

OPINION

by Prof. Penka Angelova Moncheva, PhD, Sofia University "St. Kl. Ohridski", Faculty of Biology, member of the scientific jury, determined by order № RD-38-566 / 03.12.2020 of the Rector of Sofia University "St. Kl. Ohridski"

in a competition for an associate professor in 4.3 Biological Sciences (Ecology and protection of ecosystems - Ecology of microorganisms), announced in DV no. 88 / 13.10.2020 for the needs of the Faculty of Biology at Sofia University "St. Kl. Ohridski"- Department of Ecology and Environmental Protection

Candidate for the competition: Assistant Professor Dr. Silvena Boteva Boteva

1. Brief biographical data about the candidate

In the competition for the academic position of "Associate Professor", announced by Sofia University "St. Kl. Ohridski" for the needs of the Department of Ecology and Environmental Protection the only candidate is Assistant Professor Dr. Silvena Boteva. The submitted documents for the competition are prepared accurately and in accordance with The Law for development of the academic staff and the regulations for its application.

Dr. Boteva was born in 1982. In 2004 she graduated as a bachelor in "Ecology and Environmental Protection", and in 2006 – as a master in the master's program "Environmental Protection" at the Faculty of Biology at Sofia University. "St. Kl. Ohridski". In 2011 she obtained the educational and scientific degree PhD in 4.3. Biological sciences (Ecology and protection of ecosystems). From 2009 to 2014 she worked as an expert ecologist, mainly at the Technical University - Sofia. As an expert, she deals with the preparation of EIA reports, the development of waste management programs, as well as the training of students in the same field. Since February 2014 and until now she has been an assistant professor in the Department of Ecology and Environmental Protection at the Faculty of Biology at Sofia University.

2. Characteristics of the teaching activity of the candidate

Dr. Boteva has almost 13 years of teaching experience, which started during her full-time doctoral studies (2007-2009), continued at the Technical University in Sofia, and then at the Biological faculty at Sofia University. She conducts practical classes in the following subjects: Microbial coenoses, Procedures for environmental impact assessment and complex permits; selected topics from the discipline Ecology and Environmental Protection; Waste management; Soil Science and Environmental Monitoring; Ecology of microorganisms.

Dr. Silvena Boteva has developed and conducts lecture courses and exercises in the following compulsory and elective disciplines: Soil Science; Environmental Impact Assessment; Ecological footprint; Alternative energy sources; Mapping and assessment of ecosystem services (co-authored); Procedures for environmental impact assessment and complex permits.

Its total classroom employment is 742 hours, of which 298 hours of lectures (equated to exercises) and 444 hours of exercises.

She has supervised a total 11 master's theses (8 from the Technical University and 3 from the Faculty of Biology). I recommend her to be more active as a supervisor of graduate students at Biological faculty.

3. Characteristics of the scientific activity of the candidate

Dr. Boteva has a total of 29 scientific publications, 25 of which in peer-reviewed and indexed scientific journals and 4 in non-peer-reviewed ones. She has participated in 34 scientific conferences, more than half of which are international or national with international participation. To participate in this competition for associate professor, the candidate has submitted 22 publications, most of which are part of the above-mentioned total number of papers. Nineteen of the publications have been published in peer-reviewed and indexed journals. Most of these publications have been published in international and foreign scientific journals, some of which have a high impact factor for the scientific field in which the candidate works (*Environmental Science and Pollution Research* - IF 3.306; *Environment, Development and Sustainability*

- IF 2.191; *Ecotoxicology and Environmental Safety* - IF 3.324; *International Journal of Environmental Research and Public Health* - IF 2.849). In 5 of these publications Dr. Boteva is the first author, in 5 she is the second author. In the others publications she is in a different position in the author's team. She is the co-author of two chapters of books in English, published abroad. Additionally, 3 publications in non-peer-reviewed and indexed scientific journals are presented. Dr. Boteva's scientific publications have been cited a total of 113 times, 65 of which in publications from journals referred in Scopus, and 66 in other publications.

The publications of Dr. Boteva have a total impact factor of 16,541. The h-index is 4 (according to Scopus). Dr. Boteva's scientometric parameters cover and exceed the minimum national requirements for the academic position of "Associate Professor".

