

## OPINION

on the materials submitted for participation in a competition for „Associate Professor“ in the field "Agricultural Sciences and Veterinary Medicine", Professional field 6.5 "Forestry", scientific specialty "Forest Reclamation, Forest Protection and Special Uses in Forests", in the discipline "Soil Science with Fundamentals of Fertilization".

In the competition for Associate Professor, published in the State Gazette 28/01.04.2025 and on the site of the University of Forestry with the code FOR-AsP-0325-162 for the needs of the Department of Silviculture, at the Faculty of Forestry, the candidate is Senior Assistant Professor Dr. Kamelia Georgieva Petrova, Faculty of Forestry, Department of Silviculture.

**Prepared the opinion:** Assoc. Prof. Vera Zamfirova Petrova PhD, in professional field 6.1 Plant Breeding, scientific specialty Amelioration (including soil erosion and its control), Department of Plant Protection, Faculty of Agronomy at the University of Forestry - Sofia, appointed as a member of the scientific jury by order No. ZPS-267/09.05.2025 by the rector of the University of Forestry.

### 1. Brief biographical data for the candidate

Kamelia Georgieva Petrova was born in 1987 in the town of Sliven. In 2014, she completed her higher education at the University of Forestry in Sofia, where she earned a Master's degree and a professional qualification as a Forest Engineer with a specialization in "Forest Management." Since 2016, she has been working as an Assistant Professor in the discipline of "Forest Soil Science" at the Department of Soil Science within the Faculty of Forestry at the University of Forestry. In 2020, she defended her doctoral dissertation on the topic "Updating the Classification of Soils in the Training and Experimental Forest Station (TEFS) 'Petrohan'." Since September of the same year, she has held the position of Chief Assistant Professor at the Department of Silviculture (known as the Department of Soil Science until 2023).

### 2. Correspondence of the submitted documents and materials of the applicant according to the Rules of the Development of academic staff at the University of Forestry.

In accordance with the requirements of the Regulations on the conditions and procedure for acquiring a scientific degree and for occupying academic positions at the University of Forestry, Chief Assistant Professor Dr. Kamelia Petrova has submitted the necessary documentation for participation in the competition. The total number of points collected is 554, with a minimum requirement of 400 points. The distribution of points by individual indicators is as follows: indicator A – 50 points (with a required 50 points); indicator B – 202 points (with a requirement of 100 points); indicator D – 212 points (with a minimum of 200 points); indicator E – 90 points (with a required 50 points).

The distribution of points by individual indicators shows that Dr. Petrova meets and even exceeds the requirements in each of the categories, which emphasizes the good scientific, teaching and professional preparation of the candidate.

### 3. Assessment of the candidate's educational and pedagogical activities (work with students and PhD students)

The report on teaching and extracurricular activities shows that Chief Assistant Professor Dr. Kamelia Petrova consistently meets—and even exceeds—the required workload



for individual academic duties. She delivers lectures and practical exercises in the course “Soil Science with Fundamentals of Fertilization” for students in the Landscape Architecture program (full-time) during the academic years 2022/2023, 2023/2024, and 2024/2025. She also teaches the course “Soil Science” to students in the Agronomy and Plant Protection programs (part-time) during the 2023/2024 and 2024/2025 academic years. Dr. Petrova supervises fieldwork in “Soil Science with Fundamentals of Fertilization” for Master's degree students in Landscape Architecture (first year, full-time) during the period 2020–2025. Additionally, she serves as a thesis advisor and writes reviews of graduation theses at the University of Forestry.

#### **4. Assessment of candidate's scientific, scientific-applied and publishing activities**

##### **4.1 Participation in scientific, scientific-applied and educational projects**

In her research activity, Chief Assistant Professor Dr. Kamelia Petrova demonstrates strong engagement and productivity at both national and international levels. She is the principal investigator of three projects funded by the Research Sector of the University of Forestry (RS-UF) and a participant in seven additional projects under the same organization. Moreover, she takes part in four scientific projects funded by the Bulgarian National Science Fund (BNSF) under the Ministry of Education and Science.

Of particular significance is her involvement in the long-term project “Assessment and Monitoring of the Impact of Air Pollution on Forest Ecosystems – Level I and II,” which has been ongoing for nearly 40 years and plays a vital role in ecological monitoring in Bulgaria. Dr. Petrova also contributes to an educational project under the Operational Programme “Science and Education for Smart Growth.”

At the international level, she serves as an Associate Advisor in the global scientific network World Association of Soil and Water Conservation (WASWAC), where she contributes to the exchange of best practices in soil and water conservation. In 2018, she completed a specialization at the prestigious Forest Research Institute – Alice Holt Lodge, United Kingdom, further enriching her academic and scientific profile.

Her contributions as an editor and peer reviewer for the *Bulgarian Journal of Soil Science* are also notable, as she actively participates in the evaluation and editing of scientific articles. Dr. Petrova's overall research work reflects a high level of professionalism, scientific competence, and consistent dedication to the advancement of science.

