



What are Genetics?

Genetics is **the scientific study of genes and heredity** of how certain qualities or traits are passed from parents to offspring as a result of changes in DNA sequence.

Copyright 2022 Cotton Creek Farms LLC, All Rights Reserved

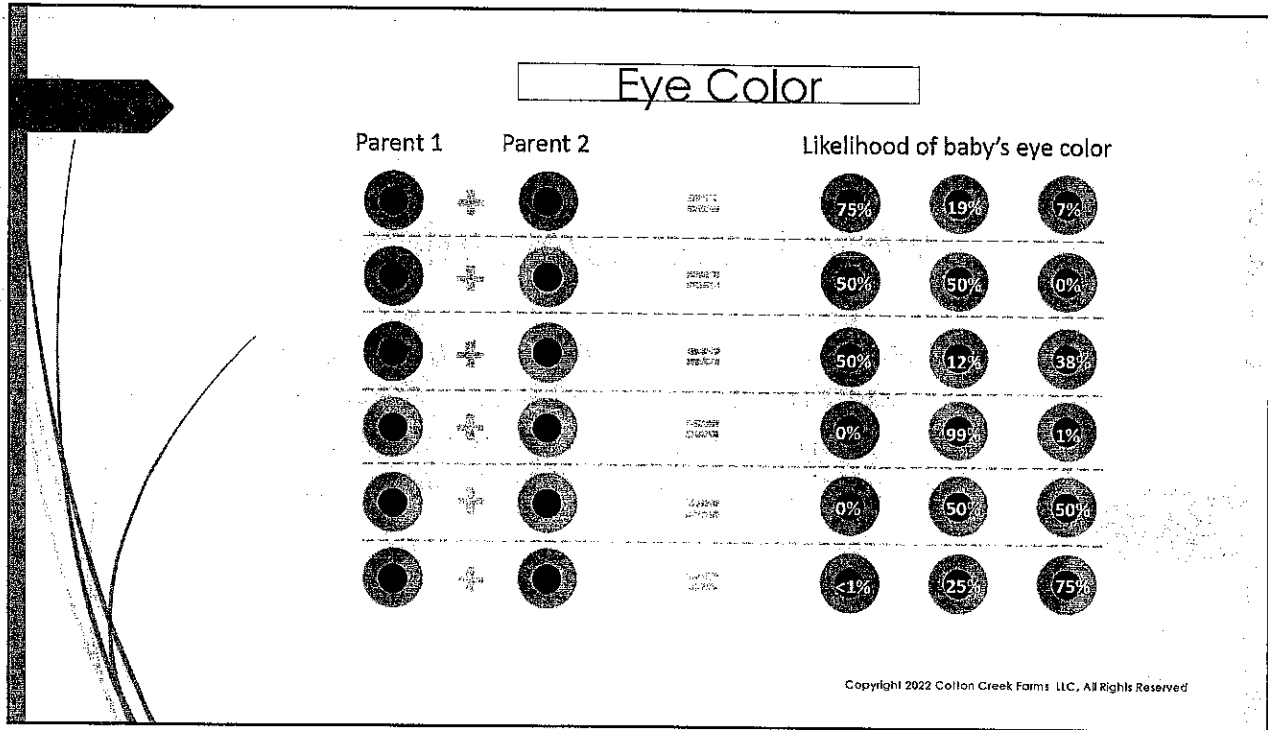


Where did I inherit height from?

- ▶ My Grandpa on my mom's side was 6'4"
- ▶ My Grandpa on my dad's side was 5'8"
- ▶ I am 6'4"

Where did I inherit the genetic traits of height from?

Copyright 2022 Cotton Creek Farms LLC, All Rights Reserved



Top 5 most important genetic traits in alpacas

Staple Length – Fiber needs to be over 3 ½ inches for processing into yarn.

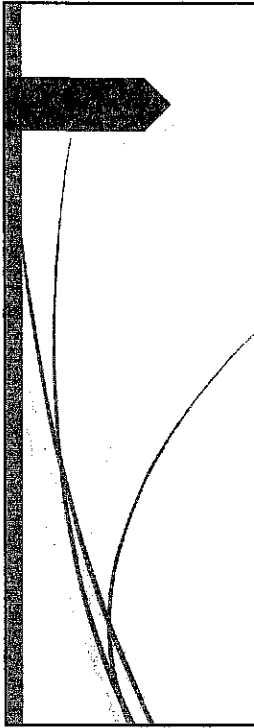
Fineness – Fiber needs to be under 30 microns in diameter for usage in garments.

