

UNA GARLANDA FARM

- AGROFORESTRY IN RICE FARMING



Photo: Una Garlanda Farm



Name	'Una Garlanda Farm'
Country	Italy
Biogeographical Region	Continental region
Region	Po Plain district
Landscape/ Eco system type / protected area	'Una Garlanda Farm' is located in western 'Po Plain' (Piedmont region), an alluvial district dominated by intensive agricultural systems, mainly related to livestock breeding and rice production. The 'Po Plain' landscape is rural, with predominantly annual crops and poplar groves. Almost no landscape features and natural habitats are preserved, except for the main river ecological corridors.
Size / Scope	140 hectares
Type of farm	Organic rice farm and rice mill
Agricultural Use	Rice fields in rotation with millet, black-eyed bean, oat, rye, grassland, soybean, wheat, pea and winter multi-species cover crops.
Best-practice / main idea	Rice fields are managed using traditional, low-impact practices such as biennial crop rotation, minimal tillage,

	and green mulching, where cover crops are incorporated into flooded soils at sowing to suppress weeds, avoid herbicide use, and increase soil organic matter. Diverse rice varieties, including local and conservation types, are used to maintain agrobiodiversity. Agroforestry elements such as trees and shrubs are integrated into and between paddies on raised embankments, enhancing biodiversity, microclimate regulation, and water dynamics. Rice fields are kept permanently flooded during the growing season, supporting wetland habitats and groundwater recharge, while some flooded areas and drainage ditches are maintained year-round to provide continuous ecological and water storage functions. All these practices, tailored to farm clayey “alfisols” (according to USDA Soil Taxonomy system), allow for no use of pesticides and external fertilisers, preserving and supporting soil health, water cycling and quality as well as on-farm agrobiodiversity.
Involved Stakeholders/ Partners	The farm is founder and part of the network of ‘Polyculturae’, a farmer association supporting efforts to promote agrobiodiversity and promoting interdisciplinary collaborations involving research entities and universities, which led to several research projects with ‘Una Garlanda Farm’ as a pilot site. The farm has a wide networking activity with local, national and international associations and promotes local activities based on citizen engagement. The farm acted as a local forerunner of the best practices which are gradually being tested and integrated by other farms in the wider ‘Po Plain’ district area.
Duration	Since 2001 until today
Goals	• Support agrobiodiversity and ecosystem services while producing high-quality and healthy food. • Minimise external input and promote circular use of resources. • Promote knowledge building and sharing and citizen awareness.



Measures addressing water management	• Traditional permanent flooding during growth season, preserving rice-related wet habitat conditions for biodiversity and groundwater recharge. • Permanently flooded areas are maintained on the farm year-round, including wetlands that support biodiversity and serve as water reserves, as well as small, permanently flooded ditches along the margins of the rice paddies. • Agroforestry tree and shrub lines are inserted in-between and inside rice paddies through raised embankments, promoting microclimate regulation and thus water infiltration and evapotranspiration rate regulation.
Measures addressing soil management	• Rice fields are managed under traditional soil and weed management practices based on biennial crop rotation, minimum tillage, and local traditional green mulching practice (multi-species cover crops are cut and incorporated into soil, fermenting through flooding at rice sowing time, inhibiting spontaneous weed growth, enabling an herbicide-free management, and enhancing soil organic matter). • Multiple rice varieties, including land races and conservation varieties, are adapted to such soil fertility and health management, also preserving cultivated agrobiodiversity. • Agroforestry tree and shrub lines are inserted in-between and inside rice paddies through raised embankments, supporting on-farm soil organic carbon storage and spontaneous biodiversity (both soil and epigeal biodiversity).
Funding / Financing	• The farm benefitted from public funding such as CAP and Rural Development Program funds for rice crops and organic agriculture and for the implementation or promotion of some of its practices. • As an 'Polyculturae' association member, 'Una Garlanda' indirectly benefitted from national and European funding and private sector grants (foundations, etc.).

