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Is it possible to mix olive trees and crops efficiently? Setting from the rich diversity of agroforestry in Morocco

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Agroforestry in Morocco is an ancient traditional practice; however there is no study on its performances and limits.The objectives of this work, based on surveys was to characterize the diversity of associations, practices, and to evaluate the efficiency of agroforestry. 72 surveys were conducted in Moulay Driss Zerhoun (Meknes, Morocco). **Cereals and legumes** are the main intercropping crops with **olive tree,** the analysis of collected data shows there was a significant difference between soft wheat and barley grain yield in agroforestry and full sun crops: we recorded a reduction of 57% of soft wheat grain yield in agroforestry versus full sun crops, and a decreasing of 42% of barley grain yield. However, there was no significant difference between grain yield of agroforestry and full sun for faba **bean, lens** and **chickpea**. The land equivalent ratio shows that the association with **faba bean** is the most important with a ratio of 1.6 , 1.5 for **lens,** 1.4 for **chickpea** ,1.2 for **barley** and 1.1 for **soft wheat**. Since the association with legumes is promising, and to understand interactions, two experiments were carried out during two years: 2016 and 2017 under 25-year old **olive tree** and two agricultural witnesses in the same years. The first year of experimentation experienced a water deficit, at this year the grain yield was not significantly different in agroforestry and pure crops; however we recorded a low yield in both agroforestry and full sun. In 2017, there was a highly significant difference between **faba bean**, and l**ens** grain yield in agroforestry and full sun crops we recorded a reduction of 72% of **faba bean** grain yield in agroforestry and 47% for **lens**, however there was no significant difference between **chickpea** grain yield. Results are variable from one year to another; further studies are needed to confirm results.

Keywords: Efficiency, olive, legumes, cereals.