Density – The denser the fiber, the more products the alpaca can produced.

Fleece Weight – Life density, fleece weight equates to more products produced.

Color


Copyright 2022 Colton Creek Farms LLC. All Rights Reserved



Expected Progeny differences (EPD) is tool we use to improve Alpacas fiber

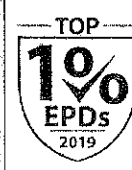
This tool assigns the strengths and weaknesses of an alpaca's fiber, so we know how to breed them to improve the quality of their offspring.

Copyright 2022 Cotton Creek Farms LLC, All Rights Reserved

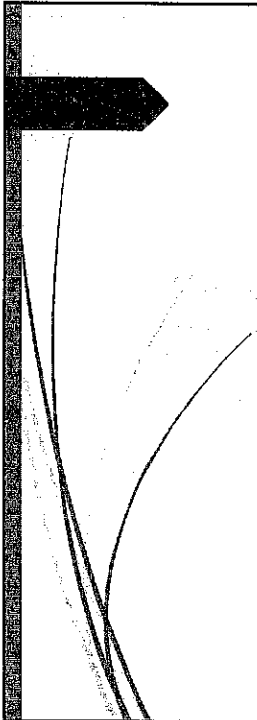


We use EPD data to determine the best heritable traits

	Trait	Value	Acc	Rank	Rank%
Fiber Diameter	AKD	1.714	0.514	1,496 of 25,949	5.54%
	SDAFD	-0.505	0.513	1,157 of 25,949	4.46%
	SP	-1.857	0.555	1,124 of 25,949	4.34%
	MF>30	-4.774	0.559	4,302 of 25,949	16.58%
	WC	7.457	0.504	159 of 25,949	0.62%
Staple Length	SDMC	3.077	0.532		
	SM	3.666	0.46	1,632 of 25,949	6.29%
	MSL	3.405	0.427	24,161 of 25,949	93.11%
	Fleece Weight	FW	0.603	0.213	2,402 of 25,949
DW		-0.293	0.178		



Copyright 2022 Cotton Creek Farms LLC, All Rights Reserved



By breeding this pair of alpacas, we hope to combine the best traits from each to produce better offspring.

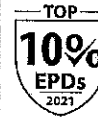
Sire

Trait	Value	Acc	Rank	Rank%
AFD	-0.018	0.338	20,695 of 28,374	73.79%
SDAFD	-0.159	0.337	12,072 of 28,374	42.55%
SP	-0.067	0.342	19,578 of 28,374	68%
WF+30	1.811	0.348	25,486 of 28,374	89.83%
MC	0.753	0.354	16,581 of 28,374	58.46%
SDMC	0.709	0.353		
MM	1.83	0.348	25,650 of 28,374	90.4%
MSL	2.109	0.288	2,992 of 28,374	10.54%
FW	0.277	0.244	10,571 of 28,374	38.67%
BW	-0.356	0.32		