Transferability	The promoted best practices have a discreet potential for being transferred to other farms. Through its collaborations, 'Una Garlanda Farm' invests great energies in results dissemination, farmer networking and exchange of practices. Different farms already tested and integrated these best practices, moving from the 'Una Garlanda' experience.
Tip / suggestion from the farmer	Test and find the best fitting and tailored solution to your own on-farm conditions. Be patient and promote system thinking when designing your farm system.
Further information	https://www.unagarlanda.it/index.html https://www.polyculturae.it/
Contact information	posta@unagarlanda.it direttore@polyculturae.it



Photo: Una Garlanda Farm

"Biodiverse rice fields generate and regenerate the environment and natural, traditional, and healthy foods" - Ugo Stocchi, Una Garlanda farm shareholder

Rice farming across three generations: A journey of change toward a more natural agriculture

The move toward sustainable agriculture at 'Una Garlanda Farm' began in the 1990s, when the farm implemented crop rotations and steadily decreased chemical inputs, departing from its prior conventional management practices.



Photo: Una Garlanda Farm

From 2001, the farm increasingly embraced an approach focused on protecting nature and its resources, including water management and quality. The farm began cultivating and multiplying heritage rice varieties that had long been abandoned and later recovered from the germplasm bank of the Ente Nazionale Risi. Over time, many of these varieties were cultivated on a larger scale and reintroduced to the market, combining the goal of rice farming without the need for fertilisers and herbicides with the hardiness of traditional rice varieties.

Re-discovering traditional rice water management techniques

From 2003 onwards, the farm began experimenting with the so-called "marsh effect", or "green mulching": a simple system for managing water and controlling weeds in rice fields that could reduce the need for invasive interventions and restore natural productivity by imitating natural processes. This was achieved through the careful management of floodwater in the rice sowing phase and the integration of grass-covered embankments designed to support local trophic regulation chains.



Photo: Una Garlanda Farm

This cultivation method — continuously refined over time according to soil and climatic conditions — has become the subject of academic and university research, as well as a project funded by the 'Italian Ministry of Agricultural, Food and Forestry Policies' (Riso-Biosystems).

A wider approach focused on agroecosystem ecological balance restoration

This approach is accompanied by a constant and widespread commitment to restoring ecological balance throughout the farm through agroforestry, enhancing ecosystem regulation services such as microclimate regulation, water flow management, water quality improvement, biodiversity support, and the activation of more complex trophic chains.

Agroforestry rows and hedgerows (around 15,000 plants extending over a total of 80 km) are spread throughout the farm's land, both along field margins and within the rice paddies themselves, thanks to raised embankments.

Crop rotation and intercropping among different varieties and cultivated species, applied across the entire farm, help sustain soil life and organic matter, even in soils traditionally considered poor, such as those of the 'Baraggia of Rovasenda' area (ancient terraces clayey soils).

Over time, all these elements have made it possible to eliminate the use of fertilisers, insecticides, and fungicides, whether chemical or natural, while also supporting the biodiversity of fauna associated with rice field ecosystems, from plants to amphibians and insects.

The farm is also home to the 'Oasi Emys' project, dedicated to the reintroduction of the *Emys orbicularis*, a marsh turtle species at risk of extinction (IUCN Red List), once commonly

associated with rice field environments and now severely affected by intensive conventional farming practices.

A farm based on multifunctionality

The farm is also strongly committed to sharing and disseminating the practices it has developed, an effort carried out through 'Polyculturae Association', of which it is a founding partner. The association was established to support farmers in respecting, restoring, and conserving the biodiversity of agroecosystems.

Today, the farm represents an example of convergence between productive needs and the protection and restoration of ecosystem services, achieved through the conscious management of all agricultural system resources: from water and soil to biodiversity and people.



Photo: Una Garlanda Farm

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