

**Alpaca Vista Suris East**

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**Alpaca Vista Suris**

**AVS**

*"Suris Across America"*



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# “Some Suris Produce Huacayas (and some Huacayas Produce Suris)”<sup>©</sup>

*By Ian Prokop  
Alpaca Vista Suris*

This article is not a scientific paper on genetics. There are many fine papers written about the genetics of Huacayas and Suris, and this article is not one of them. We will take a common-sense approach to help beginning Suri breeders understand why some Suris (male and female) have a hidden genetic agenda for the kind of offspring they



produce. Let's start by using a really simple definition for a Suri alpaca. *It is an alpaca which has its fiber hanging down in lustrous locks.* A Huacaya, on the other hand, has fluffy fiber that looks more like a sheep. That's as easy as it gets.



### A Little Bit of Scientific Stuff:

We need to talk just a little bit about the customary notation used in scientific papers about Suri genetics. Alpacas do have genes and these genes have two “markers” called alleles. Now, you mate two Suris and they each naturally contribute (presumably at random) one of their two markers to the genetic makeup of the new cria. The notation that you see in the scientific literature gets a bit confusing because in the scientific world the genetic marker for a Suri is labeled “S” and the genetic marker for a Huacaya is labeled “s”. For the casual reader, the scientific explanations would be a lot more intuitive if the markers were labeled “S” for Suri and “h” for Huacaya. So, we'll break with tradition and use these intuitive marker labels and pictures to represent the genetics. A brown Suri will depict the “S” marker and a white Huacaya will depict the “h” marker.

Now let's look at what happens when we mate Suri alpacas. If both dam and sire have SS genes, dam and sire each contribute one marker to the cria, that marker of course

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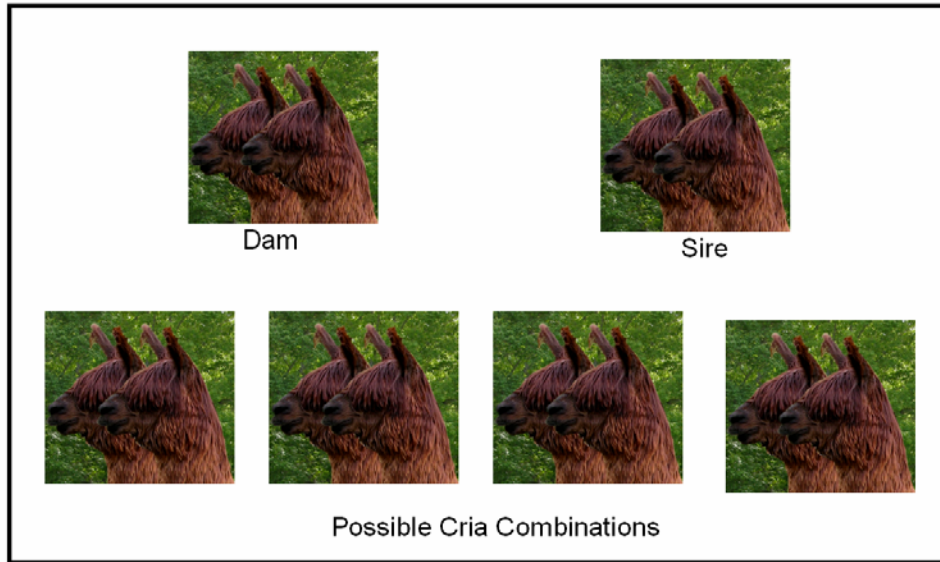
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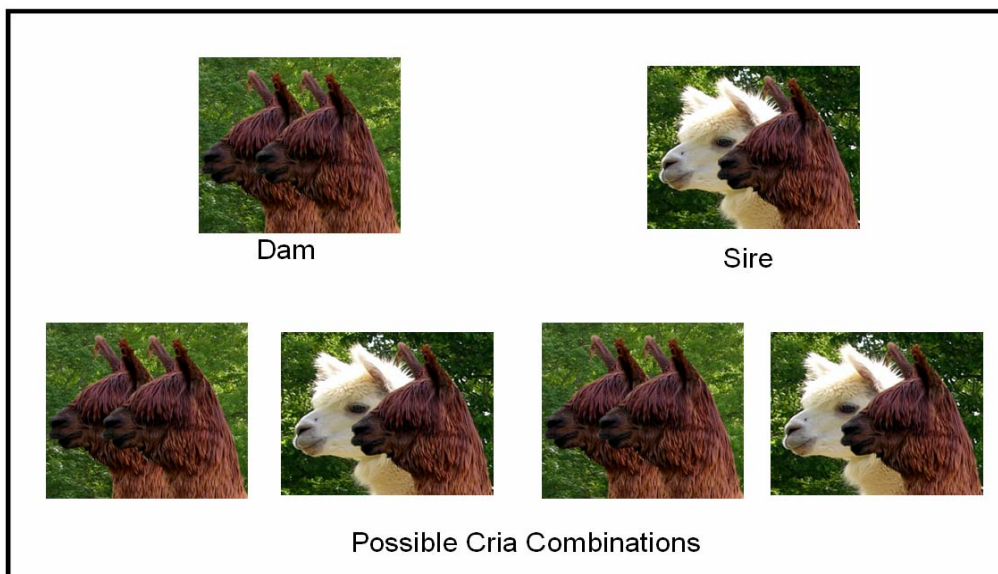
has to be an "S" from each parent. The cria can only turn out to be SS (like the parents) and that is called a homozygous Suri.



