42nd Conference for students of Agriculture and Veterinary Medicine with international participation

BIOMETRIC CHARACTERIZATION AND SEED GERMINATION OF SOME HALOPHYTE PLANTS

PhD student: Mugurași CONSTANTIN

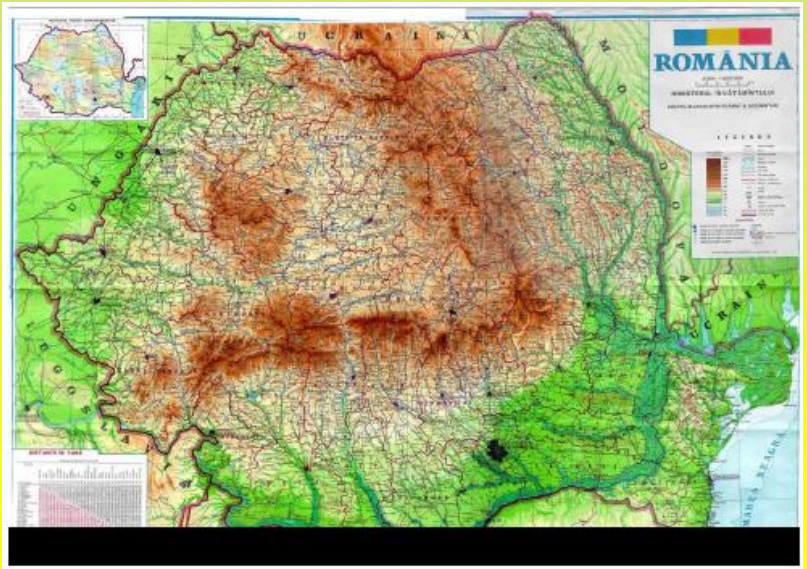
Adress: Bdul Marasti, 59, Sector 1, 011464, Bucharest, Romania
Tel.: +40721239134
Email: constantinmugurasi@gmail.com

Novi Sad, 2018

Brief overview of the university

- ✓ The University of Agronomic Sciences and Veterinary Medicine of Bucharest (UASVMB) is one of the oldest education institutions in Romania.
  - in 1852 called - "The Agricultural Institute in Pantelimon"
  - in 1855 called - "The School for Veterinary Education"

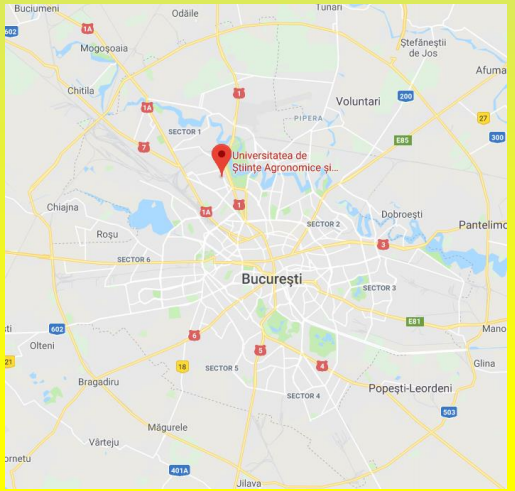
- ✓ Nowadays, the UASVMB is a modern education institution with all the forms of higher education, ranging from BSc to MSc, and PhD studies.



Brief overview of the university

✓ The UASVM Bucharest includes seven faculties in its structure:

- Faculty of Agriculture
- Faculty of Horticulture
- Faculty of Animal Science
- Faculty of Veterinary Medicine
- Faculty of Land Improvement and Environment Engineering
- Faculty of Biotechnologies
- Faculty of Management, Economic Engineering in Agriculture and Rural Development



Brief overview of the university

UASVMB also includes:

- the "Agronomie - Herăstrău" Campus
- the "Veterinary Medicine - Cotroceni" Campus

UASVMB has three branches in its patrimony, which operate as veritable research, production and work experience centres:

1. "Pietroasa" Viticulture and Enology Research and Development Station;

2. "Istriţa" Fruit-growing Farm;

3. "Moara Domneasca" Didactic Farm;

Novi Sad, 2018

Novi Sad, 2018

Novi Sad, 2018

Novi Sad, 2018

Novi Sad, 2018

Novi Sad, 2018

Novi Sad, 2018

The objective of the study

The objective - the *in vitro* germination of some halophyte seeds, on different concentration of NaCl, in order to test them afterwards on soil with different salinity, extracted from natural environment.