The research activity of Dr. Boteva covers several main scientific areas: Influence of pollutants on soil microbial communities (publications B4-1, B4-2, G7-5, B4-3, B4-4, B4-5, G7-3, G8-2, G7-11, G7.0-3, G7-10); Microflora of alpine lakes (publication G7-14); Ecotoxicology (publications G7-8, G7.0-1, G7.0-2, G8-1), and Use of remote methods in the field of ecology (publications: G7-2, G7-4, G7-7, G7-12, G7-13). In addition to these clearly defined areas, the candidate has research described in three publications concerning environmental issues, but these do not form a clear scientific field.

4. Characteristics and evaluation of scientific contributions

Dr. Boteva has presented an author's report on the scientific contributions of her publications. I would like to note that the contributions are not clearly defined, unnecessarily detailed information is presented for specific research results. In my opinion, the more significant contributions that are the result of research published in a larger number of scientific publications could be formulated as follows:

1. Contributions in the field of studying the impact of different types of pollutants on soil microbial communities:

- The effects of the fungicide azoxystrobin on soil microbial communities, soil enzyme activity, changes in the soil environment have been studied. Valuable information has been obtained from the point of view of the application of this preparation in practice.
- The influence of radionuclides and heavy metals on a number of soil indicators related to the functioning of microbial communities such as enzyme activity, physiological activity of microorganisms, diversity, etc. was studied. The role of microorganisms as more easily overcoming the stress of heavy metals in maintaining biochemical cycles, plant health and productivity has been confirmed. The use of molecular methods in determining the impact of these pollutants on microbial communities (bacterial abundance, its connection with other factors characterizing the conditions in the studied soils) I believe is a contribution of research in this area.

2. Contributions in the field of ecotoxicology:

- The toxic effect of the herbicides paraquat and glyphosate was assessed using two test-organisms- *Lepidium sativum* L., *Raphanus sativus* var. *radiculata* L. and the inclusion of molecular methods in this assessment.
- The possibility of using *Lepidium sativum* L. as a test for soil monitoring, as well as for assessing the ecotoxicity of treated waste from the production of metal products, together with *Pseudorasbora parva*, as a test object was studied.

3. Others:

- Different remote sensing methods in ecology have been studied and on the basis of the obtained results their advantages, disadvantages and applicability have been established.
- I evaluate as a contribution, although arising from a single publication, the use of molecular methods in assessing the diversity of bacterial plankton in two of The Seven Rila Lakes, which to my knowledge is done for the first time.

5. Project activity

Dr. Boteva has participated in the working team of 7 research projects - 2 of the projects are funded by the NSF, 1 - under the Financial Mechanism of the European Economic Area, and 1 from the European Regional Development Fund under the Cooperation Program between the Balkans and the Mediterranean.

She has been the leader of three of the projects, but the funding organizations are not specified. Dr. Boteva has participated individually or as a member of a team in 24 environmental developments at the Technical University - Sofia.

6. Conclusion

The teaching activity and the scientific production of Dr. Silvena Boteva meet the requirements for the academic position of "Associate Professor". Her teaching activity is characterized by a wide range of disciplines, some of which she has developed independently or as a co-author. Her classroom employment exceeds twice the mandatory for Sofia University. She has supervised a large number of graduates. The results of her scientific activity contain contributions and are presented in a sufficient number of scientific publications, most of which have been published in prestigious scientific journals. They are recognized by the scientific community through citations, half of which are reflected in publications referred to in Scopus. Dr. Boteva's scientometric parameters meet and even exceed the minimum national requirements for the academic position of "Associate Professor". My assessment of the overall academic activity of Dr. Boteva is positive. I believe she is an established and motivated university lecturer and researcher. Given the requirements of The Law for the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation, as well as the Regulations of Sofia University "St. Kl. Ohridski" and on the basis of all the above, I believe that Dr. Silvena Boteva has the qualities and fully meets the requirements for the academic position of "Associate Professor" in 4.3. Biological Sciences (Ecology and Ecosystem Protection - Ecology of Microorganisms) and I would like to suggest to the scientific jury to award her this position.

01.02.2021

Signature:

(prof. PhD Penka Moncheva)