

Sull'agricoltura sostenibile e le sue funzioni ambientali

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Open Afternoon Area Civile, Ambientale e Edile-Architettura
12 dicembre 2019



Summary

Agricoltura sostenibile

Agroecologia e funzioni dell'agricoltura sostenibile

Acqua e irrigazione tradizionale



Outline

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Agroecologia e funzioni dell'agricoltura sostenibile

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Dimensioni della sostenibilità

UE ADG (2001):¹

Maintenance (protection, renewal) of a combination of stocks with a view to sustaining wellbeing; Efficiency of the transformation process (avoiding inefficiency, promoting efficiency); Intra- and intergenerational equity



Agricoltura sostenibile

FAO (2018):²

1. *Increase productivity, employment and value addition in food systems,*
2. *Protect and enhance natural resources,*
3. *Improve livelihoods and foster inclusive economic growth,*
4. *Enhance the **resilience of people, communities and ecosystems,***
5. *Adapt governance to the new challenges*



Agricoltura organica

FAO/WHO Codex Alimentarius Commission (1999):³

[Organic agriculture is] a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasises the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system.

³Website: <http://www.fao.org/organicag/oa-faq/oa-faq1/en/> (ver. 21/5/2019). In Europa la dicitura *agricoltura organica* è spesso sostituita da *agricoltura biologica* e per essere applicata ai prodotti richiede una certificazione.



Agricoltura biodinamica

Wikipedia...⁴

[Biodynamic agriculture] is a form of alternative⁵ agriculture very similar to organic farming, but it includes various esoteric concepts drawn from the ideas of Rudolf Steiner (1861—1925). Initially developed in 1924, it was the first of the organic agriculture movements. It treats soil fertility, plant growth, and livestock care as ecologically interrelated tasks, emphasizing spiritual and mystical perspectives.

⁴ Wikipedia (ver. 21/5/2019), sub voce.

⁵ *Alternative* è inteso rispetto alla pratica dell'agricoltura convenzionale seguita alla *Green Revolution*.



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Agroecologia I

Altieri (2002):⁶

Agroecology goes beyond a one-dimensional view of agroecosystems—their genetics, agronomy, edaphology, etc.—to embrace an understanding of ecological and social levels of coevolution, structure and function.

- ▶ L'agroecologia ha come obiettivo la sostenibilità dell'agroecosistema, con una particolare attenzione all'agricoltura tradizionale, considerata come intrinsecamente biodiversa, protettrice del suolo e resistente alla scarsità idrica, per conseguire la resilienza verso i cambiamenti climatici
- ▶ La simbiosi è talvolta posta in relazione con il concetto andino di *vivir bien* (quechua: *sumac kawsay*)
- ▶ L'agricoltura tradizionale è fortemente legata alla struttura antropologica delle popolazioni

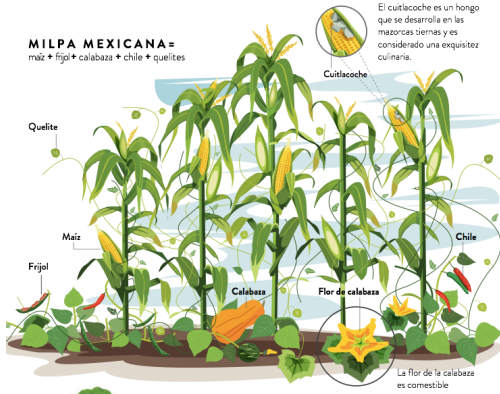


Agroecologia II

LA MILPA ES UN COMPLEJO SISTEMA AGRÍCOLA Y CULTURAL CON MUCHOS SIGLOS DE EXISTENCIA. LA ROTACIÓN DE SUS CULTIVOS MANTIENE LA FERTILIDAD DEL SUELO Y REDUCE LA EROSIÓN.

MILPA MEXICANA =

maíz + frijol + calabaza + chile + quelites



La *Milpa*, coltivazione tradizionale di fagioli, mais e zucca in America Latina. Fonte: viaorganica.org

⁶Altieri, M. A. (2002). Agroecology: the science of natural resource management for poor farmers in marginal environments. *Agriculture, ecosystems & environment*, 93(1), 1-24.

