



Finca Verde

Regenerative Permaculture

Agri-Food Project

Case Study Q1 Y1 2023

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Funded by the International Permaculture CoLab through the Next Steps Project

Objectives for Y1

High Level Objectives

- Research, documentation and development practical solutions to major challenges of our time including water shortages, loss of biodiversity, food production and strengthening local economies.
- Research & documentation of a case study over three years producing an annual report of solutions trials and results.

Team Objectives – Specific Measurable Achievable Relevant Time-bound

Split budget across our four main themes following the seasons:

water shortages (spring/summer)

- optimizing irrigation practices
- maintenance/repairs to irrigation system
- documenting & optimizing water catchment systems already in place

strengthening local economy (all year)

- document participate and promote local exchange practices
- collaborate with local initiatives including the seed-bank, permaculture initiatives

food production (spring to autumn)

- optimizing and document farm harvests from main crop, foraging and wild foods

biodiversity (quarterly)

- put in place scientific survey practices to document changing levels in biodiversity
- document creation and effects of micro climates through changes in water management

Objective: water shortages (spring/summer)

- optimizing irrigation practices
- maintenance/repairs to irrigation system
- documenting & optimizing water catchment systems already in place

Building Soil for better water management, pest control and increased bio-diversity

The team at Finca Verde put into place permaculture principles in practice and one such example is to stack functions and maximise outputs.

Since taking over the farm in 2021 the trees had not been pruned and since we were switching method of harvesting from conventional use of herbicide, turning the soil and rolling over the olives to one which uses no dig farming, soil building with organic matter and harvesting with nets we needed to bring the height of the trees down.

After consulting with Adrian and Paco Garcia the team elected to do this using an electric chainsaw with rechargeable batteries. This would ensure that we can power the chainsaw with renewable energy once we had the solar panels in place.

Daniel Atwell spent around 6 weeks pruning the centenary olives, separating the larger wood cuts, which will be dried for firewood and other farm needs, from the smaller branches.

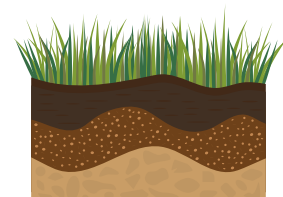


The team also purchased a wood chipper that can be manually moved around the farm as necessary without the need of a tractor. This elimination of the tractor helps to reduce the compaction of the soil which further impedes filtration of water into the soil

By leaving the shredded material under the trees we build the soil and create a better filtration surface for the water to be absorbed, reducing evaporation and providing food to beneficial bacteria and fungi to provide protection from pests as well as a home for beneficial insects. The results will be documented in our biodiversity study over time.

The shredding task is still ongoing at the time of writing. The cost of equipment was 2,000 Eur, cost of specialist pruning work, 1000 Eur and the unskilled shredding around 350 Eur.

Overall this exercise achieved our objective to optimize use of water, increase biodiversity as a result of the soil building as well as optimizing ground water catchment as the organic matter is used like a sponge. We will also monitor incidences of pests to document how the trees are adjusting to this new regenerative practice.



15th April 2023

Objective: water shortages (spring/summer)

- optimizing irrigation practices
- maintenance/repairs to irrigation system
- documenting & optimizing water catchment systems already in place

Reducing evaporation through optimizing irrigation times

Finca Verde irrigates 2 plots of land separately this is because with each plot there are different watering rights and different irrigation setups.

The larger plot which can be seen in this aerial photo has water rights from 7pm until 7am on a Sunday to Monday.



The smaller plot which can be seen on the steep hillside on the right has water rights every two weeks on a Saturday from 11am until 7pm.

The most significant difference apart from the hours of water permitted is that for the larger plot the water goes through a storage system locally called Alberca and the smaller plot has no water deposit. This influences the decision on how to water and where to water. Here is a practical example.

When there is only a trickle of water coming or no water, on the larger plot we can still choose to irrigate using water stored in the Alberca.

On the smaller plot if there is not enough water coming each terrace has to be watered separately by closing and opening the valves at the beginning of each terrace in order to build up enough pressure for the trees to get enough water.

When no water is coming then no irrigation is possible.

Whilst irrigating olives is not necessary for the tree's survival it is necessary to produce a harvest that is economically viable.

With the draught, the african storms and the reduced amount of ground water, 2022 was a year of barely anything worth harvesting so every drop of water really counts.

For the larger plot we are able to start irrigation when the heat of the day has died down thus reducing evaporation and making sure to recharge the ground water as well as provide water to the trees.

The team has also put together documentation for volunteers helping at the farm to help them understand the process and calculate the starting times which change according to the season and day light saving hour changes.

