WHAT IS AGROECOLOGY?

Agroecology is considered jointly as **a science**, **a practice** and **a social movement**.

It encompasses the whole food system from the soil to the organization of human societies. It is value-laden and based on core principles. As a science, it gives priority to action research, holistic and participatory approaches, and transdisciplinarity that is inclusive of different knowledge systems. As a practice, it is based on sustainable use of local renewable resources, local farmers' knowledge and priorities, wise use of biodiversity to provide ecosystem services and resilience, and solutions that provide multiple benefits (environmental, economic, social) from local to global. As a movement, it defends smallholders and family farming, farmers and rural communities, local and short food supply chains, diversity of indigenous seeds and breeds, healthy and quality food. Agroecology acknowledges that the whole is more than the sum of its parts and hence fosters interactions between actors in science, practice and movements, by facilitating knowledge sharing and action.

PRINCIPLES OF AGROECOLOGY

DEFINITION OF AGROECOLOGY IN UNITED NATIONS DOCUMENTS (CONSOLIDATED SET OF 13 AGROECOLOGICAL PRINCIPLES, 2019)

1. **Recycling.** Preferentially use local renewable resources and close as far as possible resource cycles of nutrients and biomass.
2. **Input reduction.** Reduce or eliminate dependency on purchased inputs.
3. **Soil heath**. Secure and enhance soil health and functioning for improved plant growth, particularly by managing organic matter and by enhancing soil biological activity.
4. **Animal health**. Ensure animal health and welfare.
5. **Biodiversity.** Maintain and enhance diversity of species, functional diversity and genetic resources and maintain biodiversity in the agroecosystem over time and space at field, farm and landscape scales.
6. **Synergy.** Enhance positive ecological interaction, synergy, integration, and complementarity amongst the elements of agroecosystems (plants, animals, trees, soil, water).
7. **Economic diversification.** Diversify on-farm incomes by ensuring small-scale farmers have greater financial independence and value addition opportunities while enabling them to respond to demand from consumers.
8. **Co-creation of knowledge.** Enhance co-creation and horizontal sharing of knowledge including local and scientific innovation, especially through farmer-to-farmer exchange.
9. **Social values and diets.** Build food systems based on the culture, identity, tradition, social and gender equity of local communities that provide healthy, diversified, seasonally and culturally appropriate diets.
10. **Fairness.** Support dignified and robust livelihoods for all actors engaged in food systems, especially small-scale food producers, based on fair trade, fair employment and fair treatment of intellectual property rights.
11. **Connectivity.** Ensure proximity and confidence between producers and consumers through promotion of fair and short distribution networks and by re-embedding food systems into local economies.
12. **Land and natural resource governance.** Recognize and support the needs and interests of family farmers, smallholders and peasant food producers as sustainable managers and guardians of natural and genetic resources
13. **Participation.** Encourage social organization and greater participation in decision-making by food producers and consumers to support decentralized governance and local adaptive management of agricultural and food systems.

You can find below some useful bibliography materials, in order to understand better what agroecology is and find some ideas for ECOVINEGOALS project:

- **Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition**. Report by The High Level Panel of Experts on Food Security and Nutrition, July 2019
- **Converging and diverging principles and practices of organic agriculture regulations and agroecology. A review.** A review Migliorini P. & Wezel A., Agron. Sustain. Dev. (2017) 37- 63.
- **Agroecology as a science, a movement or a practice**. A review. Wezel A., Bellon S., Dorè T., Francis C., Vallod D., David C. 2009, Agron. Sustain. Dev. 29 (2009), 503-515.
- **Agroecological practices for sustainable agriculture.** A review. Wezel, A., Casagrande, M., Celette, F., Vian, J.F., Ferrer, A., Peigné, J. 2014. Agron. Sustain. Dev. 34, 1–20.
- **Agroecology: The science of natural resource management for poor farmers in marginal environments.** Altieri, M., 2002. Agric., Ecosyst. Environ., 93, 1–24.
- **Agroecology - What it is and what it has to offer. https://pubs.iied.org/14629IIED/?c=foodag**
- **What is Agroecology?** (Power Point presentation). **https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.eesc.europa.eu%2Fsites%2Fdefault%2Ffiles%2Ffiles%2Fgfelix_agroecology_presentation_european_parliament.pptx**
- **FAO – Scaling up agroecology.**
- **FAO – The 10 elements of agroecology.**

