



The Freiberger horse: 100% Swiss

For 120 years, the Swiss National Stud Farm (SNSF) has promoted Switzerland's equestrian traditions and played a key role in the world of equine research. The SNSF has been part of Agroscope, the Swiss centre of excellence for agricultural research, since 2008. SNSF staff work on projects designed to draw attention to part of Switzerland's living heritage: the Freiberger horse.

September 12th, 2018

The Freiberger horse (also known as Franche-Montagnes or Freiberg) originated some 200 years ago in Switzerland's historic Jura region. Formerly bred for use in agriculture, the Freiberger is now a much valued horse for riding, recreational harness driving and competitive sports. Because the Freiberger is the only Swiss horse breed, it receives particular support from the **SNSF**, which is located in Avenches, a small town and former Roman settlement on the shores of Lake Morat. The SNSF employs specialists from a wide range of fields – agricultural engineering, biology, veterinary science and genetics – who have a common mission: to meet the challenges of equestrian practice, promote the welfare of Freiberger horses and share their expertise.



The SNSF research group is divided into two teams. Iris Bachmann, deputy head of one of the teams, explains: "The first team studies stabling methods and horse behaviour; the second focuses on breeding and genetics, mainly of the Freiberger breed." What does their work involve?

DNA tests for selecting stallions and other purposes...

The SNSF owns about 80 stallions and mares of several breeds, enabling its staff to be in continuous, direct contact with the horses. Team head Ruedi von Niederhäusern explains: "The SNSF owns about 50 Freiberger stallions. The Freiberger is the only Swiss horse breed and therefore part of our national heritage. Our mission is to support efforts to breed the Freiberger through innovative projects aimed at improving the breed by means of selective breeding and promoting the breeding and marketing of Freiberger horses. Selecting Switzerland's best breeding stallions each year is a key aspect of our programme. Following a pre-selection based on aesthetic considerations, the finest horses are brought to Avenches, where their riding and driving styles and abilities are evaluated during a 40-day period. This is known as 'station testing'. To improve the breed and ensure its long-term success, only the best Freiberger are selected.



Open house at the SNSF

DNA analysis also plays an increasingly important role in equine research for breeding purposes. For example, Annik Gmel, a doctoral student at the SNSF, is studying the Freiberger's morphological and aesthetic characteristics and its gait. She measures and scores individual horses according to predefined criteria and compares the results with the horses' genetic profiles: "My goal is to find the genes that determine the quality of the horse's gait and the Freiberger's characteristic morphology in order to improve the selection of breeding stallions."

The horses' well-being comes first

The SNSF pioneered the paddocking together of groups of stallions: "Observing their behaviour for over 10 years, we found that under the right conditions, stallions that had traditionally been kept in separate paddocks actually got along very well when they were grouped together," explains Iris Bachmann. Stallions paddocked together tend to interact, providing valuable opportunities to observe their behaviour: "This opens up new possibilities for improving breeding methods and managing stress levels in horses, especially during dressage competitions, an equestrian sport for which Freibergerers are well known... Over the last year, we have also fitted a number of horses with sensors. Smart farming technologies present tremendous opportunities to gain a better understanding of their behaviour!" For example, fitting horses with sensors makes it possible to measure their movement and self-carriage. The data is fed into a machine learning system for analysis. The horses are also filmed in order to train the system's algorithms to determine their breed, sex, personality and stress levels more effectively than human beings are able to. These promising projects are currently under development.

Studying the Freiberger's character

One of the SNSF's main fields of inquiry is equine ethology, the study of horse psychology and behaviour. For example, the research group is currently conducting a study based on data from owners of Freibergerers. The owners provide personal information about themselves and

their horses' character traits and a description of their relationship with their horses and the 'understanding' they have with them. Iris Bachmann and her team plan to use the collected data to determine specific personality compatibilities between horses and buyers.

SNSF researcher Anja Zollinger explains: "We are carrying out these ethological studies of the Freiburger breed because its most distinctive trait is its gentleness, which makes it a perfect horse for recreational activities. We are studying the Freiburger's personality to gain a better understanding of its temperament and to promote and build on this distinctive quality.



Tandem hitching of Freiburger at SNSF event

Knowledge transfer and collaboration

The SNSF's academic and educational contribution to the field of equine research is unrivalled in Switzerland. The SNSF research group is largely composed of doctoral students, master's students and trainees, and collaborates with other national and international institutions. "Like other research institutes, we depend on third-party funds to carry out projects, hire PhD students and publish our findings," says Iris Bachmann. The SNSF transfers knowledge – one of its key missions – in a variety of ways besides publications. Its staff teach in Swiss universities, polytechnics and vocational schools and offer courses for horse riders and owners. Open house events and competitions are regularly held at the SNSF in Avenches.



Demonstration of behavior tests with a breeding stallion

SNSF researchers work to serve Switzerland's equestrian community and promote the nation's equine heritage. The SNSF thus plays an essential role in the equestrian world and fulfils a unique mission in Switzerland's cultural landscape.