# Finca Verde Regenerative Permaculture Agri-Food Project

# Case Study Q2 Y1 2023

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# 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

We started the quarter looking for volunteers to move the wood pruned from the olives without much success. As the time went on it become clear that we would not be able to find people in time.

The issue with leaving the pruned wood on the land is that the olive fly gestates into the wood and then hatches and attacks the olives.

Having an outbreak of olive fly would not only damage the crop on our land but also on the neighbors land.

When it became clear that the help was not coming we had to make the hard decision of hiring locals to do the work.

This was with consultation with the neighbors about the best course of action.

Since this sort of work is off season we could not exchange the wood for labor and had to pay for it in cash.
This was truly a very difficult decision.

Doing nothing was not an option to safeguard the crop of the neighborhood.

We had to absorb the cost and that was a shocking 5,500 Eur.

We bought a chipper that can do branches up to 1 inch thick and started the work.

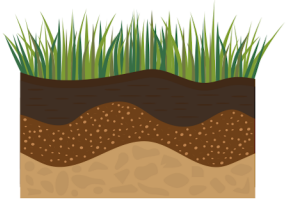
The hired local crew brought a tractor with a chipper attachment to do the larger branches. The machine cost 40€ per hour which came with a man to drive it. With three other people at 10€ per hour helping to move the wood and branches to places on the terraces accessible to the tractor.

The work went on for 3 weeks and at the end of it we have the largest of the wood which could not be chipped to dry during the summer for selling in the autumn.

It is not likely that we will be able to recoup these losses.

On the plus side from this situation we now have a chipper to be able to do the work, we have strengthened our communication channels with the neighbors and a thick cover or organic matter to be the sponge just before the rainy season. Providing a home for micro-arthropods and insects to live in and provide protection against any olive fly that do attack the trees.

On the other side because the wood still needs to be stacked for drying the risk of the olive fly is reduced significantly but not completely eliminated.



**30th July 2023**

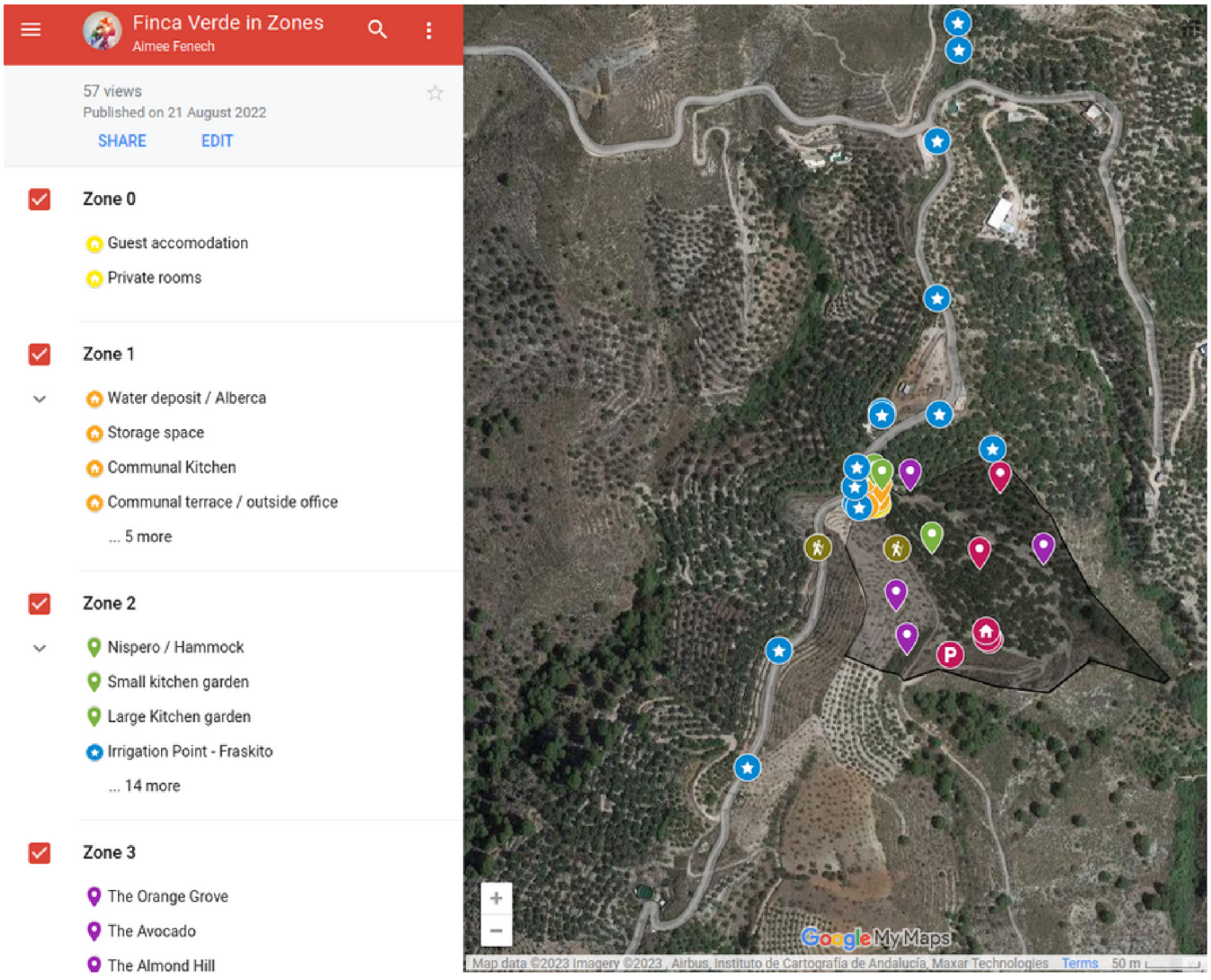
**Objective: water shortages (spring/summer)**

