

LAIMBURG REPORT





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LAIMBURG RESEARCH CENTRE: FOR FIFTY YEARS A BRIDGE BETWEEN AGRICULTURE AND SCIENTIFIC RESEARCH

Laimburg Research Centre was founded in 1975 as the first research institution in South Tyrol. Established as an applied research centre, since its foundation, it has directed its activities towards the needs and concrete problems of agriculture, working to efficiently transmit knowledge to technical consultants and to the world of agriculture.

In the early years, research focused on fruit growing and viticulture, on soil analysis and on fruit preservation techniques. With the passing of time, the areas of Laimburg Research Centre's expertise have increased to include arable crops and herbs, fodder production, field horticulture, small fruits, stone fruits, and floriculture. Thanks to further expansion of scientific research to the sector of processed foods, and thanks to the inclusion in the NOI Techpark network, the Centre is now able to cover the whole agrifood supply line with its activities.

Today, Laimburg Research Centre is a cornerstone of agriculture in South Tyrol, a guarantee for food safety and an internationally recognised research institute. Through its activities, it supports agriculture and food processing with solid scientific research, experimental field tests and specialised consulting. Using innovative methods and more recent knowledge from basic research, Laimburg Research Centre contributes to ensuring that agriculture and food processing continue to evolve and to remain sustainable over time.

The variety of areas covered makes it a point of reference for companies in different sectors. Constant dialogue with representatives from agriculture and food processing has made it possible to develop practical solutions for improvements in quality, a higher added value and a sustainable future for the whole agrifood

supply chain. The success of the past fifty years is the result, in particular, of the hard work of collaborators and constant dialogue with those working in the agrifood sector.

The challenges faced by the agricultural and food processing sectors are complex in nature. The introduction of new varieties is joined by the spread of new parasites and diseases, which are also favoured by climate change. Moreover, quality and safety are increasingly a central element in food processing. At the same time, a balance is needed between eco-sustainability and cost effectiveness. Laimburg Research Centre plays a decisive role in this area. **With its solid scientific bases, rooted in society and looking towards the future**, the aim of the Centre is to prepare agriculture and food processing in South Tyrol to face the challenges of the future through applied and basic research.

Luis Walcher,
Provincial Councillor for Agriculture, Forestry,
and Tourism

Michael Oberhuber,
Director of Laimburg Research Centre

JUBILEE YEAR 2025



INAUGURAL EVENT

The jubilee year was inaugurated on 15th January 2025, with an event at the Maso Stadio ("Stadlhof") building in Vadena. The event was also attended by Luis Durnwalder and Klaus Platter, pioneers of Laimburg Research Centre, who went back over the origins and development of South Tyrol's first research institute. During the morning, the Centre's revamped logo, with its brand new, forward-looking image, was also officially presented.

Luis Durnwalder, one of the pioneers of Laimburg Research Centre and Klaus Platter, precursor and for many years, Deputy Director of Laimburg Research Centre



CITIZEN SCIENCE FOR THE 50TH YEAR OF ACTIVITY

In this jubilee year, the population of South Tyrol was able to choose and collaborate actively in a research project of Laimburg Research Centre. In summer 2024, the project "Bloomiverse – Chi semina, raccoglie (dati)" was selected through a public opinion poll. The project was then included in the Programme of activities 2025 and was commenced in the following spring. Bloomiverse had over 160 participants, people from all over South Tyrol who received a mix of seeds, a pot, the soil needed to plant the seeds, and a guide on how to perform the experiment. The mix of seeds included five species of native plants, from the region: common daisy, brown knapweed, English plantain, bladder campion, and red clover. Thanks to the data collected by the participants, the research team at Laimburg Research Centre is studying the development of plants in different areas of the region, and with different temperatures and different nutrient levels.



For its 50th birthday, the Laimburg Research Centre launched a new **Instagram channel**, offering a look at the Centre's work, and informing people about initiatives of particular interest to the community.



OPEN DAY

In May, Laimburg Research Centre held an open day for the citizenship. Guided tours of the experimental orchards, the open-air digital laboratory LIDO, the fields of small and stone fruits, the historic Rock Cellar and the display gardens, gave everyone the opportunity to enjoy first-hand experience of the research carried out at the Centre. The event was accompanied by the Laimburg Band, a music group formed by collaborators at the Centre. A buffet, served with wines from the Laimburg Winery completed the offer.

Guided tour of the Rock Cellar with the Oenologist urban Piccolruaz during the Open Day



Zartes Gleichgewicht © Michaela Wellenzohn



PHOTO ACTION: NATURE IN FOCUS

With the photography initiative *Photo Action: Nature in Focus* Laimburg Research Centre has invited the population of Trentino-South Tyrol to slow down and rediscover nature through their own lens. With the motto "In stillness, nature whispers. Click." all photography enthusiasts were able to contribute to the initiative with their own shots. There were three proposed categories: symmetry, local biodiversity and colour contrasts. The initiative, which was open to anyone over the age of 18, took place between 7th July and 7th September.

In October, some selected images were presented and exhibited at the NOI Techpark in Bolzano.



In der Umarmung von Licht und Schatten © Gabriel Demetz

Feuerlibelle © Daniel Larentis



MANY MORE ACTIVITIES

For the jubilee, a new **Imagefilm** was created to present the story, research and successes of the Laimburg Research Centre. A 160-page **commemorative volume** looks through the first fifty years of activity. In 2025 the **institute's website** was also revamped.

For the 50th birthday, the Laimburg Winery produced an **anniversary spumante**. The grapes came from Teodone, in Val Pusteria, where they grow at an altitude of 900 metres. The variety used is Solaris, which is resistant to fungal diseases and well known for its rich aromatic spectrum and lively acidity. The prosecco was matured for 30 months on yeasts, according to the classic method of re-fermentation in the bottle, and it was made in a limited edition of just 130 bottles.

The highlight of the celebrations for the 50th anniversary was the **symposium** in November, during which, local and international speakers discussed the role of science for a forward-looking society and the economy.

This **Laimburg Report** is also a **special edition**, dedicated to the 50th anniversary of Laimburg Research Centre.

1975 – 2025: 50 YEARS OF LAIMBURG RESEARCH CENTRE

1. BRONZE AND EARLY IRON AGE: NECROPOLIS AND SETTLEMENT

Large communities of over one thousand inhabitants were already living on the site of Laimburg Research Centre over three thousand years ago. Earliest archaeological evidence from the area dates back to the late Bronze Age and includes a necropolis, a small horse made in bronze from the 9th-8th centuries BCE, and a home dating back to the Iron Age, which has reached us in an excellent state of preservation. Some reproductions of these findings can still be seen in the Rock Cellar at Laimburg Research Centre. One of the most historically and culturally important findings are the grape seeds from a Rhaetian settlement, dating back to 2400 years ago. They are in fact one of the oldest pieces of evidence of wine-growing traditions in the area.



Bronze horse dating back to the 9th-8th century BCE.

2. RUINS OF CASTEL LAIMBURG: MEDIAEVAL ORIGINS

Laimburg Research Centre takes its name from the castle ruins located on Sella di Novale al Varco, not very far from the Centre's main headquarters. The castle was built in the 13th century, when Count Mainardo II of Tyrol gave it as a fiefdom to Bolzano citizen Heinrich Laian, from whom it probably takes its name. In the 14th century, the castle passed to the lords of Rotten-

burg. The castle suffered serious damage when it was conquered by the troops of the Bishop of Trento in the period between 1339 and 1341. After undergoing restoration and expansion works, the castle passed under the control of Duke Frederick IV of Habsburg, known as „Frederick of the Empty Pockets,” in 1410, following the Rottenburg feud. In the late 15th century, the castle was abandoned and by the 17th century it was already in ruins.



Ruins of Laimburg Castle, near Sella di Novale al Varco © A. Pürgstaller

3. THE STADLHOF CORRECTIONAL INSTITUTE AND PSYCHIATRIC HOSPITAL

In 1891, the regional council of Tyrol purchased 150 hectares of land to build a reformatory for young people with educational problems or considered at risk, who would then perform farm work as an integral part of their education. The institute was closed in 1924, and the annexed farm was assigned to the San Michele all'Adige Agrarian Institute. In 1938, the institute's psychological rehabilitation activity, which was undertaken under the direction of the psychiatric clinic in Pergine Valsugana, under the form of "Provincial Farming Community for calm mentally infirm persons". From 1963, the facility, which became the "Stadlhof provincial psychiatric institute for occupational therapy", had its own medical directorate and over 100 places for men and 50

for women, most of whom were long-term patients who worked in the gardens and fields. In 1985, following legislative reform, the Stadlhof psychiatric institute was permanently closed.

4. DEVELOPMENT OF CONSULTANCY AND AGRICULTURAL TRAINING

In 1874, the Tyrolean Diet of the Austro-Hungarian region, founded an agricultural school with annexed research institute. After the First World War, however, the student intake from South Tyrol saw a significant fall, leading to a notable lack of agricultural training in the region. In 1947 an association of agricultural school graduates was founded (A.L.S. - from the German "Absolventenverein landwirtschaftlicher Schulen") which, from 1952 onwards, worked to establish an agricultural school with suitable area for field work. In 1957 the Laimburg Agricultural Complex was created in Vadena-Pfatten, from 40 hectares of farmland that had belonged to the Stadlhof psychiatric clinic. The estate worked with growing fruit and grapes, arable crops, and livestock, and formed the basis for a future agricultural college.

5. THE PROFESSIONAL SCHOOL

Between 1958 and 1960 a School for Fruit Growing and Viticulture was established at Laimburg, including teaching and administration buildings, a dormitory, winery, hay barn and a stabling for 60 animals. In 1962, the school commenced its activities with an initial intake of 27 students. The two-year course blended classroom theory in the morning with practical lessons in the fields of the Laimburg Farm Estate in the afternoon. The school itself was inaugurated on 6th May 1967.

6. 1970-1975: DECISIVE YEARS

With the second Autonomy Statute in 1972, South Tyrol obtained primary competence in agricultural education and research, together with the necessary funds to create the foundation for modern fruit and wine growing. Until then, responsibility for agriculture training and experimentation fell to the Trentino-South Tyrol region, which delegated them to the Agricultural Institute of San Michele all'Adige. Provincial act no. 53 on 3rd November 1975 saw the creation of the Laimburg Research Centre for Agriculture and Forestry. The Centre's first Director was Hermann Mantinger.



Collaborators in the late 1970s

7. THE BEGINNINGS OF LAIMBURG RESEARCH CENTRE

In 1974, pomologist Reinhold Stainer, conservation expert Carlo Nardin, and technician Günther Giuliani moved from the Agricultural Institute of San Michele all'Adige to the newly created Laimburg Research Centre. From the Agricultural School came Hermann Mantinger, in charge of fruit growing, oenologist Klaus Platter, Josef Vigl, in charge of physiology and plant pathology, and technician Johann Gasser. At its official establishment in 1975 the Centre officially numbered seven people. Viticulture was the responsibility of lecturer Andreas Weiss, Eduard Spitaler and Heinrich von Mörl, who were formally still part of the school body.



The main building of Laimburg Research Centre

8. EXPANSION AND RENOVATION: INFRASTRUCTURE FOR EXPERIMENTAL RESEARCH

Between 1972 and 1973 the test warehouse was built, allowing - as it does today - conservation tests to be performed, reproducing real farming practice conditions. This facility laid the foundations for the development of modern refrigerated storage of fruit in South Tyrol. In 1976, farming practices at Laimburg were interrupted and the livestock were moved to the "Mair am Hof" farmstead in Teodone (Dietenheim), owned by the Laimburg Agricultural Estate. This latter became the main experimental centre for growing arable crops and forage production. Between 1976 and 1979, the stabling was converted to a new main building, and a classroom was built along with offices for the staff. In the same period, the new agricultural chemistry labs were set up, followed by the purchase of a soil testing laboratory, previously run by the South Tyrol Agricultural Consortium. In this period, the winery was renovated, a canteen was opened, and a former milking shed was converted into administration offices.



The stable, later converted into administrative offices

9. FROM THE FARM ESTATE TO THE LAIMBURG PROVINCIAL FARM

In 1970, Klaus Platter succeeded Alfred Petermeier at the head of the Laimburg Farm Estate. With the establishment of Laimburg Research Centre in 1975, the estate became an integral part of the Centre and was renamed "Laimburg Provincial Farm", and Klaus Platter took the post of Deputy Director. The Farm managed the farmland owned by the province, making it available for field tests and looking after experimental installations. The farms also managed by Laimburg were gradually

converted to pilot sites for new crops and production techniques. They also provided the necessary technical equipment and, if needed, staff to support research programmes. The administration and financial management of Laimburg Centre also fell under the Provincial Farm. The aim was to guarantee close integration between the school, farm, and experimental activities.



Laimburg Provincial Farm

10. FARMS

With the second Autonomy Statute, the Italian government returned more than twenty farm properties of the ONC (Opere Nazionali Combattenti - the assistance body for war veterans) to the Province of Bolzano. These were located in the area of Merano and confiscated during the period of fascism. Between 1976 and 2003, these lands, together with other farms owned by the Province, were allocated to the Laimburg Provincial Farm. Their distribution over different climate areas made it possible to perform research and testing in the field at different altitudes and in diverse geological and climate conditions.

