



STATEMENT

on the materials for participation in a competition of academic position „Associate Professor”, domain of higher education 6. „Agricultural sciences and veterinary medicine”, professional area 6.5. „Forestry”, scientific specialty „Forest Melioration, Forest Protection and Spatial Forest Utilisation”, educational subject „Fundamentals of plant protection”, announced by Forestry University in State Gazette N° 102/08.12.2023, code of the procedure: ELA-AsP-1123-118.

Applicant for the position: Chief Assistant Professor Nikolay Georgiev Zafirov, Ph.D.

Author of the statement: Associate Professor Gergana Ivanova Zaemdzhikova, Ph.D., professional area 6.5. „Forestry”, scientific specialty „Forest Melioration, Forest Protection and Spatial Forest Utilisation”, educational subject „Forest entomology”, Forest Research Institute – Bulgarian Academy of Sciences.

1. Short biography of the applicant

Nikolay Zafirov was born in 1979 in Samokov. He got secondary education at the Professional High School „Konstantin Fotinov” in Samokov (1997). He graduated his higher education at the University of Forestry in Sofia, with BSc. degree in the subject „Forestry” (2002), followed by MSc. Degree in „Forest protection” (2003). In 2008, Nikolay Zafirov developed PhD thesis „Main phytopathological stressors in Scots pine (*Pinus sylvestris* L.) plantations in South-Western Bulgaria”. In the period 2006-2013, he worked as a programmer at the Directorate „Information Systems, International Cooperation and Public Relations”. Since 2013 Dr. Zafirov is a Chief Assistant in the Department of Plant Pathology and Chemistry at the University of Forestry (UF), Sofia. He has 10-year-long experience in lecturer’s career in the UF and up to now is a titular lecturer on fundamentals of plant protection, forest phytopathology, forest protection and dendroecological methods for the subjects forestry and ecology and environmental protection. Chief Assist. Nikolay Zafirov speaks English and possesses very good computer skills. He develops software applications, uses statistical software R and StatSoft Statistica.

2. Compliance of the submitted documents and materials of the applicant with those required under Regulations on the Development of Academic Staff at the University of Forestry (RDASUF)

To participate in the competition, Chief Assist. Zafirov has submitted all necessary documents required by the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the Regulations for the Development of the Academic staff of University of Forestry (RFASUF). All documents are described in details in the submitted application for participation in the competition. The candidate participates with articles (general habilitation report), monographs, scientific and scientific-applied articles. The present report on the minimum scientometric requirements of ADASRB and RFASUF shows that Chief Assist. Zafirov covers them and in a number of cases significantly surpasses them. The scores by indicator are as follows: Indicator A - 50 pts (required 50), Indicator B – 125.9 pts (required 100), Indicator G – 201 pts (required 200) and Indicator D – 150 pts (required 50). The total amount points,

according to parameters in the RFASUF applications for the relevant professional field of the competition, is 526.9 points at a required minimum 400 points.

3. Characterization and evaluation of the candidate's activity

3.1. Evaluation of the teaching activity of the applicant

During his more 10-year-long teaching career, Chief Assist. Nikolay Zafirov gave lectures and conducted laboratory classes and practical training in the subjects fundamentals of plant protection, forest phytopathology, forest protection and dendroecological methods with students from different subjects of the University of Forestry. He is the author of study programs of the mentioned subjects. Under his supervision, 18 diploma theses were defended. He is a member of the Academic Staff of the UF, as well as in the National Commission for Forest Protection at the Executive Forest Agency. Chief Assist. Nikolay Zafirov participates in scientific-applied projects, expert consultations and consultancy activities. He has been awarded several times by the Rector of the UF for his contribution to the development of scientific research activities. Nikolay Zafirov participates in several international scientific networks: ATR – Association for Tree-Ring Research, ESENIAS – East and South European Network for Invasive Alien Species and COST program – FP1106 STReESS „Studying Tree Responses to extreme Events: a Synthesis”.

4. Assessment of the applicant's scientific, applied publication activities

4.1. Participation in scientific, applied science and education projects

According to the minimum scientometric requirements, outlined in the Regulations for the Development of the Academic staff of University of Forestry (RFASUF) for occupying the academic position „Associate Professor”, no evaluation is required based on this indicator. Besides the competition, Chief Assist. Nikolay Zafirov has participated in 13 national scientific-applied projects, expert opinions and consultancy activities. He is a team leader from the University of Forestry for one project, funded by the Bulgarian National Science Fund (BNSF). I highly appreciate the candidate's participation in this indicator and I definitely consider it a good certificate for his scientific research and professional activity.

4.2. Characteristics of published scientific results

The candidate Chief Assist. Nikolay Zafirov participates with 10 articles united by a common topic in habilitation report (Indicator B4). All they were published in journals referred in WoS and Scopus. Out of these publications, four other papers were published in journals referred in the above-mentioned databases (Indicator G7). Of the refereed publications – 5 were published in indexed journals (IF/SJR). Four articles were published in scientific journals outside the focus of WoS and Scopus, however, these journals are on a good scientific level (Indicator G8). A monograph was published on the topic of the PhD theses, containing update information (Indicator G6). Two works are book chapters and another type of collective monographs (Indicator G5 и G11). Five papers have been published in international conference proceedings. Two of the candidate's publications are independent, in another 5 articles he is the leading

author, and in the rest, he is the second and next author. A total of 6 publications are in Bulgarian and 15 in a foreign language (English).

