



OPINION

on the materials submitted for participation in a competition for the academic position "Professor" in professional field 6.5 "Forestry", scientific specialty "Forest reclamation, forest protection and special uses in forests", announced by the Forest Research Institute - BAS in SG no. 51/05.06.2020

Candidate for participation in the competition: Assoc. Prof. Dr. Margarita Ilieva Georgieva
Prepared the opinion: Prof. Dr. Daniela Kirilova Pilarska, New Bulgarian University

1. Brief biographical data.

Assoc. Prof. Margarita Ilieva Georgieva was born on January 23, 1974 in the town of Velingrad. In 1998 she graduated from the University of Forestry and received a Master's degree in Forestry, and in 2010 she successfully defended her dissertation for PhD Degree" on "Diseases of Douglas Fir (*Pseudotsuga menziesii* (Mirb.) Franco) and their impact on the introduction of the species in Bulgaria". Her work experience began at the Forest Research Institute, BAS, where in 1998 she was appointed a forestry engineer. During the period 2006-2015 she held academic positions of assistant and chief assistant, and since 2015 she has been an associate professor in the specialty "Forest reclamation, forest protection and special uses in forests". Since 2017 she has been the Scientific Secretary of the Forest Research Institute actively participating in the work of scientific and expert councils, liaises with other institutes and foreign scientists and being responsible for the scientific and educational activities of doctoral students and the research activities of scientists at the institute. She is a member of the Union of Scientists in Bulgaria, the Union of Foresters, the National Commission for Forest Protection.

2. Compliance of the submitted documents and materials of the candidate with the minimum requirements, according to the Regulations for acquiring scientific degrees and holding academic positions at the Forestry Research Institute - BAS.

The submitted documents and materials for participation in the competition are extremely precisely prepared and meet the requirements of the Law for the Development of Academic Staff in the Republic of Bulgaria (LDASRB), as well as the Regulations of FRI, BAS for holding the academic position "Professor". Assoc. Prof. Georgieva presented a self-assessment report on the achieved scientometric indicators according to LDASRB and the Regulations of FRI, BAS, which unequivocally proves that the minimum requirements for holding the position of "professor" according the above mentioned rules are not only fulfilled, but also several times exceeded. The minimum number of points in categories A, C, D, E, F for "professor" in the professional field "Forestry" is 650 points, and the total number of points of the candidate is 4.4 times more - 2 836 points, as follows: in A - 50 points, C - 209.6, D - 237.4, E - 1675, F - 480 and according to additional indicators of FRI - 184 points.

3. General description of the presented materials.

Assoc. Prof. Margarita Georgieva has presented a total of 120 scientific and applied publications, of which 40 are related to the acquisition of the PhD Degree and "Associate Professor", and 71 are after the last habilitation and are related to this competition. Of these, 43 scientific papers have been published in scientific journals, which are refereed and indexed in world-famous databases of scientific information. The articles published in prestigious scientific journals with quartile Q1, which are co-authored with world-famous phytopathologists, make a very good impression. Twelve articles have been published in non-peer-reviewed journals. The candidate also has one published study and is a co-author of 5 popular science articles.

Assoc. Prof. Margarita Georgieva is a leading author in 18 of the publications, 12 of which

are publications indexed and refereed in the global databases Web of Science and Scopus. The materials submitted by the candidate also include documents for other activities, such as review activities, scientific and applied developments, participation in scientific forums, research projects, membership in editorial boards, etc., which present her as a highly valued expert and sought-after consultant.

4. Main directions in the research work of the candidate and the most important scientific and scientific-applied contributions.

The most important scientific and scientific-applied contributions of Assoc. Prof. Margarita Georgieva have been received in the following areas:

1. Study of bioecological features and distribution of pathogens in forest tree species
2. Study of bioecological features of insect pests
3. Parasitoids and entomopathogens on economically significant insect pests
4. Monitoring the health status of forest ecosystems and urban areas

The main scientific and applied contributions can be summarized as follows:

In the first direction, studies have been conducted on the biology and ecology of fungal pathogens:

➤ For the first time, the fungal pathogens *Sirococcus conigenus*, *Botryosphaeria*, *Asterosporium asterospermum*, causing damage to economically important tree species, have been reported for the Bulgarian mycota.

➤ The distribution of fungal pathogens and the damages caused by them in the pine forests in Bulgaria have been studied and it has been shown that the most widespread and virulent for the pine trees is *Diplodia sapinea*.

➤ The processes leading to irreversible damage of natural sweet chestnut plantations (*Castanea sativa*), caused by the fungal pathogen *Cryphonectria parasitica*, have been observed and it has been established that *Cryphonectria parasitica*, *Armillaria mellea*, *Cryptodiaporthe castanea*, *Phomopsis castanea* together with insect pests increase the negative effect

➤ New data on the prevalence of recently identified fungal pathogens *Botryosphaeria dothidea* and *Cryptostroma corticale*, causing drying of important tree species have been established.

In the second direction, research has been conducted on the biology and ecology of invasive and local insect pests:

➤ A new invasive species, the oak lace bug *Corythucha arcuata*, has been reported for the first time in Bulgaria and its food plants have been established under our conditions.