11. THE 1980S: MORE AND MORE TASKS AND STAFF

In 1982, Heinrich Abraham launched the first cultivation tests for herbs. In the same year, the plant nursery - previously owned by the Stadthof psychiatric institute - was expanded, and the tropical greenhouse was built. At the same time, thanks to the scientific contribution of Laimburg Centre, the winemaking sector of South Tyrol was undergoing significant changes: quality was preferred to quantity and the espalier growing system took the place of pergola method. An essential step in fruit growing was the introduction of integrated production according to AGRIOS guidelines in 1988, with the main aim of reducing the use of synthetic chemical plant

protection products to a minimum. Roland Zelger and his team contributed to this development in the direction of more sustainable plant protection, introducing - among other things - the use of natural antagonists and sexual confusion techniques. In the late Eighties, under the responsibility of Luis Lindner, the Centre became the body officially responsible for phytosanitary checks and the certification of propagation material for fruit tree nurseries and vineyards.

12. THE ROCK CELLAR

In the early 1970s, Laimburg Research Centre began to hold courses and conferences dedicated to wine and to winegrowing in South Tyrol. These courses were for professionals from Italy and abroad. Thanks to these initiatives, the Centre gradually took on the role of representation for agriculture and wine growing in South Tyrol. In this context, and in response to the growing need for spaces that could be used for refinement in wooden barrels and to store bottles, Klaus Platter moved for the construction of the Rock Cellar. Between 1989 and 1990, more than 4,000 m³ of porphyry were dug out behind the Centre, using 5,000 kg of dynamite. The result was a deposit for the bottles, a barrel store and a 300 m² room that the Provincial Body used for institutional events and to promote the wine of South Tyrol. The Rock Cellar was later expanded in the periods 2001-2003 and between 2004 and 2005.



Construction of the Rock Cellar

13. THE LAIMBURG WINERY

The Laimburg Winery was founded within the administrative structure of Laimburg Research Centre and under the direction of the Laimburg Provincial Farm. At the time, the Winery made some 2500 hectolitres of wine every year - the equivalent of around 200,000

bottles - from 45 hectares of vineyards, located in various soils at different altitudes. Responsibility for production, vinification, storage and sale was allocated to the oenologist and director of the Farm, Klaus Platter. Since 1991 the position of oenologist at the Winery has been filled by Urban Piccolruaz. After the reorganisation of 2017, Laimburg Winery remained an integral part of the Laimburg Research Centre. Under the leadership of Günther Pertoll, production was redimensioned, while today, the activity focuses on communication of wine and on capitalising on innovation and rarities, such as native vines and little grown varieties.



The Laimburg Cellar

14. THE 1990S: EXPANSION OF RESEARCH AREAS

Thanks to Markus Kelderer's contribution, in 1991 a sector dedicated to organic farming was set up, making Laimburg Research Centre a pioneer in organic fruit growing in Europe. Between 1992 and 1993 an experimental winery was created, making it possible to follow the entire production of wine, from grape growing through to the bottling stage. In the 1990s, the Centre extended its research into mountain areas, with testing dedicated to fodder growing, livestock farming, vegetable growings and arable crops, above all in Teodone in Val Pusteria and Oris in Val Venosta. In 1996 the main building and research warehouse were rebuilt and extended, while in 1999 the new building for plant health was completed. In the same year, the director of the period Hermann Mantinger retired and was succeeded by Josef Dalla Via.



Renovation of the main building between 1995 and 1997



Construction of the Plant Health Building in 1999

15. CASTEL TRAUTTMANSDORFF GARDENS

In 1995, the President of the Province of Bolzano, Luis Durnwalder, commissioned the Laimburg Provincial Farm, under the direction of Klaus Platter, the completion, care and management of Castel Trauttmansdorff Gardens. An area of 12 hectares and a difference in height of 100 metres was turned into over 80 miniature landscapes, divided into four thematic areas: "Forests of the World", "The Sun Gardens", "The Water and Terraced Gardens" and "Landscapes of South Tyrol". After seven years of work, the Castel Trauttmansdorff Gardens were inaugurated in June 2001. The gardens won several awards and remained under the management of the Laimburg Centre until they passed to the Provincial Public Property Agency in 2017. Since 2018, the Gardens have been managed by Gabriele Pircher.

16. 2000 - 2010: A DECADE OF TRANSITION

Under the direction of Josef Dalla Via, the Molecular Biology Laboratory with its state-of-the-art instruments and methods, was opened in 2002. In the same year, the Centre obtained its first financing from third parties. In the following years, the laboratories and analytical methods were accredited. In 2005, fruit conservation technologies using a dynamic controlled atmosphere (DCA), developed by Laimburg Research Centre, began to be used in agriculture and then spread all over the world. In 2008 Dalla Via left the Centre for health reasons and Klaus Platter took up the position ad interim, until the appointment of Michael Oberhuber as new director in 2009. Two years later, after 45 years of service, Platter retired and in 2012 he received the Tyrol Cross of Merit for his contribution to the development of the Laimburg Research Centre. The Provincial Farm was then headed up by Daniel Bedin.



Handover from Klaus Platter to Michael Oberhuber as new Director of Laimburg Research Centre.

17. NEW LABORATORIES, NEW OPPORTUNITIES

In 2014, Laimburg Research Centre set up a sector dedicated to food technologies with the aim of covering the whole agrifood supply chain, from the field to the finished product. For this purpose, new working groups were formed and laboratories dedicated to the production and characterisation of foods were set up. With the expansion of primary production research into processed products and to both public and private green areas, the Centre was able to increase its public and commence a collaboration with new interlocutors, such as businesses and municipal administrations.

18. NOI TECHPARK

Fourteen sectors of Laimburg Research Centre are partners of the NOI Techpark and are therefore recognised as "NOI Labs". Five of them are located in the Bolzano Sud technological park. The NOI Techpark aims to boost the link between research and business, and the presence of Laimburg Centre within this network has made it possible to increase collaboration with businesses. These exchanges have led to the development of new commissioned research projects, the creation of Open Labs and the expansion of test services for third parties.

19. RESHUFFLE AND FUTURE MANAGEMENT

In 2016, at the initiative of then Provincial Councillor for Agriculture, Arnold Schuler, a reshuffle was begun which separated the skills of Laimburg Research Centre from those of the Laimburg Provincial Farm. This latter was incorporated into the Provincial Body for Public Owned Forests, leading to the creation of the Provincial Property Agency. Since 2019, the Laimburg Research Centre has had its own administration structure, responsible for human resources, accounts, financial statement and management of assignments. The new organisational framework of the Centre includes four institutes and an administration office.



Directors of Laimburg Research Centre

Hermann Mantinger: 1976 to 1999

Josef Dalla Via: 1999 to 2008

Michael Oberhuber: since 2009



Directors of Laimburg Provincial Farm

Klaus Platter: 1980 to 2010

Daniel Bedin: 2011 to 2014

Günther Pertoll: 2015 to 2016



RESEARCH FACILITIES AND EXPERIMENTAL FIELDS

Laimburg Research Centre is strongly rooted in South Tyrol. As well as its main headquarters in Vadena and its laboratories at the NOI Techpark in Bolzano, the Centre works in many locations in South Tyrol, where it performs lab tests on different crops.



LAIMBURG RESEARCH CENTRE:

- 1 Main headquarters in Vadena
 - 2 NOI Techpark
 - 3 Experimental field, Oris
 - 4 Farm „Mair am Hof“
-
- Farms belonging to the Provincial Property Agency, where Laimburg Research Centre performs multi-annual testing
 - Areas where Laimburg Research Centre has performed at least one test from 2010 to today



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FROM PRACTICE TO APPLICATION

Laimburg Research Centre was founded in 1975 as the first research institution in South Tyrol. Through experimentation backed by science, and applied research activities, we create know-how, come up with solutions, and develop innovation for **agriculture and agrifood processing**. Our studies are focused on the following **crops**: fruit growing and viticulture, vegetable growing, small fruits, stone fruits and nuts, arable crops and herbs, fodder, and horticulture. We develop sustainable management methods to safeguard natural resources, such as water, soil, biodiversity and the climate. Our detailed knowledge of biological relations, selection, and testing of varieties and robust rootstock, and our targeted use of plant protection

products mean we can promote **low-impact, resilient growing systems**. Our use of cutting-edge digital technologies allows us to develop sustainable, forward-looking growing models. We aim to support the whole agrifood supply chain **from cultivation through to the finished product**. We devise innovative methods to allow companies to produce **quality food with guaranteed origin**. To make the most of regional mountain products, we support **diversification** and contribute to the development of a regional circular economy. In our specialist laboratories, we perform **reliable tests**, both as a service for third parties and to support our own research projects.



Sustainable and Resilient Cultivation Systems

Unlocking nature's full potential:
We develop sustainable and demand-oriented cultivation techniques to protect and preserve resources and biodiversity, and to support agricultural businesses in the Alpine region.



Digital Innovation and Smart Technologies

Developing future-oriented cultivation and processing techniques:
We implement digitalisation and modern breeding technologies into actual practice.



Local Diversity and Circular Economy

Valorising regional mountain products:
We promote the diversity of high-quality mountain products and ensure that they are utilised in a (supra-)regional circular economy.



Quality and Health

Safe and healthy food products from South Tyrol:
We develop innovative methods which companies in South Tyrol can employ to produce food products of certified quality and origin.

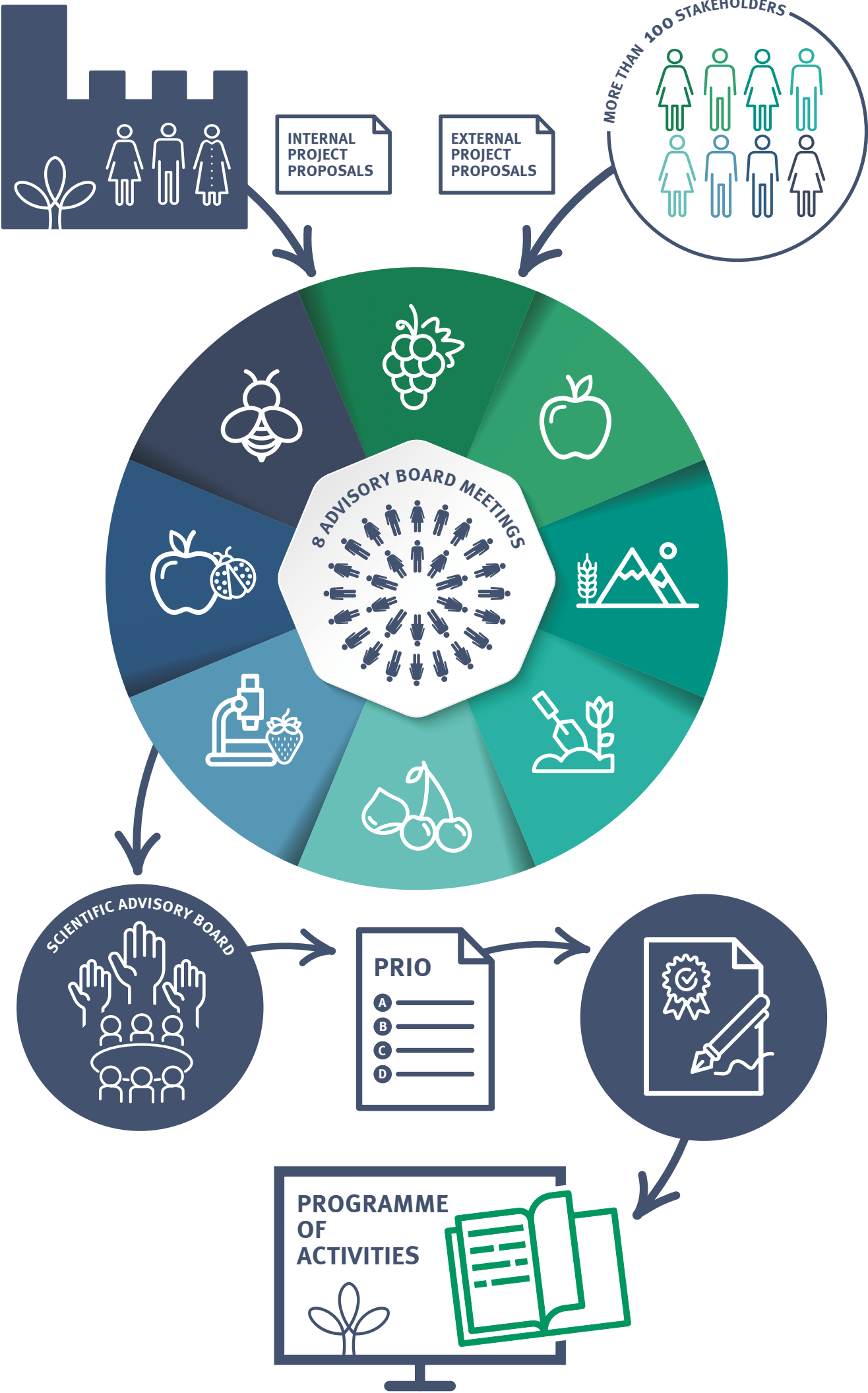
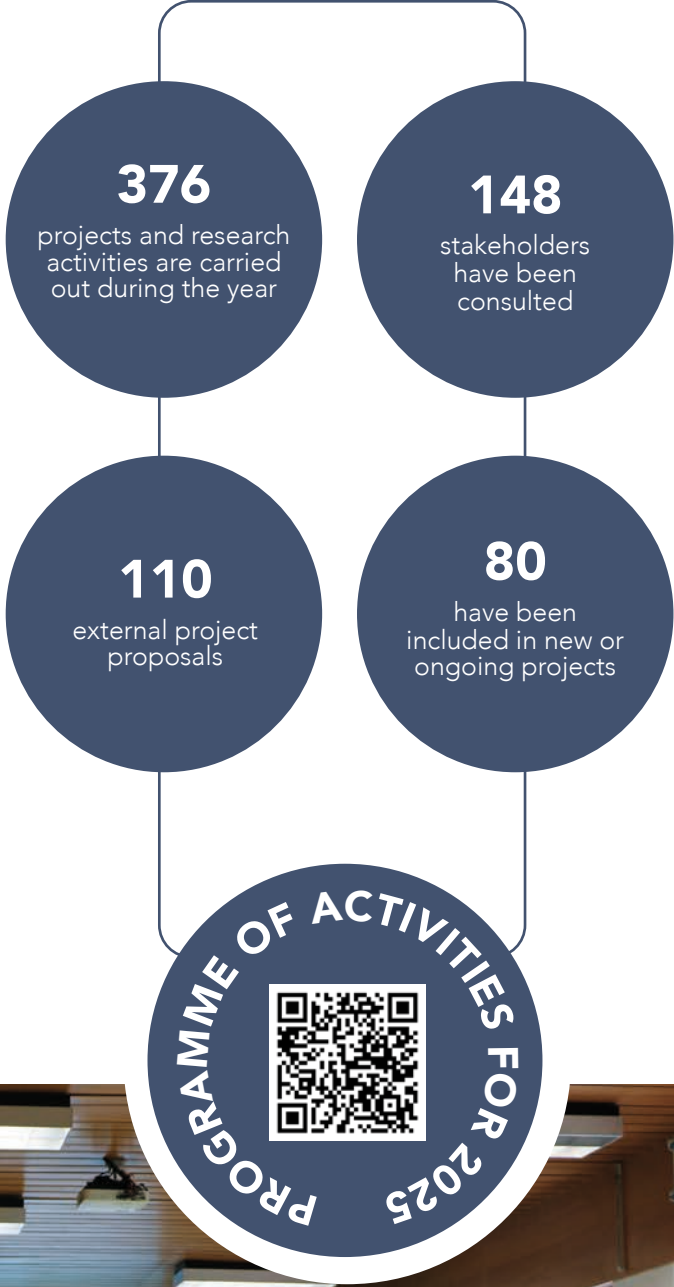