4.3. Reflection of the applicant's scientific activity in the literature (citations)

The applicant has presented information about 10 citations, all of them are registered in scientific journals referred in WoS and Scopus (Indicator D13). With the required minimum for this indicator of 50 points, he declared 150 points. Probably Chief Assist. N. Zafirov has other unidentified citations. In this case, the number of presented citations by Nikolay Zafirov in no way detract from the scientific activity of the candidate, as most of the presented citations are in prestigious international scientific publications such as *Forests*, *Dendrochronologia*, *Agricultural and Forest Entomology*.

4.4. Contribution in the scientific production of the applicant (scientific and applied contributions)

Scientific and applied scientific contributions of Chief Assist. Nikolay Zafirov can be classified in the following more important areas:

Studies of the dynamics in the health status of forests and the influence of major stress factors on it.

- The change in the health status of Scots pine (*Pinus sylvestris*) and Austrian black pine (*Pinus nigra*) stands in different regions of Central and Southwestern Bulgaria was analysed. Mean index chronologies for the radial increment of *P. sylvestris* and *P. nigra* in the different localities were developed.
- The main factors, affecting the health status of *Abies alba* (Central Balkan National Park), *Picea abies* and *Pinus peuce* (Pirin National Park) were investigated. Mean index chronologies for the radial increment of the investigated tree species were created.
- The main stress factors, affecting the health status of *Quercus* spp. in different regions of the country have been studied. Mean index chronologies for the radial increment of oak species in different localities were developed.
- The main factors, affecting the health status of *Fagus sylvatica* in Central Balkan National Park were studied. Mean index chronologies for the radial increment of the common beech in the study zone were created.
- For the first time in Bulgaria, dendrochronological analysis was applied as a method for studying the influence of the horse chestnut leaf miner (*Cameraria ohridella*) on the growth of *Aesculus hippocastanum* in the „Dervisha” reserve in Eastern Stara Planina Mt.

Study of the changes in tree growth species before their death.

- The changes in the growth of tree species before their dieback were studied. The hypothesis is stated, that the algorithms based on tree growth can be a tool for predicting of their dieback. In conifers, a decrease in the radial increment of tree before their dieback was found (in 84% of the observed cases). In broad-leaved tree species, on the contrary, no such dependence is observed.

Use of intra-annual wood density variation in the dendrochronological studies.

- An in-depth analysis of the causes leading to the occurrence of intra-annual wood density variations was made. A database of tree-ring chronologies for the whole of Europe has been made.
- The impact of climate change on wood density variations has been analysed. The occurrence of wood density variation was found to increase with tree-ring widths and conversely decrease with the altitude and age of stands.

Investigations on biotic factors, damaging forest stands.

- Field observations were carried out in 29 coppice oak plantations (*Quercus petraea*, *Q. frainetto* and *Q. cerris*) in 7 state forest enterprises in Western Bulgaria. As a result, 10 fungal pathogens and 8 insect pests were found. The frequency of pathogens and pests in oak forests in the studied zone was reported.
- Field observations were made on the health status of 12 oak plantations (*Quercus petraea*, *Q. frainetto*, *Q. pubescens* and *Q. cerris*) in the state forest enterprises Zemen and Blagoevgrad. As a result, 7 fungal pathogens and 8 insect pests were found to cause damages of oak trees. The frequency of pathogens and pests in oak forests in the studied sites was reported.

Monitoring of forest ecosystems.

- Assessment of the health status of forest stands in the Gornata koria and Chuprene reserves in Western Stara Planina was carried out. An integrated approach for the assessment of forest health status was applied, based on innovative method for remote monitoring and field survey of trees.

Application of statistical analysis methods in dendrochronological studies.

- Various methods of analysis for the increment of main tree species for Bulgaria are presented. The application of the methods for the analysis of changes in radial increment and changes in the status of tree species is demonstrated.
- A tree-ring database was created for 11 tree species collected from 89 sample sites in 8 European countries.
- A database of tree-ring widths covering several continents has been created. Data from 36 tree species collected from 190 sample sites were analysed.
- A database has been developed for the storage of dendrochronological data in Bulgaria, which can be used for the analysis of changes in the status of tree species, as well as for the dating of archaeological and historical objects.
- Several long tree-ring width chronologies have been developed. It can be used to date material and cultural heritage.

Studies on the on the diameter variation curves, height and volume of Douglas-Fir Forest plantations.

- Studies on the on the diameter variation curves, height and volume of medium-aged Douglas-fir forest plantations were carried out. The established regularities in the structure according to diameter could be used for more effective management of Douglas-fir plantations in 3rd age class, growing at comparatively higher altitude.

5. Evaluation of the personal contribution of the applicant

The candidate's personal contribution is clearly expressed throughout his scientific output. I highly appreciate his accuracy, completeness and consistency in data analysis and scientific results. Chief Assist. Nikolay Zafirov is one of the leading scientists in our country in the field of forest protection and dendrochronology. I can confidently say that his participation in the conducted scientific and scientific-applied studies is indisputable.

6. Critical remarks and recommendations

I have no important critical remarks and recommendations.

7. Personal impressions

I personally know Chief Assist. Nikolay Zafirov and I have excellent impressions of his scientific and teaching activities. I would describe him as an excellent lecturer and expert in the field of forest protection and dendrochronology.

8. Conclusion

Chief Assist. Nikolay Zafirov meets all the scientometric and other requirements provided in the ADASRB and RDASU. Based on all facts and evaluation presented above, I support the candidature of Chief Assistant Professor **Nikolay Georgiev Zafirov** for the academic position „Associate Professor” of the subject „Fundamentals of plant protection”, professional domain 6.5. „Forestry”, scientific specialty „Forest Melioration, Forest Protection and Spatial Forest Utilisation”.

Date: 25.03.2024

Author of the statement:

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