Agricoltura e conservazione del suolo

La **Thematic Strategy for Soil Protection**⁷ dell'UE evidenzia **otto maggiori cause di degrado del suolo**:

1. Erosione (C-d: precipitazione, vento, A-d: esposizione dei campi)
2. Diminuzione di sostanza organica (può essere A-d, **con C-f: perdita di immagazzinamento di C**)
3. Compattazione (A-d: eccessivo calpestio, uso di meccanica agricola pesante)
4. Salinizzazione (C-d: evaporazione da falda, intrusione salina, precipitazioni ricche di sali, A-d: inquinamento da K e Na nell'acqua di irrigazione, eccessivo sale sparso sulle strade, irrigazione a sprinkler)
5. Frane superficiali (C-d, A-d)
6. Inquinamento (A-d)
7. Sigillazione (A-d)
8. Decadimento della biodiversità (A-d, **ha importanti C-f**)

Legenda: C-d Forzante climatica, A-d Forzante antropogenica, C-f Feedback climatico



Conservazione del suolo e cambiamento climatico

Vienna Soil Declaration (December, 7th, 2015)

3. As a major carbon pool of the globe, soil should be considered a key component to help mitigate climate change (...)

4. Whenever possible, the urbanisation and sealing of soils should be limited to avoid losses of vast areas of the best agricultural soils and soil degradation processes such as soil erosion, soil compaction, nutrients depletion, salinization, soil pollution and loss of soil biodiversity should be avoided as much as possible by proper soil management.




Richiami dell'UNCCD sulle questioni di genere

UNCCD Secretariat (2005):⁸

Desertification causes the spread of poverty, it exhausts marshes and backwaters, and it causes the soil to dry out which results in an inability to cultivate such things as root vegetables, wild fruit and trees for firewood. It is a vicious circle which degrades the life of the women, whose means of survival depends on the fertility and productivity of the soil.

The women are the guarantors of the survival of the African family, because they are reacting to the gravity of the situation, making agreements and undertaking action plans. They try to find solutions through communication between women of different populations and the organization of inter-village meetings on the management of the territories.

(...) Some traditional technologies are used to fight desertification and to reduce the scourge of drought. Some women, with the help of the children, make fences to surround the towns. After the birth of a child the young mother must plant five seedlings during the period of 20 days that the baby is suckling.

⁸UNCCD Secretariat (2005) *Women of the world*. For further reading: UNCCD Secretariat (2007) *Women pastoralists. Preserving traditional knowledge. Facing modern challenges*; UNCCD Secretariat (2016) *Turning the tide. The gender factor in achieving Land Degradation Neutrality*. 



Richiami dell'UNCCD sulla conoscenza tradizionale

UNCCD Secretariat (2005, p.50):⁹

7. In the discussion by the Panel it was stated that traditional knowledge:

(a) Has an important economic role; generates social and cultural benefits and values; is dynamic and adapts to change; needs an enabling environment to be developed and to reproduce itself; cannot just be listed, as it is not static information but rather time, context and actor-specific living knowledge.

(b) Moreover, traditional knowledge also integrates modern knowledge, evolves, and spreads to create regional traditions; it should not be glorified blindly but carefully evaluated in its contribution to sustainable resource management; the term “traditional knowledge” also includes very old, forgotten techniques; it is a plural term, indicating the diversity of the knowledge of other cultures (...).

⁹UNCCD (2005) *Revitalizing Traditional Knowledge. A Compilation of Documents and Reports from 1997—2003*. UNCCD, Bonn, Germany; for further reading UNCCD and World Bank (2017) *Land for life. Create wealth, transform lives*. UNCCD, Bonn, Germany.



Richiami dell'UNCCD sull'irrigazione tradizionale

UNCCD Secretariat (2005, p.51):¹⁰

15. *One of the most successful techniques for the rehabilitation of strongly degraded land in the Sahel is the improved traditional planting pit or “zai”. This traditional technique was improved in the early 1980's by a farmer in the Yatenga region of Burkina Faso. He increased the diameter and the depth of the traditional pits and put manure in them during the dry season. (...)*