Climate-Neutral Agriculture

Developing cultivation and processing methods that are more climate-friendly:
We develop agricultural practices with a smaller climate footprint and higher carbon capture rate, and we adapt cultivation methods to future climate conditions.

PROGRAMME OF ACTIVITIES 2025

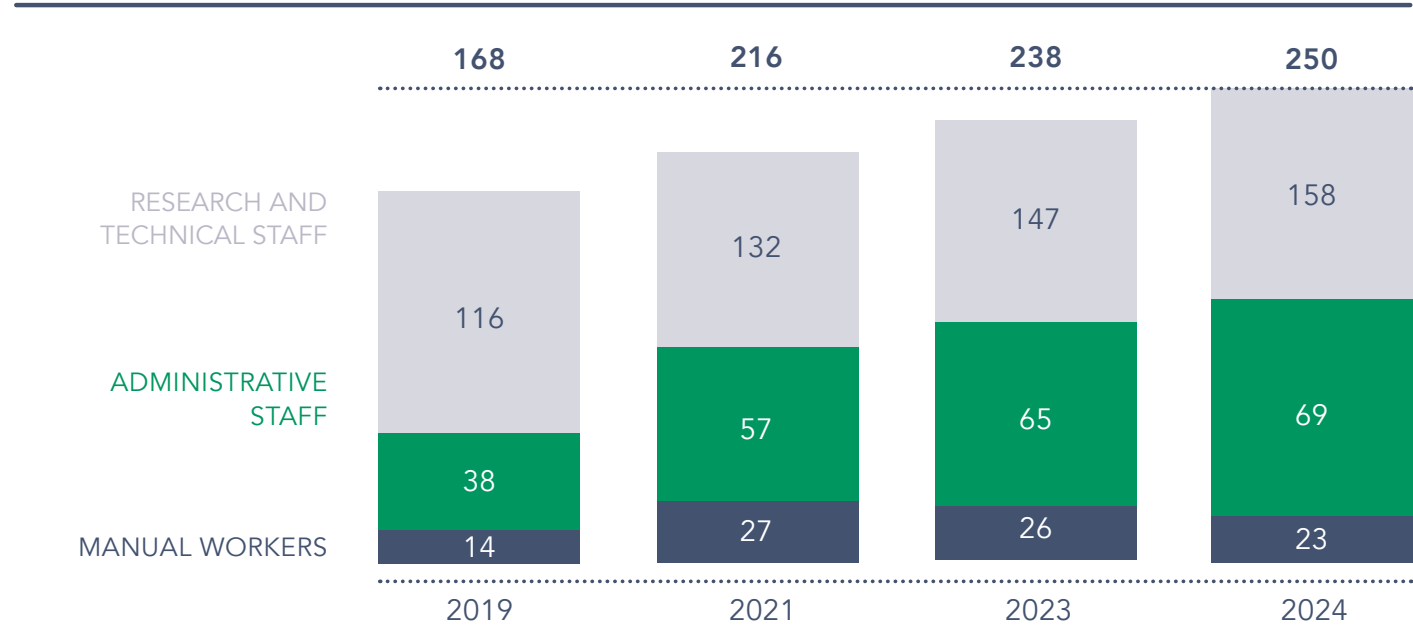
As an applied research centre, we focus in particular on making sure our **scientific activities are directed towards the needs and concrete challenges of farming practices and food**. In the 1980s, a unique participatory process was developed to involve representatives of practice into the definition of a programme of activities. For this purpose, working groups were established where consultants from the South Tyrol Advisory Service for Fruit Growing and Viticulture, together with experts from Laimburg Research Centre discussed the problems of the practice and translated the results of their research into firm recommendations. These groups were the forerunners to the **stakeholder Advisory Board Meetings today**. Every year, some 130 organisations representing agriculture and food processing in South Tyrol are invited to share their research priorities and to propose new projects for the Programme of Activities.



TEAM

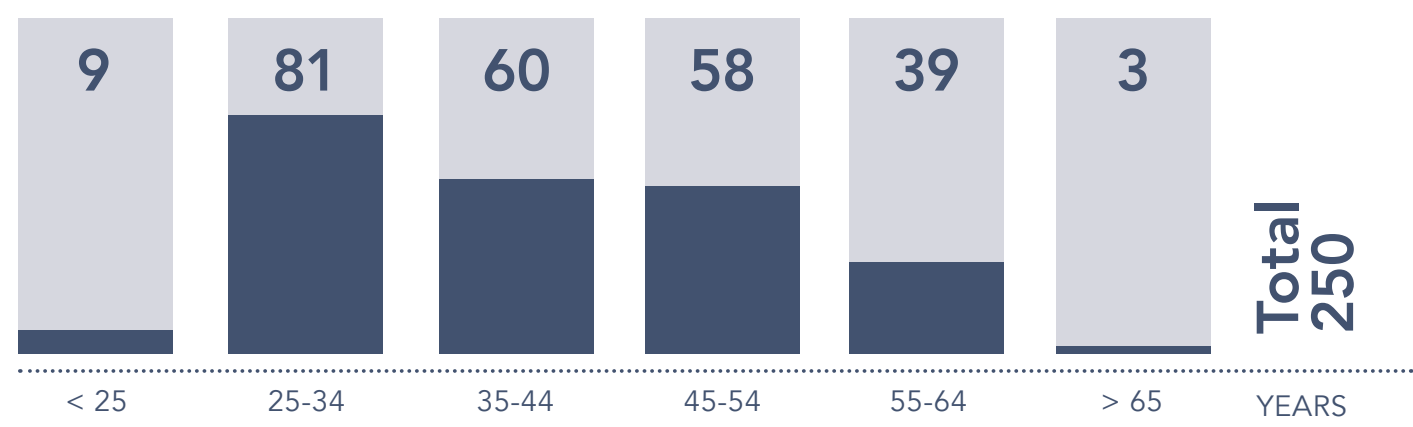
2024

TEAM COMPOSITION

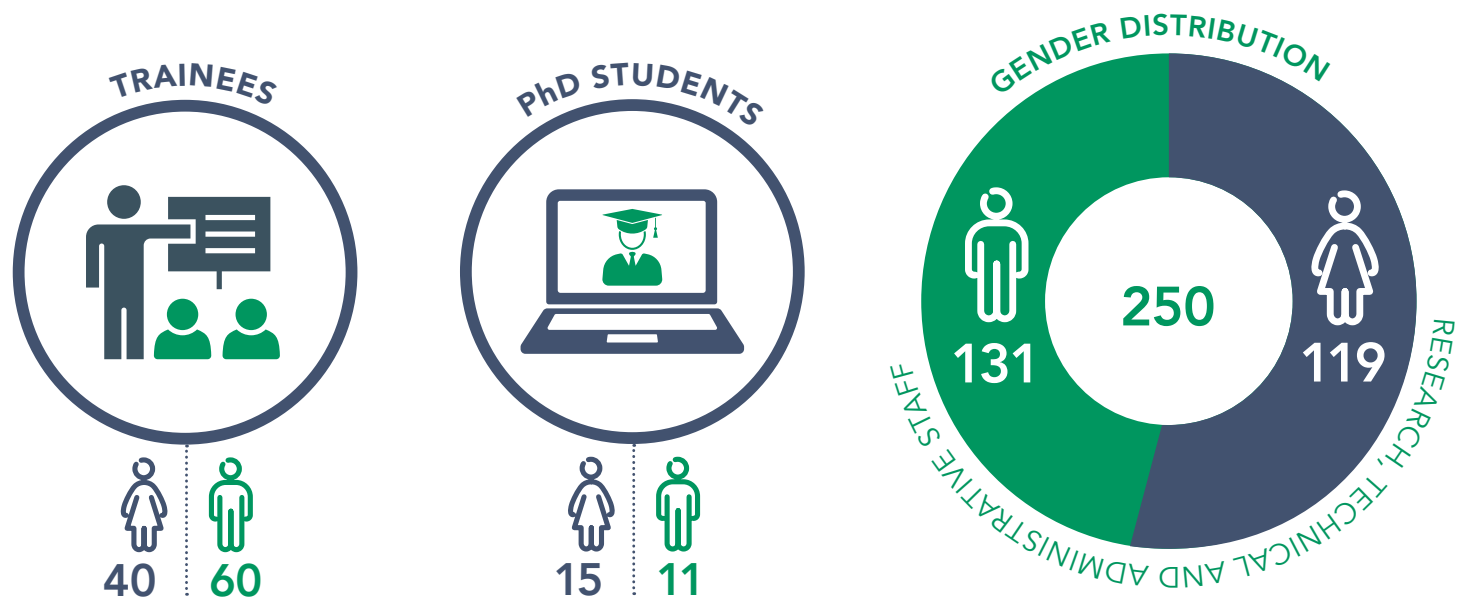
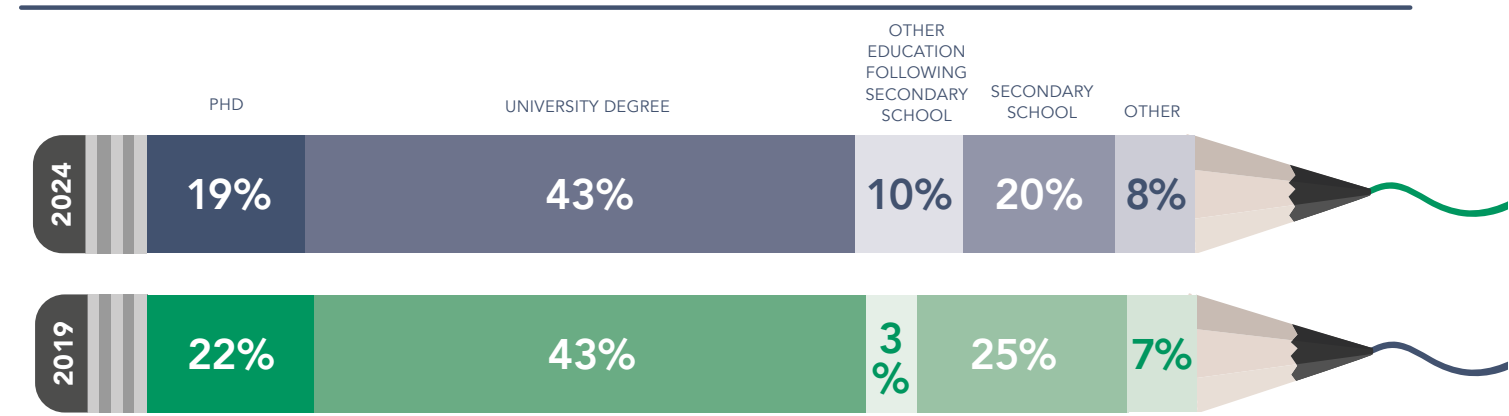