Objective: strengthening local economy (all year)

- document participate and promote local exchange practices
- collaborate with local initiatives including the seed-bank, permaculture initiatives

The Finca Verde Team attended the Exchange Market bringing freshly harvested oranges and were interested in meaningful exchanges mostly without the use of fiat money.

Local Exchange

On this site there were a number of caravans parked on the river bed and despite the event being cancelled and the organiser not advising people who had signed up for a stall space a few of us decided to set up anyway.

The team gave away oranges to children and made some exchanges for practical clothes, a cup of hot tea since it was a cold day and a book about art.

The most worthwhile exchanges came from talking with a local nearby farmer and we agreed to keep in touch as they have a permaculture demonstration site which is often used by the seedbank group as a workshop location.

Another meaningful exchange came when a local introduced the team to a group which does peer to peer organic certification which is active in our region.

We were also made aware of other telegram groups that ARCO groups use for local exchange using the local exchange currency.

Retrospective

What went well?

The exchanges were meaningful and had concrete outcomes for the team to follow up on.

The location really lends itself to workshops and any other community events and includes a large eco building that could be used if it is raining.

The team felt inspired to hold workshops there in the future.

Collaboration with Da-A-Luz and the local nearby farmer is in the books.



[Da A La Luz Oasis](#)



[ARC Events](#)

What could have gone better?

The organisers cancelled the event but did not inform the stall holders.

There were no signs pointing to the event so unless seen on social media people walking past would not know what is going on.

The location does not have wheelchair accessible restrooms.

There was no one from Da-A-Luz or Arco to talk to.

15th April 2023

Objective: strengthening local economy (all year)

- document participate and promote local exchange practices
- collaborate with local initiatives including the seed-bank, permaculture initiatives



The Finca Verde Team attended the Encuentro de Agricultores bringing almonds harvested last August and signed up as members of the Huella Meraki as well as joined the telegram group to keep up to date with future events.

Local Exchange

We had very good interactions and exchange of organic regenerative practices with a local farmer who has his land in a neighbouring village. In particular we discussed methods to reduce breakages to the irrigation system using natural cleaning agents to clean blocked irrigation pipes, use of filters for particulates.

We offered to exchange almonds for other produce but the farmer already had almonds of his own at home.

We also had a very good exchange with a farmer who processes produce and other bought materials into skin care products. We talked about extraction methods of essential oils as well as infused oils methods.

This interaction resulted into an agreement to share costs for primary material to mix with produce.

From attendees to the event we also sold a small quantity of almonds, less than 10 Eur.

Retrospective

What went well?

Since we have decided not to harvest fresh produce for this event there was no food waste.

The exchanges were meaningful and had concrete outcomes for the team to follow up on.

The weather was good and the location really lends itself to markets, workshops and any other community events.

The team felt inspired to hold workshops there in the future.

Collaboration with Huella Meraki and other farmers is in the books.

Finca Verde joined Asociación Socio- Cultural Huella Meraki



[Asociación Socio- Cultural Huella Meraki](#)



<https://t.me/huellameraki>

What could have gone better?

The foot traffic at the event was very poor. A large party was held the day before and could have influenced attendance.

There were no signs pointing to the event so unless seen on social media people walking past would not know what is going on.

The location does not have wheelchair accessible restrooms.

Objective: strengthening local economy (all year)

- document participate and promote local exchange practices
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Strengthening the Local Economy through Mutual Aid

Finca Verde is lucky to have cordial and helpful neighbors who are not only experts in their fields but also are always ready to help each other when needed.

In the picture on the right Jose Luis and Adrian collaborate to provide freshly cut prunings from Jose Luis's farm to Adrian's goats who love to eat them.

Adrian brings his tractor and truck to load them away and Jose Luis helps him out. This arrangement benefits Jose Luis by ridding him of the prunings which means he will not burn them, this is a plus for the environment and benefits Adrian by reducing the food costs for his goats.

Here at Finca Verde we do not grow all the produce we need. Instead of buying eggs, vegetables, fresh goat cheese and milk from the supermarket whenever possible we buy these from Adrian's family farm.

This is not only a way to keep a good relationship with our neighbours by contributing toward their financial well-being, it also means that the vegetables we eat are harvested on the spot when we need them, making them as fresh as can be, while also eliminating any carbon footprint associated with food transportation.



In addition we also know that the vegetables are grown organically and there are no nasty chemicals involved.

Adrian and Paco also provide consultation services on organic farming and are contracted in to do specialist work which requires the use of a tractor.

This ensures that we have the service available without the need to purchase a tractor.

Since we live in a remote area we consider ourselves to be a part of a strong mutual support network in which we are able to call on each other in case of emergency or when we need help.

The majority of farm decisions are taken after consultation within this mutual support network tapping into their experience and with their support.

