

## RESEARCH REGARDING THE IMPORTANCE OF THE IRRIGATION IN THE SUSTAINABLE AGRICULTURE SYSTEM FROM NORTH WESTERN PART OF ROMANIA

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**Abstract.** *The paper is based on the research carried out during 1976-2014 in Oradea, in a long term trial at ten different crop.*

*The melioration crop rotation with alfalfa, the fertilization system with manure and optimum chemical fertilization determined to maintain the structured degree in the irrigated variant on the level of the crop rotation with unirrigated wheat- maize*

*Soil water reserve on irrigation depth decreased bellow easily available water content every year and in the 30 % from years even bellow wilting point.*

*The irrigation improved the microclimate conditions and the optimum water consumption can be assured using the irrigation, only .*

*Irrigation determined the increase of the yield level in average with 39 % (wheat) to 127 % (maize for silo); yield stability (standard deviation ) improved with 8,7 % (sunflower) to 50,4 % (maize for silo). Yield quality and water use efficiency were improved, too, in the irrigated conditions.*

*The correlations quantified in the soil-water-plant- atmosphere system sustain too the importance of the irrigations in the sustainable agriculture system from Western part of Romania, too.*

**Keywords:** irrigation, microclimate, sustainable agriculture, yield, water use efficiency.

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