A. tumefaciens. The systematic position of the *Agrobacterium* spp. strains isolated by us from blueberries requires further clarification based on the analysis of genotype characteristics, which we plan to do in the future.

References

1. Alippi, A. M, López, A. C. & Balatti, P. A. (2012). Diversity among agrobacteria isolated from diseased plants of blueberry (*Vaccinium corymbosum*) in Argentina. Eur J Plant Pathol, 134, 415–https://doi.org/430 10.1007/s10658-012-0001-x
2. Erarslan, G., Karakaya A. (2026) Bacterial threats to blueberry (*Vaccinium* spp.) production: A synthesis of pathogen diversity, epidemiology and control strategies. Microbial Pathogenesis, 216, 108494 https://doi.org/10.1016/j.micpath.2026.108494
3. Kałużna, M. & Pothier J (2022). Complete genome sequence data of two *Xanthomonas arboricola* strains isolated from blueberry plants displaying bacterial leaf blight in Poland. Phytopathology, 112(8), 1814–1818 https://doi.org/10.1094/PHYTO-11-21-0484-A
4. Kałużna, M. Puławska, J., & Meszka, B. A. (2013) A new bacterial disease on blueberry (*Vaccinium corymbosum*) caused by *Pseudomonas* spp. Journal of Plant Protection Research, 53(1), 32–36 https://doi.org/10.2478/jppr-2013-0004
5. Oliver, J. E.,. Cobine, P. A., & La Fuente, L. De (2015). *Xylella fastidiosa* isolates from both subsp. multiplex and fastidiosa cause disease on southern highbush blueberry (*Vaccinium* sp.) under greenhouse conditions. Phytopathology, 105(7), 855–862 https://doi.org/10.1094/PHYTO-11-14-0322-FI
6. Patyka V. P., Pasichnyk L. A., Gvozdyak R. I. et al. (2017). Phytopathogenic bacteria. Research methods: monograph. Vinnytsia: Vindruk.

https://doi.org/10.30970/apmicro.2026.47

Diakiv S.[1], Komovych L.[1], Kuzmishyna I.[2], Kalinkin V.[1]

MICROBIOTA OF HIGHBUSH BLUEBERRY RHIZOSPHERE ON GREY SANDY LOAM SOILS

[1]Lutsk National Technical University, 75 Lvivska St., Lutsk, 43018, Ukraine
[2]Lesya Ukrainka Volyn National University, 30a Vynnychenka St., Lutsk, 43025, Ukraine
e-mail: s.diakiv@lntu.edu.ua

Abstract. The local growth conditions were analyzed and the number of agronomically valuable groups of microorganisms in the rhizosphere of high-growing blueberries Duke variety was investigated. Blueberry bushes were planted on a typical substrate and gray sandy soil as well. The most optimal conditions for the development of oligotrophic microorganisms ($52.27 \cdot 10^6$ CFU/g ADS) and microscopic fungi ($2.07 \cdot 10^6$ CFU /g ADS) were formed in the experimental gray sandy soil.
Keywords: rhizosphere microbiota, highbush blueberry, *Vaccinium corymbosum* L. cultivar Duke, ecological-trophic groups of microorganisms.

High-growing blueberry (*Vaccinium corymbosum* L.) is one of the most promising berry crops due to its high content of antioxidants, anthocyanins and vitamins. However, its growing is associated with significant difficulties: the main problem – is the need for acidic soil with a pH level 3.5–5.0. Blueberry root system is devoid of root hairs and feeds exclusively on symbiosis with ericoid mycorrhiza, which is formed only in an acidic environment.

Therefore, the study of blueberry rhizosphere microbiota on soils atypical for this culture is a current scientific and practical task.

The purpose of the work was to investigate the soil microbiota composition from rhizosphere of blueberries Duke variety. Soil samples from three areas of blueberry rhizosphere were taken: control 1 – peat substrate with sulfur application of 180 kg/ha (Dubno, Rivne region); control 2 – peat substrate without sulfur application (Dubno), experimental sample – gray sandy loam soil with the application of sawdust and sulfur 180kg/ha (Lutsk).

The rhizospheric soil sampling was carried out after start of vegetation period. Soil pH level (potentiometric method) and humidity (thermostatic-weight method), as well as definition of the number of different microorganisms groups were conducted in laboratory conditions. While sowing the soil suspension we used nutrient media: Nutrient Agar – for eutrophs (ammonifiers); Hungry Agar – for oligotrophs; Chapeka Medium – for micromycetes; Ashby Medium – for nitrogen fixers; Muromtseva Medium – for phosphomobilizers. All of the measurements were three times repeated.

Despite numerous studies of the plant qualitative parameters (Yavorska et al., 2016), the blueberry rhizosphere microbiota data are presented in small quantities, and almost all sources are foreign (Kasurinen & Holopainen, 2001; Kelvin et al., 2025). Meanwhile microbiota practically forms the growth conditions and affects the yield of the crop. Therefore we investigated the number of some ecological-trophic microorganisms groups with agronomic value in the blueberry rhizosphere soil under the different growing conditions.

In the experimental gray sandy soil sample the most optimal conditions for the development of oligotrophic microorganisms ($52.27 \cdot 10^6$ CFU /g absolutely dry soil (ADS)) and microscopic fungi ($2.07 \cdot 10^6$ CFU /g ADS) were formed. While other investigated microorganisms' groups dominate in peat substrates due to typical local conditions for blueberry growth. The highest number of microbiota, except oligotrophs were represented in control 2. Among the three studied samples, control 1 was distinguished by the smallest number of microorganisms of all studied groups, which is probably associated with pH level 5.34.

The determination of microbiological processes direction in the soils showed the high oligotrophic coefficients for all of the studied samples, significantly higher than 0.25–0.30. This indicates the nutrient deficiency in the soil or depletion of humus reserves.

Therefore, the conducted research confirm that successful blueberries cultivation is possible in acidic, organic-rich environment, which supports well balanced microbiota number with a high proportion of eutrophs and nitrogen fixers microbes. On gray sandy loam soils without radical preparation, a suppressed microbiocenosis is formed, which is unable to provide the plant nutrition.

References

1. Kasurinen, A. & Holopainen, T. (2001). Mycorrhizal colonisation of highbush blueberry andits native relativesin central Finland. *Agricultural and Food Science in Finland.* 10, 113–119. https://journal.fi/afs/article/view/5683/4882
2. Kelvin, K., Esther, M., Clabe, W., Tavasi, N., Jonh, M., Dennis O., Dennsi O., Hamond, M., Sipho, M., Janet, T. (2025). Unveiling the roles, mechanisms and prospects of soil microbial communities in sustainable agriculture. *Discover Soil*. 2(10). https://doi.org/10.1007/s44378-025-00037-4
3. Yavorska, N. Y., Lobachevska, O. V., Khorkavtsiv, Ya. D., Kyyak, N. Ya (2016). Microclonal propagation of the varieties of highbush blueberry *Vaccinium corymbosum* L. *Biotechnologia Acta*. 9(5), 30–37. https://jnas.nbuv.gov.ua/article/UJRN-0000663271