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

As part of the case study we have mapped out the external input of the water catchment and irrigation system.

This not only gives us better visibility of our system but also allows us to see where issues could arise for example where blockages are likely to occur and therefore provides an opportunity to avoid them.

This map and the information is being used for a permaculture design of the property.




Optimization has included having a conversation with the neighbours about filtering the water before it is channel into the water pipes, reducing blockages. Maintainance responsability is distributed between the people using it. We used some of the communal funding available for maintenance of the acequia to lay additional pipes making the opening and closing of the water channel in summer a much more accessible for people less able to do the manual labor involved in opening and closing the channels which normally require a lot of upper body strength.

**30th July 2023**

## 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**

Since we have had to put in so much time and money towards the processing of the wood pruning the surveys had to take a back seat however we have been observing the creation of micro climates especially in 3 different places which have been effected greatly with the water management changes we have put in place.

### Fully Oxydized Septic Tank

The installation of the tank with the connection to the air pump was completed in June 2023.

The tank is divided into two parts, the black water goes initally into the first tank where air is pumped into it. This helps the contents remain aerated, with the beneficial bacteria breaking down the waste.

Once that's processed the water goes into the second tank for a secondary processing and the outflow has been channeled into a bed of herbacious plants.

### Observations

Despite of the incredible heat of the summer season the area is very green and rapidly becoming over grown.

Because the pump is not constantly on we have observed that there is a bad smell coming from the tank when the pump first kicks in. This is most likely due to the introduction of air in the mixture letting out unaerobic bacteria gasses.

We have been changing the frequency of the pump processing and making a permaculture design for the outflow to be productive.

This new green space is housing many insects, increase absorbtion of water into the soil. Helping to provide a micro climate which did no exist before putting in this tank.

The outflow water is not potable but it would be suitable to water the olive trees and woody herbs.

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### The area behind the farm house

The area behind the house has a water connection, when we started the vegetable beds under the olive trees for shade we modified the watering system so that the irrigation water would pool where the plants are. This pooling also happens when it rains.

This area is green and overgrown even in the hottest of the summer months.

When planting we put down a 3 inch layer of straw.

### Observations

The area is very green and overgrown even in the height of the summer heat.

We've been able to keep watering this at least once a week with the water that has been coming through the acequia despite the drought.

There was a concern that some plants may become water logged but the hardy winter vegetables seem to be doing fine.

The olives and the orange trees on the same terrace are also looking good with fruit on them.

Insect populations, lizards, bumblebees are visibly more active here than areas which have bare soil and no water.

**30th July 2023**