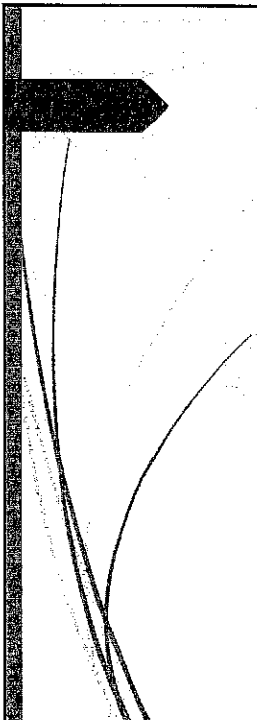


Dam

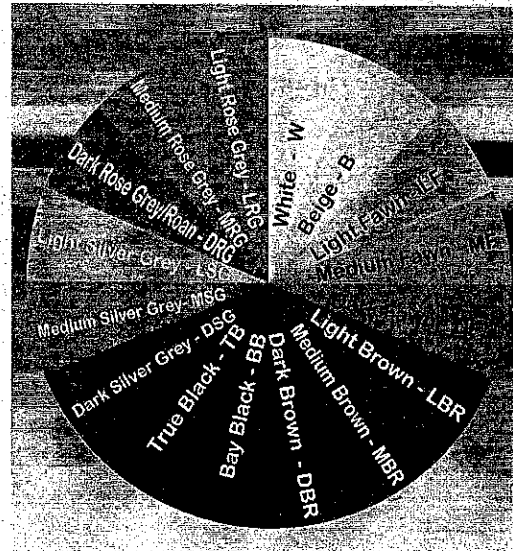
Trait	Value	Acc	Rank	Rank%
AFD	-1.194	0.351	7,947 of 51,192	15.52%
SDAFD	-0.229	0.388	12,925 of 51,192	25.25%
SP	-0.385	0.402	8,793 of 51,192	17.18%
WF+30	-5.159	0.405	5,050 of 51,192	9.87%
MC	0.881	0.383	19,062 of 51,192	37.24%
SDMC	1.603	0.405		
MM	-2.082	0.363	9,973 of 51,192	19.49%
MSL	1.374	0.335	8,823 of 51,192	17.24%
FW	0.445	0.299	3,221 of 51,192	6.3%
BW	-1.383	0.281		



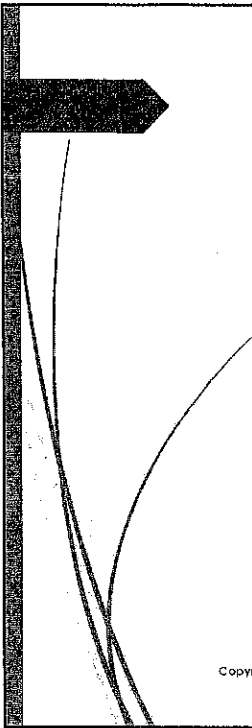
Copyright 2022 Cotton Creek Farms LLC, All Rights Reserved



Color Genetics in Alpacas





Copyright 2022 Cotton Creek Farms LLC, All Rights Reserved






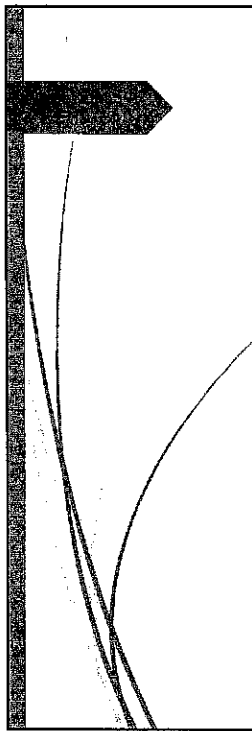
Breeding Pair of Romeo and Bubbles

- ▶ Romeo is fawn, his dad was black, and his mom was brown
- ▶ Bubbles is black, her Dad was dark grey, her mom was black

What did we hope to get?




Copyright 2022 Cotton Creek Farms LLC. All Rights Reserved



Bubbles and Romeo produced Carl, who is a **white** cria

Copyright 2022 Cotton Creek Farms LLC. All Rights Reserved



ABN-44 615 341 136 | ACN- 615 341 136
 Ph: 07 3736 2134
 EMAIL: naa-lab@neogen.com
 PO BOX 1388 | UQ GATTON CAMPUS
 GATTON QLD 4343 AUSTRALIA

Alpaca Coat Colour Test Results

Customer Name: LITTLE CREEK FARM ALPACAS Date: 18/04/2021
 Order Number: 620105

Alpaca Genotype 4 Letters

Sample Barcode	Animal ID	Registration Number	MC1R + ASIP Genotype	Base Coat Phenotype	Grey/Non-Grey Status*
31819038239	2871		EE aa	B	Non-Grey
31819038260	2756		ee AA	PSW CF CH	Non-Grey
31819038268	2345		EE Aa	WF BB	Non-Grey
31819038278	2144		Ee aa	B	Non-Grey
31819038249	2714		EE aa	B	Non-Grey

