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ASSESSMENT OF SOIL NUTRIENTS AVAILABILITY OF AN EXPERIMENTAL FIELD USED IN ORGANIC VEGETABLE CROPS FROM BUZĂU COUNTY, ROMANIA

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Keywords: ICP-MS, macronutrients, micronutrients, soil availability, soil fertility

INTRODUCTION

Macro- and micronutrients status of soil is very important not only for plant grows and development (function of plant enzymes and biochemical processes and integrity of plant cells) but is also an indicator for soil fertility. Deficiency of nutrients in soil can lead to the crop yield reductions, while the excess can affect the plant quality and health.

Plants can be found in the following states with nutrients: poor, normal, abundant, excess, and toxic), depending on the level of soil nutrition, physical and chemical properties, and climatic conditions.

In neutral and alkaline soils the permanent load is compensated by basic cations (Ca^{2+}, Mg^{2+}) (Lacatuşu, 2016).

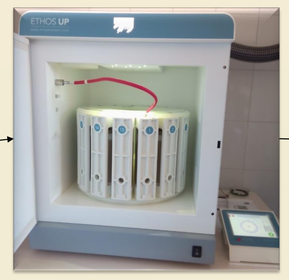
Rich nutrient conditions reveal that vegetation grown in fertile soil can be more efficient in sequestering carbon, thereby combating greenhouse gas effects and global warming (Zhang et al., 2019).

MATERIALS AND METHODS

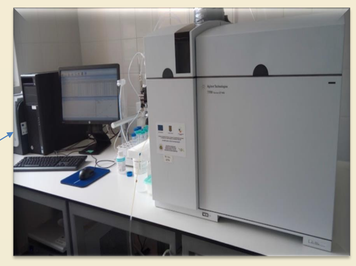
The nutrients content analysis were made in the Research Centre for Study of Food and Agricultural Products Quality, University of Agronomic Sciences and Veterinary Medicine of Bucharest.

The experiment was conducted in the organic research plot from Vegetable Research and Development Station Buzău, România

- Three soil surveys were taken up to a depth of 125 cm, with soil samples collected in plastic bags, than dried in the laboratory and milled.
- For soil samples preparation (mineralization by microwave digestion)

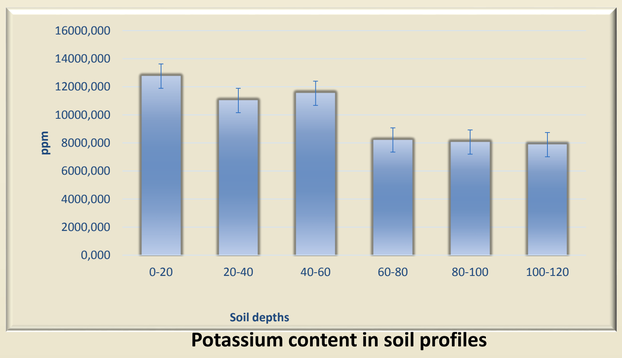


and quantification at ICP-MS (with MassHunter Workstation software),

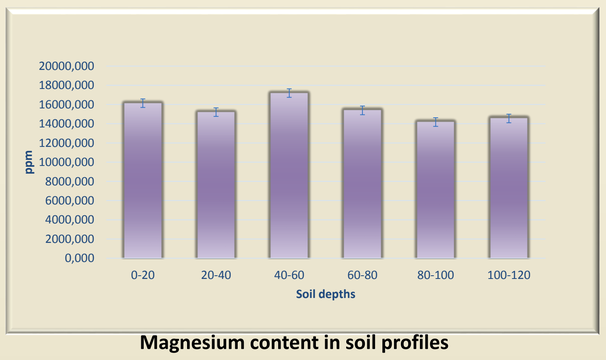


RESULTS AND DISCUSSIONS

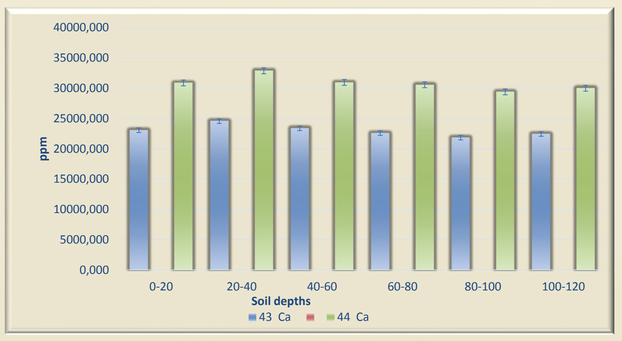
Macroelements content



Potassium content in soil profiles

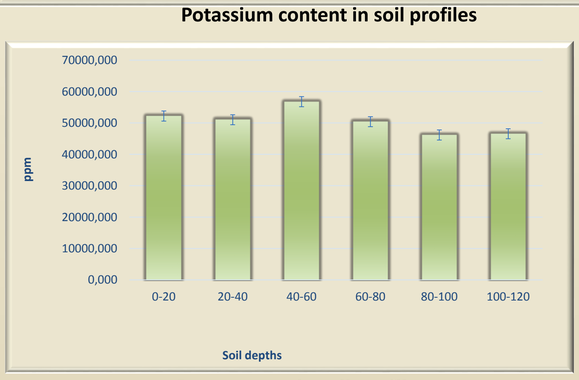


Magnesium content in soil profiles

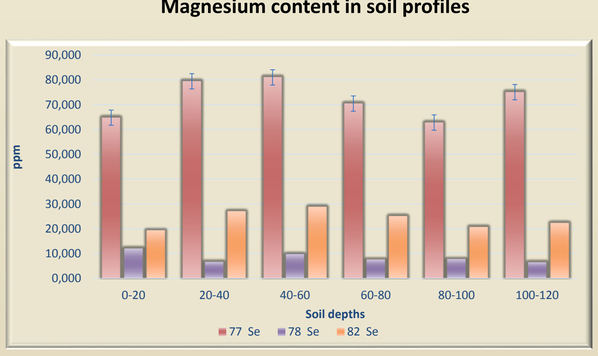


Calcium content in soil profiles

Microelements content



Iron content in soil profiles



Selenium content in soil profiles (different isotopes)

Correlation between soil profile and nutrients content

Soil profile	0-20	20-40	40-60	60-80	80-100	100-120
0-20	1					
20-40	0.998	1				
40-60	0.998	0.995	1			
60-80	0.996	0.998	0.997	1		
80-100	0.996	0.9992	0.995	0.9995	1	
100-120	0.995	0.998	0.994	0.9993	0.999	1

CONCLUSIONS

- The results reveal positive correlation between nutrients content and soil profile. Soil nutrient availability has a significant impact on organic crop production.
- It was found that experimental field from Buzau have a very important content both in macro and microelements.

ACKNOWLEDGEMENTS

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