

THE INFLUENCE OF PLANT ALLELOPATHIC ACTIVITY ON THE DYNAMIC OF MICROORGANISM QUANTITY

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INTRODUCTION

Microbial populations are the perpetual quantity compounds of plant communities. Microorganisms have high fermentative activity that is why they play an important role in the allelopathic interactions of plants. This work is a part of studies of steppe plants in “Mikhailivska Tsilyna” reserve (Ellanskaya, 2003). The aim of our work was to find out if the quantity of microorganism groups in the soil depends on allelopathic activity of plants.

MATERIAL AND METHODS

We have analyzed the soil of 7 steppe species of plants in “Mikhailivska Tsilyna” reserve – *Genista tinetoria* L., *Salvia pratensis* L., *Asparagus officinalis* L., *Euphorbia stepposa* Zoz., *Fragaria viridis* Duch, *Urtica dioica* L., *Poa aigustifolia* L. – at different phenological stages of plants. Soil samples were taken from the rhizosphere of plants (Zvyagincev et al., 1984). The number of microorganisms were measured using; soil fungi were initiated on Chapek medium (pH 4,5) and mash agar; bacteria – on the medium No. 19 and cabbage agar; *Bacillus* sp. – Mishustin medium (Methods ..., 1982).

RESULTS

The investigations showed that the rhizosphere of allelopathically active plant species such as *Genista tinetoria* and *Salvia pratensis*, had more quantity of micromycetes than the plants with the lower level of activity during the whole period of observation. The quantity of bacteria in the rhizosphere of diverse species of plants was insignificantly different during all vegetation period. The figures of *Bacillus* had the same ones as the micromycetes. The spreading of Streptomycetes in the rhizosphere of plants with different allelopathic potential was manifold. Their quantity increased in autumn in the rhizosphere species with high activity (*Genista tinetoria*, *Asparagus officinalis*, *Urtica dioica*, *Fragaria viridis*). But that figure decreased in the same period in the rhizosphere species with low activity (*Euphorbia stepposa*, *Poa aigustifolia*).

CONCLUSIONS

Basing on there results we may conclude that the rhizosphere of allelopathically active plant species have large number of micromycetes and insignificant quantity of bacteria and Streptomycetes. Probably this is due to the large number of phenols in the rhizosphere of allelopathically active plant species.

REFERENCES

- Ellanskaya N. E. 2003 – Allelopathic potential of rhizosphere soil of steppe plants in “Mykhailivska Tsilyna” reserve /Ecophysiological Aspects of Plant Responses to Stress Factors, V. 25, N 3, Cracow, 23-24 (in English).
- Zvyagincev D. G., Kochkina G. A., Kozevin O. A. 1984 – The new approaches to study of microorganisms successions in soil, M. Nauca, 81-103 (in Russian).
- Methods of experimental mycology. 1982, Kyiv, Nakova Dumka, 550 pp. (in Ukrainian).