



Field trial (1) – Lebanon: Effect of soil management and different cover crops on soil characteristics, olive production and olive oil characteristics (Activity 4.3.2)



ACTIVITY COORDINATED BY THE LEBANESE AGRICULTURAL RESEARCH INSTITUTE (LARI)

The fruitful collaboration between the Lebanese Agricultural Research Institute and the Faculty of Agriculture of the Lebanese University (LU) within the LIVINGAGRO Project led to the establishment of a field trial to assess the effect of soil management and different cover crops on soil characteristics, olive production and olive oil characteristics. The experiment was established in November 2020 at the Lebanese Agricultural Research Institute (LARI)-Abdeh station (Akkar, Lebanon).

The main objectives of this trial were:

- Assessing the effect of soil management and different cover crops on soil characteristics in order to reduce alternate bearing behavior in “*Balad*” olive tree, and improve productivity and oil yield and quality.
- Increasing farmers’ income through multiple cropping.



The experiment consisted of five treatments and six replicates (trees):

- ✓ Faba beans (*Vicia faba*);
- ✓ Broccoli (*Brassica oleracea* var. *italica*);
- ✓ Mixture Barley (*Hordeum vulgare*) + Vetch (*Vicia sativa*);
- ✓ Fertilizers + Herbicide;
- ✓ Spontaneous vegetation.

Preliminary results showed an increase in soil mineral nitrogen and organic matter content only in the Faba beans (*Vicia faba*) and in the mixture Barley (*Hordeum vulgare*) + Vetch (*Vicia sativa*) treatments. In the spontaneous vegetation treatment just an increase in organic matter was observed. In case of broccoli treatment, only slight increase in organic matter was observed possibly due to the fact that the consumable part of the plants were harvested for human consumption and the remaining part was introduced to the soil because of its positive effect against *Verticillium* disease.

On the other hand, the experiment showed that farmers may increase their income through selling the additional crops such as fresh Faba beans and Broccoli. For instance, an average production of fresh Faba beans can reach about 10 000 Kg/ha sold at a price of 1USD/Kg when harvested at early spring (as in this region, these crops mature very early). Then, the remaining part of the plant should be introduced to the soil. As per broccoli, an average production of 20 000 kg/ha could be reached and sold at a price of 1 USD/kg.

In conclusion, the adoption of cover crops as a soil management practice can be considered as a good practice to improve the soil composition and increase its fertility, especially by increasing the percentage of organic matter and the amount of nitrogen. In addition, this practice can be considered as a feasible way to reach sustainability in many olive orchards on a long-term basis and to increase farmer's income through the introduction of new crops in their orchards.

FOR MORE INFORMATION

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Photos by Dr. Peter Moubarak