##### **4.2 Characterization of published scientific results**

The candidate, Chief Asst. Prof. Dr. Kamelia Petrova, participated in the competition with 27 publications published in journals indexed in the prestigious databases Web of Science or Scopus, which clearly testifies to the high scientific level and international visibility of her work. The candidate's scientific output is distinguished by high quality, international focus, thematic diversity and active collaboration, which emphasizes her significant contributions to the scientific field and establishes her as an active and productive researcher.

##### **4.3 Reflection of Candidate's Scientific Publications in Literature (known citations)**

- Total -6 citations.

###### **By type of citations:**

- In reference journals and proceedings of scientific forums - 6 citations;

##### **4.4 Contributions to the candidate's work (scientific, scientific-applied, applied)**

The analysis of the scientific and applied contributions presented by Chief Assistant Professor Dr. Kamelia Petrova demonstrates a high level of originality, innovation, and practical significance. Her work is focused in the interdisciplinary field between soil science, microbiology, ecology, and forestry, with contributions that can be clearly distinguished by their scientific and applied value.

### **Scientific Contributions**

1. **New scientific knowledge on soil processes in Bulgaria** – For the first time in the country, an initial stage of the podzolization process in brown forest soils under a common beech (*Fagus sylvatica* L.) stand has been identified and proven. This is a fundamental study contributing to soil classification and diagnostics (G7\_1).
2. **Integrated research on truffles and soil characteristics** – Her research on the relationship between soil parameters and the development of black summer truffle (*Tuber aestivum* Vittad.) is remarkable, with direct application potential in truffle cultivation and sustainable resource management (G7\_9, G7\_14).
3. **Application of GIS in soil ecology** – She has contributed to the development of a new approach for spatial analysis of the soil–microorganisms–tree vegetation relationship using GIS, applied in the territory of Vitosha Nature Park (G7\_10).

### **Applied Scientific Contributions**

1. **Assessment of carbon stocks in peat soils** – Research conducted in the "Torfeno Branishte" Reserve reveals how bulk density affects organic carbon content, which is essential for assessing carbon balance in vulnerable ecosystems (G7\_2).
2. **Evaluation of erosion risk using the C-factor** – A methodology for quantitative soil erosion assessment using the C-factor has been applied for the first time, providing practical value for forest management planning (G7\_3).
3. **Monitoring of chemical composition in plant litter and soil solution** – Critical data have been obtained on the accumulation of heavy metals (manganese, cadmium), which exceed permissible levels and are important for ecological monitoring (G7\_4, G7\_12).
4. **Microbiological analysis of Cambisols** – Detailed microbiological studies of Cambisols have been carried out for the first time, establishing a strong correlation between altitude and microbial abundance, which highlights the bioindicator potential of these soils (G7\_6, G7\_7, G7\_8).
5. **Catalase activity as an indicator of biological activity** – An innovative study on the catalase activity of soil microorganisms has been conducted, showing a clear relationship between microbial biomass and the ecological status of forest stands (G7\_11).
6. **Soil fertility and geostatistical analysis** – A geostatistical model (IDW) has been applied in the Botevgrad Basin for interpolating macronutrients, which is useful for soil fertilization planning and agricultural land management (G7\_15).
7. **Changes in microbial composition due to growth depression** – A novel observation has been made that growth depression in spruce stands alters the structure of microbial communities, especially actinomycetes (G7\_16).



8. **Soil health and landscape analysis in Pirin National Park** – Relationships between morphometric relief characteristics and soil health have been identified, which can support the conservation of natural areas (G7\_17).

#### **5. Assessment of the applicant's personal candidate**

I believe that the materials presented to me for opinion are the personal work of the candidate. Her personal contribution is expressed not only in the active participation and leadership of scientific projects, but also in the original ideas and the in-depth approach to their implementation.

#### **6. Critical remarks**

I have no critical remarks regarding the candidate. For the further development of her scientific career, it is advisable to establish a clearer focus on a leading research line that reflects a personal signature and provides a sustainable contribution within a specific sub-discipline.

#### **7. Personal impressions**

Chief Assistant Professor Dr. Kamelia Petrova stands out for her high level of professionalism, in-depth knowledge, and dedication to both scientific research and teaching. Knowing the candidate personally, I can confirm that she is an extremely hardworking and goal-oriented individual who approaches every task with commitment and responsibility. All these qualities establish her as a valuable expert and a reliable colleague with a genuine contribution to the development of soil science and forest research in Bulgaria.

#### **8. Conclusion**

**In connection with the above, I propose that Chief Assistant Professor Dr. Kamelia Georgieva Petrova BE elected as an "associate professor" in the discipline "Soil Science with Fundamentals of Fertilization" in Professional Direction 6.5 "Forestry", scientific specialty "Forest Reclamation, Forest Protection and Special Uses in Forests".**

Prepared the opinion: \_\_\_\_\_

/Assoc. Prof. Vera Zamfirova Petrova PhD /

Opinion delivered to: 28.07.2025