ERIAFF Agroecology Working Group

Autonomous Province of Bolzano

Main information:

- Country:
➔ Italy
- Regional capital:
➔ Bozen / Bolzano
- Population:
➔ 535.774 inhabitants
- Contact(s)[1]:
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Agricultural features:

- What are the main agricultural sectors in your region?

➔

South Tyrol is a region in Northern Italy characterized by various climatic and geological conditions, due to its mountainous topography. At higher altitudes, mainly livestock and grassland farming are practiced. Fruit growing (especially apples) and viticulture are concentrated instead at lower altitudes.

- What are the main issues farmers are facing in your territory?

➔ Preserving the sustainability of smallholder farmers. Small agricultural enterprises are in decline at European level. In South Tyrol most of the farmers are smallholders. They are key actors for landscape conservation and for the local economy.

➔ Sustainable food production: mountain areas host fragile agroecosystems. The sustainable management of resources such as water, soil, biodiversity can be improved through agroecological practices.
Climate change mitigation and adaptation: 18% of the CO_2 emissions produced in South Tyrol come from agricultural activities. The effects of climate change are already visible: farming can be done at higher altitudes and extreme weather events are becoming more frequent.

[1] *Not to be published in ERIAFF Website*

- Can you present 1 or 2 agroecological good practices led in your region?

Follows a description of the two main research institutions involved in agroecological research projects:

Versuchszentrum
Centro di Sperimentazione
Research Centre
LAIMBURG
NATURE & SCIENCE: HAND IN HAND

Laimburg Research Centre (LRC), founded in 1975 as a public body of the Autonomous Province of Bolzano, is the research institution for applied science in the fields of agriculture and food quality in South Tyrol. Its main goal is to promote sustainable agriculture and to support agri-food enterprises in the region along the whole value chain: from cultivation to the final product. LRC is part of a large research network of local and international partners.

As an institute working in the field of applied research, LRC seeks to be aware of the concrete problems of agricultural practice and to focus on solving their problems. To this end, LRC has established a **unique participatory exchange system with its local stakeholders** by holding annual meetings with more than 100 local organisations. During these meetings, local stakeholders can submit proposals for research projects and discuss the LRC's research proposals for the coming year.

Currently, LRC supports and implements several initiatives covering multiple elements of agroecology, such as knowledge co-creation, development of synergic effects, connectivity, soil health, input reduction and increasing functional biodiversity. An example of a direct application of some of the above-mentioned agro-ecological elements is the **Domino** project (Horizon 2020- Core organic co-fund). The DOMINO project aims at improving the long-term sustainability and the ecological footprint of intensive organic fruit orchards. It focuses on the interaction of fruit trees with different wild species, organic residues, and microbiome and it intends to break the paradigm of monoculture in organic fruit growing, enhancing the ecosystem services. The innovation is expressed in the development of new intercropping strategies with different living mulches, legumes and utilizing novel organic fertilizers. (https://orgprints.org/view/projects/Domino.html)

Libera Università di Bolzano (UNIBZ) is a young university founded in 1997 as a multilingual, internationally oriented institution. It is a non-state funded public university located at the crossroads between the Italian and the German cultural and economic worlds. This international outlook is a driver of the research activity carried out at UNIBZ to address contemporary challenges while also meeting local interests. In fact, besides teaching and research, another fundamental objective of UNIBZ is to contribute to local development fostering knowledge through collaborations with public institutions and private organizations. UNIBZ is composed of five faculties (Economics and Management, Computer Science, Education, Design and Art, Science and Technology) and 8 Competence Centres with specific research focuses.

As for projects, UNIBZ counts almost 300 international and local projects, 88 of which at European level, including 36 Erasmus+ and 18 HORIZON projects (3 HEU in CL 4 and CL6 and Mission Soil; 15 H2020 of which 8 MSCA and 7 RIA/IA in various societal challenges); and 1 PRIMA project. In addition, UNIBZ is core partner of EIT Food.

The Science and Technology faculty teaches and carries out research in the fields of agricultural science, environmental management, mechanical and industrial engineering, energy, logistics and production, automation and basic sciences. Sustainability and interdisciplinarity constitute the starting point for the solution of complex issues related to the exploitation of mountain territories and the fields of energy efficiency, food production and food quality control as well as innovation in industrial processes and products.

Within Agroecology, the Competence Centre for Plant Health and the Faculty of Science and Technology in collaboration with Eurac Research coordinates the project "***Environmental DNA and Agroecological Networks for Biomonitoring apple Orchard Soils to Support Sustainable Agroecosystems***". Within the project, the research team investigates more than 21 soil samples from apple orchards in South Tyrol with different agronomic management systems that combine the environmental DNA (eDNA) approach for rapid monitoring and agrobiodiversity measurement (e.g., bacteria, fungi and metazoans) with the traditional indicators of soil chemical and biological quality.

Furthermore, in **BioViSo,** a joint Project Austria-Italy starting in January 2023, the research group aims to determine key drivers and the keystone species influencing soil biodiversity by applying an innovative agroecological network analysis in vineyards according to their management and geographic location. **BioViSo** will apply a large-scale approach utilizing Next Generation Biomonitoring combining traditional chemical and biological approaches with DNA metabarcoding approach. This knowledge will represent the prerequisite for the setup of agronomical practices aimed at sustainable agriculture. Soil management and, in particular, soil microbial management will permit to maximize agroecosystem sustainability, i.e., to better exploit natural resources already present in soil and to reduce the use of external inputs.