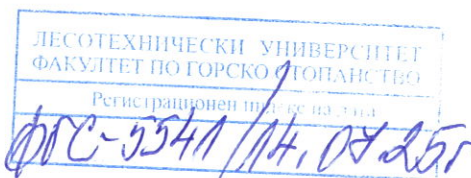


REVIEW



on the materials for participation in a competition for the academic position of associate professor, field of higher education 6. "Agrarian Sciences and Veterinary Medicine", PN 6.5. Forestry, scientific specialty "Forest Reclamation, Forest Protection and Special Uses in Forests", in the discipline "Soil Science and Fundamentals of Fertilization". In the competition for associate professor, announced by the Forestry University in the State Gazette, issue 28/01.04.2025 and on the website of the Forestry University on 17.03.2025, with procedure code FOR-AsP-0325-162, for the needs of the Department of Silviculture, at the Faculty of Forestry, the candidate is senior assistant Dr. Kamelia Georgieva Petrova.

Reviewer: Prof. Dr. Eng. Nikola Vichev Kolev, Dr.Sci., retired, scientific specialties "Soil Science" (Dr. Sci) and "General Agriculture" (professor), member of the scientific jury with order No. 3, LS-503 of 12.09.2024

1. Biographical data about the candidate:

The candidate in the competition, senior assistant, Dr. Kamelia Georgieva Petrova was born in 1987 and graduated from the University of Forestry, Sofia, in 2014, with the "Master" degree, specialty "Forestry". After full-time doctoral studies, she defended a dissertation on the topic "Updating the classification of soils from the territory of the Petrohan State University of Forestry" for the educational and scientific degree "doctor" in the scientific specialty Soil Science. In 2020, after winning a competition, she held the academic position of "senior assistant". She has 10 years of work experience at the University of Forestry, of which 8 years and 7 months in an academic position. Dr. Petrova is fluent in English and works with the computer program Microsoft office.

2. Compliance of the documents and materials submitted by the candidate with those required by the Regulations for the RAS at the LTU:

I have carefully reviewed the documents submitted by Dr. Petrova for participation in the competition for Associate Professor at the LTU, and I have found that they have been prepared in accordance with the Regulations for the RAS at the LTU. As for her scientific production and participation in national scientific projects, she has achieved 554 points, which has exceeded the important requirement of the LTU to have more than the minimum number of points (400) required by the Regulations.

The materials submitted by the candidate for participation in the competition include: a creative CV; a list of scientific works, a list of scientific projects and contracts carried out or supervised by the candidate; copies of diplomas and documents, and a list and copies of scientific publications for participation in the competition, a bibliographic reference of her citations; a certificate of work experience, organizational, educational and expert activity and an author's certificate for the implementation of the scientometric indicators of the LTU for the academic position of "associate professor".

3. Assessment of the candidate's teaching activities:

According to the certificate prepared by Dr. Petrova, she has a total of 1867.5 hours of classroom and equivalent extracurricular work over the last 5 years, and in the discipline "Soil Science with Fundamentals of Soil Fertilization" she leads a course and a practicum. She leads a lecture course with students from the specialties "Agronomy" and "Plant Protection". For the academic year 2024 - 2025, the total teaching work of the candidate in the competition is 404 hours (including - classroom work - 375 hours and extracurricular work - 29 hours). In the period 2020-2024 Dr. Petrova is a thesis

supervisor of 1 student and has prepared 2 thesis reviews. Senior Assistant Professor Dr. Kamelia Petrova participates in 11 national scientific projects. She is the head of 3 projects at NIS-LTU, participates in 7 more scientific projects at NIS-LTU. She participates in 4 scientific projects at FNI-MES and in one educational project funded under the Operational Program "Science and Education for Smart Growth". Dr. Kamelia Petrova also participated in the project "Assessment and Monitoring of the Impact of Atmospheric Air Pollution on Forest Ecosystems - Level I and II (Large-Scale and Intensive Monitoring of Soils in Bulgaria)", which has been ongoing for almost 40 years. She also participates in a scientific network, as an associate advisor to the World Association of Soil and Water Conservation (WASWAC). In 2018, she specialized at Alice Holt Lodge, United Kingdom – Forest Research Institute. She participated in the Glossolan course. In the period 2018-2024, she participated in the following international scientific forums with published papers: International Scientific Conference "90 Years Forest Research Institute - for the Society and Nature"-24-26 October 2018; International Conference "Forestry: Bridge to the future" 05–08 May 2021 in Sofia, Bulgaria; XXII International Multidisciplinary Scientific GeoConference Surveying, Geology and Mining, Ecology and Management - SGEM Albena 2022 2 - 11 July, 2022; International Scientific Conference "95 Years Forest Research Institute - Forests without borders"-19-21 October 2023.