AGE DISTRIBUTION

(RESEARCH, TECHNICAL AND ADMINISTRATIVE STAFF)



EDUCATION



BUDGET

2024



1.777.400,00 €

INCOME FROM SALES AND
LABORATORY SERVICES

753.665,68 €

FROM ONGOING THIRD-PARTY
FUNDED PROJECTS

14.136.700,00 €

BASIC FUNDING BY THE AUTONOMOUS
PROVINCE OF BOLZANO – SOUTH TYROL

16.667.765,68 €

TOTAL FUNDING



29

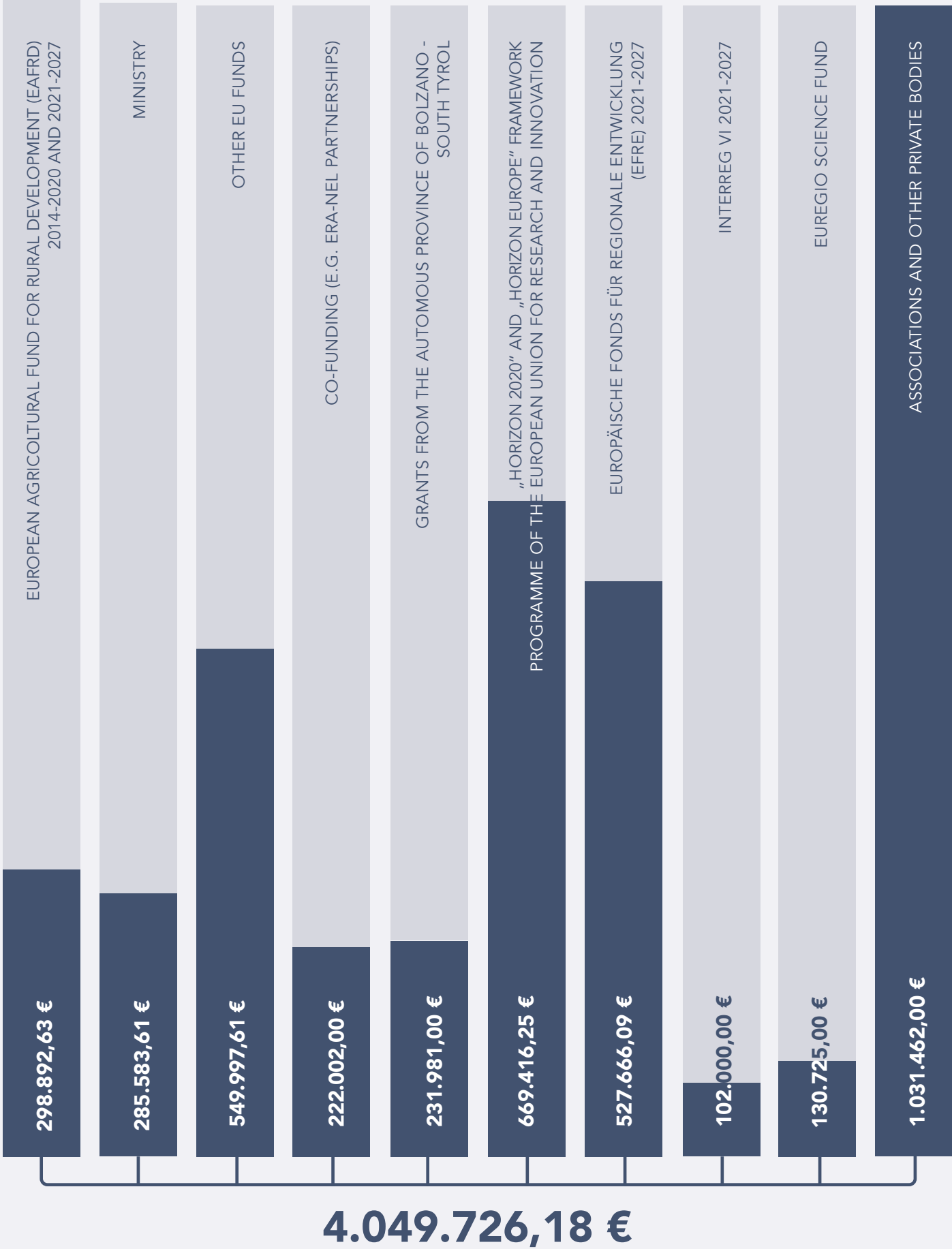
SUPERVISED THIRD-PARTY
FUNDED PROJECTS
YEAR 2024



33

PROJECT STAFF
WHO WORKED AT LAIMBURG
RESEARCH CENTRE AS PART OF
THIRD-PARTY FUNDED PROJECTS

THIRD-PARTY FUNDS



Total budget of all in th year 2024 active third-party funded projects.

THIRD-PARTY FUNDED PROJECTS

PINOTBLANC

Duration: November 2016 – November 2019

Total Budget: €722,600

Partners: Laimburg Research Centre (lead), Consorzio Vini Alto Adige, social wineries Termeno, Appiano, Terlano, Nalles-Magré, Gummererhof estate

Over the last decades, rising temperatures have significantly increased the ripening of Pinot blanc grapes in South Tyrol, with effects on its freshness, acidity and typical character. The PinotBlanc project has looked at the ways in which higher altitudes can combat these effects and help to maintain the quality of the wine. On eight plots located between 200 and 700 metres of altitude, researchers from Laimburg Research Centre have collected climate, agronomic and phenological data. The harvested grapes were vinified, and the experimental wines were tested from a sensory and chemical viewpoint. Tests showed that altitude significantly influences the aromatic composition of the wine. In particular, higher sites tend to better preserve acidity and develop and aromatic profile that is both finer and more complex. These results give us solid information for growers when it comes to choosing sites for vines and the best time for harvests, and they also help oenologists to make best use of the grapes, according to their area of origin.

APPLECARE

Duration: January 2017 – December 2020

Total Budget: €799,905

Partners: Laimburg Research Centre (lead), Medical University of Innsbruck, University of Innsbruck, South Tyrol Health Authority

Birch pollen allergies affect one in five people in Central Europe, a trend that is constantly increasing in South Tyrol. Starting with the close similarities between birch pollen and apple pollen, the AppleCare project developed an innovative immunotherapy protocol based on controlled consumption of apples. The treatment requires progressive consumption of three varieties of apple, suited to a gradual hyposensitisation to the least allergenic type to the most reactive one. The aim is to get the immune system used to the allergens and significantly reduce symptoms. The treatment has been tested on 52 allergic patients with encouraging results at the end of the treatment, not only for apples but other “risk” foods, such as cherries, carrots, peanuts and kiwis have resulted as being more tolerable. Moreover, during the pollen season, people have shown less serious symptoms and a lower need for medicines. The recommended treatment, even after the conclusion of the project is now available at specialist medical centres.

GRAZING4AGROECOLOGY

Duration: September 2022 – February 2026

Total Budget: €168,600

Partners: Grünlandzentrum Niedersachsen-Bremen (lead), Laimburg Research Centre, Bioland and a further 15 partners from 8 European countries.

Alpine meadows and grazing land are the main income source for many family-run farms in South Tyrol. However, throughout Europe, the practice of grazing land is seeing a strong decline, with negative consequences on the environment, biodiversity and the rural economy. To turn this trend around, the European project Grazing4Agroecology (G4AE) was launched, involving 18 partners from all over Europe. Within the project Laimburg Research Centre and Bioland are responsible for activities over the South Tyrol area. Collecting examples of good practices and testing innovative solutions, they promote the exchange of knowledge between agricultural businesses and livestock farms, consultants and researchers. The results will be circulated through technical meetings, training materials and digital channels, with the aim of helping companies to improve environmental performance and integrate grazing efficiently even in mountain conditions.

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme under grant agreement No 101059626

INSTINCT

Duration: January 2024 – December 2026

Total Budget: €928,688

Partners: Laimburg Research Centre (lead), Eurac Research, unibz, Gruppo FOS

Reducing the use of synthetic insecticides and developing new systems for the sustainable campaign against harmful insects are two key challenges for agriculture in the future. The INSTINCT project is part of this context with the aim of developing intelligent traps, able to monitor, in real time, the spread of two of the main plant-eating insects in fruit growing in South Tyrol: the apple parasite (*Cydia pomonella*) and the fruit fly that affects small fruit (*Drosophila suzukii*). Thanks to the use of specific attractive substances and the presence of sensors, traps are able to detect the presence of the insects in the field. The data collected are processed by an AI-based system, trained to recognise the target species with precision, and to distinguish any accidental capture of other insects. The information obtained in this way, added to weather parameters, make it possible to study the life cycle of leaf-eating insects in detail, together with their interaction with the environment, making it possible to plan containment interventions in a more targeted, effective manner.



WORK AT LAIMBURG RESEARCH CENTRE

Laimburg Research Centre is headquartered in Vadena/Pfatten, surrounded by green orchards and vineyards. High up, on the red porphyry rock above the main building, are the ruins of Laimburg, from which the Research Centre gets its name. Laimburg Research Centre also has other sites, including offices and laboratories in the NOI Techpark innovation district in Bolzano. In Oris, in Vinschgau/Val Venosta, researchers are dedicated to growing vegetables. Most of the research linked to mountain agriculture is performed in Dietersheim/Teodone, in Pustertal/Val Pusteria.



WHAT WE OFFER



An interdisciplinary, co-operative team: we offer our staff a dynamic, future-orientated working environment with a wide range of themes. Interdisciplinary working methods that offer open, collective exchange.



Excellent work-life balance: with flexible working hours, part-time contracts, working from home, and subsidies for childcare, we support our employees in achieving the best possible work-life balance.



Company canteen: we offer our staff balanced meals at a subsidised price in our internal canteen.



Parking and links to public transport: large car parks are available at Laimburg Research Centre and other sites. The Centre can be reached by train or bus, there is also a cycle track from Bolzano.



Training opportunities: we offer all employees a wealth of opportunities for training, internally and externally, including participation in scientific conferences.



Support on doctorate courses: we support our staff who are undergoing scientific training and education, such as doctorate programmes and undergraduate and master's degree dissertations. Every year, we finance a range of bursaries for doctorate courses, in conjunction with several universities.



Complementary insurance and healthcare fund: all staff can ask to receive supplementary payments into their complementary pension fund, and they are also signed up to the additional healthcare fund, SaniPro, which partly reimburses healthcare costs.



SCIENCE & CORPORATE AMBASSADOR ACADEMY

The Laimburg Science & Corporate Ambassador Academy is an annual course of institutional and scientific communication available to a selected number of people. The aim is to offer research and administration staff the opportunity to acquire visibility, transmit specialist skills efficiently, and receive support in the creation of a personal brand in line with the mission of Laimburg Research Centre.

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“The research conducted at Laimburg Research Centre is closely tied to practice, with the aim of making agriculture and food processing in South Tyrol increasingly more competitive and sustainable. I firmly believe that here at Laimburg Centre we do excellent and important work for South Tyrol every day. It is important that this commitment is made visible and understandable from the outside, too. However, communicating science in a clear fashion is not always easy, which is why I am taking part in the Science & Corporate Ambassador Academy.”



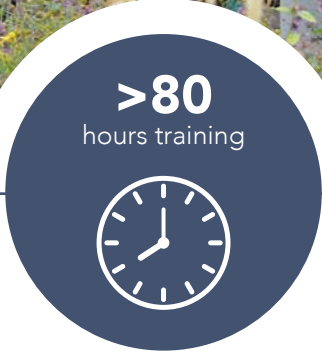
Magdalena Peterlin
collaborator with the working group Fruit Physiology

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“In the experimental fields and laboratories, researchers are working on concrete solutions to practical problems, but they are also performing basic research on specific areas. As a project manager at Laimburg Research Centre, I am particularly fascinated with the way in which new research projects are born: from the idea to the financing, and through to the optimum use of resources. To share my experiences and make it possible to see the importance of our work, I decided to become an Ambassador for Laimburg Research Centre”.

