Horse Stats & Inheritance System

This page explains how Equestricraft's horses statistics (stats) function, what each stat controls in terms of riding and competing your horse and how these stats are inherited through breeding.

Overview

There are two types of statistics you can see on your horses stats page. These are labelled as "Stats" and "Indicators". This page is dedicated to the "Stats" portion of the horses stats page. "Stats" are genetic values which are inherited from the foal's parents. Each stat has a maximum value determined from birth. Foals will display a lower "Current Value" and "Base Value" when they are born, this can be trained up to the genetic "Maximum Value".

For every stat, each horse has two hidden numerical alleles. The average of these alleles determines the horses visible "Base value", and therefore the function. I.e speed, for each horse. These values are passed down genetically through breeding, and players are only able to infer the alleles of each parent by observing foals and their stats.

Stat Genetics & Alleles

As mentioned in the overview:

- Each stat has 2 alleles (e.g. Speed Allele A and Speed Allele B).
- Alleles are hidden and cannot be directly viewed.
- The visible "Base value" for each attribute is calculated as the average of both alleles.

Example

(These numerical values do not represent what values will look like in game, and are only used as an example)

If a horse has:

- Speed Allele A: 60
- Speed Allele B: 80
- The visible speed "Base Value" will be: 70. This results from the calculation (Allele A+Allele B)/2 so in this case (60+80)/2

The only way to potentially infer what alleles your horse might have is through breeding results.

Inheritance Mechanics

When breeding two horses:

- Each parent of the foal has a 50% chance to pass down one of their two alleles per stat.
- Per stat, the foal receives one allele from each parent.
- The foals "Base Value" for each stat is calculated from the average of those two inherited alleles.

This means:

- If you breed a mare and stallion with high stats, it does not guarantee foals with high stats
- Two horses with average stats may produce foals that have a lot higher stats.

Example

(These numerical values do not represent what values will look like in game, and are only used as an example)

If one mare has the following speed alleles:

- Allele A: 20
- Allele B: 90
- The average, and therefore their "Base Value" for speed will be 55

And one stallion has the following speed alleles:

- Allele A: 88
- Allele B: 40
- The average, and therefore their "Base Value" for speed will be 64

If you bred these two horses together, these are the possible stat combinations the foal could have for their "Base Value" for speed:

Foal "Base Value" Outcomes	Mare Allele A	Mare Allele B
Stallion Allele A	54	89
Stallion Allele B	30	65

In this case, you can see that if the foal inherits Mare Allele A x Stallion Allele A or Mare Allele A x Stallion Allele B; the result is a foal with a lower "Base Value" than either parent. However if the foal inherits Stallion Allele A x Mare Allele B or Stallion Allele B x Mare Allele B, the result is a foal with a higher "Base Value" than either parent.

There is a 25% chance of each combination of Alleles, so all results are equally as likely. So if you breed two horses together multiple times, it is possible to see foals with drastically different stats.

Maximum Value

A horses "Maximum Value" Can sort of be considered its training potential. It is the highest stat level a horse can reach through training, on top of its base stats. This value is genetic and set at birth. The maximum value is calculated using a hidden "Maximum Value Factor", which works just the same as the calculation for base stats. It is determined by averaging two genetic alleles. This factor cannot be seen by players.

The "Current Value" Is essentially just the current stat you have trained your horse to, out of the maximum stat. Using this you can determine how much you have left to train your horse, alongside looking at the training bar.

Training your horse up to this maximum value does **not** change a horse’s base stats or the base stat alleles it passes on. It only affects how much a stat can be improved through training. Since the "Maximum Value Factor" is genetic, some horses will be able to train higher than others, and the alleles for "Maximum Value Factor" is passed down to foals. So its theoretically possible to breed a horse that has a very high "Maximum Value" even if it is born with poor speed base stats.

