

Rainfed olive grove in Spain

Case Study 4

Experimenting crop diversification and low input farming



Experimentation plot of 3 ha with 200 olives located in Torredelcampo – Jaén (Spain)

INTERCROPS AND MANAGEMENT PRACTICES TESTED IN THE CASE STUDY

1 Olive + saffron

2 Olive + oat

3 Olive + lavender

1 No tillage or minimum tillage

2 Mulching with crushed offcuts from pruning

3 Mechanical removal of the cover

AGRONOMIC BENEFITS

1. Soil organic matter increase
2. Micro and macrobiological activity increase
3. Total nitrogen increase

ENVIRONMENTAL BENEFITS

1. Reduced erosion rates
2. Increased carbon sequestration
3. Increased soil fertility

SOCIOECONOMIC BENEFITS

1. **Potential for higher revenues** when considering environmental improvements from diversification
2. Possibility of generating employment in rural areas

FINAL CONCLUSION

Is it beneficial to adopt these sustainable practices?

Alley cropping can increase biodiversity and carbon sequestration in soil.

However, it is essential to select a diversification that is adapted to the local soil and climate conditions as the inclusion of diversification in olive groves can be associated to important economic risks owing to a reduction in olive yields for the first years



AGRONOMICS DRAWBACKS

1. **Lower yield** in the main crop during the first years of alley cropping
2. Lower soil infiltration rate
3. Difficulty to establish cover/diversification on degraded soils

ENVIRONMENTAL DRAWBACKS

Environmental changes in the short-term are difficult to detect due to the harsh Mediterranean environmental conditions. Changes are expected to happen in the long-term

SOCIOECONOMIC DRAWBACKS

1. **Significant initial investment in the installation of some diversifications.**
2. Increased in the amount of agricultural labour

WHY IMPLEMENT CROP DIVERSIFICATION?

Crop diversification in low-input systems is a useful tool for climate change mitigation, decreased erosion, increased soil fertility and improved biodiversity.



DIVERFARMING