Philip Coassin
Head of working group Project Management

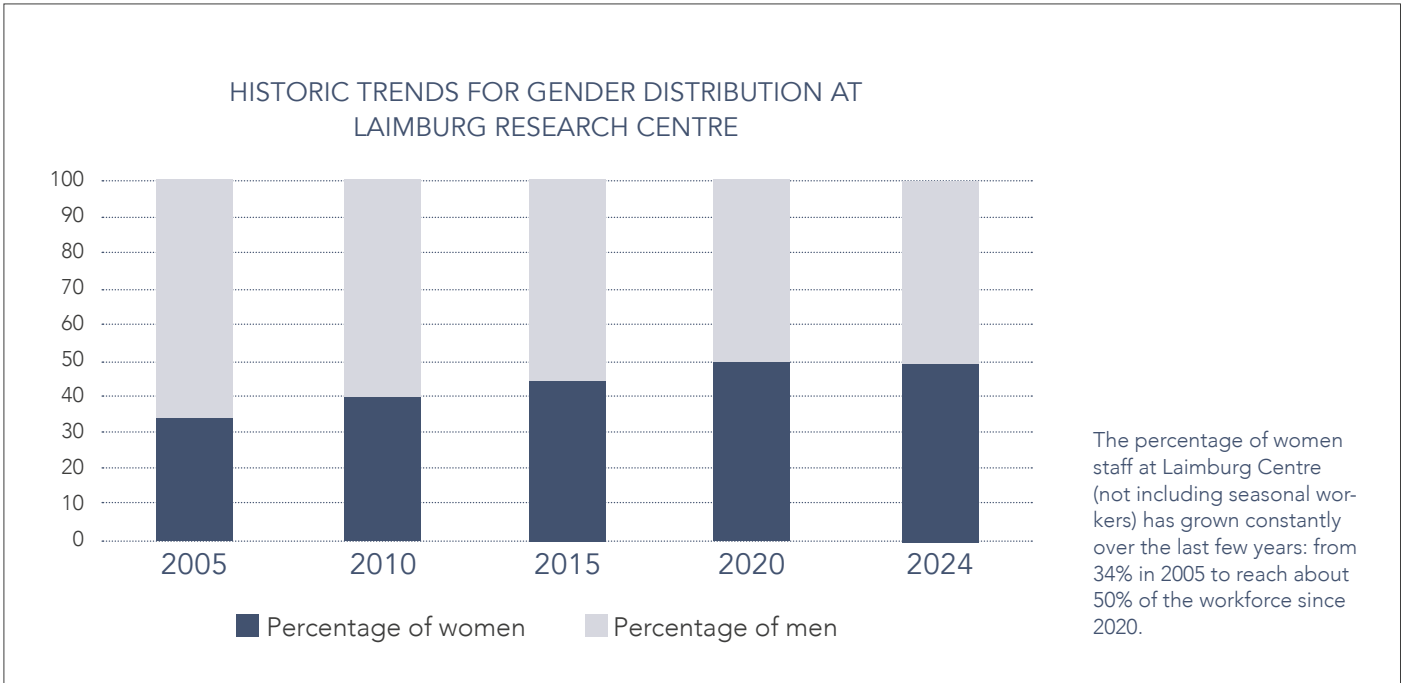


EQUAL OPPORTUNITIES AND CAPITALISING ON DIVERSITY

Laimburg Research Centre has over 50 years of activity in applied research. As well as our commitment to innovation, quality and scientific excellence, we also focus on social responsibility. The Centre is actively committed to gender equality and promotes equal opportunities and diversity.

GENDER EQUALITY PLAN

The Gender Equality Plan (GEP) is the key means used to promote gender equality at the Laimburg Research Centre; it was introduced in 2022 and is updated regularly. The GEP makes it possible to monitor the measures already in place to combat gender inequality and also aids in the identification of new areas of intervention. Moreover, holding a GEP is a requirement for accessing a range of different European research funding.



ETHICS COUNSELLOR

In 2023, the figure of the ethics advisor was created with the aim of strengthening a working culture based on mutual respect and freedom from discrimination. Since 1st January 2025, the advisor is available to all collaborators at the Centre, as an independent contact, bound by confidentiality. The advisor's role includes consulting and support in cases of harassment, discrimination, bullying or conflicts linked to the workplace.

Means such as the Gender Equality Plan, Code of conduct and the figure of the ethics advisor are brought into play allowing Laimburg Research Centre to aim to create fair, inclusive and respectful, to actively make the most of diversity. This approach represents an essential prerequisite for scientific research that is solid, innovative, and forward looking.



RESEARCH AND INTERNATIONALISATION NETWORK

RESEARCH NETWORK

Since the early 1980s, Laimburg Research Centre has been working in close contact with other research institutes in the agricultural sector. Initially, these contacts mainly focused on Italian- and German-speaking areas. From the 1990s, thanks to the Genetic Improvement Programme for the Apple, launched in 1997, the exchange of information and expertise has been extended to Europe and the rest of the world. Today, the Laimburg Research Centre is part of a global network and partners numerous European research projects.

For many years, the Centre has been a member of the „European Fruit Research Institutes Network“ (**EUFRIN**), which numbers over 35 European research institutes.

Bilateral framework agreements and **cooperation agreements** signed by Laimburg Centre are a testament to the interest in an increasingly intensive collaboration at international level.

In 2024, the **Alliance for Fruit, Wine and Vegetable Growing** was founded. This Alliance includes eleven research institutes from German-speaking countries, and it pursues the aim of boosting collaboration in scientific research and training in the viticulture, and fruit and vegetable growing sectors.

Over the last few years, **co-financing doctorate bursaries** at partner universities in Italy and internationally has become an efficient means of promoting innovative cooperation projects.

INTERNATIONALISATION STRATEGIES

In 2020, the Laimburg Research Centre developed an overall internationalisation strategy for the first time. This pursues three main objectives:

- **Increased participation in European Union financing programmes:** specifically, the aim is to boost participation in projects with direct EU financing, such as those in the Horizon Europe programme.

- **Raised international profile:** Laimburg Research Centre needs to position itself, on a European level, as an expert partner in research applied to agriculture, also through communication of best practices and of its own distinctive characteristics, as well as by playing an active part in international networks.

- **Research in line with the times:** European research trends must be recognised in good time, and relevant knowledge needs to be integrated in a targeted manner into research for South Tyrolean agriculture.

Different measures have been implemented to achieve these targets. Since 2019, Laimburg Research Centre has been **represented in Brussels** by Francesca Ricardi. This representation gives the Centre direct access to information on developments in European research, as well as a faster, more effective reaction to new financing opportunities.

Moreover, Laimburg Research Centre has appointed over a dozen **“International Experts”**. These

researchers are tasked with maintaining international contacts and participating actively in European research networks and projects.

The Implementation of the internationalisation strategies is coordinated by the **“Science Support, Strategy & Communication”** sector. The working group Project Service maintains constant contact with the representative in Brussels and has the task of informing researchers about European research strategies and to support them in writing up their project proposals. The working group Research Management promotes expansion of the research network, launching new collaborations and supporting the co-financing doctorate bursaries.

PhD students from Laimburg Research Centre and Humboldt University of Berlin at a joint workshop



The members of the Alliance for Fruit, Wine and Vegetable Growing



SCIENTIFIC RESEARCH MEETS BUSINESSES AND START-UPS

Laimburg Research Centre is the main research institution for agriculture and food processing in South Tyrol. As well as its in-house projects, Laimburg Centre develops collaborations with private businesses, supporting their research and development activities.

For this purpose, it makes **third party research services** available, whether standardised or customised ("Consulting", "Small", "Medium", "Large").

The available offers include **Open Lab**, which allows farms and start-ups in South Tyrol to use the laboratories and equipment of the Centre, independently.

Laimburg Centre also makes its consulting and research services available at a low cost, provided that businesses share the intellectual property rights of their projects and the results they obtain.

To support the costs of these collaborations, companies and start-ups in South Tyrol can ask the NOI Techpark for a Lab-Bonus, financing that covers up to 65% of the costs. Other financing opportunities for collaboration between business and research institutes include pro-

vincial finance grants for innovation (Legge provinciale 14/2006), and projects supported by the FESR, Horizon Europe, the European Innovation Council (EIC) and other national and European finance programmes.

The **NOI Techpark** is a technology park in Bolzano, where the innovative capabilities and scientific competitiveness of South Tyrol are strengthened by building a network of scientific research and business. In this scenario, Laimburg Research Centre, together with the Free University of Bolzano, coordinates the **Food & Health technology sector**.

Laimburg Research Centre partners NOI Techpark in 14 areas of research. The majority of the so-called "NOI-Labs" are located at the Centre's main headquarters in Vadena. Five laboratories can be found at the NOI Techpark in Bolzano. The Laboratory of Flavours and Metabolites performs testing on food quality and plant health. Together with the Free University of Bolzano,, Laimburg Research Centre manages the Laboratory of NMR Spectroscopy, where the origin of agricultural products is checked and certified. NOI Techpark is also



Laboratory of Flavours and Metabolites

home to the laboratory of the working group Fruit and Vegetable Processing, where the DIC pilot system for the production of innovative dried foods is also located. The laboratory of the working group Meat Products is dedicated to the development and optimisation of traditional South Tyrolean specialities made with meat and cured meats. The Laboratory of Residues and Contaminants performs testing for the detection of residues and contaminants.



Laboratory of the working group Fruit and Vegetable Processing



Laboratory of NMR Spectroscopy



Working group Meat Products

THE LAIMBURG RESEARCH CENTRE NOI-LABS

- Laboratory of the working group Food Microbiology
- Laboratory for Wine and Beverage Analysis
- Laboratory of Residues and Contaminants
- Laboratory of Flavours and Metabolites
- Laboratory of NMR Spectroscopy
- Laboratory for Soil and Plant Analysis
- Laboratory for Fodder Analysis
- Laboratory of the working group Molecular Biology
- Storage and Postharvest Biology
- Fruit and Vegetable Processing
- Fermentation and Distillation
- Sensory Science
- Meat Products
- Oenology research area
- LIDO - Laimburg Integrated Digital Orchard



Laboratory of Residues and Contaminants

RESEARCH SUPPORT AND SCIENCE COMMUNICATION

The Science Support, Strategy & Communication sector of Laimburg Research Centre accompanies research staff during a **project's whole lifecycle**, from definition of the idea through to its realisation, management and communication.

RESEARCH MANAGEMENT

Supports the development of **long-term strategies** and the **expansion of the scientific network** by creating strategic partnerships at Laimburg Research Centre. It also accompanies the work to draw up the annual research programme **in conjunction with stakeholders** and organises Advisory Board Meetings and the meetings of the Scientific Advisory Board. It also promotes young researchers through **doctorate bursaries**, financed jointly with several universities.

PROJECT SERVICE

Offers consultancy and support during the **project preparation stage**, helping research staff to **interpret the requirements of calls for research proposals** and aligning project content with the guiding strategies of financing programmes. Prepares the **necessary documents**, formulates a detailed budget and submits the application. In case of approval, it prepares the **financing agreement**.

PROJECT MANAGEMENT

Coordinates and administers projects financed by third parties, from the kick-off meeting through to the conclusion. Together with the project manager/s, **it plans and monitors activities** and takes care of accounting, guaranteeing **transparency** for fund management. The working group **answers questions** from authorities and cooperation partners on project progress.

SCIENCE COMMUNICATION

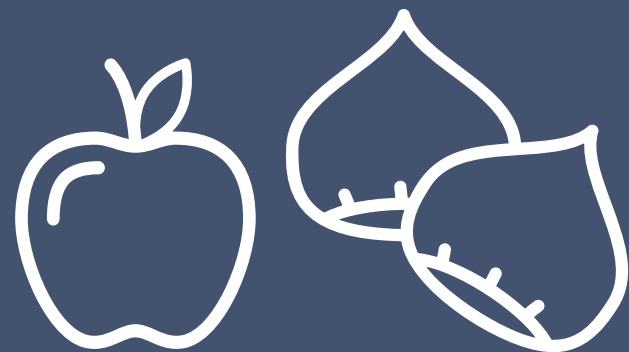
Manages the **dissemination of research and experimentation activities** on a range of traditional and digital channels. Promotes the **exchange of knowledge** with experts in the field and with the community, working alongside researchers to **prepare contributions** aimed at transmitting new knowledge to practices. Curates the institutional image of Laimburg Research Centre and staff training on the subject of science communication.

LIBRARY

Administers and makes the very latest **scientific literature** in agriculture and food technology spheres available to research staff as well as taking care of **sourcing texts not present in the catalogue**. The library also curates the **Laimburg Journal**, the open-access online scientific review where researchers from Laimburg Research Centre can **publish the results of their studies and experiments**.



INSTITUTE FOR FRUIT GROWING AND VITICULTURE



Rooted in local tradition and with connections spanning the whole world, the Institute for Fruit Growing and Viticulture aims to **improve the cultivation of apples, stone fruits, small fruits, nuts and grapes, as well as the transformation of grapes into wine**. The main aim is to produce fruit and grapes of the highest quality in a profitable and also eco-friendly way. To do this, every year the institute carries out more than one hundred research projects and activities, working in close contact with local businesses, commercial organisations and other research bodies, to circulate results and improve agricultural practices.

The climate crisis, the urgent need for **greater sustainability** but also digitalisation and technological processes mean many challenges for applied research in fruit growing and viticulture in the future. To respond to these needs, the Institute for Fruit Growing and Viticulture is engaged in developing and implementing innovations in the areas of **sensor technology and robotics**, but also in the realisation of **genetic improvement programmes and varietal tests**, which will allow the development of hardier, stronger and better-quality fruit and grape varieties.

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“We are committed to keeping our eyes on the future, working with renowned universities and research institutes to transform today’s ideas into tomorrow’s success.”

Walter Guerra,
Head of the Institute for Fruit Growing and Viticulture





NEW OBSERVATIONS ON LIMITATION OF THE DAMAGE CAUSED BY *GNOMONIOPSIS CASTANEA*

Over the last few years, not only in South Tyrol, the fungus *Gnomoniopsis castaneae* has been causing significant damage to the cultivation of chestnuts. Although the biology of this fungus has not been fully studied as yet, tests performed over the last few years have indicated a route for damage limitation.