➤ Original data on fertility, survival, structural characteristics of egg batches and mortality during their embryonic development in the dangerous pest, pine processionary moth *Thaumetopoea pityocampa*, were obtained, both in Bulgaria and in Bosnia and Herzegovina, France and Greece.

➤ The zones and rates of expansion of *Thaumetopoea pityocampa* have been established and it has been shown that the pest expands its range to the east and southeast with an average speed of 2.6 km per year.

➤ The phenological development of the pine processionary moth in Bulgaria has been studied and new data for the development of another pest, the pistachio processionary moth, *Thaumetopoea solitaria* have been received.

The third direction includes studies on parasitoids and entomopathogens related to the biological control of dangerous forest pests.

➤ A new species of *Baryscapus transversalis*, an egg hyperparasitoid of the pine processionary moth was reported for the first time for the fauna of Bosnia and Herzegovina. The

species composition of other egg parasitoids species of the pest in Bulgaria, France, Bosnia and Herzegovina and Greece was investigated too.

➤ A summary analysis of the insect pest parasitoids in the area of the Plovdiv Forest Protection Station for the period 1990 - 2017 was performed and 46 species of parasitoids parasitizing 11 species of lepidopteran, hymenopteran and coleopteran hosts have been identified in this period.

➤ Three new species of entomopathogenic fungi have been reported from the pine processionary moth and a molecular characterization of the found isolates has been performed for the first time. In addition to these fungal species, two new tritrophic associations have been identified, including the hyperparasitic fungus *Syspastospora parasitica* and the fungi *Beauveria pseudobassiana* and *B. varroae*.

➤ An analysis of the results from the introduction and spread of the entomopathogenic fungus *Entomophaga maimaiga* infecting the gypsy moth *Lymantria dispar* in Bulgaria and other countries in the Balkans and Central Europe was conducted and new data about the impact of the pathogen on the gypsy moth and its host specificity were received.

In the fourth direction, long-term studies of the health status of economically important forest tree species have been conducted:

➤ A long-term study of the condition of common beech plantations, as well as of natural forests and forest plantations of Scots pine and European black pine has been carried out. The obtained results show that the health condition of beech trees and natural pine stands is good, but deterioration of Scots pine plantations at lower altitudes has been reported, due to the presence of bark beetles and fungal pathogens.

➤ However, the ten-year monitoring of the Turkey oak forests shows development of a pathological process caused by phytopathogenic fungi, the most serious being the influence of *Hypoxylon mediterraneanum*. This has led to a deterioration in the condition of the Turkey oak forests.

➤ A methodology for monitoring of fungal pathogens of invasive alien species as well as classifications of harmfulness of fungal and insect pathogens based on the physiological condition of the host plants and the place of damage has been developed.

➤ For the first time, a combined approach has been tested to assess the health status of trees and shrubs in urban environments by using remote sensing methods and applying entomological and phytopathological methods. Thanks to the testing of an innovative method for remote monitoring of forest plantations in two reserves, difficult to be accessed, it is possible to determine the factors damaging them.

5. Reflection of the candidate's scientific publications in the literature.

The scientific publications of Assoc. Prof. Margarita Georgieva have received international recognition. The total number of citations is 183, and after the first habilitation 141 positive citations were recorded, which exceeds more than 8 times the minimum requirements of the Forest Research Institute, BAS. Most of them (90) are in refereed and indexed in world known databases (Web of Science, Scopus), which is a confirmation of the relevance and importance of the scientific activity of the candidate.

6. Participation in research projects.

The candidate's participation in 23 scientific (national and international) projects demonstrates her active scientific-organizational and expert activity, as well as her ability to work fruitfully in a team with other researchers. Assoc. Prof. Margarita Georgieva is a sought-after and highly valued specialist and partner of colleagues with world recognition.

7. Teaching and learning activities (supervisor/consultant for doctoral students, student training, etc.)

Assoc. Prof. Margarira Georgieva is a scientific consultant of 1 successfully defended graduate from the University of Forestry and is a scientific supervisor of 2 doctoral students (from the Forest Research Institute, BAS).

8. Assessment of the personal contribution of the candidate.

Assoc. Prof. Georgieva's personal contribution is well outlined in all publications, both in those in which she is a leading author and in the others. The indicated scientific and scientific-applied contributions are personal work of the candidate.

9. Critical remarks and recommendations.

I have no critical remarks. I wish Assoc. Prof. Georgieva to continue working with her inherent enthusiasm and energy and to realize many more achievements.

10. Personal impressions.

I have known Margarita Georgieva since 2010 and I would like to express my admiration for her in-depth knowledge in the field of phytopathology and entomology, her ability to work, energy, erudition and modesty, which have contributed to the achieved results and contributions.

11. Conclusion.

The candidate of the announced competition Assoc. Prof. Dr. Margarita Georgieva is a well known scientist with outstanding research qualities and international recognition, who not only covers but also exceeds the requirements of the Law for the Development of Academic Staff in the Republic of Bulgaria and the criteria of FRI, BAS for the academic position "Professor". This gives me a reason to vote convincingly "FOR" her candidacy and to propose to the esteemed Scientific Jury and the members of the Scientific Council of the Forest Research Institute, BAS to unanimously elect Assoc. Prof. Georgieva to the academic position "Professor" in the scientific specialty "Forest reclamation, forest protection and special uses in forests ".

28 September 2020

Member of the Scientific Jury:

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