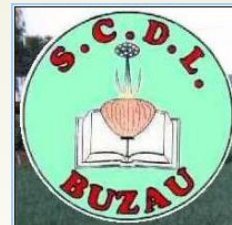




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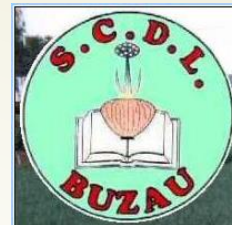
Characterization of soil conditions in an organic testing field for vegetable crops, Buzau county, Romania

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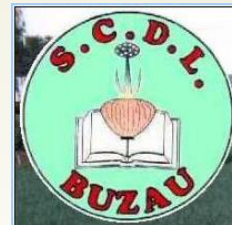


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- ✓ The vegetable production is one of the main agriculture sectors in Romania, that may provide high quality, safe and sufficient products both for Romanian market and exportation, all year round, as both open field and covered production systems are in practice (Scurtu et al., 2016).
- ✓ In Romania, in 2017, from the entire vegetal production, the value of the vegetable production was ranked the second, with 17.9%, just after the cereals production, which represent a percentage of 34.8% (INS, 2018b).



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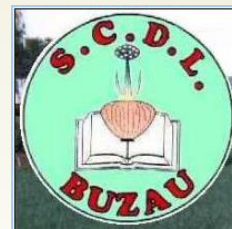
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- ✓ According to the National Institute of Statistics, in 2017, the vegetable production increased by 8.1% due to the increase of yield per hectare, although the cultivated area decreased with about -1.8%, as compared to the 2016 (INS, 2018a).
- ✓ In order to support the farmers, deep knowledge of soil characteristics become a necessity and soil analysis are more and more requested.



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- The same Motsara and Roy, 2008, in their FAO guide for plant nutrients analysis state that the nutrients for crops, of various sources, should be applied knowing
- the requirements of different crops,
- the characteristics of different type of soils,
- the availability of various resources,
- the expected level of production
- the costs of inputs and outputs.



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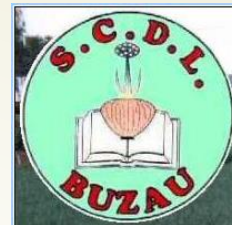
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Material and Methods

Vegetable Research and Development Station Buzău, România
(lat.:45.16108714 N and long: 26.82423914 E, alt: 92 m) in 2018



It is one of the most famous research stations in Romania, in the field of vegetable growing, especially tomatoes, for which they have developed a high number of new cultivars

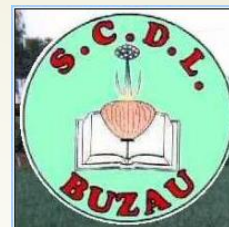


Material and Methods

- Three soil surveys were taken up to a depth of 125 cm, with soil samples collected in plastic bags, than dried in the laboratory, milled and analysed.
- The identified soil type has been characterized morphologically and physicochemically according to the guidance for field description of soil profiles and specific environmental conditions presented in the Romanian System for Soil Taxonomy, 2014.
- The complete characterisation of the soil was possible by analysing the results based on the A.S.R.O. standards, which are in line with international standards.



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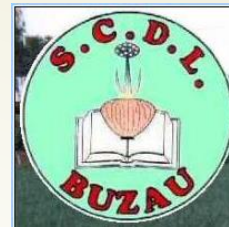
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The flat area of the analysed organic research field



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A. depth of soil profile;



B. soil profile
and soil
sampling tool



C. dring samples in the lab

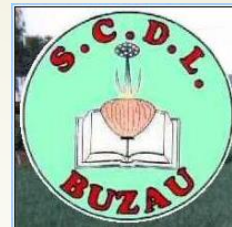


D. sample milling



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Material and Methods

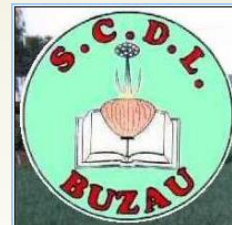
The following analytical methods were used to determine the chemical properties:

- Organic matter (humus)
- CaCO_3 (carbonates)
- nitrogen content
- mobile phosphorus content (mobile P)
- mobile potassium content (K mobile)
- pH: potentiometrically
- Hydrolytic acidity
- degree of bases saturation V%



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Material and Methods

The following analytical methods were used to determine the physical characteristics:

- determination of granulometric fractions:
 - pipette method, for fractions ≤ 0.002 mm;
 - wet grinding method for fractions of 0,002 - 0,2 mm and dry gringing method for fractions $> 0,2$ mm.
- bulk density (BD)
- aeration porosity (PA)
- compaction rate (GT)
- hygroscopicity coefficient (CH)
- permanent wilting point (CO)



