Freie Universität Bozen
Libera Università di Bolzano
Università Liedia de Bulsan

Public Competition
for the admission to the PhD programmes
42nd cycle
Academic year 2026/27
Faculty of Agricultural, Environmental and Food Sciences
PhD Programme in
Mountain Environment and Agriculture

Website: https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/phd-mountain-environment-agriculture/

Duration: 3 years

Academic year: 2026/27

Start date: November 1st, 2026

Official language: English

Art. 1 - POSITIONS

1. A total of 4 positions are available for the PhD programme in **Mountain Environment and Agriculture**; the programme is divided into the following curricula: Curriculum 1 **Sustainable Agricultural Production Systems** and Curriculum 2 **Ecology, Environment and Protection of Mountain Areas**

2. All information about the PhD programme in general, the schedule and its structure as well as the possible research projects listed below can be found at the following link: https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/phd-mountain-environment-agriculture/

3. Positions without scholarship: 1

Positions tied to subject-related scholarship: 3

of which for Curriculum 1: 3

for Curriculum 2: 0

PhD-Cooperation programme „One Health im alpinen Raum": 3

Project 1: Alpine Slurry: Circular Nutrient Management with Biogas-Derived Fertilizers

Project 2: Alpine Slurry: Regional Feed Additives and Breeding Programs to Curb Methane Emissions in Cattle

Project 3: Vectors, Plant Pathogens, and Biological Control in Plant Protection

4. The following list of research projects and related supervisors and linked to positions financed with a unibz scholarship or without a scholarship is listed for illustrative purposes only, as other topics inherent to the activities of the various research groups at the university may be the subject of study.

Research projects and supervisors		
Curriculum 1 Sustainable agricultural production systems		
Title	**Supervisor(s)**	**Notes**
1. Alpine Slurry: Circular Nutrient Management with Biogas-Derived Fertilizers **Project description:** This project looks at how processed slurry-derived products from local biogas plants can be used in an innovative, safer, and more sustainable way in alpine agriculture. We will evaluate their effects on soil and plant health, and environmental quality. These innovative products will be considered in comparison with conventional slurry and other fertilization strategies, with particular attention to soil chemical, physical, and biological indicators in line with the new EU Soil Monitoring Law. **Required qualifications:** The ideal candidate should have a background in soil science, agronomy, environmental sciences or a related field. Experience in soil and plant sampling, sample preparation and laboratory analyses of soil chemical, physical or biological properties is highly desirable. Knowledge of nutrient cycling, organic fertilisers, soil health assessment and environmental monitoring would be an advantage. Proficiency in data analysis and statistical software, particularly R, is also desirable.	Prof. Tanja Mimmo	One Health im alpinen Raum
2. Alpine Slurry: Regional Feed Additives and Breeding Programs to Curb Methane Emissions in Cattle **Project description:** This project addresses a central and innovative research field within the context of European climate and agricultural policy: the reduction of enteric methane emissions in alpine	Dr. Thomas Zanon	One Health im alpinen Raum

dairy farming. By acquiring an innovative GreenFeed measurement system, the Free University of Bozen will be able to scientifically evaluate emission-reducing feeding and breeding strategies under real-world alpine conditions. **Required qualifications:** The ideal candidate should have a scientific background in animal science livestock production systems. Practical expertise in collecting field data as well as proficiency in data analysis using the R or SAS software is highly desirable.		
3. Vectors, Plant Pathogens, and Biological Control in Plant Protection **Project description:** This project investigates whether *Wolbachia*, a naturally occurring bacterium found in many insects, can be used as an innovative tool to block the transmission of plant diseases, using phytoplasmas and psyllids as a study system. The project integrates artificial transmission experiments in the laboratory and semi-field experiments, studying *Wolbachia* and pathogen interaction using innovative molecular genetic and genomic approaches. The project offers an innovative, environmentally friendly strategy for crop protection and serves as a model for managing other insect-borne diseases. **Required qualifications:** The ideal candidate should have experience with molecular genetic approaches. Practical expertise in collecting and handling of insects as well as proficiency in data analysis using the R is highly desirable.	Prof. Hannes Schuler	One Health im alpinen Raum
4. Soil Microbial Processes and Environmental Risks of Biogas-Derived Fertilizers **Project description:** This project investigates how processed slurry-derived fertilizers influence soil microbial activity, organic matter transformation and nutrient-release processes in Alpine agricultural soils. The research will focus on the biological mechanisms regulating nitrogen and carbon cycling, as well as on potential environmental risks associated with nutrient losses and greenhouse-gas emissions. Laboratory incubations and targeted field measurements will be used to	Prof. Tanja Mimmo	Without scholarship

compare different slurry-derived products and conventional fertilization practices. The results will contribute to the development of environmentally sound strategies for recycling nutrients from local biogas production. **Required qualifications:** The ideal candidate should have a background in soil science, soil biogeochemistry, environmental biology or a related field. Experience with laboratory incubations, microbial or enzymatic analyses, greenhouse-gas measurements, or the assessment of carbon and nitrogen transformations is highly desirable. Familiarity with molecular or biochemical methods, experimental design and the handling of environmental datasets would be an advantage. Experience with statistical analysis, preferably in R, is also desirable.		

