

FOCUS ON MINIMUM TILLAGE, COVER CROPS AND ADDING COMPOST

Name Rafael Alonso Aguilera
Region Comarca Campo de Tabernas, Almería, Andalucía, Spain
Farm type Organic mixed farm (olives, livestock)
Farm size 650ha



Tell us about your farm and the main challenges?

This farm is 650ha, but we also help manage organic farming on neighbouring farms. The main product is high quality organic olive oil. The soil is mainly sandy-loam, with naturally poor nutrient status. The climate is dry with mean precipitation around 200mm p.a. So we struggle with soil erosion and water retention. This means that we concentrate on soil health and apply deficit irrigation using the water from the aquifer.

How have you incorporated minimum tillage, cover crops and crop inputs into your rotations?

Reduced tillage is applied all over the farm, as this helps with the soil erosion problems. Cover crops are grown when needed for seasonal protection. In terms of inputs, we leave the pruning debris from olives on the soil to provide more nutrients, as well as grass cuttings when they are available. The waste from the olive oil mill is mixed with livestock waste (mainly from sheep) and returned to the field as organic compost to increase the organic content in our soils.

How did you make the change?

Sustainable farm and soil management have always been in our philosophy. We think about how to provide more nutrients to our soils in sync with the nature. We started using the practices, like minimum tillage by testing on smaller, flatter fields. I developed a plan so that I could make these changes without external financial support or subsidy.

How has the soil benefited from this change?

We record and analyse our soils, and we have seen an increase in soil organic matter and in turn soil fertility. We know this is from the pruning debris, grass and application of organic matter. Thanks to these practices, the soil water retention is much better, erosion has reduced and the microorganism population is larger. During the years with more precipitation we have observed a large worm population in our soils. Applying minimum tillage in the olive fields, you can prevent the olive roots breaking and in turn avoid the time and energy wasted in the root recovery.



Estimated impact on soil carbon (tC/ha/yr)

Cover crops	0,3
Compost management	0,06
Total	0,36

How have the yields been affected by this change?

We can achieve similar or higher yields to other farms in the area which use conventional management but they use 40% more water and apply inorganic fertiliser. We also control the pests by natural predators and use the livestock (horses) as a natural mower to control the cover crops. Overall these represent substantial cost savings. We have a mean olive yield of about 8t/ha, which is four times higher than the average production volume in Spain.

What are the financial implications of making the change?

You have to manage your farm as a business, whether or not it is organic. We can sell our products in over 20 countries because of their high quality and sustainable production. We can sell our product for 30% more above the market price for medium quality products and from conventional management, so we have an excellent quality-ratio price. Organic farming requires more labour but it can be covered with this extra 30% in price. Any further cost savings are mainly from the reduced needs of inputs.

For further information about these practices see the SmartSOIL toolbox:

<http://smartsoil.eu/smartsoil-toolbox/about/>

Farm specific economic analysis for the combined measures (€/ha)

Change in Gross margin: €502/ha

	With measure	Without measure
Output (Revenue)	2688,0	2016,0
Costs (Production)	630,7*	461,2
Gross margin	2057	1554.8

*costs are high due to specialised organic compost production and not considered typical

What advice and support is needed to make the change?

When we first started, we didn't have as much available information as we do now. We discussed progress amongst ourselves and with other farmers. It is important to use scientific work and information, but you have to adapt it somehow to your area. You will also need to have a strategy and economic feasibility to afford the initial investment. Many farmers do not implement such practices because the economic information is not available.