Material and method

Biological material – 50 seeds

✓ *Festuca arundinacea*

www.species.wikimedia.org

✓ *Portulaca oleracea*

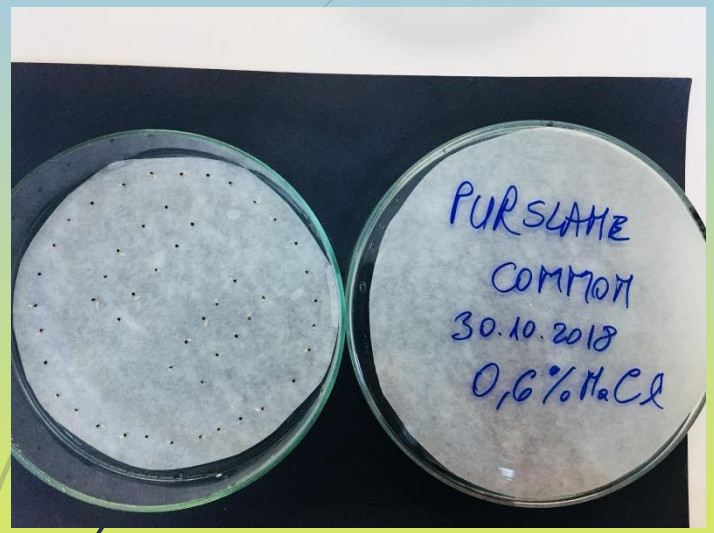
www.en.wikipedia.org

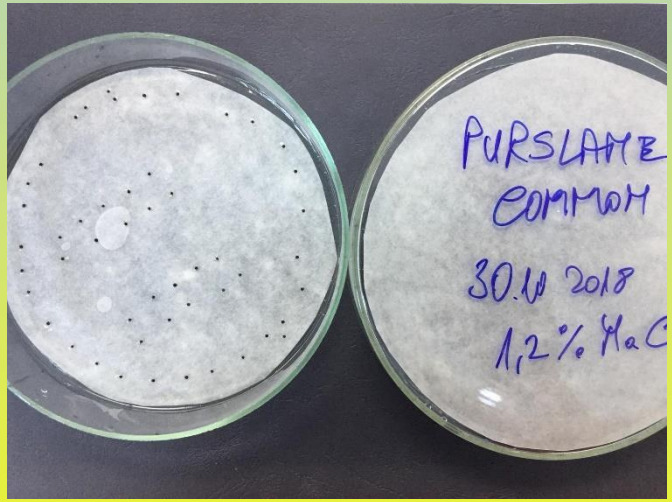
✓ *Gypsophila elegans*

www.en.wikipedia.org

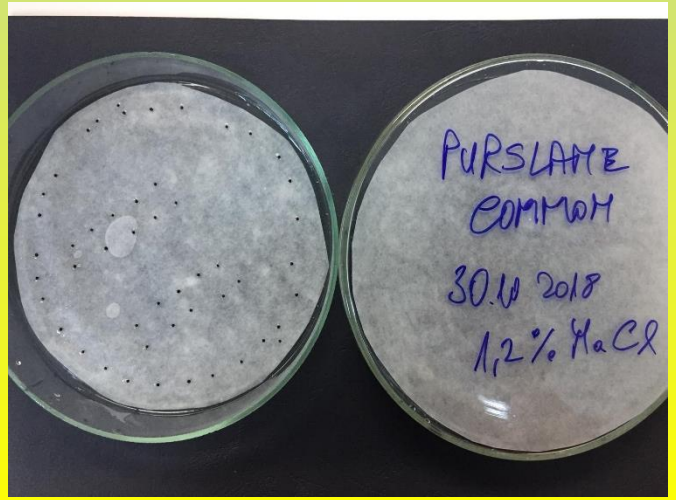
Cultivation conditions

- ✓ 0.2% NaCl solution, 0.6% and 1.2%;
- ✓ Photoperiod of 12h, 20 ℃, and 90% relative humidity in climatic chamber;
- ✓ The seeds were placed on filter paper discs in Petri dishes, sterilized in advanced;
- ✓ The samples were monitored daily for a period of 9 days;
- ✓ To determine the length, the fully developed plants were measured.





Portulaca seeds



10x

20x

Festuca arundinacea

20x1

Portulaca oleracea

20x

20x

Gypsophilla elegans

20x

Results and Discussions

With regard to *Festuca arundinacea seeds:*

1. Following the experiments it was observed that this species had a similar germination percentage (96%) in the presence of a 0.2% NaCl concentration like in distilled water (95%).

2. With increasing NaCl, the percentage of germination decreases up to 75% in the case of 1.2% NaCl solution.

3. It could be noticed that after germination in the presence of NaCl solutions, roots and stem lengths decrease for all concentrations as compared to the sample in distilled water.

Results and Discussions

With regard to *Festuca arundinacea seeds*:

1. Following the experiments it was observed that this species had a similar germination percentage (96%) in the presence of a 0.2% NaCl concentration like in distilled water (95%).

2. With increasing NaCl, the percentage of germination decreases up to 75% in the case of 1.2% NaCl solution.

3. It could be noticed that after germination in the presence of NaCl solutions, roots and stem lengths decrease for all concentrations as compared to the sample in distilled water.

Results and Discussions

With regard to *Portulaca oleracea seeds:*

