This is a genetically-based definition, and implies that a breed is genetically uniform enough to allow for predictability of type and production. So where do alpacas fit into this scheme, and specifically where do huacaya and suri alpacas fit in?

Depending on the strictness of the standard of “like begetting like”, neither the huacaya nor the suri qualifies as a breed in the most narrow sense. Very rarely, huacaya x huacaya matings produce suri offspring, and more commonly suri x suri matings produce huacaya offspring. These two fleece types are therefore more usefully viewed as “varieties” rather than breeds, at least currently. The genetic composition of suris dictates how they function as a population, and wise breeders will use this information to their advantage as well as to the long-term advantage of the suris themselves.

The genetic relationship of huacaya and suri type is complicated. Ponzoni’s work suggests a single dominant gene. This may account for part of the story, especially in Australian stock, but almost certainly does not account for all of the story in North American stock. In the ARI records there are 145 crias produced from suri x huacaya crosses. Of these, 89 are huacaya, and 56 suri. These figures are important, for if suri were simply a single dominant gene, then the relative excess should be suri offspring since some suri parents should have been homozygous. The practical “take home” lesson is that while suri x huacaya crosses can indeed produce some suris, they will also produce proportionately more huacayas. Another significant finding is that at least 4 cases of huacaya x huacaya matings have produced suri offspring in North America. This result indicates that a single dominant gene is not the whole story behind the suri fleece type. The suri type does need to be closely monitored and guarded, and the breeding practices surrounding this fleece type are indeed important.

Suri alpacas, as presently in South America, and as imported into the USA, are not a completely homogeneous population. That is, they will produce huacayas, and indeed the records indicate that suri x suri matings in North America have resulted in 1702 suri and 278 huacaya crias. This is neither good nor bad - it just is the way it is, and the challenge to breeders is how to use this information for further development, maintenance, and improvement of the suri in North America.

North American breeders have a variety of options for maintaining the suri on this continent. These vary along a continuum from one extreme to another, and discussing the extremes might help to chart an overall course. One extreme would be to consider suri as only a fleece variant among alpacas, and to perpetuate it by any and all breeding combinations (suri x suri, suri x huacaya). This is the “anything goes” option. At the other extreme it would be possible to constrain matings to only suri x suri, in the hopes of finally attaining a homogeneous population that only produces suri offspring. This is the “suri only and always” option.

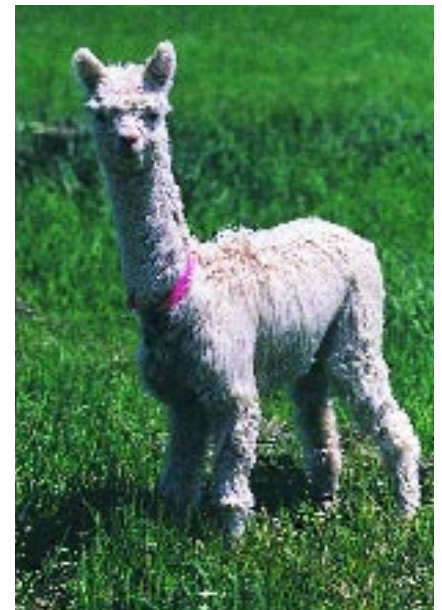
The “anything goes” option is very likely to prove too extreme for maintaining any consistent production of suri type in matings. Present data reflect a substantial lack of the expected 50% suri offspring from such a strategy. An educated guess is that after a few generations of suri x huacaya matings it would be difficult to find any suris that consistently produced even 50% suri offspring, let alone trying to raise that percentage in an effort to achieve predictability in suri production. Predictability may or may not be important, but it is certainly true that extensive use of suri x huacaya matings is only going to decrease what predictability is in the present suris. The “anything goes” extreme therefore does not focus or concentrate the unique qualities of suris, and barely lets the breeders selectively breed for suri excellence in a host of traits that have great long-term importance: lock formation, fiber density, luster, fleece weights.

The “suri only and always” option counters some of the disadvantages of the “anything goes” option. This option will slowly impose predictability and uniformity on the suri in the USA. This is probably good in the long run, especially if breeders focus on fleece characters beyond the easy and tempting array of colors, and include weight, lock formation and fineness in selection goals. Clamping the lid down tight on suri breeding does change them from what they are in South America, and that has to be done with great thought and deliberation since traditional breeders of these animals are likely to know a great deal that we don't. The occasional suri x huacaya mating may indeed be important for the suri, especially if this allows the introduction of single rare color genes, or traits of extreme performance in the fleece traits important to the suri type.

I am always reluctant to advise for strict imposition of breeding practices in most livestock, since I feel that breeders can generally be trusted to make breeding decisions. In

addition, most breeds (or varieties such as suri) benefit from having a large number of breeders each accomplishing selection and mating in slightly different directions. While this is true in suris as well as in many other situations, if I were producing suris I would opt for suri x suri matings for the most part, and would generally insist that any suri with a huacaya parent be mated back to a suri. Part of me is an experimenter, and I would probably do the occasional huacaya outcross, if only to see if some extreme fleece character or some new color variant could be achieved that way. Any suris resulting from a suri x huacaya outcross, though, would be mated back to suris to once again try to consolidate the predictability that suri x suri matings bring to alpaca production. Legislating this as a requirement may not always be the wisest approach, since that can result in some unregistrable and therefore untraceable alpacas. One strength of the North American alpaca population is that every animal (or as close as is possible) is identified and registered. Any tactic that diminishes uniform registration across the population (such as barring registration of certain crosses) needs to be very carefully thought through.

While suri to suri crosses have the best potential to consolidate and strengthen the genetic uniformity of these fascinating animals, suri to suri crosses as the only permitted strategy would never allow for finding some of the answers to this unique fleece type and would limit introduction of the occasionally interesting variant. To balance that, though is the fact that extensive suri x huacaya crosses run a very real risk of diluting suris as useful and fascinating fiber producing animals. The safest approach is likely to be suri to suri matings, with only the occasional, well thought, and fully sanctioned, outcross to huacayas. ❖



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