



Good agricultural practices on rainfed soils in Mediterranean areas for the European Green Pact.

Maria Jose Martinez-Sanchez¹, Carmen Perez Sirvent¹, Salvadora Martínez Lopez¹, Lucia Belen Martinez Martinez¹, Imad El-Jamaoui¹, Jaume Bech², and Manuel Hernandez Cordoba¹

¹University of Murcia, Agricultural Chemistry, Murcia, Spain (mjose@um.es)

²University of Barcelona. Barcelona. Spain

The European Green Deal (EU, 2019 b), the EU's growth strategy for a sustainable future, is based on the realization that ecological transformation is an opportunity and that inaction comes at a huge cost. In this sense, implementing nature-based solutions on a larger scale would increase resilience to climate change and contribute to multiple objectives of the Green Deal, as they are essential for maintaining healthy water, oceans and soils. Considering the risks and threats that climate change poses to agriculture in general and rainfed crops in particular, solutions are urgently needed to help farmers and land managers cope with climate risks.

This paper focuses on three points of this green pact:

- Achieve zero pollution and a pollution-free environment.
- Preserve and restore ecosystems and biodiversity.
- Achieving a healthy, fair and environmentally sustainable food system from the "Farm to Fork" strategy.

From the above points it is clear that, in the future and under climate change scenarios, it would be necessary to increase soil fertilization, mainly due to the loss of organic matter and soil fertility, which in the case of Mediterranean soils is already generally low. And, since inorganic fertilization is increasingly limited by regulation, this increase would have to be carried out by organic fertilization. This undoubtedly increases operating costs and thus the uncertainties regarding the economic viability of farms. It is necessary to adopt measures for mitigation and adaptation in rainfed agriculture, whose main benefits are increased soil fertility, CO₂ retention, increased water infiltration and decrease in desertification.

To achieve these objectives it is necessary to implement mitigation measures based on the 4 per thousand initiative, improving and conserving the soil resource as a source of wealth and fertility, to halt rural abandonment and promote organic agriculture with the use of local waste, promoting the circular economy.

Among these measures, the following have been considered:

- Green manuring.
- Supply of composted plant material with local ingredients.
- Use of plant residues.
- Compost management.
- Crop rotation to promote soil fertility.

These monitoring works have been carried out in four plots located in the Region of Murcia in the context of the LIFE AMDRYC4 Project.

The introduction of good agricultural practices, incorporating the addition of organic matter to the soil and the restoration of natural vegetation, increases biodiversity and soil quality, slowing down desertification processes and contributing to Initiative 4 %. The results obtained with these proposals have been assessed and evaluated through indicators (DESERTNET Indicators of Fertility, Salinity and Phytotoxicity).

A baseline has been obtained to define the initial state of the monitored areas, thus making it possible to calculate the different indicators and the real cost of improving soil ecosystem services, concluding that in general, the measures that provide organic matter to the soil, increase soil fertility and do not include phytotoxicity problems, thus meeting the objectives proposed in the Green Pact, moving towards soil neutrality and increasing the ecosystem services it produces.