



RESEARCH CONCERNING THE EFFECT OF IRRIGATION AND FERTILIZERS ON SOIL FERTILITY AND WHEAT AND MAIZE YIELD CERCETARI PRIVIND EFECTELE IRIGARII SI FERTILIZARII ASUPRA CULTURILOR DE GRAU SI PORUMB

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The experiments carried out at the Podu-Iloaiei Agricultural Research Station, during 1980-2003, had the following objectives:

1. The improvement of fertilization system in wheat and maize crops on slope lands under irrigation;
2. The evolution of soil fertility, estimated by physical, chemical and biological indicators as influenced by fertilizers and irrigation;
3. Effects of long-term fertilization and irrigation on wheat and maize yield, cultivated on slope lands;
4. The study of water runoff and soil losses in different crops under irrigation and unirrigation.

Soil mean losses by erosion, during 1993-2002, on irrigated lands with a slope of 10 %, were of 0.346 t/ha in wheat and 1.872 t/ha in maize. By crop irrigation, annual mean soil losses by erosion increased with 11 % in wheat and 19 % in maize.

The results concerning the intensity and uniformity of spreading water by sprinkler irrigation on lands with a slope of 10 % pointed out that by using ASJ 1M sprinklers with nozzle diameter of 7 mm in watering schemes of 12x18 or 18x18 and by ensuring a working pressure of 3.1-3.6 kgf/cm²/ha during the first growth stages and to 600 m to the sprinkler, the uniformity coefficient Christiansen varied between 74.9 and 81.6 %, according to wind speed. Ensuring these quality indices at watering applied and limiting them to 400 m/ha in critical stages, compared to crop water requirements, lands with a slope of 10 % can be successfully irrigated without increasing the erosion process.

The highest yield increases (the best from the economic point of view) obtained in wheat during 1982-2003, were of 78 % (2220 kg/ha) at a rate of N100+ 100 kg/ha P₂O₅ and 92 % (2620 kg/ha) when N70+ 70 kg/ha P₂O₅ + 30 t/ha manure was used. In maize crop, the use of watering rates of 400 and 600 m/ha resulted in getting mean yield increases of 31 and 39 %, respectively (1803-2237 kg/ha) during 1982-2003.