For any Suri that is SS, any of its offspring, *even if mated to a Huacaya*, will be a Suri because the S marker is dominant. This is the most desired state of events. If you were able to ensure that all of the Suris that you had were homozygous Suri (SS) and that all of the Suris that you

breed to were homozygous Suri (SS), you would always produce homozygous Suris. However, there is currently no way to test these markers.

The next possible combination is to breed a homozygous Suri (SS) to heterozygous Suri (Sh). In that case, you have 50% chance of getting a homozygous (SS) Suri cria and a 50% chance of getting a heterozygous (Sh).



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However, if both parents are heterozygous (Sh), taking one allele at random from each parent will result in a 25% chance of the cria being hh, which is a Huacaya.

If you work out the arithmetic, for each breeding of two Suris, each of which is Sh, you have 25% chance of getting a homozygous (SS) Suri cria, 50% chance of getting a heterozygous (Sh) Suri cria and 25% chance of getting a Huacaya (hh) cria. SS Suris and Sh Suris are indistinguishable in appearance and all other aspects. The only difference is in the genes that they contribute to their offspring.

Also remember that 2 Huacayas will never produce a Suri; if you cross an hh with an hh, you will always get an hh.

Dam Sire



Possible Cria Combinations

**End of Scientific Stuff.**

Now we get down to the on-the-farm practical reality of assessing a Suri (male or female) that you want to purchase, or a stud that you want to mate to. You of course want to have a Suri offspring from this purchase, not a Huacaya, so let's focus on just

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that question and leave color, conformation, fleece luster and other such things for another time.

You cannot look at a Suri and determine if it is homozygous (SS), just by inspection. In fact, there is no medical test that you can do to find out if the Suri is Sh or SS. Remember, with SS you always get a Suri (either an SS or an Sh), no matter who you mate it to. Even if mated to a Huacaya, you will get an Sh Suri, every time. On the other hand, with an Sh Suri mated to another Sh Suri, you have a 25% chance of getting a Huacaya cria from this mating. So now, if you want to evaluate a Suri, how do you assess it's "Suriness"?