4. Evaluation of the candidate's scientific, applied science and publication activities:

4.1. Participation in scientific, applied science and educational projects

The candidate Dr. Kamelia Petrova participated in the competition with: * 10 publications, combined with monograph quality; * Publications outside the 10 – 17 issues; * Projects – 11 issues; Dr. Petrova has participated in 4 national scientific projects under the National Science Foundation, one of which she was the head, and in 7 scientific projects under the National Science Foundation of the University of Technology. 4.2. Characteristics of the published scientific results Publications can be classified as follows: * Publications in scientific journals - 26 issues; * Publications in peer-reviewed collections – 1 issue; By importance: * Articles in journals with impact factor and impact rank - 26 issues; * Reports in collections – 1 issue; Language in which they were published: * In Bulgarian - 2 issues; * In a foreign language – 25 issues; Number of co-authors: * Independent - 2 * With one co-author - 4 * With more co-authors – 21 It is important to emphasize that the developments in which Dr. Petrova participates are complex and interdisciplinary, and therefore her publications are by author teams. The systematized 10 scientific publications (equivalent to a monographic work) on the topic "Studies of forest soils and assessment of basic soil parameters" cover Brown forest soils and dark-colored forest soils, which are of silvicultural importance in Bulgaria. They are medium to highly productive for beech, spruce, fir and other tree species that develop successfully on them. These soils are extremely important in the regions of the forest zone of the country. The mechanical composition of the soil, its strength, active reaction and organic matter content are important factors for the growth and productivity of tree species. Studies have been conducted in the studied sites regarding the content of heavy metals in these soil types. Concentration coefficients for Mn, Pb, Cu, Zn and Cd in forest soils have been calculated. The content of heavy metals on the territory of Western Stara Planina and on soils from forest areas under different land use has been studied. Basic soil parameters have been assessed in relation to the soil fertility of new soil units for the country, according to the WRB classification system (2006, 2007). Issues related to soil erosion and the application of new models for its assessment in mountainous areas have been examined. In the scientific works of Dr. Petrova, the state, abundance and diversity of soil microbial communities are taken into account, which are one of the main indicators for the assessment and monitoring of forest ecosystems and for soil monitoring. In these works on soils, higher values of the correlation

coefficient for microbial abundance were found in the lower soil horizons with humus content compared to the upper soil horizons. Studies were conducted related to the classification of Brown Forest Soils (Cambisols) and their parameters in the region of Western Stara Planina. The studied soils are distributed in the Middle Mountain zone of beech and coniferous forests. The soil fertility of the soil units Acrisols and Lixisols on the territory of Strandzha Mountain was studied. Complex studies were conducted to assess basic soil and microbiological indicators directly related to the fertility of these soils.

4.2. Reflection of the candidate's scientific activity in the literature (citability)

Dr. Petrova has registered, in essence, 6 citations of her scientific publications: Total - citations - 6 pcs.; According to the type of citations: * In refereed journals - 6 works by domestic and foreign scientists.

4.3. Contributions to the candidate's works (scientific and applied science):

I support the contribution elements of the ten publications with monograph quality, which are expressed in the following:

