

Olive tree and annual crops association productivities under Moroccan conditions

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Introduction

Agro forestry which that means association on the same land of trees and crops is a traditional practice. In recent years, because of negative impacts of monoculture intensification; agro forestry interested scientists at international level. This TRADITIONNAL and also NATURAL innovation has many advantages (Kang and Wilson, 1987) (preservation of bio diversity, diversification of productions, C sequestration, alternative solution for climatic change, soil erosion control δ). In Morocco such practice is used in mountainous and oasis regions where water and/or land resources are limited. In these locations many crops are mixed and their monitoring is complicated. Unfortunately, few scientific studies were dedicated to such system and someone might describe it as primitive, none productive and must be changed. The aims of this work, are a) determination of the importance of olive tree and annual crops association b) estimation with farmers of the productivity of the association and c) evaluation of advantages and disadvantages of such practice according to farmers and scientists point of views.



Materials & methods

This study is based on rapid rural appraisal approach. In different regions where olive tree are implemented, farmers (70 groups) gave qualitative indications of olive tree field: density and age of plantation, estimated olive yield, annual crops cultivated in inter rows of olive trees and their productivities in such situation. Also, interviews were made with farmers, researchers, development agents to determine the importance, advantage and disadvantages of alley cropping based on olive tree. In parallel to this study, in different filed where olive tree are associated with other crops, we determine: density of trees, distance left from tree to cultivated crops in inter rows and general observations on crops and olive tree performances.

Results & discussion

In the investigated zone, results shows that 75% of farmers growing olive tree are also producing annual crops between tree rows. Those crops are: cereals (durum and soft wheat or barley), legumes . faba bean, lentils, pea, chickpea) and vegetables when irrigation is possible (potato, tomato, onion).Olive tree and cereals association are dominant (50% of cases). We estimated that for an average density of 100 tree/ha, annual crops may occupy 75% of the land while olive tree may occupy the remaining part. Farmers indicated that technical interventions (ploughing, fertilizing) concerns mainly annual crops and then can profit to olive tree. Olive tree monoculture is explained by : age of the plantation; when tree are aged their shadow do not allow intercrop implementation also, when, tree density is high or when olive tree are implemented in accident land. According to farmers estimations: legume crops like faba bean do not affect olive production comparatively to cereals (durum or soft wheat or barley). In this second case, olive production is reduced by about 39% when cereals are intercropped between the rows. However, farmer produces an added value of cereals or legume of respectively 9 and 7 qx/ha. We hypothesis that legume do not affect negatively olive production since those crops have short cycle comparatively to cereals and may give more nitrogen to plantation as result of biologically fixed nitrogen.

Conclusions

Association of perennial crops and annual ones is a common practice by farmers and might be more important in future due to land scarcity. Scientific involvement to analyses such system is necessary. Positive and negative interactions should be elucidating to choose more profitable combinations in more adaptable conditions..

References

Kang BT and Wilson GF (1987) The development Of alley cropping as a promising agroforestry technology. In: Stepler HA and Nair PKR (eds) Agroforestry: A Decade of Development, pp 227-243. ICRAF, Nairobi, Kenya.