One way to get a better handle on what you are dealing with is to look at the ARI certificate of the Suri you are interested in. If one of the parents of the Suri is a Huacaya, you know for certain that this Suri is an Sh and has a 25% probability of throwing a Huacaya when bred to another Sh. If both parents of this Suri are also Suri, you are in the dark about whether this Suri is homozygous or heterozygous. But you do know for sure that this Suri is not a Huacaya (hh). If one of the grandparents is Huacaya but both parents are Suri, you are in the same boat – you just don't know which pair of markers from each of the grandparents (and then from each of the parents) wound up on this Suri you are looking at. You can make the same statement going back through great grandparents. A Suri is a Suri but there is no *proof* that this Suri is SS (homozygous). So, why do we look back through the records looking for Huacaya in the background of a Suri we are interested in? There is a feeling of comfort involved, but absolutely NO GUARANTEE that this Suri is homozygous. Remember, in each mating of two Sh Suris the outcome is determined only by *that* dam and *that* sire. A long string of Suri ancestors and no Huacayas does not mean for certain that a resulting Suri cria is SS (homozygous). In fact, as we have seen, the resulting cria may turn out to be a Huacaya – even given the long string of Suri ancestors.

There are some indicators, however that you can look at to get a better feeling of comfort about a particular Suri that you are evaluating. The easiest evaluation pertains to a Suri stud which has a lot of crias. If all the crias are Suri, there is a very high probability that this stud (but not his crias: remember – there is a dam involved) is in fact homozygous. The probability of a heterozygous stud throwing only Suris for, say, 25 consecutive crias is almost zero. Once again, this is not proof that the stud is homozygous, but it is as close as we can get just dealing with probabilities.

In looking at the produce of a dam, you are limited by the number of crias a dam can have in her productive years. In this case, you deal with much smaller numbers than with a stud and the probability of demonstrating that she is homozygous by the number

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of Suris she produces is on much shakier ground. The reason is that a dam can be expected to produce from 10 to say 16 crias in her entire productive lifetime. Compare that, for example, with a stud which I have part ownership in, who produced over 50 crias in his first 2 years of breeding (all Suris, I might add).

You can spend a lot of time on the ARI database researching the produce of dams and the get of sires in a Suri's family history. That endeavor is interesting but probably not useful for your decision about buying this Suri. This Suri that you are interested in just might be a homozygous SS from a long line of heterozygous Sh Suris, all of whom have had 25% of their crias being Huacaya hh. This SS Suri had a 25% chance of becoming SS from her Sh dam and from her Sh sire. In this hypothetical case, that 25% worked in her favor. But you do not know and cannot prove that she is homozygous!

### In Conclusion

Just as an endnote, there *can* be a homozygous Suri who has lousy fiber and terrible conformation. Being homozygous is really desirable, but not the sole criterion for a desirable Suri for your herd. Assessing those other traits really requires a hands-on inspection of the alpaca. You can't get any of that information from databases. You will hear the judges in the show ring say of a blue ribbon winner: "This Suri is a complete package". I would rather have the "complete package" in a heterozygous Suri than have a homozygous Suri with fiber or conformation defects. As a small farm, we put a lot of emphasis on whether a Suri herdsire has NOT produced a Huacaya cria ... that's a HUGE plus in our book.

My inclination is to select dams for their "complete package". On the other hand, I select the studs to breed to for a high probability that they are homozygous, in addition to other traits that I want to improve in the dam's offspring. So my emphasis is different in evaluating dams from evaluating studs. Other Suri breeders have different opinions, and each of us has to sort through the pros and cons of the many factors involved in selecting a Suri to add to their herd or to breed to.

### **About the Authors:**

*In 1998, Ian Prokop and April Works started their Suri alpaca farm, Alpaca Vista Suris, located in Poulsbo, Washington. During our first few years in business we have produced numerous multiple-award-winning Suri offspring and we continue to strive for the best. We sell our dams to*



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*new breeders in the market and to established farms that need to take their breeding program to the next level. Alpaca Vista Suris West has been an active part of the alpaca industry where Ian served for 3 years as Chair of the National Alpaca Owners & Breeders Association (AOBA) Education Committee. April was Treasurer of the Alpaca Association of Western Washington (AAWW) and served as registrar of the regional alpaca show, AlpacaPaloosa, for two years. We are excited to be able to bring these lovely and majestic Suri alpacas to both coasts. Both locations (Washington and Virginia) work under the Alpaca Vista Suris banner and can be contacted at [Suris@AlpacaVista.com](mailto:Suris@AlpacaVista.com).*

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