CHESTNUTS ALREADY CONTAMINATED AT THE TIME OF HARVEST

It is presumed that the fungus is already present in its latent form in fruits at the time of harvesting, even if visible symptoms are lacking. Studies have shown that over the last few years, the percentage of infected chestnuts is between 75% and 100% of the total amount. The metabolism of the fungal pathogen follows a trend depending on temperature: the higher the temperature, the faster it develops. Below 4°C it slows down, and it stops at 0°C.

ENCOURAGING RESULTS

Since in a crop such as chestnuts it is not always possible or permitted to adopt fungal control strategies

in the field, the damage can be reduced to a minimum only by using the right preservation technique. This is why, since 2020, Laimburg Research Centre has been conducting different preservation tests with excellent recommendations for correct management post-harvesting:

- Chestnuts that remain on the ground reach - and in some cases, exceed - a critical temperature of 30°C in the autumn; therefore, harvesting needs to take place on a daily basis.
- The use of nets or aspirators allows for a quicker harvest without leaving the inoculum on the ground for the following season. Rotten fruit need to be composted away from the chestnut grove.
- Sorting in water, with removal of floating fruit to eliminate damaged pieces is possible but has no effect on limiting the damage caused by *Gnomoniopsis*.



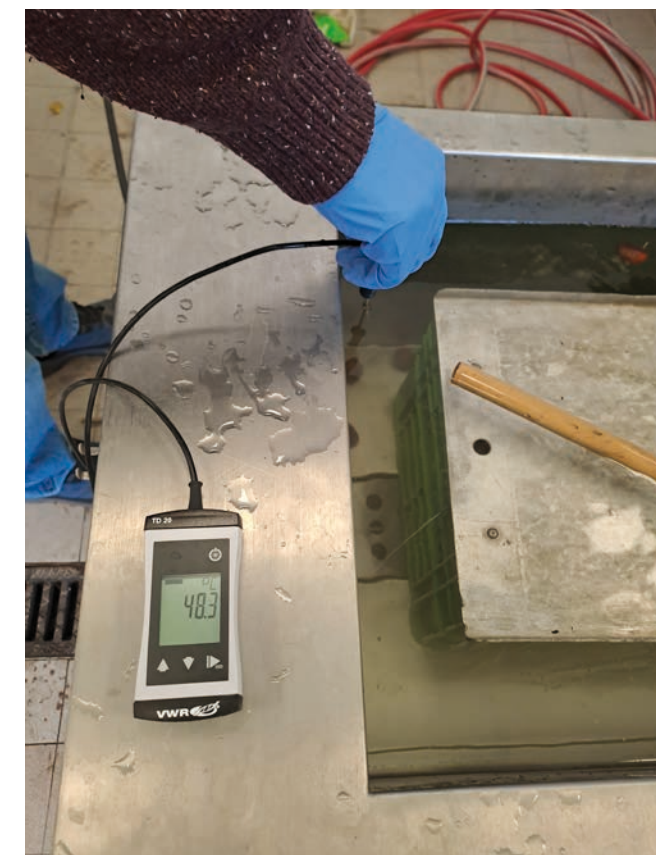
A quick, efficient harvest without leaving any inoculum in the field is possible using aspirators

- The so-called novena (i.e., the nine-day water bath) does not reduce infection and in some cases, it has even favoured the presence of rot.
- Drying after harvesting and sorting must never be carried out in sunlight, but rather in shaded, ventilated areas (sheds, corridors, etc.).

If necessary, the chestnuts can be placed in hot water. To preserve the proteins contained in the chestnuts, the water temperature must never exceed 50°C. 25 minutes are enough for medium-sized chestnuts, after which time, the chestnuts must be immediately placed in cold water for at least 10 minutes. This treatment using hot water is very effective, but it requires expensive equipment.

PROMPT CHILLING CAN PROTECT CHESTNUTS

The chestnuts must be chilled immediately on the day of harvesting. The optimum storage temperature is between 0°C and 4°C (ideally close to 0°C). Excessively high relative humidity in the cooling cell may lead to



The water temperature needs to be monitored at all times during the "hot bath"

the development of surface mould, while if too low, it causes the chestnuts to dry out. Storage in a normal atmosphere is currently the best method. Traditional storage in basements or cellars is not recommended since this exceeds the critical temperature (4°C).

INSTRUCTIONS FOR SUCCESSFUL SELLING

It is important not to interrupt the cold chain, even after sale. The chestnuts therefore need to be stored in special cooled compartments in the sales point. Even the end consumer needs to be told to store chestnuts in the fridge or freezer.



Giacomo Gatti, Irene Perli, Massimo Zago
Working group Berries, Stonefruits and Nuts



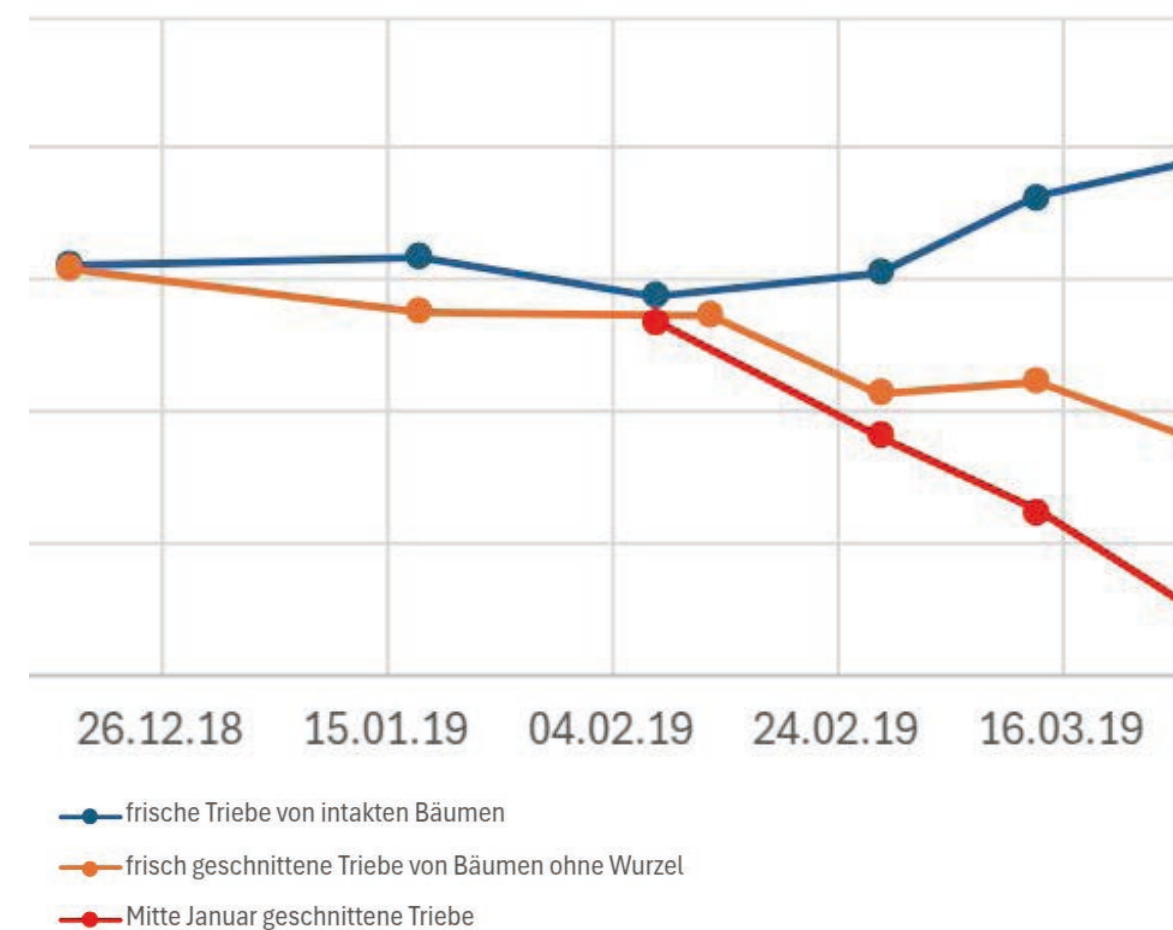
THE APPLE TREE WATER BALANCE IN WINTER

During the summer months, apple trees absorb large amount of water from the soil for continuous evaporation through the leaves. But what happens in winter? Can the roots absorb the water that evaporates from the tree, once the leaves have fallen? Answers to this question have been provided by a joint project between Laimburg Research Centre and the Free University of Bolzano.

DOES WATER EVAPORATE FROM APPLE TREES IN WINTER?

It has been demonstrated that woody plants release water vapour into the environment not only through their leaves, but also through their bark - albeit to a much lesser extent. Nonetheless, there is very little knowledge about the amount of water lost to evaporation in winter and on the role of climate conditions. To clarify these

aspects, an incision (just above the grafting point) was made in the trunks of several apple trees from a working installation. The cut was sealed with nylon film. The apple trees were then placed in their original position and tied to their support structure. Over the following months, year-old branches were taken from cut trees and from intact trees to identify their water content in the laboratory. Moreover, at the start of the winter, some other branches were also cut, leaving them on



their respective trees for later sampling.

This experiment showed that the water content of one-year branches is rapidly reduced in winter if the branch is cut from the tree. It also showed that the evaporation rate is strongly influenced by weather conditions, significantly increasing along with the temperature, from February onwards.

OVER THE WINTER, APPLE TREES ABSORB UP TO 1.5 LITRES OF WATER FROM THE SOIL

To prevent branches from drying out, trees compensate for evaporation loss by constantly adding to water from the reserves in the trunk. However, stored water is not enough to compensate for water evaporated over the winter. On the apple trees with cut trunk, the water content dropped significantly towards the end of winter, both in branches and in the other parts of the

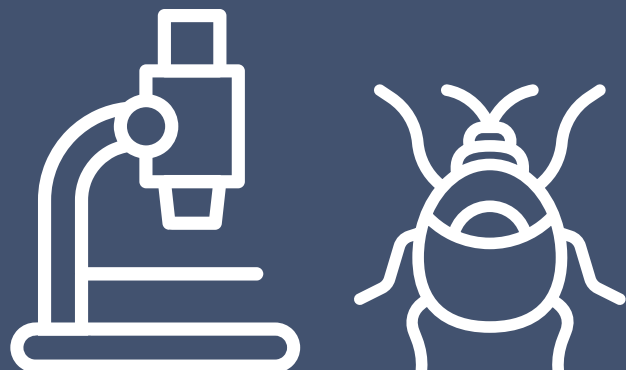
tree, while on intact trees, the water content stayed constant thanks to absorption through the roots. These tests have also made it possible to estimate the water absorbed by the roots during winter dormancy: it is approximately 1-1.5 litres per apple tree, a relatively small amount but decisively important for the survival of trees in winter.



Martin Thalheimer

Working group Soil, Fertilisation and Irrigation

INSTITUTE FOR PLANT HEALTH



Protection and health of crops are right at the centre of the scientific activities of the Institute for Plant Health. Research focuses on **the recognition and diagnosis of harmful organisms, the study of their biology and the systematic development of methods for pest control.**

The management of new toxic organisms and diseases which, aided by climate change, are spreading through South Tyrol, is a challenge for local agriculture. As well as this, it is essential to continue to study and monitor the diseases we know already, to guarantee effective crop protection. Increasingly stringent pesticide laws mean the task is twofold: on one hand, **constant perfecting of existing application techniques;** on

the other, the research and **assessment of alternative substances and sustainable, innovative strategies,** such as the use of microorganisms for organic parasite control and targeted use of semiochemical compounds to influence insect behaviour.

Since 2020 the Institute has also been involved in **horticulture,** providing consulting services to public administration and private clients, as well as performing tests of different kinds, from balcony experiments to roof gardens. The purpose is to **exploit the aesthetic, ecological, social, cultural and urban development role of green areas, and promote sustainable use.**

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“Constant dialogue with agricultural business in the area is priceless. With their input, their skills and their support, we can find new strategies for healthier and safer agriculture.”

Sabine Öttl,
Head of the Institute for Plant Health





THE FLOWER MEADOWS PROJECT

As part of the Flower Meadows Project between February 2024 and January 2027, participants in the initiative will see meadows with high ecological value being planted in municipalities in South Tyrol. These will use native plant species and seeds from local sources to preserve the genetic diversity of South Tyrolean flora. The aim is to boost the creation of habitats for pollinating insects and to promote biodiversity in urban areas.

The goal of the project is to boost skills at municipal level in the field of sustainable maintenance of green spaces and municipal sites, as well as to raise awareness of the value of biodiversity among local populations.

The project, financed by the Fondazione Cassa di Risparmio di Bolzano, can count among its participants: the Federazione Ambientalisti Alto Adige (project leader and in charge of public relations), the Associazione Sortengarten Südtirol, Local Flora Seed for the supply of seeds, Eurac Research, and the Laimburg Research Centre, which provide technical support to the municipal authorities.

MUNICIPALITIES, PROJECT AREAS, AND TRAINING COURSES

At the end of December 2024, there were 37 Municipalities in South Tyrol involved in the project, with four mandatory training meetings specifically for municipal staff:

- soil preparation
- seeding
- maintenance at startup
- maintenance when up and running.