Objective: food production (spring to autumn)

- **optimizing and document farm harvests from main crop, foraging and wild foods**

Herb foraging for domestic and microenterprise use

At Finca Verde we utilize the region wild herbs which can be readily foraged throughout the growing season, starting in winter and all the way until late autumn and use them in cooking and for our small microenterprise making self-care products. We also show volunteers how to forage ethically, identify herbs and teach them how to dry them.

The herbs that grow wild in the area include, but are not limited to:

- Rosemary
- Sage
- Thyme
- Lavander
- Fennel

In the areas that get water other herbs can also be found. Of these rosemary is by far the most endemic, with many bushes dotting the hillsides.

Planting new fruit trees

Almond trees have a life expectancy of around 7 years in un-irrigated terrains such as the one we have at Finca Verde, necessitating frequent replacement.

In the last quarter the team has planted a new kiwi tree and started multiple new rose bushes from cutting. The petals for which are used for salads and in our microenterprise.

Organges, harvesting, processing and consuming

The orange harvest was very good this year although we did not weigh it the trees were full of sunny bright oranges full of sweet juice.

The orange grove is only watered when the leaves show signs of dehydrating. Otherwise they are watered by the rain and from the overflow of the Alberca.

Since the trees are at the bottom of the valley the trees benefit from any runoff that comes from the steep hillsides on three sided and help the water seep into the ground water which when full births a spring further down the valley.

Currently the oranges are juiced, exchanged for help, given as gifts and occasionally sold or exchanged at markets.

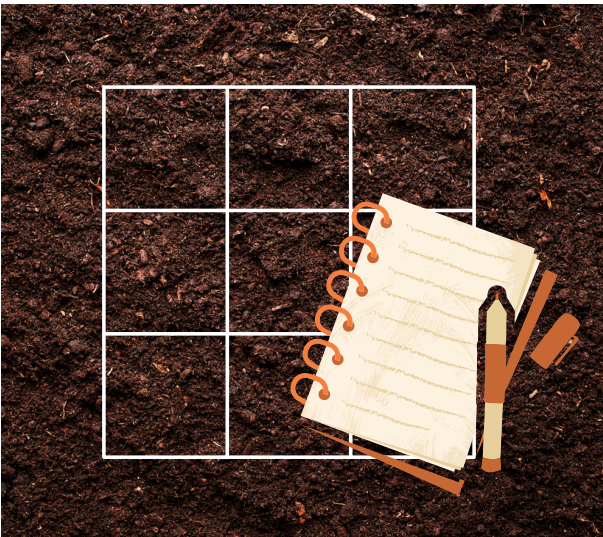
We are looking into utilizing more of this harvest through preservation, researching further the local market and opening the grove to community members who need it.



biodiversity (quarterly)

- put in place scientific survey practices to document changing levels in biodiversity
- document creation and effects of micro climates through changes in water management

The Research Team at Finca Verde have chosen the Quadrat method for the scientific method to document changing levels of biodiversity as the soil building and water management changes come into play.



Measuring soil organic matter content

Apart from the diversity survey we would also like to measure how effect our soil building methods are over time. For this purpose we will also conduct soil organic matter testing using the Loss on Ignition method.

Source:
<https://catalog.extension.oregonstate.edu/sites/catalog/files/project/pdf/em9251.pdf>

What is the quadrat method and why use it in this case study?

"Quadrat sampling is a method by which organisms in a certain proportion (sample) of the habitat are counted directly. It is used to estimate population abundance (number), density, frequency and distribution..." Source: <http://eduterre.ens-lyon.fr/thematiques/hydro/littoral/investigatiolittorale/Quadrat%20sampling.pdf>

We decided to use it in this case study to have a method we can easily use with different sampling places in different parts of the property that can be easily copied and replicated at other sites by others as well.

The quadrat method will be used to collect data for a qualitative study combining number and variety of species and other uncountable factors.

Microscopy snapshot

As a Soil Food Web student one of our researchers would also like to include a microscopy snapshot of the life in the soil to monitor numbers of bacteria and funghi over time.

Watch demo video here:
<https://www.youtube.com/watch?v=v5B6bPDo0f8>

biodiversity (quarterly)

- **put in place scientific survey practices to document changing levels in biodiversity**
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Data Collection Form (Draft)

Date: _____

Name: _____

Time: _____

X Coordinate: _____

Y Coordinate: _____

Specie name: _____

Specie quantity: _____

Specie name: _____

Specie quantity: _____

Specie name: _____

Specie quantity: _____

Specie name: _____

Specie quantity: _____

Specie name: _____

Specie quantity: _____

Specie name: _____

Specie quantity: _____

Specie name: _____

Specie quantity: _____

Soil sample

Photo of unidentified species for identification

Soil temperature

Soil Moisture