16. *The most widespread system characteristic of the Mediterranean area is the terracing system that can be found in the Middle East, Greece, Italy and Portugal. (...) The aesthetic qualities, the beauty of natural materials, the comfort of architecture and spaces, the organic relationship with the landscape that the ancient towns of the area boast are especially due to the qualities of traditional techniques and to the search for symbiosis and harmony intrinsic in local knowledge. The survival of traditional societies in the whole Mediterranean area depends on the effective, economic and sustainable management of natural resources. In the Mediterranean area, which is characterised by intensive settlement, the environment is not only the result of natural processes, but rather represents a cultural landscape where historical centres are the crystallization of knowledge appropriate to environmental management and maintenance.*

¹⁰ UNCCD (2005) *Revitalizing Traditional Knowledge. A Compilation of Documents and Reports from 1997—2003.*



Una recente posizione dell'UNESCO

Dry-stone walls have been inscribed in the list **intangible cultural heritage**¹¹

The Intergovernmental Committee for the Safeguarding of the Intangible Cultural Heritage, meeting in Mauritius until 1 December, inscribed nine elements on the Representative List of the Intangible Cultural Heritage of Humanity. The Representative List seeks to enhance visibility for the traditions and know-how of communities without recognizing standards of excellence or exclusivity. The newly inscribed elements are: (...)

*Croatia, Cyprus, France, Greece, Italy, Slovenia, Spain, Switzerland – Art of dry stone walling, knowledge and techniques – The art of dry stone walling concerns the art of building by stacking stones upon one another, without using any other materials except, in some case, dry soil. This know-how is preserved in rural communities where the practice is deeply rooted, and among construction industry professionals. Dry-stone structures **have shaped numerous and diverse landscapes with a variety of constructions used as dwellings, for farming and animal husbandry.** Such structures testify to the methods used by people from prehistory to the present in organizing their living and working space by **optimizing local natural and human resources.***

¹¹<https://en.unesco.org/news/intangible-heritage-nine-elements-inscribed-representative-list>, checked 29/11/2018



Terrazzamenti, protezione del suolo e resilienza climatica I



Oliveto terrazzato Peschiera Maraglio (Montisola, BS, 6 settembre 2015)



Terrazzamenti, protezione del suolo e resilienza climatica II



Limonaia de La Malora a Gargnano (BS, 6 giugno 2016, fotografia: Marco Peli)



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Marco Polo a Bukhara



Arrivo dei fratelli Polo a Bukhara, XV sec., MS BNF français 2810 f. 2r

(Fonte: <https://commons.wikimedia.org>, checked 31/5/2018)



L'oasi e la *civiltà idraulica*

Starr, 2013 [2017], pp.44—45, sull'Asia centrale:¹²

... un'importante forza fece sì che in tutta l'Asia centrale una civiltà e un'elevata cultura potessero svilupparsi e conservarsi. Anche in questo caso, l'azione non era dovuta alla natura ma al genere umano, in particolare, alla sua graduale padronanza dell'arte e della tecnologia dell'irrigazione. Fu l'irrigazione, e solo l'irrigazione, a rendere possibile la nascita di una civiltà su alcune delle terre centroasiatiche altrimenti sterili. In questo senso, è giusto definire l'Asia centrale una "civiltà idraulica"...

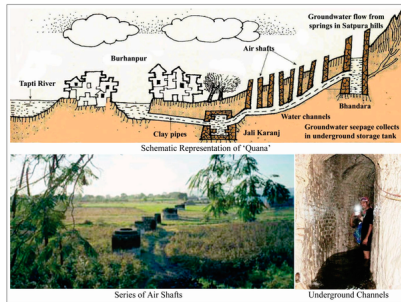


¹²Starr, S.F. (2013). *L'illuminismo perduto. L'età d'oro dell'Asia centrale dalla conquista araba a Tamerlano*. Einaudi.

