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***The climate Change risk in agriculture.
Intercropping and agroforestry as good practices for
sustainable adaptation.***

Adriano Ciani, External Charged Teacher ,Perugia University

Paolo Ciuchi, Foundation of Agricultural Education , Perugia (Corresponding Author)

Annalisa Gambardella, Agonomist, Free Lance

Abstract

Intercropping and agroforestry, old and commonly practices used in agriculture in order to get the best efficiency in the use of growth resources until the recent past time, can be appreciate in the future because of the simultaneous action of the climate change risk and the economic crisis.

The lost of employment, has decreased the pricing of human labour in west countries, at the same time the climate change is making difficult to preserve high productivity that specialized agriculture needs to keep a reasonable profitability.

Intercropping and agroforestry make possible to increase strongly the productivity of natural resources as well the stability of the yields. The synergies between crops in mixed crop systems generates more efficiency in the use of resources and have a secondary important action in environmental protection, particularly from soil erosion and groundwater pollution so as in increasing of biodiversity and food security.

Otherwise, the weak side of mixed cropping, is the strong increase of costs of production, resulting to the high necessity of Human labour per hectare. Such limit becomes less constraining yet, in a period of increasing unemployment and decreasing of wages.

To evaluate the productivity advantages of intercropping and agroforestry compared to specialized agriculture, many authors recommend the L.E.R. (Land Equivalent Ratio), an index which returns a good comparative assessment of productivity. To evaluate economic efficiency of the crop system the authors purpose is to use the "Equilibrium price of labour ", assessed as residual value, setting first the price of labour to 0 and dividing the resulting operating income value to the total hours necessity for cultivation. This parameter returns a good evaluation of the ability of the economic activity on labour remuneration. A study case

has reported in this paper, concerning an analysis of productivity and economic performances of an agroforestry crop system recurring in central Italy and practiced on a little farm of the region of Umbria. It demonstrates that agroforestry is able to generate a high L.E.R., pointing out a strong productivity advantage on specialized crop systems. From the economic point of view, very high revenues as well an acceptable Equilibrium price of labour used for cultivation, mark out the agroforestry crop system, obtaining data quite similar to the specialized farm.

The final conclusion is that Intercropping and agroforestry have great potential to increase their importance in the future especially on little farms and will provide an important opportunity to deal with climate changes. To support growth and development of those crop systems is important to change the current technological system, promoting new model of mechanization with little machinery and high degree of automation such as robotics.

Keywords: Intercropping and Agroforestry, Land Equivalent Ratio (L.E.R.), operating income

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