Copyright 2022 Colton Creek Farms LLC, All Rights Reserved

Genotype Data on Alpacas color

4 Locations from testing Results

_ _

First two Letters are MC1R

E – No Dilution
e – Dilution

2 locations combined:

EE – No dilution
Ee – Partially dilute (1 dilution)
ee – Full dilution

_ _

ASIP (Alleles)

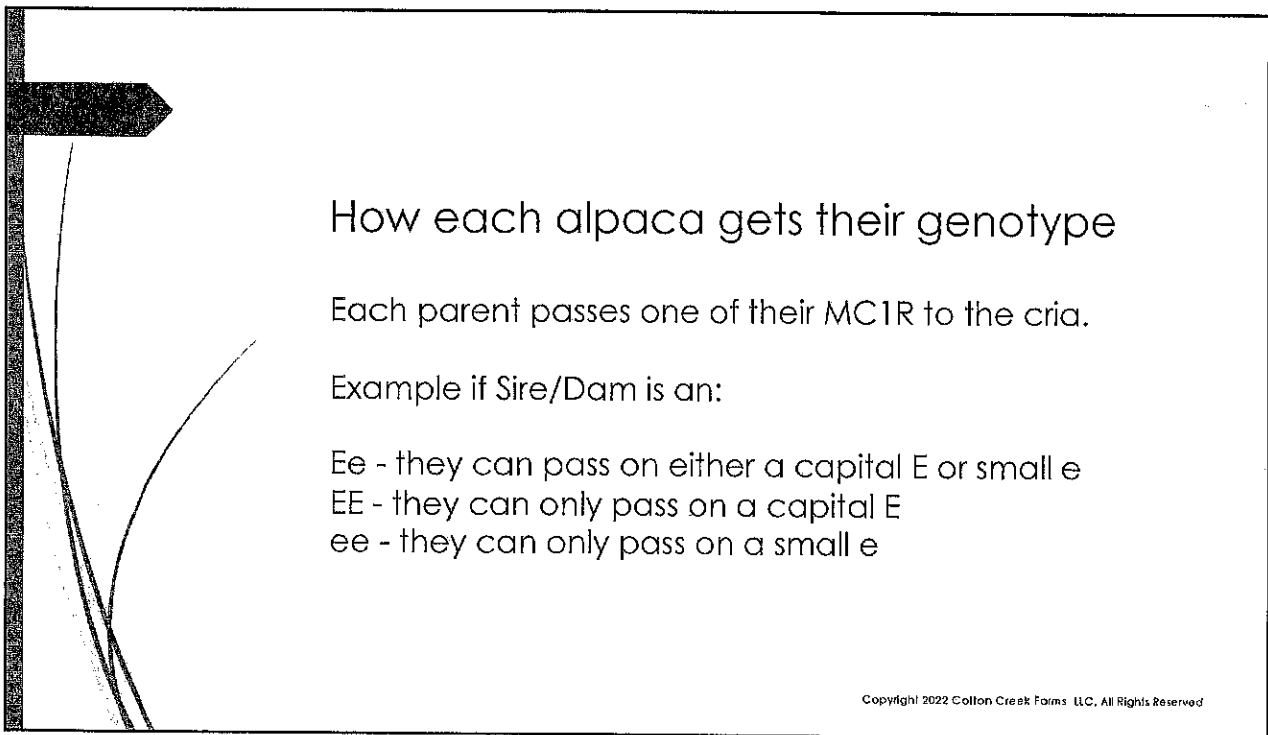
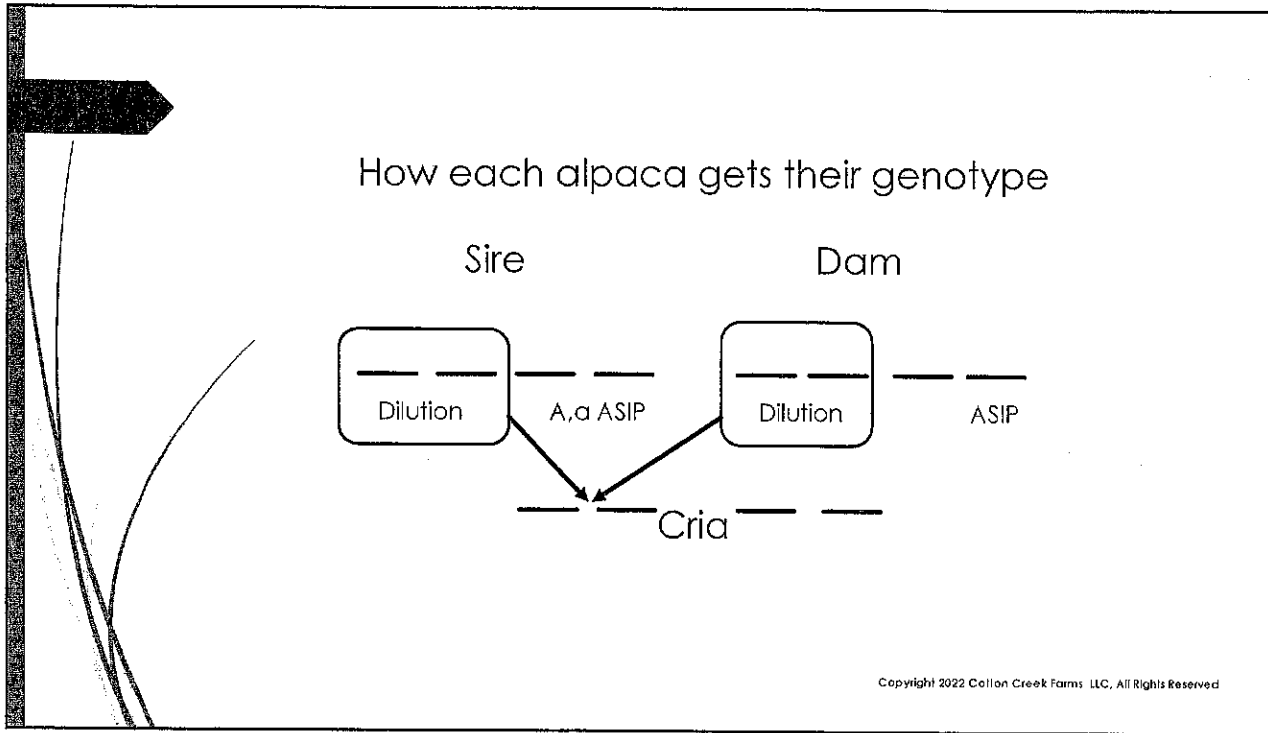
A – Brown Allele
a – Black Allele