The calculation for the horses "Maximum Value" is as follows. (You do not need to worry about this part at all if you don't understand, you cannot ever see the Maximum Factor Value so it is not important to understand, I have just included it for those that are interested about the calculations behind the scenes)

1. Add **1** to the Maximum Value Factor
2. Multiply the result by the horse’s base stat

Example:
If a horse has a Speed stat of 0.9 and a "Maximum Value Factor" of 0.3:

0.3+1=1.3 1.3x0.9=1.17

This means the horse’s Speed can be trained up to 1.17.

Mutations

After a foal’s genetics are calculated, there is a small chance for mutations to occur. These mutations are rare and unpredictable, representing natural genetic variation rather than inherited traits from the parents. Mutations may result in subtle changes to the foals stats, but never anything extreme.

Stat Breakdown

Just to clarify, there are a few stats planned for future release that may slightly change how some current stats affect a horse. While most of these changes are already planned, they have not yet been implemented.

The adjustments will be minor and should not significantly impact your horses. When these updates are released, an announcement will be made and this page will be updated with full details. The changes mainly affect how stamina works, so there’s no need to worry too much for now, however all these stats are always subject to change based on feedback and testing. Aside from that, the current stats are as follows:

Current Stats

Below is a list of all current stats and the effect they have on your horse.

Speed

Controls:

- Collected Canter
- Canter
- Extended Canter
- Gallop
- Fast Gallop

A horses speed stat determines a horse's maximum movement speed at the gaits mentioned above. Horses with higher speed stats will therefore move faster and generally outperform slower horses in disciplines like racing and other speed focused disciplines.

All other gaits' speed is universal across all horses.

Stamina

Controls:

- All gaits

Stamina determines how long a horse can maintain gaits before slowing down or tiring. Low stamina causes a horse to fatigue quicker and slow down.

Acceleration

Controls:

- How quickly a horse builds speed after switching gaits

When a horse transitions from one gait to another (e.g. Walk to trot), the gait change occurs instantly, but the horses actual movement speed increases gradually. A horse with higher

acceleration will reach the gaits maximum speed quicker than a horse with a lower stat.

Unlike acceleration, deceleration is consistent across all horses and is not affected by a stat.

Control

Controls:

- Input frequency of pressing the W key required to maintain a gait

Control determines how often you must press the W key to maintain a gait. E.g. A horse with a higher control stat's gait will flash red (requiring you to press the W gait to maintain it) more infrequently than a horse with a lower control stat.

Steering

Controls:

- Turn speed

Steering affects how quickly/sharply a horse can turn while moving. A higher steering stat allows a horse to turn quicker than a horse with a lower steering stat.

Jump

Controls:

- Jump height

Jump determines the maximum height (in blocks) a horse can jump over. A horse with a higher jump stat can jump over a higher amount of blocks than a horse with a lower jump stat.

Intelligence

Intelligence is determined by genetics and age, and cannot be influenced by anything else. It affects how a horse makes decisions and navigates its environment.

More intelligent horses are better at pathfinding and exploration. When wandering or searching for other horses, they will make more effort to pathfind, find companions and consider a larger number of nearby horses when choosing a potential mate. Less intelligent horses tend to focus only on what is close to them.

Intelligence also affects breeding behaviour. Mares with higher Intelligence are more selective and are less likely to accept breeding if they have already accepted many recent requests. Less intelligent mares are more likely to accept breeding regardless.

Additionally, Intelligence influences how easily a horse can find a running group and how far it will search for food. Smarter horses will look farther, while less intelligent horses will stick to nearby

options.

Memory

Memory is a genetically influenced trait that also changes with age. Young horses (under 2 years) memory is capped at about 60% of their maximum Memory, while older horses (over 25 years) memory is capped at about 70%. Aside from ageing, the only thing that can negatively affect Memory is illness.

Memory controls how well a horse remembers past experiences and information. This includes remembering where food containers were seen recently meaning that they are more likely to go back there and eat, recognising other horses, and recalling previous interactions. Horses with better Memory remember if they have interacted with other horses and how many times they have.

This directly affects behaviour. Horses that recognise familiar horses tend to show less frustration and aggression, while poor recognition can increase both. Memory also plays a role in breeding behaviour: horses are more likely to accept or pursue mates they remember having interactions with in the past.

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