Soil preparation and seeding courses have already been held in 15 municipalities. At least two employees per municipal authority took part in the courses of which at least one person responsible for municipal maintenance or one gardener. Courses have also been attended by interested citizens.

12,300 m² MEADOW SEEDED

The municipalities that have already completed the first two training courses now have a total of approximately 12,300 m² of meadow. Specific focus has gone into soil preparation, since a good seed bed and a lack of weeds are essential for effective seeding.

The majority of the areas in the plan were seeded in late summer and autumn 2024. With the exception of three areas, germination and coverage of the ground have been satisfactory and no significant growth of weeds was found during the growing season. The three areas where weeds were found were seeded between May and June, and in this case, strong competition was observed between weeds and the meadow plants sown. Early mowing was performed to stem the growth of weeds and guarantee better direct sunlight for the seed species.

PROSPECTS

Flower meadows seeded with native varieties promote biodiversity. The training courses have met with a positive response from the municipalities taking part, which are in turn raising awareness among local citizens. Those who are interested can find out more about native flower meadows on the project's website (www.blumenwiesen-pratifikoriti.bz.it).

In 2025, a practical handbook will be designed and created for setting out and managing flower meadows. Training will continue with the Municipalities involved in the project and the seeded areas will be continuously monitored.



Centaurea jacea



Dietmar Battisti, Sara Nicli, Kathrin Plunger
Working group Landscaping



ASSESSING THE EFFECTIVENESS OF A BIOFILTER FOR WASHING WATER TREATMENT IN ORCHARDS AND VINEYARDS

Contamination of surface and underground water from plant protection products is one of the main environmental problems linked to agriculture. Waste water from washing the machines used to apply treatments is a significant source of pollution. In Italy, very few farms have systems for the correct disposal of this water, and figures are lacking for the effectiveness of these solutions in a local context.

THE IMPORTANCE OF EFFECTIVE WASHING WATER TREATMENT

In 2017 the Laimburg Research Centre launched an experiment to test a biofilter based on the microbial biodegradation of the active substances present in wastewater. The experiment activities expect above-average active substance concentrations, since they include both washing water from sprays as well as residues from experimental treatments.

BIOFILTER DESIGN AND CHARACTERISTICS

Two prototype biofilters have been created and tested. The first was assembled in 2017, using containers for harvesting grapes. A second prototype was then constructed in 2019, using the more robust IBC (Intermediate Bulk Containers). Both systems were designed to treat 6,000-8,000 litres of contaminated water per year. The operating cycle takes seven months, from April to October, with a daily capacity of 30-40 litres. The biofilter substrate, consisting of straw, peat and soil



First prototype biofilter, built in 2017

hosts the microbial biomass that is responsible for the deterioration of the active substances. The containers are linked together with drainage pipes and thanks to gravity, the treated waters can pass through them.

AN EFFICIENT, SUSTAINABLE AND COST-EFFECTIVE SOLUTION

Results from water tests have shown a significant reduction in the concentration of plant protection products:

- Prototype 1: 99.96% reduction.
- Prototype 2: 99.06% reduction.

Tests of the substrate have shown that higher concentrations of active ingredients are found in the first container in the stack, including a build-up of copper that is the main critical aspect. The lower containers show a gradual reduction in active elements.

The biofilter has shown itself to be an efficient, sustainable and cost-effective solution to reduce contamination in washing water. The research project on long-term effectiveness is currently ongoing. Moreover, a pilot physical and chemical system to purify larger volumes of wastewater and boost the collective use of this structure is currently undergoing testing.



Second prototype biofilter, built in 2019



Physical-chemical wastewater treatment system



Christian Roschatt, Urban Spitaler
Working group Evaluation of Plant Protection Products



Martina Bonadio
Working group Sustainable Cultivation Systems

INSTITUTE FOR AGRICULTURAL CHEMISTRY AND FOOD QUALITY



The Institute for Agricultural Chemistry and Food Quality develops innovative test methods and vanguard technologies for the agricultural supply chain. Every year over **25,000 accredited tests on wine, soil, fodder, residues and plant organs in support of regional product quality, food safety, and varietal authenticity certification**. The tests are also performed as services for third parties.

As well as testing activities, the Institute performs research programmes in innovative areas of **molecular biology and microbiology**. In the field of genetic improvements, it works with international partners to adapt existing technologies to local crops, with the aim of developing increasingly disease-resistant apple and grape varieties. The Institute is also strengthening its

expertise in the field of omic technologies. The **MOC - MultiOmics Centre for Food and Health**, financed by the European Union, with the FESR programme, integrates genomic, proteomic, and metabolomic data. The centre, born of collaboration with Eurac Research, offers new opportunities for testing foods, plants and microorganisms with applications in the area of quality, crop protection and health.

Other projects are also moving in this direction, looking at the **preventive and treatment potential of regional products**, for example, in the treatment of allergies or neurodegenerative diseases. In this way, the Institute contributes to an integrated, sustainable vision of agri-food research.

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“Through accredited testing and cutting-edge studies, we connect scientific research in the agrifood sector to socially important themes for a healthier, more resilient future.”

Thomas Letschka,
Head of the Institute for Agricultural Chemistry
and Food Quality





WHEN BACTERIA ATTACK PLANTS: MOVING TOWARDS NEW KNOWLEDGE THANKS TO INTERNATIONAL SCIENTIFIC COOPERATION

Plant diseases caused by bacterial pathogens are a threat to world agriculture. Bacterial infections such as phytoplasmosis also affect apple growing and viticulture in South Tyrol. But how do these micro-organisms actually interact with the host plant, and how do they contribute to the development of the disease? What are the strategies that can be developed to combat them? Collaboration with international research institutes and interdisciplinary research teams makes it possible to exchange knowledge, test innovative approaches, and find sustainable solutions.

NEW DISCOVERIES ON PHYTOPLASMOSIS

Collaborations with local and international partners have notably advanced research, in particular, concerning the study of the molecular mechanisms at the root of the development of "apple proliferation", an infectious disease caused by phytoplasmas. In 2019 the Laimburg Research Centre working group

Functional Genomics described a specific molecule of the pathogen for the first time. At the time of publishing the initial results, it was not possible to identify the role of this molecule in the development of the disease with any precision. Nonetheless, current data suggest that the bacterial protein suppresses the plant's immune response and therefore, allows the pathogen to spread more easily. Thanks to the close collaboration with research teams at the University of



Identification of symptoms

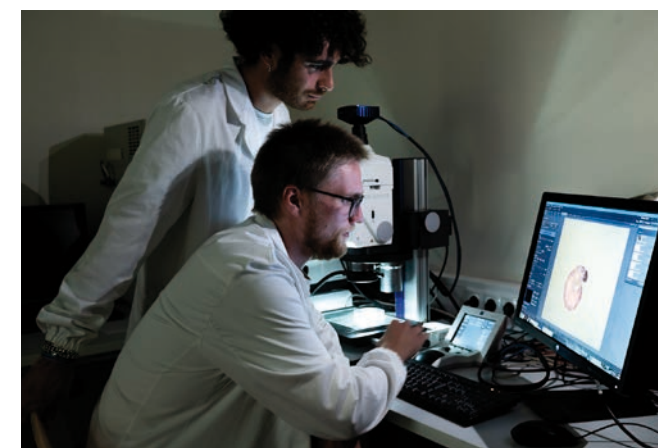
Padua and to important experiments performed at the Ruhr University Bochum, work is ongoing to obtain further important information on the function of the bacterial molecule.

CONCLUSIONS AND PROSPECTS

Exchanges with international research partners has made it possible to acquire more detailed knowledge of phytoplasmosis. As well as acquiring scientific knowledge, academic collaborations are also an educational opportunity for young scholars in South Tyrol. The scientific work performed at Laimburg Research Centre is regularly a basis for university theses. In this way, on one hand, scientific quality is fostered through independent assessment by academic institutions and on the other, young researchers are given the chance to know about the work of other research institutes. Modern methods in molecular biology and interdisciplinary approaches are a source of very important opportunities for cutting-edge research.



Spectral analysis for the identification of apple proliferation



Identification of insects using microscopy



Katrin Janik
Working group Functional Genomics



VARROA TREATMENT RESIDUES IN BEESWAX

Honeycomb is a natural product made by bees (*Apis mellifera*) to store honey, pollen and propolis. The whole structure, i.e., the wax cells and the honey they contain, is edible. In the last few years, the consumption of honey together with the honeycomb has become more and more widespread, making it necessary to check for the possible presence of pest control products, in the wax too.

To protect bee colonies against the *Varroa destructor* parasite, the Istituto Zooprofilattico delle Venezie (IZSVe) recommends the use of a preventive treatment at least twice a year. Permitted active ingredients include oxalic acid, amitraz, formic acid, timolol, eucalyptol, levomenthol, camphor, flumethrin, and tau-fluvalinate. Nevertheless, only amitraz and tau-fluvalinate are recognised and regulated by the EU as specific active ingredients for this particular use. For this reason, the Laboratory of Residues and Contaminants has developed an analytical method to identify pesticides in beeswax, with specific attention to varroacids.



Bee larva infested with the *Varroa destructor* parasite

A SPECIFICALLY DEVELOPED TESTING METHOD

Beeswax consists of a mix of natural substances, including fat, alcohols and oils similar to paraffin. These elements bind together in particular structures that make beeswax very different from other foods such as fruit or vegetables. Therefore, a method of testing has been modified and optimised in the laboratory specifically for this purpose. For a new method to be considered valid and reproducible, it is necessary to perform stringent quality controls to guarantee its accuracy. Therefore, a known quantity of pesticide was added to an uncontaminated sample and the results for different concentrations of these two active ingredients confirmed the reliability of the method, making it possible to use it on real samples.

RESULTS OF TESTS ON AMITRAZ AND TAU-FLUVALINATE

Analytical data have shown that amitraz rapidly degrades in wax, so that only its metabolites can be detected, while tau-fluvalinate shows a greater persistence. The beeswax testing method has shown itself to be solid and robust, both for the active ingredients studied and for a wide range of other substances. This technique is an effective control tool that can support beekeepers in the protection of their colonies and in guaranteeing high quality standards for their products.



Andrea Lentola, Andrea Rivelli
Laboratory of Residues and Contaminants

INSTITUTE FOR MOUNTAIN AGRICULTURE AND FOOD TECHNOLOGY



In an area such as the Alps, where agriculture is not just about production, but also taking care of the countryside and of cultural identity, the Institute for Mountain Agriculture and Food Technology works in close contact with farms and local producers to meet their requirements with tailored solutions, able to **improve the quality, efficiency and sustainability of agriculture in an Alpine environment, conservation and post-harvesting, and for the production of processed foods.**

In mountain agriculture, extreme events such as droughts and thermal movements put serious pressure on crops. This is why varietal tests are performed to

identify the most suitable varieties to grow in alpine environments, along with studies of precision cultivation systems. Other challenges concern cohabitation with wildlife and the need to improve the ways in which farming is perceived by society.

In the field of food technology, the institute is committed to **improving production processes** respecting local traditions, in close collaboration with agrifood businesses. **Intelligent use of resources** is promoted, **making the most of by-products and biomaterials** to reduce waste and develop production processes and prototypes for sustainable foods.

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“Our aim is to support the whole supply chain, from growing in the field through to the processing of typical foods in the area, making available essential skills based on solid scientific data and promoting models from the circular economy.”

Angelo Zanella,
Head of the Institute for Mountain Agriculture and Food Technology





HOW TO EXTEND THE USE OF TEMPORARY GRASS

Temporary grass fields with a growing duration of 2-3 years are normally grown on arable land and rotated with maize silage. The fodder yield and the amount of crude protein produced are important factors when deciding how many years to maintain these crops; when yield and fodder quality drop significantly, it is necessary to plough the field and cultivate maize silage, for example.

FIELD TESTS OF DIFFERENT SEED MIXES

At the experimental farm, "Mair am Hof" in Teodone/Dietenheim seed mixes already in use on local farms are tested - along with new mixes - to assess their agronomic suitability and adaptability to climate conditions in South Tyrol. From 2019 to 2022, three mixes were trialled in a field test (**KG = mix of red clover and grasses; KGR = mix of red clover and grasses for difficult situations, WW = mix of clover and grasses for temporary grass fields**), which differ, among other things, due to the red clover percentage (*Trifolium pratense*) (27.4%; 13.3%; 5%). Moreover, the three mixes were grown with three different varieties of red clover. The test examined the effect of one prolonged cultivation (3 vs. 2 years) on the fodder yield and the amount of crude protein harvested per hectare for the purpose of providing recommendations as to the composition and duration of use advised for the mixes.

DIFFERENCES FOUND IN THE DURATION OF PRODUCTIVITY

The lower persistence of red clover meant a slight reduction in fodder yield for the mix with the highest percentage of red clover (KG) in the third year of growth. In the KGR mix, the yield was stable, while in the WW mix, which had a slightly lower yield compared to the other two, yield increased in the third growing year. As for the varieties of red clover, no significant differences were found. The "Spurt" variety was the only one with a slightly lower yield in the third year of cultivation. The result is different for the crude protein yield. In all mixes and all red clover varieties, it fell when cultivation was prolonged. With a two-year cultivation, the crude protein yield was 2.56t/ha per year on average, while with three-year cultivation, it dropped to 2.35 t/ha per year.