1. Dr. Petrova established coefficients for the accumulation of heavy metals, which represent quantitative values of the natural accumulation of heavy metals in the surface soil layers of Cambisols. The maximum values of the coefficients for Mn, Pb, Cu, Zn and Cd in these soils (B4_1) have been calculated.
2. The concentrations of Fe, Mn, Zn, Pb, Cu and Cd in forest soils from the Western Stara Planina were studied and evaluated by Dr. Petrova. A direct relationship between the pH_{H2O} values and the ongoing processes of accumulation or migration of heavy metals in the soil profiles in the A horizon of the studied soils was established (B4_2, B4_5);
3. The content of heavy metals on the territory of the Petrohan State Agricultural Research Center was assessed. It was established that in the studied Cambisols intensive migration processes occur in relation to the manganese content in the soil, due to the strongly acidic reaction of the soil solution (B4_3);
4. The concentrations of Pb, Cu, Zn, Mn and Cd were established in forest soils with different land use, which were used in the past for gold mining. It was found that as a result of ore mining, the concentrations of lead, zinc and cadmium exceed the MAC in the Pasishte 2 site (B4_4).
5. The soil fertility of Acrisols on the territory of the Petrohan State Forest Reserve was studied for the first time and assessed, by applying a classification system developed for soils in forest areas, according to which the following 4 indicators were used - soil depth, organic carbon stock, total nitrogen stock and active moisture capacity (B4_2).
6. Soils on the territory of Strandzha Mountain were classified, by applying the diagnostic criteria of WRB (2006, 2007). It was established that, at the first taxonomic level, these soils are classified as Lixisols and Acrisols in areas that, according to the national classification of soils in Bulgaria, are occupied by Yellow Earth-Podzolic soils and Cinnamon Forest Soils. At the second taxonomic level, a prefix qualifier haplic and a suffix qualifier - hypereutric were applied to Lixisols. A prefix qualifier haplic (B4_5) was applied to Acrisols;
7. The main characteristics of the wood litter by fractions (leaf mass, wood and reproductive organs and seeds) were studied at the Yundola intensive monitoring station. The content of basic nutrients in the individual fractions was also determined and assessed. The chemical composition of the lysimeter waters from the Yundola station was assessed. The main groups of microorganisms in the MGP and soil horizons were studied, with non-spore-forming bacteria dominating in the MGP and A

x-t. For actinomycetes, it was found that their quantity increases significantly with increasing soil depth (B4_6).

8. Brown forest soils from the territory of Western Stara Planina were studied, in order to study basic soil parameters and their classification. It was found that the majority of the soil profiles are classified as unsaturated with bases (Dystric Cambisols) (B4_7);

9. An IntEro model was applied to study the risk of erosion processes for the Vladayska River catchment area on the territory of Vitosha Nature Reserve. It was found that the studied territory belongs to category IV – a zone with weak erosion. It was found that during intense rainfall the shape of the catchment area allows the formation of a high wave, which can lead to significant damage (B4_9).

10. Basic soil parameters of Cambisols class soils on the territory of Pirin, Vitosha and Stara Planina were assessed in order to establish relationships with the proven growth depression of spruce plantations. It was found that in soils with a very strong acidic reaction, the plantations have a more pronounced growth depression, expressed in reduced radial growth and the formation of narrow annual rings (B4_10). The remaining publications, reports and projects in which Dr. Petrova participated have scientific and applied contributions, as their formulations given by the candidate in the competition are presented in detail in the submitted reference. Scientific and applied contributions in the remaining scientific works:

11. For the first time in Bulgaria, the initial stage of the podzolization process, occurring in brown forest soils, formed under the influence of a deciduous plantation of common beech (*Fagus sylvatica* L.) on the territory of the Petrohan Forest Reserve (G7_1), has been studied and proven.

12. For the first time, a study of basic soil parameters was carried out that have a direct connection with the growth and development of the fruiting bodies of the common black summer truffle (*Tuber aestivum* Vittad.) on the territory of Western Bulgaria. An assessment of the soil parameters of the soils was carried out,

5. Assessment of the candidate's personal contribution

The relevance and contributions of the developments presented by the candidate in the competition are undeniable, because they enrich the methodology of research in the field of soil science.

6. Critical notes and recommendations:

1. The reference for the contributions prepared by the candidate is verbose.
2. I recommend that the candidate in the competition publish independently and more in international journals.

7. Personal impressions

I do not know Kamelia Petrova, but I am impressed by her active work on the dissertation, publications and projects. The writing of scientific papers and participation in projects have formed the clearly expressed profile of Dr. Petrova's research work in the field of diagnostics of soil differences in forest soils, with the aim of forming land protection policies. I have no common publications with Dr. Petrova. The candidate in the competition has no plagiarism in scientific works discovered by me and proven in accordance with the statutory procedure (Art. 24. para. 5 of the Law on Soil Science and Soil Science).

8. Conclusion

Based on the analysis of the candidate's scientific and applied scientific activities, I believe that with the results of her teaching, research and applied work at the university, Senior Assistant Dr. Kamelia Georgieva Petrova meets the requirements of the Law in accordance with the main discipline "Soil Science and Fundamentals of Fertilization" taught by her and to propose to

the Faculty Council of the University of Forestry that she be elected to the academic position "Associate Professor" in the professional direction 6.5. Forestry, scientific specialty "Forest Reclamation, Forest Protection and Special Uses in Forests", in the discipline "Soil Science and Fundamentals of Fertilization". In the competition for Associate Professor.

14.07.2025

Reviewer: Prof. Dr. Eng. Nikola X. Kolev, Dr.Sci.

Sofia



Review submitted on: 14.07..2025