Short Description of the research groups

<u>Curriculum 1 Sustainable agricultural production systems</u>

Soil Health and Plant–Microbe Interactions Group (Prof. Mimmo, Prof. Borruso, Prof. Villa)

The research group focuses on soil-plant-microbe interactions in agricultural contexts, with a strong focus on cultivated plants affected by biotic and abiotic stressors. Its research is based on a multidisciplinary approach that combines physical, chemical, and biological perspectives to study processes occurring in soils, plants, and their associated environments. Main areas of expertise include root exudation dynamics, plant stress physiology, and the taxonomic and functional diversity of microbial and faunal communities. The group also addresses emerging environmental issues relevant to agroecosystems, including the effects of microplastics on soil-plant-microbe systems. Although its primary focus is on agricultural systems, selected activities may also involve particular non-agricultural contexts or unique ecosystems, such as the Galápagos, when relevant to the study of cultivated plants and their interactions with soil biota. A unifying theme across all research lines is the study of soil as a dynamic system, with emphasis on the interplay among its physical, chemical, and biological properties.

Animal Science (Dr. T. Zanon)

The Animal Science team evaluates and improves dairy and beef production systems by comparing breeds, assessing functional traits such as health and welfare, and developing high-quality, regionally adapted beef chains. Milk quality analyses are an integral part of this work, supporting the evaluation

of how feeding strategies, management systems, and genetic factors influence both product quality and overall system performance. A key research line focuses on reducing enteric methane emissions through advanced technologies such as GreenFeed and MIR spectroscopy. These tools allow precise measurement of emissions in dairy cows and breeding bulls, enabling the study of genetic parameters, the testing of plant-based feed additives, and the evaluation of regional feed resources as mitigation strategies. By integrating data from experimental farms and breeding stations, the group develops genetic, nutritional, and management approaches to lower emissions while safeguarding productivity, milk quality, and animal health. Results are shared nationally and internationally to support sustainable, climate-resilient livestock farming in mountain regions.

Applied molecular entomology (Prof. H. Schuler)

Our research group is broadly interested in the evolutionary ecology of insect pest species. We are using a combination of genomic and population genomic approaches as well as in vivo experiments in laboratory and semi-field experiments. One of our primary research questions addresses the association of microbes with insects and their impact on the ecology and evolution of their hosts. In particular we study insect vectors of phytoplasma diseases, we investigate the associations of bark beetles with symbiotic bacteria and fungi to understand their role in the population dynamics of this important pest species. Moreover, we study the invasion dynamics of invasive insect species. Our research combines fundamental and applied aspects of the biology of insect pest species with the orientation towards a more sustainable pest management.

5. The application for admission must state the preference for one curriculum and for a maximum of 2 research projects. The preference expressed will be indicative of the interests of the applicant and not binding for the selection committee.

6. Subject-related scholarship positions will have separate rankings. Separate rankings will be also compiled for each Curriculum. Winners of subject-related scholarships must conduct research related to the specified topic. These will be assigned preferentially to applicants who make a specific request in their application.

7. Pursuant to the general part of the present call for applications, the number of positions may be increased as a result of funding provided by other universities, public research bodies or qualified private companies. Notice of such an increase will be given exclusively on the unibz web page dedicated to PhD programs. Applicants wishing to obtain eligibility for any additional subject-related scholarships may make an explicit request to the selection committee during the interview, in order to allow it to assess the specific eligibility.

Art. 2 – ADMISSION REQUIREMENTS

1. Application to the present public competition for the admission at the PhD programme in Mountain Environment and Agriculture may be presented pursuant to art. 4 of the general part of the present call for application, without limitations regarding gender, age or citizenship, by:

a) Applicants holding a postgraduate degree as per Ministerial Decree no. 509/1999, a postgraduate degree as per Ministerial Decree no. 270/2004, a degree of the former Italian university system of the following degree classes: all;

b) Applicants holding an equivalent degree obtained abroad;

c) Applicants achieving one of the above-mentioned titles within the enrolment deadline. In the latter case, applicants will be conditionally admitted to the public competition and are **required to present the qualification by the enrolment deadline, under penalty of forfeiting admission to the programme;**

2. Candidates are expected to have acquired an appropriate educational, and/or cultural and/or professional background in the field of agricultural, environmental, biological or geosciences.