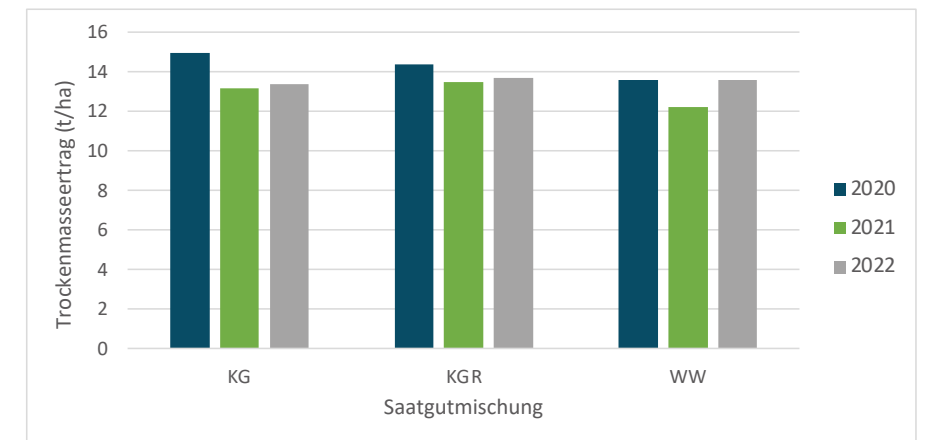
The mixes in the field test



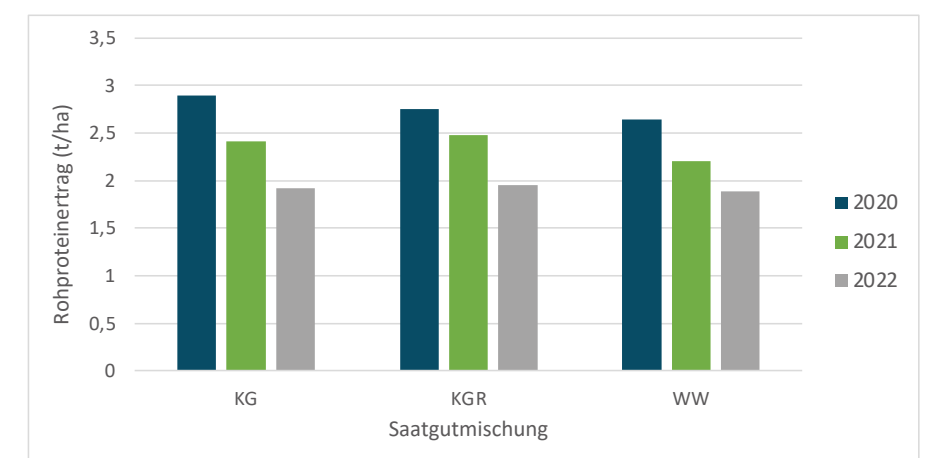
Manual sorting of the fodder species

CONCLUSION

The results of the field test show that crude protein yields fall in the third year of cultivation. As a result, livestock farms cannot count on high and constant fodder and protein yields if the duration for forage mix cultivation is prolonged. The figures show that it is possible to recommend forage mixes in a targeted manner, together with the more suitable red clover varieties for prolonged cultivation.



Dry matter yield (t/ha) for fodder mixes (KG, KGR, WW) over three years of cultivation.



Crude protein yield (t/ha) for various fodder mixes (KG, KGR, WW) over three years of cultivation.



Alois Fundneider, Markus Gatterer, Franziska Mairhofer, Giovanni Peratoner, Anna Rottensteiner, Moritz Wierer
Working group Grassland Farming



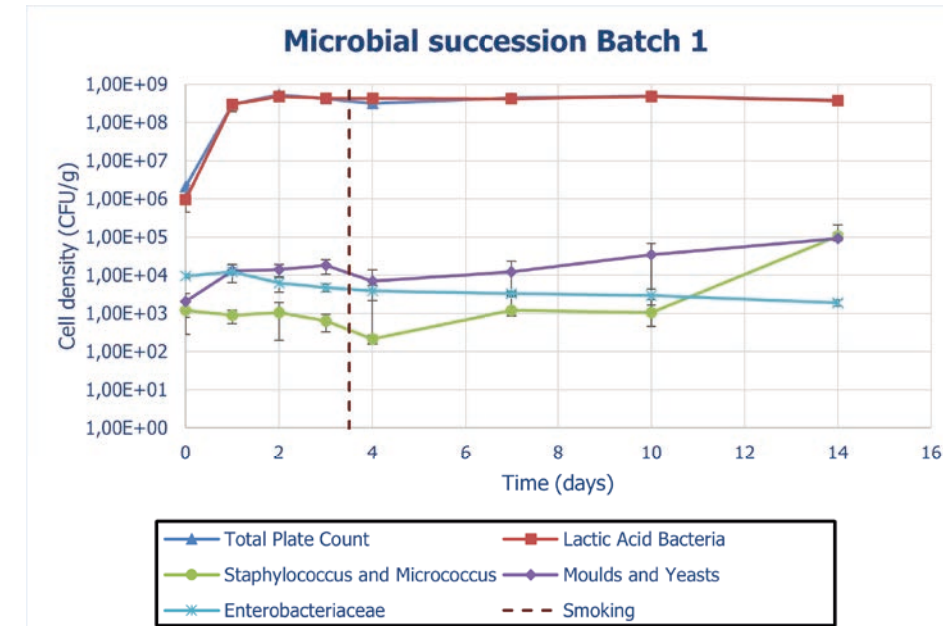
KAMINWURZ: A PRELIMINARY STUDY OF A TYPICAL SOUTH TYROLEAN PRODUCT

Kaminwurz is a typical cured meat product (salami) from South Tyrol and has been awarded the South Tyrol Quality Mark since 2024. Although very well known, there has not been much research into this product. Kaminwurz is made with pork and other types of meat, including beef and game. It is then stuffed into pig intestine casings, smoked (an operation that was once carried out in a chimney, which gives this salami its name), before it is matured. An initial study of Kaminwurz included small-scale production tests, and the analysis of chemical, physical and microbiological characteristics at different stages in the process. The purpose of this study was to assess any critical issues of a microbiological nature in the product and its production process.

THE PHYSICAL, CHEMICAL AND MICROBIOLOGICAL CHARACTERISTICS OF KAMINWURZ

The artisan methods often used in production involve a certain variability in terms of ingredients, as well as in the way in which they are processed, as revealed in an initial study. This study monitored the physical, chemical and microbiological characteristics over time of a test Kaminwurz, made in the laboratory using a typical

recipe from the area. Samples were taken from several batches at regular intervals and subjected to the following tests: weight loss, acidity (pH), water activity (aw), moisture and microbial count. Temperature and relative humidity (RH%) were monitored for the curing rooms of local producers.



DEVELOPMENT OF TEST PARAMETERS DURING THE MATURATION PROCESS

Factors such as the type of ingredients, weather conditions and maturation area, the smoking type and the fermentation trend are responsible for the large differences found in different batches.

Although lactic bacteria have led to an acidification of up to pH values between 5.3-5.4, the fall in pH alone cannot be seen as a sufficient barrier against the majority of unwelcome bacteria. Specifically, a high degree of ambient humidity during maturation fostered the growth of surface mould, obstructing the acidification process. 16-18 days after production, a value of $a_w \leq 0.92$ was reached, which, combined with pH, temperature, oxygen concentration and the presence of antagonist microbial flora prevents the development of the major part of pathogens. The microbial count has shown a prevalence of lactic bacteria from the early stages, which represents an essential factor in obtaining a stable product. The data collected are in line with findings for other types of salami.



Mould development on Kaminwurz matured at different humidity levels

CONCLUSION

The aim of this initial characterisation of Kaminwurz, based on a technological approach, was to assess the possible effects of process changes on the important physical, chemical and microbiological characteristics for health and hygiene purposes.



Elena Venir, Graziella Battilana
Working group Meat Products

STRUCTURED INTERNAL MANAGEMENT SUPPORTING SCIENTIFIC RESEARCH



Administration plays a strategic role across the board to guarantee the efficient, sustainable operation of scientific activities of Laimburg Research Centre.

By providing a wide range of services, from economic and financial management to taking care of human resources, procurement of goods and services, and maintenance of infrastructure, the different groups in the Administration Institute ensure and provide the operational support needed.

One of the Administration Institute's central tasks is supporting the staff responsible for procurement, who have detailed knowledge of their own area of competence. Working in close collaboration with the Procurement sector, these managers work in planning purchases, investments and services. Administration provides them with administrative assistance and technical support, to simplify and speed up the different processes.

Another important aspect is the gradual application of new rules on contracts, integrated into our internal processes, step by step, to guarantee transparency and fairness at every stage of procurement.

The activities of the Human Resources area range from publishing vacancies and competition notices, to management of applications, drawing up contracts and managing structured on-boarding. Special attention is dedicated to staff training and internal communication, with the aim of promoting development, strengthening the sense of belonging, and stimulating dialogue within the Centre.

Thanks to the **EFFECTIVE COLLABORATION OF ALL ADMINISTRATION AREAS**, researchers can focus all their attention on their scientific aims, supported by a reliable, streamlined system of quality.



CONTRACTS



332
CONTRACTS
under € 40,000

11
CONTRACTS
between € 40,000
and € 221,000

4
CALLS
for tender over
€ 221,000

ACCOUNTING



2.300
INVOICES
for purchases and assets

> 6.000
PAYMENT ORDERS

4.000
SALES INVOICES

10.000
ACCOUNTING DOCUMENTS

2.000
ADJUSTING ENTRIES /
TRANSFERS/ ADJUSTMENTS /
MISCELLANEOUS
ADMINISTRATION

HUMAN RESOURCES



49
SELECTION PROCEDURES

6
COMPETITIONS

58
RECRUITMENTS

26
GRADUANDS

A WISH FOR THE FUTURE...

”

“I wish that the experimental activities will continue to dispose of the financial means and personnel required to meet, in an independent and neutral manner, the growing needs of agricultural practices and the ongoing transformation processes, without influence from private enterprise, and in the interest of agriculture.”



Hermann Mantinger,
first Director of Laimburg
Research Centre (1976–1999)



Luis Walcher,
Provincial
Councillor for
Agriculture
(since 2024)

“On one hand, I wish that Laimburg Research Centre can continue, in the future, to maintain a dialogue with farms and farmers, so that together they can find solutions to the challenges that await them. On the other, I hope that it will be able to cultivate its exchanges with other research centres to analyse problems and develop shared solutions. In my opinion, Laimburg Centre is not already 50, it is only 50, and I am sure it will be able to meet the coming years with success”.

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“Laimburg Research Centre has undergone extraordinary developments over the last few years: tasks have multiplied, and thanks to new technologies, there is a constant source of new opportunities to expand our knowledge. I wish that the Province of Bolzano will continue to guarantee the financial means necessary to support this institution, even in the future. In fact, in agriculture, new challenges are commonplace and to meet them, we need motivation, resources, and brilliant minds, such as those at work in Laimburg Research Centre.”



Klaus Platter, Director of the Laimburg
Provincial Farm Estate / Laimburg Provincial
Farm (1970–2010) and Deputy Director of
Laimburg Agricultural and Forestry Research
Centre (1978–2010)

”

“I wish Laimburg Centre can above all continue to capture the signs of the times and think one step ahead. And that it can continue to find the right people to work with: people who are able to grow relationships with the population, associations, organisations, and consumers. In this way, not only is new knowledge achieved, but - and above all - research that approaches practice, with areas of solid application, able to make itself known in political debate”.



Luis Durnwalder,
Provincial Councillor for
Agriculture (1979–1988); President
of the Province of Bolzano (1989–2013);
Chair of the Board of Directors of
Laimburg Research Centre (1979–2014)



Michael Oberhuber,
Director of the Laimburg
Research Centre
(since 2009)

“My wish for Laimburg Research Centre for the future, is that Laimburg Research Centre continues to perform top-flight research: research inspired by the very latest scientific knowledge and modern methods, but that at the same time, profoundly rooted in the South Tyrolean context and aware of the specific demands and crops of our region. Our aim is to develop practical solutions with impact at local level, but which can also be recognised internationally. A decisive factor for our success will continue to be our close collaboration with research bodies both in South Tyrol and internationally, as well as with the world of agriculture consulting and training. Transferring knowledge into practice will remain a central focus of our mission, because it is only when the results of our research become concrete and applicable that we can appreciate their true value. This takes excellent minds and optimal working conditions as well as modern infrastructure. This is the only way that Laimburg Research Centre will be able to continue in its role as a driver of innovation, sustainability and competitiveness for agriculture in South Tyrol and at the same time, a place that attracts research talents”.

“My wish for the future of Laimburg Research Centre is to preserve and develop its curiosity, commitment and passion for research. At the end of the day, it is the collaborators who bring in new ideas and the energy needed to achieve them. And this is the greatest resource on which the Centre can count for the future.”



Josef Dalla Via, Director of
Laimburg Research Centre
(1999–2008)

“I wish that Laimburg Research Centre can continue to achieve great results and to take the right decisions: the future of viticulture, fruit growing and mountain agriculture in South Tyrol depends on it”.



Arnold Schuler,
Provincial Councillor for
Agriculture (2014–2023)

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COLOPHON

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