



WHY THE SVIC?

▶▶ SESVanderHave's sugar beet seeds are sown in more than fifty countries, from Russia to America. This geographical distribution has an influence on the varieties, due to differences in climate, soil types, diseases and other factors.

At the SVIC, we can analyse all of these factors in the minutest detail, and offer tailor-made solutions. In addition, we are able to separately control the climate of each research compartment at the SVIC, independently of the weather and the season. This means that our young plants grow in a more uniform fashion, without being disturbed by the changing weather conditions.

The development of a new sugar beet variety generally takes up to ten years. Thanks to the new techniques that we use at the SVIC, we are able to investigate an even larger number of young plants even more rapidly, enabling us to develop new varieties almost twice as quickly, which makes a huge difference.

ACTIVITIES AT THE SVIC

MANUAL CROSSBREEDING

We use manual crossbreeding to precisely select the right characteristics for a new variety of sugar beet. First, we select the father and mother plants with successful genes. We then use the pollen from the father plant to pollinate the mother plant. In this way, we literally give nature a helping hand, and produce new combinations of successful genes. Thanks to our climate control capabilities, we can cultivate young plants in our greenhouses throughout the year. After a period of artificially induced cold in the growing chambers, they start to flower.

It is on these flower stems that thousands of manual crossbreeds are carried out every year. This increases the chances of finding the right features. Next, we isolate these features via self-pollination. After a few generations of self-pollination, our breeders obtain the desired breeding lines. These form the basis for our commercial sugar beet varieties.

At SESVanderHave, conventional cultivation methods are continuously supported by innovative biotechnology techniques. Using DNA marker analysis, we create a huge DNA database of father and mother plants and their specific features. This database helps us control and speed up the manual crossbreeding process.

With this purpose in mind, we take DNA leaf samples from the plants, and analyse them in our genotyping laboratories.

GENOTYPING OR READING DNA

The leaf samples from the plants with potential new DNA combinations are processed in the genotyping laboratories.

Here, our scientists map the DNA of the different sugar beet plants. Genotyping enables us to select the precise characteristics that a variety needs under specific conditions in a given region. We do this by recording small differences in the DNA chain.

The leaf samples are subjected to various processes with the aim of defining the DNA sequence of the sugar beet. Thanks to this research, SESVanderHave is capable of determining which genetic markers are linked to which features. As a result, for example, we know whether a plant is resistant to a particular disease, or which plants are naturally better equipped for various climatological conditions.

This valuable information allows the research team to carry on working on only the best plants.

DEVELOPING RESISTANCE TO DISEASE

Sugar beet is also threatened by various pests and diseases, caused by viruses, bacteria, fungi, worms or insects. These organisms – or pathogens – occur in the root or on the leaves of the sugar beet.



ACTIVITIES AT THE SVIC

Through detailed research, the Biotic Stress Management team is able to control the selection procedure at the SVIC. In this way, we are able to develop resistances to the different diseases.

For each disease, an inoculum is prepared in the laboratory. The disease is then spread on the plants in the greenhouses. We have the capability to simulate the natural environment of a specific disease in our greenhouses. After a few weeks, the team is able to separate the diseased plants from the healthy ones. Only the healthy plants – or the resistant plants, as we refer to them – continue in the cultivation process.

SV DIAGNOSTIC CENTER

Our disease analysis laboratory - the SESVanderHave Diagnostic Center – carries out research into every disease that affects sugar beet.

Customers from all over the world can send their infected plants to us for a thorough investigation. We send back a custom-tailored diagnosis, and our teams propose an appropriate solution. The increase in demand for analysis fortunately coincided with the laboratories' move to the SVIC, which gave an immediate boost to our analytical capacity.

THE SVIC IN FIGURES

- ▶▶ 20 million Euros in investments
- ▶▶ 20,000 m² (2 hectares) in area (more than four football fields)
- ▶▶ 13,000 m² of greenhouses
- ▶▶ 1,500 m² of office space
- ▶▶ 1,500 m² of technical facilities
- ▶▶ Construction completed in barely 400 days
- ▶▶ 50 personnel
- ▶▶ 29 km of heating system
- ▶▶ 20 km of piping
- ▶▶ More than 8,000 m³ of recovered water used for plant spraying
- ▶▶ 32% of SESVanderHave employees (out of a total of 620) work in research
- ▶▶ More than 18% of our revenues are devoted to Research and Development