3. Language requirements: a good/very good knowledge of English is required, which will be assessed during the interview.

Art. 3 – APPLICATION FOR ADMISSION

1. In addition to the documentation listed in the general part of the present call for applications, the following documents must be uploaded to the application portal:

a) Motivational letter in English (maximum 1 page), in which the applicant must indicate their preference for research projects (maximum two) and/or for a position with a subject-related scholarship, briefly explaining the reasons for their choice.

b) Updated curriculum vitae in English pursuant to the European format, downloadable at the following link: https://europass.cedefop.europa.eu/en/documents/curriculum-vitae

c) up to a maximum of 2 letters of reference, written in Italian, German or English by a university lecturer or researcher from a research institute.

In addition to the documentation under a-c, if available, please upload:

d) copy of the publications (published or accepted for publication) including the master dissertation (pdf version).

e) any English language certificate at level B2 or higher (see the list of certificates recognized by the Language Centre: https://www.unibz.it/it/services/language-centre/study-in-three-languages/). Please note: the certificate must not have been obtained more than 5 years before the application for recognition.

Art. 4 – SELECTION PROCEDURE

1. The selection procedure consists of three phases:

a) applications will be examined ex officio for completeness and fulfilment of the formal requirements; applicants excluded due to incomplete applications or lack of requirements will be notified on the dedicated unibz web page. The publication will have the nature of a notification to all effects. No individual communication will be made.

b) The selection committee will assess the complete applications in accordance with Article 5, considering the qualifications and attached documentation referred to in Article 3. Applicants who reach the minimum score referred to in Article 5 will be admitted to the interview. Admission to the interview, as well as the relevant dates and times, will be communicated on the unibz dedicated web page. Individual communications will be sent in due time to the e-mail address indicated in the application form to applicants admitted to the interview.

c) Interviews may be held in person or by videoconference, at the applicant's request to the selection committee and will be evaluated in accordance with the criteria set out in article 5. Applicants must ensure the use of a webcam to enable them to identify themselves to the selection committee by showing a valid identity document or passport, under penalty of exclusion from public competition.

2. Absence from the tests and/or interviews, non-connection, unavailability of the applicant on the appointed day and/or time or non-exhibition of a valid identity document or passport are a cause for exclusion from the public competition.

3. If technical problems occur after the start of the induvial interview by videoconference, if the problem concerns one or more members of the selection committee, the interview is deferred to another date ex officio; if the problem concerns the applicant, the committee may, subject to the principles of non-discrimination and equal treatment of applicants, postpone the test to another date for justified reasons.

4. Once the examinations have been completed, the relevant selection committees draw up rankings based on the scores obtained by the applicants in the individual tests.

Art. 5 – EVALUATION CRITERIA

1. The selection committee carries out a comparative assessment of the applicants. For applicants who have expressed a preference for positions tied to subject-related scholarships, the committee also ascertains their suitability for the specific subject.

2. The following scores will be awarded during the evaluation of the documents submitted with the application under Article 3:

a) up to a maximum of 23 points for the academic qualifications: scientific proximity of the qualification to the PhD in Mountain Environment and Agriculture, as evidenced by the CV, master's degree/grade, motivation letter and other documents and certificates;

b) Up to a maximum of 7 points for the congruence of the curriculum with the theme chosen by the candidate among those indicated in the list of projects available on the dedicated portal;

3. Applicants who reach the threshold of 18/30 points will be admitted to the interview. Admission to the interview and the relevant dates and times will be communicated on the unibz dedicated web page. Individual communications will be sent in due time to the e-mail address indicated in the application form only to applicants admitted to the interview.

4. The following elements will be assessed during the interview: aptitude for research; possession of a language level appropriate to the language of the programme; argumentative capacity in relation to the theoretical and methodological hypotheses of the research project presented. As the PhD program is offered in English, candidates must have an adequate language level (corresponding to at least intermediate level, B2), which will be ascertained during the interview. A maximum of 20 points will be awarded. The interview is considered passed if at least 12/20 points are obtained.

5. The final score is made up of the sum of the scores obtained in the assessment of the documentation and interview. Applicants and candidates who have obtained at least 30/50 points will be eligible. In the event of a tied score, the applicant with the youngest age will have priority.

Art. 6 – RANKING

1. Applicants and candidates will be admitted to the programs in the order of their ranking until the number of positions available is reached. In the event of equal merit, the applicant who is younger in age shall prevail. In the event of successful placement in more than one ranking list, the winner

must exercise the option for only one position. Separate rankings will be drawn up for each curriculum and position tied to a subject-related scholarship.

2. The final rankings will be published on the unibz website on the page dedicated to PhDs. Such publication has the value of an official communication. No individual communication will be made.