Irrigazione tradizionale e innervamento del territorio



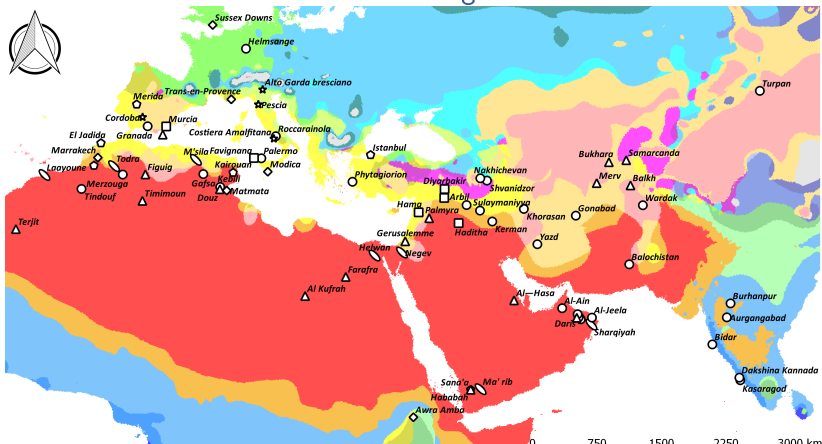
Kariz in Iran



Khooni bandhara in Madhya Pradesh



Circolazione delle tecniche e tradizioni esogene



Legenda

Tecniche

- qanat
- ◇ muretti a secco e altre tecniche a condensazione
- ◌ uadi e barrage
- cisterne
- tecniche di sollevamento dell'acqua
- ★ sistemi di distribuzione dell'acqua
- △ oasi
- K-G CC
- Af

Am	BSK	Cwb	Dsa	Dwb	Dfd
Aw	Csa	Cwc	Dsb	Dwc	ET
BWh	Csb	Cfa	Dsc	Dwd	EF
BWk	Csc	Cfb	Dsd	Dwa	Dfa
BSh	Cwa	Cfc	Dwa	Dfb	Dfc

Ecumene tolemaico



Mappa del mondo nell'edizione di Leinhart Holle (1482) della *Geografia* di Tolomeo
(Fonte: <https://commons.wikimedia.org>, checked 12/12/2018)

Canalette di distribuzione dell'acqua I



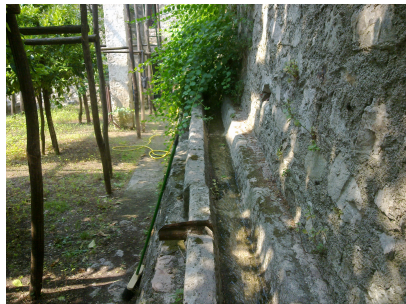
Sistemi di distribuzione dell'acqua a Siviglia (Spagna, fotografia di M. Peli)



Canalette di distribuzione dell'acqua II



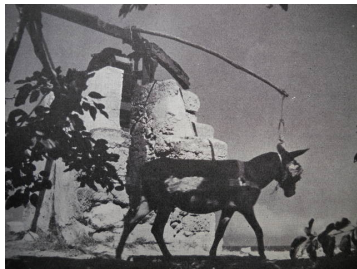
Giardini a Cordoba (Spagna, A. Mondini, 2013)



Limonaie a Gargnano (Brescia, 2015)

Le canalette per la distribuzione dell'acqua nelle limonaie sono molto simili alle tecniche distributive arabe.

Saqiya e Sènia



Saqiya in Mali (1924, fonte: <https://dianabuja.wordpress.com/>, sinistra) e “*noria*” o *sènia* nella Sicilia occidentale (1953, fonte: <https://reportagesicilia.blogspot.it/>, destra).

Una nota di Elisée Reclus



Elisée Reclus (fotografia di Nadar)

24 HISTOIRE D'UN RUISSEAU.

Dans l'intérieur de l'Asie, dans la Péninsule arabique, dans les déserts du Sahara et de l'Afrique centrale, sur les plateaux du Nouveau Monde, même dans certaines régions de l'Espagne, chaque source est plus que le symbole de la vie, c'est la vie elle-même : que cette eau devienne plus abondante et la prospérité du pays s'accroît en même temps ; que le jet diminue ou qu'il tarisse complètement et les populations s'appauvrissent ou meurent : leur histoire est celle du petit filet d'eau près duquel se bâtissent leurs cabanes.

Les Orientaux, lorsqu'ils rêvent de bonheur, se voient toujours au bord des eaux ruisselantes, et leurs chants célèbrent surtout la beauté des fontaines. Tandis que dans notre Europe bien arrosée, on s'aborde bourgeoisement en se demandant des nouvelles de la santé ou des affaires, les Gallas de l'Afrique orientale se disent en s'inclinant : « As-tu trouvé de l'eau ? » En Indoustan le serviteur chargé de rafraîchir

L'EAU DU DÉSERT. 25

es demeures en aspergeant le sol, s'appelle le « paradisiaque. »