1. Following the experiments, it was observed that this species had a germination percentage of 92% both for germination in distilled water and for 0.2% and 0.6% NaCl, decreasing to 86% in the case of 1.2% NaCl;

2. The length of the stems in the case of distilled water was 11.22 mm, smaller than 12.97 mm and 12.65 mm corresponding to 0.2% and 0.6% NaCl, but higher than 8.04 mm corresponding to 1.2% NaCl solution;

3. The length of the roots for distilled water was 17.22 mm, lower than 18.21 mm and 12.41 mm corresponding to 0.2% and 0.6% NaCl concentration, but higher than 5.2 mm in the case of 1.2% NaCl.

Results and Discussions

With regard to *Gypsophila elegans seeds*:

1. Following the experiments it was observed that this species had 77% germination in distilled water, in contrast to 0.2% and 0.6% NaCl, it showed higher percentages 82% and 92%, respectively.

2. Root lengths are higher for 0.2% NaCl and 0.6% NaCl, 22.41 mm and 21.52 mm respectively, wile for distilled water 11.67 mm.

3. he lengths of the stems are higher at 0.2% NaCl and 0.6% NaCl 12.06 mm and 7.97 mm respectively compared to distilled water 7.35 mm.

4. In the case of 1.2% NaCl solution *Gypsophila* seeds were inhibited, achieving a germination percentage of only 52%. However, the dimensions of the roots and stems are very small in this case, the majority measuring less than 1 mm.

Conclusions

www.thinglink.com

- 0.2% NaCl does not affects the germination, on the contrary improves germination percentage in case of *Portulaca oleracea;*
- *Festuca arundinacea* is sensitive to more than 0.6% NaCl; Gypsophila elegans it increases and at Portulaca oleracea the germination percentage remains unchanged.
- In case of 1.2% NaCl solution, the percentage of germination in all species studied is decreased.

Acknowledgments

The travel costs were supported by the financing contract no. 44 / 2018 European and International Cooperation - Subprogram 3.2 - Orizont 2020, Integrated system of bioremediation – biorefinering using halophyte species - cod: ERANET-FACCE-SURPLUS-HaloSYS.

Thank you for your attention!