

WHEAT WATER CONSUMPTION AND WATER USE EFFICIENCY UNDER THE CROP ROTATION AND FERTILIZERS INFLUENCE

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Abstract. *The paper is based on the results researches obtained during 2009 – 2011 in Oradea. In the crop rotation of 4 years with clover in comparison with wheat – maize crop, the yield gains statistically assured were obtained both in the variants with organic fertilization and in the variant with organic + chemical fertilization. The use of the mixture lupin + oat in this crop rotation determined to obtain yield gains in comparison with variants with lupin, pure crop as green manure; yield obtained using lupin + oat were close to the yield from variant with manure 25 t/ha. Meliorative crop rotation and fertilization determined the improve of the water use efficiency in comparison with the controls; water use efficiency from variants with lupin + oat was bigger than water use efficiency obtained in the variant with lupin, too.*

Key words: crop rotation, green manure, water use efficiency, wheat.

1. Introduction

In the sustainable agriculture system, the crop rotation is the central pivot and organic fertilization is one of the most components [1,6, 9]. Green manure can occupied a very important place between the organic fertilizer types but the correct use are need consist of the mixture between lupin and oat (rye) and rape. [5, 7]. The use of the lupin in pure crop due the small C/N rapport determines, explosive microbiological processes and intense humus mineralization and finally the decrease of the soil humus reserve. [8, 10]

2. Materials and methods

The researches were carried out in Oradea, Western Romania, on eroded preluvosoil with slope of 8°. On ploughing land the pH value is of 6.2, humus content is of 2.1, mobile phosphorus is of 34.1 ppm and mobile potassium content is of 209.2 ppm. Structure degree is of 55.8% and field capacity (24.3%) and wilting point (9.1%) have median value.

Research period was 2009 – 2011, experimental dispositive includes three factors: Factor A: crop rotation: a1 : wheat – maize; a2 : oat + clover – clover – wheat –

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