- **https://www.ifoam.bio/**
- **https://www.agroecology-europe.org/**
- **https://ec.europa.eu/eip/agriculture/**

Agroecological practices for vineyard already integrated in today’s agriculture

- Decrease of pesticides and herbicides
- Mechanical weeding
- Sexual confusion
- Use of biodegradable material
- Use of wooden poles
- Green manures
- Mulching
- Bio fertilizers and bio stimulants
- Resistant varieties and/or local varieties
- Drip irrigation and smart irrigation management
- Agroforestry
- Intercropping, consociations
- Maintenance of traditional landscapes structures like as dry stone walls (UNESCO World Heritage Sites)
- Creation of hedges and groves for improve biodiversity and avoid drift of pollution
- Placing nests for birds and for pollinating insects.

GOOD PRACTICE DESCRIPTION FORM	
Title	Green Manure in vineyard
Proposing subject	Autonomous Province of Trento
Country, region, contacts	Italy, Trentino, Unit for organic production - PAT federico.bigaran@provincia.tn.it ; arianna.dallaporta@provincia.tn.it +39 0461 495911
Short description of the practice	Green manure represents a safe and non-polluting way to bring large quantities of organic matter into the soil and to arise the biodiversity of the vineyard. This practice consists of growing annual plants between the rows and using them as green manure. This has a favorable influence on the physical, chemical and biological characteristics of the soil, without affecting the growth, ripening and maturation of the grapevine. Depending on type the of soil and environmental conditions, the cover crops are generally planted, previous seedbed preparation, a few weeks after the harvest (September-November) and mowed and shredded in pre or post-flowering (depending on the needs). This is followed by incorporation into the soil with targeted sown plants. The choice of the seeds mix depends on the type of soil and is made using different families such as Legumes (clover, alfa-alfa), Gramineous and Cruciferous (mustard), in addition, can be mixed with others cover crops, such as Phacelia, useful for honey bees. The main representative example in Trentino are 40 hectares of vineyards managed by Toblino Winery (Sarche area).
Aim of the best practices	To increase soil organic matter; to stimulate soil biological activity; to improve soil physical characteristics; to catch or keep valuable nutrients; to protect the soil from erosion; to interrupt pest and disease cycles; to manage weeds; to provide an additional food source for pollinators like honey bees.
Suggestion for implementation	Every year is important alternate the rows with the cover cropping for the transit of agricultural machines in the no tillage rows. Change the seed mix, because by planting a mixture of cover crops you will get all the advantages from each green manure crop. The best strategy is to work with several crops that have complementary root patterns for green manuring, in accordance with your soil characteristics and climate conditions and to make a proper seeding with a good soil condition.
Expected Results	Mature cover crops decompose slowly and generate humus (long-lived organic matter), enhance soil stability and soil porosity (due to the improvement of soil aggregation following to the action of earthworms), water retention and erosion protection will be definitely provided in the end, reduction of the pathogenic infection from insects, nematodes or other organisms. It keeps under control weeds growing due to the huge competition with the cover crops, can create a shelter and ensure food for helpful insects.
Improvable or Critical Aspects	Critical aspects: to find a proper mix seed with the soil characteristics of the vineyard.
Bibliographic indications	Soil microbiota respond to green manure in organic vineyards. Longa CMO et al. Journal of Applied Microbiology, 03 Nov 2017, 123(6):1547-1560 La tecnica del sovescio per migliorare la fertilità fisica, chimica e biologica del terreno. Ferrari F.lli Lunelli SpA
References	Autonomous Province of Trento, Fondazione Edmund Mach, Cantine Ferrari e Toblino

Pictures (1/4)	
•Pictures (2-3/4)	 
•Pictures (4/4)	

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