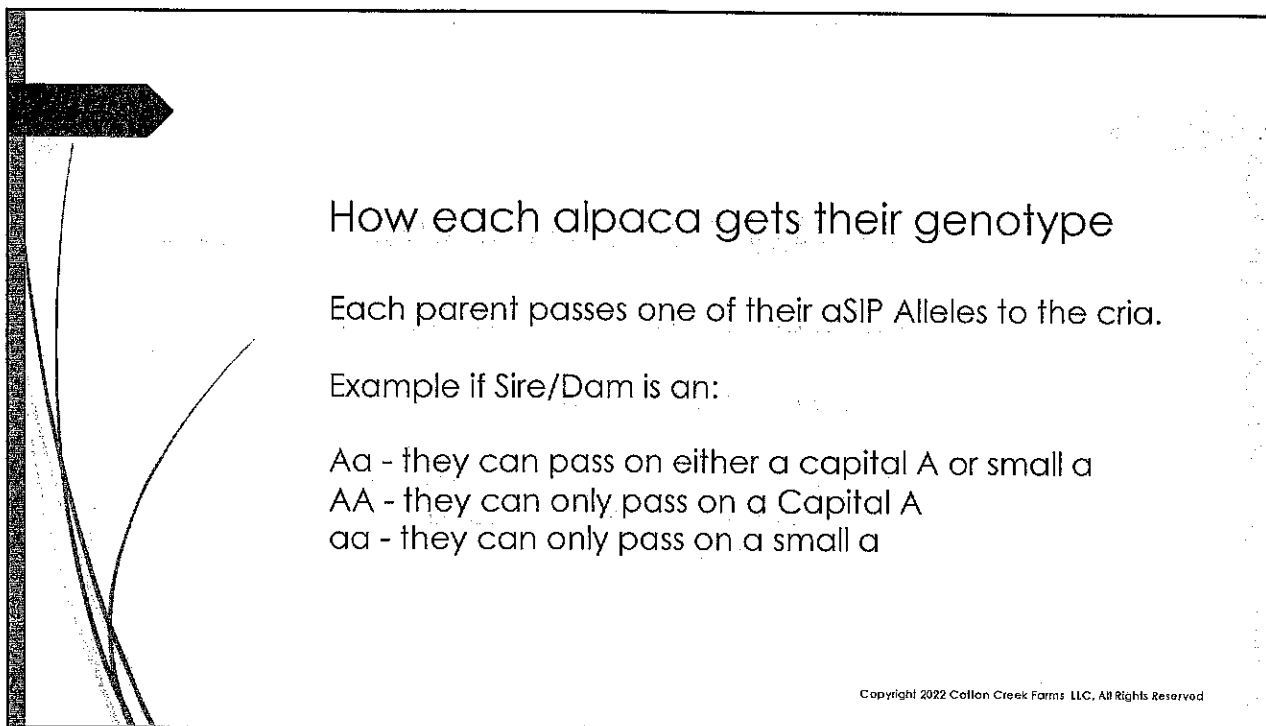
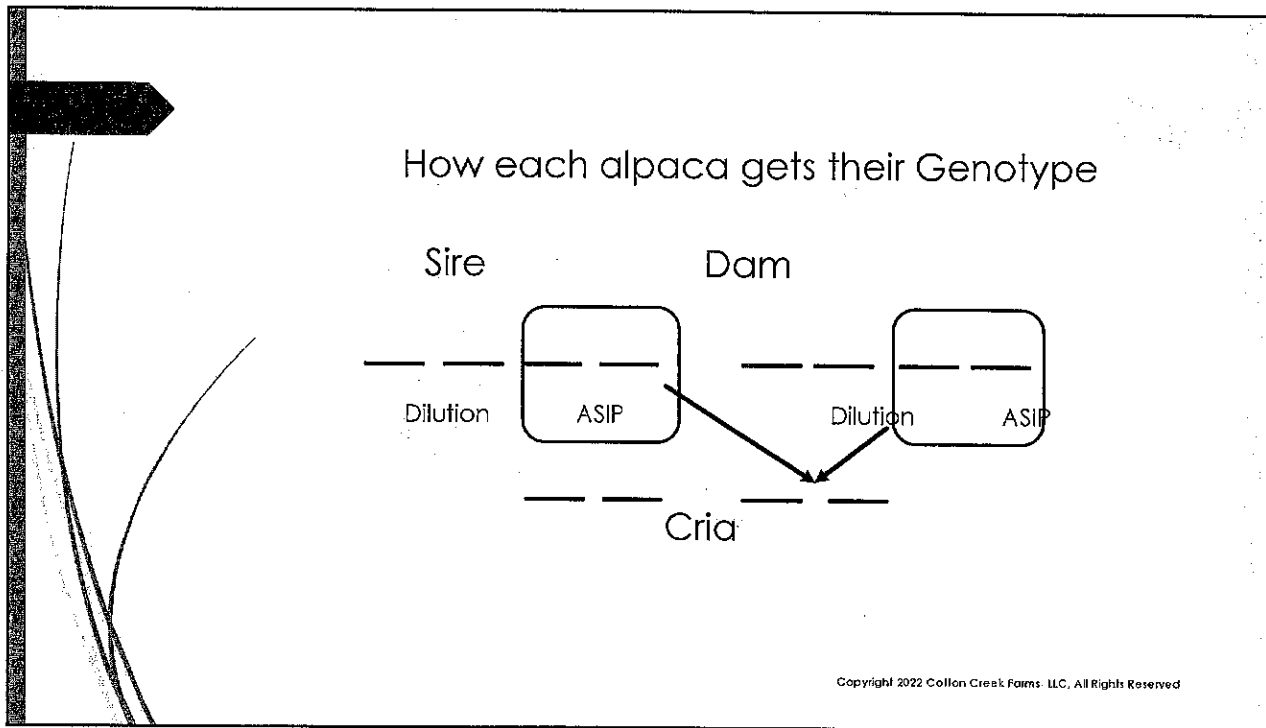
2 locations combined:

AA – Brown allele that does not carry black
Aa – Brown allele that carries black
aa – Black alleles in both locations

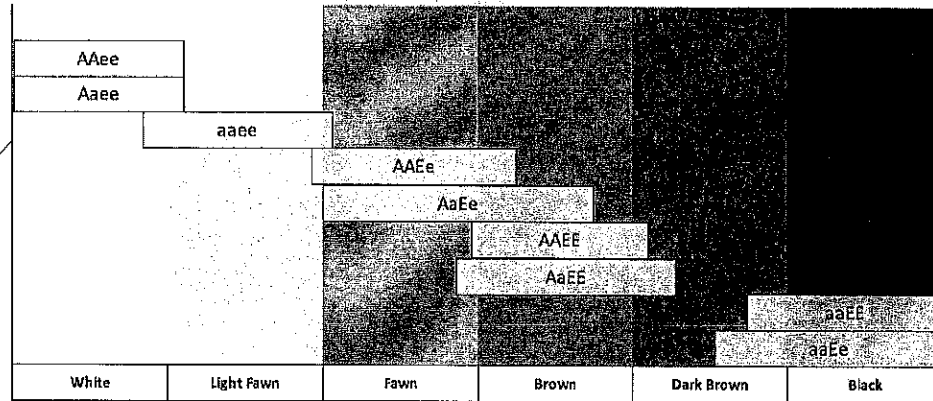
Every Alpaca has 4 letter designations that make up their color code.

Copyright 2022 Colton Creek Farms LLC, All Rights Reserved





All Alpacas have 4 genetic marker locations that make up their color code



Copyright 2022 Colton Creek Farms LLC. All Rights Reserved

Which herdsire should I use?



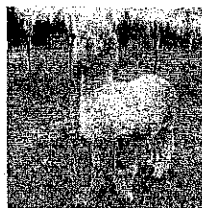
Bubbles aaEe



Daredevil AaEE
50% Black
25% Brown
25% Fawn



Romeo AaEe
25% White
50% Fawn
25% Black



Coalition AAEE
50% White
50% Fawn



Leviticus aaEE
100% Black or
Grey



Occult aaEe
25% White
75% Black

Copyright 2022 Colton Creek Farms LLC. All Rights Reserved

Which herdsire should I use?



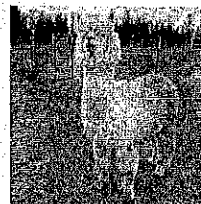
Dolly AAee



Daredevil AaEE
50% Brown
50% Fawn



Romeo AaEe
50% White
50% Fawn



Coalition AAee
100% White



Leviticus aaEE
100% Fawn or
Brown

Copyright 2022 Collon Creek Farms LLC, All Rights Reserved

Which herdsire should I use?



Peaches AaEe



Daredevil AaEE
25% Black
37.5% Fawn
37.5% Brown



Romeo AaEe
25% White
25% Fawn
25% Brown
25% Black



Coalition AAee
100% White



Leviticus aaEE
50% Black
25% Fawn
25% Brown

Copyright 2022 Collon Creek Farms LLC, All Rights Reserved

Which herdsire should I use?



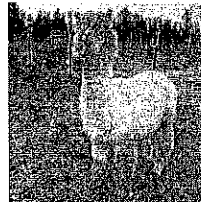
Faith aae



Daredevil AaEE
50% Black
50% Fawn



Romeo AaEe
50% White
25% Fawn
25% Black

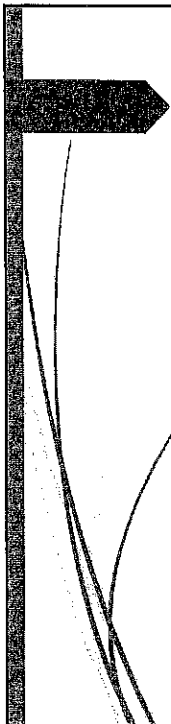


Coalition
AAee
100% White



Leviticus aaEE
100% Black

Copyright 2022 Collon Creek Farms LLC, All Rights Reserved



Any Questions?

1950

1951

1952

1953

1954

1955

1956