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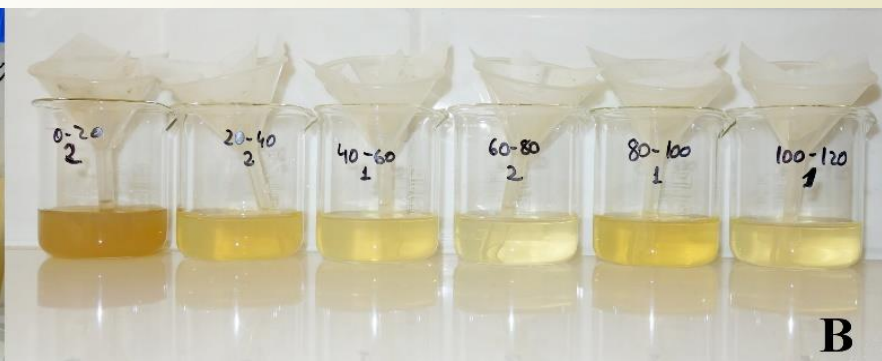
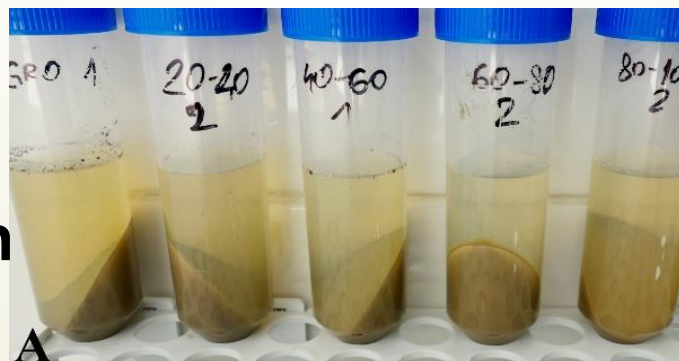


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Results and Discussions

- ✓ The analysed soil profile belongs to the soil class of calcareic alluvial soils, founded on fluvial deposits, on a meadow region, with the ground water lower than 3 m.
- ✓ As stratification is the major characteristic used to distinguish these soils, the layers may be easily detected by the different particle-size distribution and organic matter content.
- ✓ The soil was used for long time for vegetable growing.

A. The presence of the organic matter in the first three soil layers.

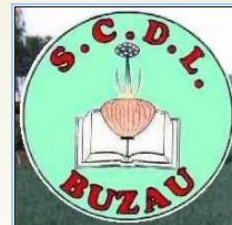


B. Different coloration of soil layers.



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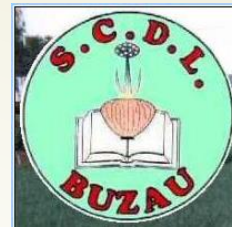
Results and Discussions

- ✓ The soil reaction is moderately alkaline,
- ✓ humus content is medium,
- ✓ the total content of nitrogen is medium,
- ✓ the mobile phosphorus content (ppm) is high,
- ✓ mobile potassium content (ppm) is medium,
- ✓ the texture is sandy loam, it contains carbonates,
- ✓ the soil is non-saline/ non-alkalized, eubazic (saturated in bases) >91 %, humus reserve (t/ha) is medium.
- ✓ The studied soil integrates in the Quality Class II, with 74 points, due to high groundwater and floods.



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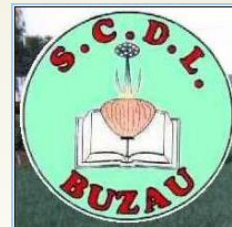
Conclusion

- ❑ The soil cover is in accordance with the physico-geographic conditions of the area, with only one type of soil being identified: calcareic alluvial soil.
- ❑ The parental material consists of fluvial deposits of different granulations, with the formation of alluviosols, specific to the meadow area.
- ❑ The studied territory is drained by the Buzău River and the network of drainage channels consists of the water bodies located at varying depths depending on the local specific landforms (1-3 m).
- ❑ The main limiting factors of the production potential (for arable crops) are the climatic conditions and the high groundwater level for the meadow, especially in the rainy years.



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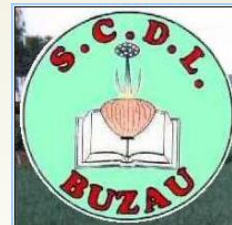
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Conclusion

- ❑ The soil is very suitable for vegetable growing due to sandy-loamy texture, high groundwater level, with favorable conditions for irrigation and reduced distance to consumers.
- ❑ For an alluviosol, physicochemical properties are very favorable due to the natural factors and the way of exploitation from the last decades.
- ❑ According to the quality indicators, the soil is in the 2nd quality class with 74 points.
- ❑ The fertilization with phosphorus and potassium is necessary depending on the crop, but in limited amounts, due to the high natural supply.
- ❑ The nitrogen fertilization should be done mostly with foliar products, in low dosage and more often.



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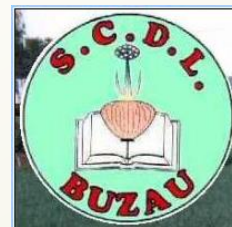
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Acknowledgment

This work was supported by a grant of the Romanian Ministry of Research and Innovation, CCCDI-UEFISCDI, project number PN-III-P1-1.2-PCCDI-2017-0301 / 28PCCDI, within PNCDI III.



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Thank you for your attention!

